The diffusion of digital technology among Millennials and Gen X in the South African Aviation Industry

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ABSTRACT

As digital technology continues to shape the aviation industry, it remains unclear how millennials and gen x help or hinder the diffusion of digital technology in the workplace to improve usage and shape the passenger digital technologies in the industry. This study examines the impact of millennials and gen x on the diffusion of digital technology in the South African Aviation Industry.

A qualitative approach was adopted, and 12 participants were purposively selected and interviewed (with an equal representation of millennials and gen x). The participants were asked questions relating to their role as contributors to passenger digital technologies in the industry and as passengers (consumers of passenger digital technologies). The data was analysed thematically using an inductive and deductive approach to capture the rich responses. Rogers' Diffusion of Innovations theory underpinned this study and also informed the interviews and analysis of the data.

The findings were in-depth insights that showed the two generational cohorts' meaningful contributions in the workplace. Overall, the study found that millennials and gen x share similarities in their attitudes about the advantages and concerns of using passenger digital technologies in the workplace and showed differences in the challenges and disadvantages of using the technologies as passengers. Age, the social system, communication channels, and the role of time were found to play a big role in the diffusion process. The theoretical framework was useful in structuring the interviews and analysing the data collected using themes that emerged from the data and the framework.

The findings indicated that the two generational cohorts belong to two important adopter category groups, which help the workplace diffusion process. This study contributes valuable insights that enrich the existing body of knowledge in the South African Aviation Industry. There are not many contributions related to the diffusion and usage of digital technology in the South African Aviation industry and in those that exist researchers use quantitative approaches to collect data. This study however illustrated the importance of using qualitative methodology in analysing the insights from the participants which provided a deeper

understanding of the topic from business-level perspectives. Future researchers can find this interesting when examining similar topics and may find value in combining different research methodologies to gather more data.

Keywords: Digital Technology, Passenger Digital Technology, Diffusion of Innovation, South African Air Transport Industry, Generation X, Millennials

DECLARATION

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

Name: Kabelo Margery Kgodane Signature: 

Signed at ……Johannesburg……

On the ……25th….. day of ……August…..….2023….

DEDICATION

This study is dedicated to the ICT industry that powers many industries including the South African Aviation Industry and all those who are actively using digital technology to contribute to the Africa our dreams. Africa must rise and Africa will rise as we continue finding solutions to the problems that face individuals, society, and industry. May this contribution to the academic body of knowledge inspire more people to solve industry related problems and add their contributions as well.

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To Mabotse Mohlala, Fiona Khan, Karabo Mathonsi, Thabo Makamola, Lesedi Jantjies, my friends at the Yolanda Cuba Mentorship Circle, the Rotary Club of Sandton, the Black Management Forum Sandton Chapter, the friends I have made at WITS Business School, including my Syndicate F group members who have grown to be friends, my mentors, and every giant on who's shoulders I stand. I would like to acknowledge your fellowship, kindness, and thoughtfulness when I needed it the most. Last, but certainly not least, I would like to thank myself for putting in the work towards this research, staying the course and picking myself up when the journey got tough, and setbacks seemed to be many.

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LIST OF ACRONYMS

4IR – The Fourth Industrial Revolution, 'Japanese Society 5.0'

ACSA – Airports Company of South Africa

AI – Artificial Intelligence

API – Application Programming Interface

B2B – Business-to-business

B2C – Business-to-consumer

CIO – Chief Information Officer

COVID- 19 – Coronavirus disease

GDP – Gross domestic product

GDS – Global Distribution System

Gen x – Generation x

Gen y – Generation y

IATA – International Air Transport Association

IT – Information Technology

SITA – Société Internationale de Télécommunications Aéronautiques

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CHAPTER 1. INTRODUCTION

1.1 Statement of purpose

This qualitative study aims to explore the generational gap between Gen X and Millennials in the South African Aviation Industry and how that influences the diffusion of digital technology in the organisation to cater to a digitised air transport passenger.

1.2 Background of the study

According to Aviation Benefits Without Borders, the aviation industry in Africa is one of the important contributors to the GDP of many countries on the continent because of the support it provides for tourism which stimulates economic activity and the millions of jobs created in the process (“Africa”, 2022). The industry also offers a way for people and goods to be moved in, out and across the continent. South Africa, often referred to as the gateway to Africa (Miti & Kilambo, 2012) has 72 designated ports of entry, with 10 of those being airports and the rest land and seaports. These 10 airports serve as a gateway into Africa and the rest of the world (Rasmeni, 2013).

Air travel typically starts out with a passenger embarking on a planning phase to explore the options available to them. This includes the airlines available from their departure point to their destination, the price, the dates suitable for their travel, the accommodation and any other information that is important for booking this travel.

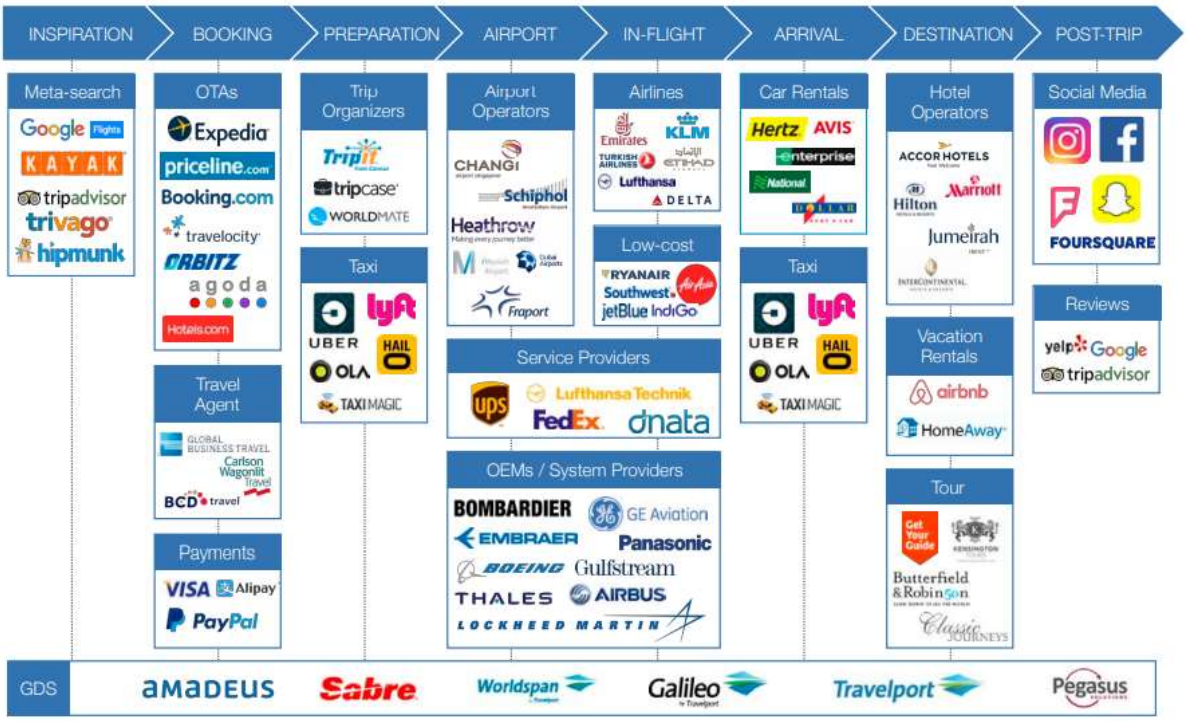

Figure 1-1 The Aviation, Travel & Tourism Ecosystem (Spelman et al., 2017)

Figure 1 above illustrates the steps that a passenger would follow to start and complete air travel. A booking would be made and thereafter the passenger would prepare themselves for the travel by ensuring that all travel documents are in hand, check in is completed and arriving at the airport. Once check in and baggage drop-off has happened, the passenger would move through to security check and immigration if applicable for that travel and once cleared they would move on to board the aircraft. Once the passenger arrives at their destination, they would continue with other aspects of the trip like accommodation and tourism. Then they have an opportunity to rate their travel experience using social media and review applications (Spelman et al., 2017).

The last layer in Figure 1.1 above shows that this ecosystem is made possible and more efficient by a computer network operating between travel agents and many other service providers and information technology providers in the travel industry. The GDS would collect inventory, schedules and fares from different providers and share this information with booking agents and online travel

agencies to allow them to offer these on search and book the seats. This is made available through API's.

Many other systems within the airport and airline environments need to talk to each other in order for the whole ecosystem to become possible, SITA is one of the IT service providers which delivers these services ("*How to Choose a GDS: Amadeus vs Sabre vs Travelport,*", 2023).

SITA Aero a B2B Information Technology Services Provider in the Aviation Industry. SITA was founded over 70 years ago by eleven airlines with the aim to have one IT service provider that can be shared across them and to use one communication network efficiently ("The Postal History of ICAO,", 2022). Over the years, SITA has had many firsts in the air transport Industry, which has helped them become a leader in the field.

Digital technologies like AI, Augmented Reality and Virtual Reality, IoT and Big data which were introduced by the 4IR wave on business has meant that the acceleration of innovation and the speed at which disruption happens cannot be anticipated and planned for by leaders in business (Schwab, 2016). Furthermore, it is predicted that B2C business will be the most impacted by the change. SITA as a B2B provider in the aviation industry designs and delivers solutions for their customers who operate a B2C business model, and it is important to have the end consumer in mind. The passenger is the end customer in the aviation, travel, and tourism ecosystem (Berghaus & Beck, 2016). SITA has over 4 500 employees globally who are spread across 126 countries and provide IT services for the air transport industry by delivering solutions to airlines, aircrafts, airports, and governments (Cornu, 2020). With over 140 nationalities represented in the company and over 60 languages spoken by their employees, SITA prides itself in the diversity of its people and inclusion of all to design, build and support technology solutions with the vision of creating easy air travel every step of the way (Cornu, 2020).

Cecile Cornu, HR leader for Reward and Recognition, Performance Management and Inclusion at SITA talks about the diversity of perspectives and ideas being a competitive advantage for the company because in addition to the different

cultures and countries represented in their workforce. they also have employees who have been in the industry and company for decades collaborating with those who are just out of university and are starting their career with the company (Cornu, 2020).

1.3 Research problem

The work environment is dominated by two generations who need to collaborate to bring new solutions in the age of digital technologies: the generation x who are born between 1965 and 1980 and millennials who are born between 1981 and 1996 (Smola, 2017). Research shows that generation x is typically known to be tech savvy when compared to previous generations and is also the generation that has worked to bring most of the technological advancements we enjoy today (Calvo-Porral & Pesqueira-Sanchez, 2020). This generation uses technology in their lives to personalize and humanize their experiences, for example they prefer using email for business and almost expect that kind of service from providers.

Millennials on the other hand are often referred to as the internet generation. This generation is also tech savvy, but they are the first generation to have their baby pictures taken using a mobile phone and they have since relied heavily on their mobile phones to communicate instantly using email and social media applications (Tyler, 2007, 2008). Together, these two generations would work to bring new solutions to the industry. What is often not covered in literature is how these generations of people who grew up with technology and the ones who are playing catch-up (Lancaster & Stilman, 2002) diffuse digital technology among each other in an organisation and if their attitudes towards digital technology helps or hinders this diffusion.

Recent reports have indicated that the aviation industry in Africa is lagging technologically and is generally unable to cater to passengers that expect a better travel experience through digital technology (Lourie, 2023; Mosehlane, 2020). In light of this, the Airports Company South Africa (ACSA) and airline CIO's in the region have made significant investments in digital technology to digitalise operations and improve passenger experience through self-service programmes

throughout their travel journey. This is with the specific aim to speed up industry recovery and achieve revenue recovery (Malinga, 2023).

1.4 Research Questions

This study investigated the following research questions:

RQ1: What are the perceived differences in attitudes towards passenger digital technologies between millennials and gen x?

RQ2: What are the perceived similarities in attitudes towards passenger digital technology between millennials and gen x?

RQ3: What role does age play in the diffusion of passenger digital technology in the workplace?

RQ4: Which adopter category do they belong to and how does that hinder or help the diffusion of digital technology in the workplace?

1.5 Significance of the Study

This study seeks to contribute to the academic body of knowledge on the diffusion of innovation subject, focusing on organisations. There have been several contributions to the discussions about the different generations in the workplace including that of Calvo-Porral and Pesqueira-Sanchez (2020), Tyler (2007, 2008), Arora (2019), Angeline (2011). However, it seems that there is no real focus on the African context and specifically that of the aviation industry. This study therefore aims to re-look the general characteristics of the four generations in the workplace today by adding the events which took place in Africa during these periods to include individuals in Africa belonging to these generational cohorts. This will help to give a clearer picture of elements shaping the behaviours, values, and attitudes towards adopting passenger digital technology in South Africa.

As digital technology continues to shape the aviation industry, it remains to be seen how millennials and gen x help or hinder the diffusion of innovation. This study aims to focus on digital technology as an innovation. This paper will

contribute to the future studies involving digital technology in Africa, the usage of the technology by passengers of different generational cohorts like millennials and Generation Z's and other generations that will follow in the workplace.

This study will answer the research questions mentioned in section 1.5 to explore the generational gap between the two generational groups in the workplace and understand how that influences adoption and diffusion of passenger digital technologies in both their capacities as passengers and workers in the industry.

Understanding this problem will help the South African Aviation Industry and B2B service providers in the industry to better understand how digital technology is diffused between the contributors of the technology in the workplace. This will ultimately result in investing in the right solutions for their over 41 million passengers facilitated through ACSA's nine airports (futuretravelexperience.com, 2019) and help with their efforts to post-pandemic recovery.

1.6 Delimitations of the study

This study collected data from employees of SITA who are born between 1965 and 1980 (referred to as gen x) and the millennials who are born between 1981 and 1996. Therefore, the study only focused on two generations, gen x and millennials. All other generational cohorts were excluded from the study.

The South African Aviation industry is multinational, with organisations that have employees from all over the world who do not necessarily live and work in their countries of birth. This study will therefore not focus of the nationality of the participants but rather the fact that the participants are working in the South African Aviation Industry.

There are discussions in literature on the recruitment and retention of these two generational cohorts, but this study will focus on the contributions of these employees in the workplace to passenger digital technologies rather than their recruitment or retention.

1.7 Definition of terms

Digital Technology – Technologies that underpin the third and fourth industrial revolutions which started with computer processing & networking, data storage & analysis, the internet, digital and mobile communication (Armstrong & Lee, 2021).

Gen X - Generation x is defined as people who are born between 1965 and 1980 (Smola, 2017).

Millennials – Millennials are defined as people who are born between 1981 and 1996 (Smola, 2017).

Generational gap – Difference in behaviours and opinions as a result of being born at different times (Smola, 2017).

Passenger Digital Technology – Digital technology used in any part of the airline passengers' journey, including self-service programmes, artificial intelligence and biometrics, platforms, and applications.

Innovation – An idea, practice or object seen as new by an individual who will be adopting the innovation regardless of when the innovation was first discovered or used by others (Rogers, 2003).

Diffusion of Innovation – The spread of innovation over time through communication channels within a social system (Rogers, 2003).

1.8 Assumptions

- It is assumed that the participants are based in South Africa actively working with the airlines, airports, ground handlers, Civil Aviation Authorities, Government entities, Passengers in the region.
- It is also assumed that all participants have been airline passengers and that means that they have experienced air travel in South Africa (at a minimum) or regionally on the African continent or internationally.
- It is also assumed that participants have used at least one digital technology in their day-to-day work and in their capacity as an air travel

passenger and will therefore be able to understand the context of this study.

- Finally, it is assumed that because most of the participants are employees within SITA (either permanent or contractors), they should be available to contribute to the study.

CHAPTER 2. LITERATURE REVIEW AND THEORETICAL FRAMEWORK

2.1 Introduction

This literature critically explores the generational gap between Gen x and Millennials; two generations of employees who are at fore front of innovation in the aviation industry in Africa. The literature also investigates the diffusion of digital technology by these two generations within the organisation as the theory underpinning the study.

2.2 Definition of topic or background discussion

2.2.1 *A global overview of digital technology and the four generations in the workplace*

A generation of employees as defined by Kupperschmidt (2000) is made up of individuals born more or less at the same time of two decades each who typically share birth years, age, location, and significant life events (Kupperschmidt, 2000, p. 65 -66). A recent study (Jones et al., 2019) indicated that there are four generations in the workplace: baby boomers born between born between 1946 and 1964, who are typically born after World War II are known to be workaholics and disciplined. This generation is mostly retired or preparing for retirement (Jones et al., 2019). Generation x or gen x born are between 1965 and 1980, they tend to be more individualistic because of their upbringing, because their identity was shaped by the independence of being left alone after school (Blakemore, 2015). They are currently in middle and senior management roles in the workplace (Jones et al., 2019).

In addition to this, there are two newer generations that are part of the workplace known as generation y or millennials born between born between 1981 and 1996 and generation z (also known as digital natives) born 1996 to mid-2000's ("2020 workforce will be dominated by millennials", 2019, Jones et al., 2019). These two

generations are often characterised by their reliance on technology for both their social and professional lives and this is largely due to the fact that they were born into a world that advanced technologically and is wireless (Jones et al., 2019).

What is common with the existing literature on this topic is that the contributions are largely based on populations in America (Lee et al., 2019), Europe, Asia (Arora, 2019) and Middle East (Lissitsa & Laor, 2021) while very little is said about these generations in developing countries. The lived experiences of individuals born in different countries and continents even if they are born at the same time or similar periods will sometimes be different. There may of course be some similarities with global events that have taken place but there may be significant life events that only apply to a continent or region which shape their lives. This creates gaps between generations which are largely characterised by their differences. On the one hand, these gaps present challenges in the workplace and on the other hand they also present an opportunity for employees who belong to the different generational cohorts to leverage of each other's strengths ("How to Manage the 5 Generations in the Workplace", 2019). Understanding what these different groups of people have experienced and how these experiences have shaped their characteristics and values can bring insights to how they find new ways of working (Angeline, 2011; Arora, 2019). Additionally, this can lead employers closer to understanding unique qualities that can help to close this generational gap and encourage employees belonging to these cohorts to adopt new technologies.

A 2018 study in India on the perspectives, engagement, expectations, preferences, and satisfactions from the workplace for generation y has found that many of the propositions in other literature on generation y were reflected by the participants in India (Arora, 2019). The study also indicated some differences and nuances as a result of the participants being in a developing country. This study is an important contribution for literature on developing countries and in particular on the gen x and millennials on continents like Africa because of the similarities in issues and social climate in between the countries. This becomes important for future studies that will look at the different generations in these countries.

2.2.2 *An overview of digital technology in Africa with a focus on gen x and millennials*

Africa is often called a young continent with a roughly 1.2 billion population, mainly people between the ages of 15 and 20 (Wangari, 2018). This suggests that a large part of the workforce in African industries would be made up of young people. Furthermore, predictions were made that by 2020, the global workforce would be made up mainly of an equal number of millennials and gen x ("2020 workforce will be dominated by millennials", 2019). This trend has been the norm on the African continent due to the population make up and other experiences associated with living on the continent. This presents a possibility that global definitions of millennials and gen x may differ when looking specifically at Africa and the individual countries on the continent.

While gen x and millennials are globally described as the first to connect with digital technology, with millennials even being called history's first "always connected" generation (Reiersgord, 2021), they face many issues in Africa which gives them a different reality producing inequality. Literacy and education are some of the core ingredients required to learning and adopting digital technology and in cases where a population of people have low literacy rates and education it can hamper their ability to connect with digital technology.

In Africa, the issues that hamper people from connecting with digital technology are sometimes political in nature, like intra-state conflict, security, and corruption (Bosman, 2022) that causes resources that can help boost education being looted. They are also economic in nature (van der spy, 2022; Adeniran, 2022) where economic growth dictates how many young people will be employed and can actively participate in keeping up with the latest digital technology trends. Furthermore, environmental, social and governance issues including climate change (Benkenstein, 2022) and health (Okarfor, 2022) are now highly prioritised and can mean that the agenda for gen x and millennials to be the first to connect with digital technology may have been delayed. This has resulted in inequality that the so-called gen x and millennials face on the African continent today. It is also as a result of the legacy of colonialism, wars, apartheid, and race issues (Warson, 2015; Mhlauli et al. 2015; Wolpe, 1995).

An article from Forbes Africa further adds that these generational labels could cloud issues of inequality on the continent today (“Millennials, Gen X, Gen Z, baby boomers: how generation labels cloud issues of inequality”, 2019). Most of these issues have solutions and gen x and millennials are now working together to produce innovative solutions. Digital technologies have shown to help solve these issues and scale solutions to the rest of continent and globally (Polak et al., 2010).

2.2.3 *An overview of digital technology in South Africa with a focus on gen x and millennials*

To continue with this theme, a recent article (2021) by Reiersgord argues that South Africa’s youth are not millennials because the original definition of millennials was based on Americans whose economic factors, lineage and historical circumstances don’t match that of South Africans. The same can be inferred to Africans who live and grew up on the continent of Africa. Reiersgord (2021) further explains that the baby boomer generations in America enjoyed a post-World War II boom which has allowed them to own homes and go into retirement, sometimes even passing on their wealth to their millennial children. This is while cohorts of people born in the same period in South Africa were living in the height of apartheid which have only left behind a legacy of race issues and inequality (Reiersgord, 2021).

It is also important to note that inequality is a by-product of digital transformation and as industries transformed there was and continues to be a large population of people that are left behind as a result of the social and economic issues they face. Reiersgord does however agree that being born at the beginning or end of a generational category has an impact on your outlook on life and it also to some degree determine the kind of experiences you may have in your life (Reiersgord, 2021). This provides an explanation on why the gen x cohort can be largely credited for the digital technology transformation in many industries in South Africa. Following them are the millennials who are undoubtably the first generation to grow up connected to the internet but even in this cohort the experiences of those born at the beginning of this generational category may

differ from those born at the end because of changes in the country (Lissitsa & Laor, 2021; Reiersgord, 2021). Both these generational cohorts have been confronted with digital technology as an innovation and have had to interact with this innovation in the workplace.

2.2.4 *Millennials and Gen x as drivers of innovation*

The internet has been called the fastest diffusing innovation (Dholakia et al, 2003, Counted & Arawole, 2015) compared to any other innovation that the world has seen, and this staggering growth of people being connected can become contributors to the pool of new ideas that are developed and shared. Having access to the internet alone is not an indication of innovation however gen xers and millennials have proved to be innovative.

Gen xers are credited as the generation that created startups as we know them today. This generation has engaged with technology from an early age and laid the foundation for the transformation the world is enjoying today. Being tech-savvy, they added their entrepreneurial spirit and founded tech giants like Google and Amazon (Johnson, 2016). Millennials on the other hand are also no strangers to innovation as this is the generation that has proven to make the internet more useful by bringing new ideas to life through start-ups and collaborations which have disrupted industries and have helped to re-imagine the way we work and live.

A study by Counted and Arawole (2015) explored the internet inequality and challenges of millennials in Africa and makes the argument that while access to the internet is growing on the continent, the fact that so many people are still left out deflates the productivity and creativity of African millennials (Counted & Arawole, 2015). Even with this reality, gen xers and millennials on the continent still continue to develop applications that are solving real African problems to improve the standard of living through their mobile devices with research pointing out that mobile internet usage in Africa is among the highest in the world and this has inspired a new wave of innovators (Counted & Arawole, 2015, Kalan, 2013, Jung et al., 2001).

With this background on digital technology and innovation in Africa, Table 2-1 wraps up the findings from the literature on the four generations in the workplace by adding a specific lens on the African continent around the significant life events that they have lived through, their general attitudes, characteristics and how they adopt new technology.

Table 2-1 The general characteristics of the four generations of employees currently in the African workplace. Adapted from (Angeline, 2011; Lissitsa & Laor, 2021)

Generation	Significant Life events	Attitudes, Characteristics & Adoption of new technology
Baby Boomers Born between 1946 and 1964	- Decolonisation of Africa, starting in 1950's to 1975 - Apartheid in South Africa - Economic and political Instability	- Slow, taking things step by step.
Generation X (Gen X) Born between 1965 and 1980	- 17 Countries in Africa gained their independence in 1970 (Everett et al., 2020) - More wars for independence, e.g., the Rhodesian war for independence	- First generation to use email and they are comfortable with communicating using technology. - Strong technical ability and fast technology adoption - Work to live attitude

	- Beginning of computer usage	
Generation Y/ Millennials Born between 1981 and 1996	- Generation of born frees (Free from colonial rule and apartheid) - Internet Usage and beginning of social network activities (Mxit, Facebook, Myspace)	- Confident, connected, and open to change (“Millennials: Confident. Connected. Open to Change”, 2010) - Impulsive - Live first, then work
Generation Z/ Digital Natives Born in the mid 1990’s to mid-2000’s	- First generation to grow up in a completely wireless world which has created the need to be constantly connected (Jones et al., 2019) - The instant generation - The Instagram, TikTok and YouTube channel generation	- The most Tech Savvy of the four generations - Always connected - Multitasking

2.3 Millennials and Gen X attitudes towards digital technology

2.3.1 *Millennial attitudes towards digital technology*

Literature has well documented the times in which millennials grew up which are marked by accelerated technological development (Lissitsa & Laor, 2021). During these times, mobile and connected technology has introduced new ways of communicating, socializing (Au-Yong-Oliveira et al., 2018) and learning through better knowledge management and collaboration.

One of the most important concepts was the introduction of distance learning: the idea that learning can happen anywhere not just in a formal, controlled environment (Au-Yong-Oliveira et al., 2018). In the recent COVID-19 pandemic and its associated lock downs, life as we know it was not normal and so leaning institutions were forced to close its doors in order to keep everyone safe. The learning however did not stop as learners continued to connect via online learning platforms and video calling platforms to interact with their teachers and fellow students. During this time, new technological services like grocery delivery services where you can track the items purchased in real time from the store to home were also introduced.

There are many other examples that show the accelerated technological development which continues to shape the world. What is also noteworthy is the speed at which millennials can do the same activities that previous generations used to do. Messages are now sent instantly, calls are made in real time whether it is a voice call or video regardless of where the person on the other end of the phone, media (including music, television, news etc.) can be accessed with just a click of a button. Technology allows for things to happen in real time, with more accuracy and the ability to keep track of events for future reference. This experience with technology starts to create an expectation for how things should be done, and the way life needs to happen.

Millennials are therefore more likely to have a more favourable attitude towards digital technology as it helps to facilitate so many events that make up their lives (Forest, 2014).

Forbes reported that there is a new generation of business travellers on the rise who are tech savvy, who travel more than previous generations (on average, five business trips a year) and are expecting a digital experience when they travel (Forrest, 2014). These travellers are millennials; they are said to be more open to loyalty programs, self-service programmes and generally anything thing they can do on their smartphones during travel. Their attitude towards travel is typically enhanced by offering them convenience and allowing them to have control over their travel. If this is offered, then millennials are open to spending more money during travel. Another strong characteristic they display is the willingness to give feedback about their experiences and even share this online where other people can have access to it and use this when planning for their travels. Businesses are therefore paying attention to this generations and doing their best to meet their expectations (Forrest, 2014).

A similar attitude is observed in the workplace where this generation views work as something you do rather than a place that one goes to as technology has helped to make remote working possible with real time collaboration with their teams a key part of the work. A recent study in Lithuania showed that attitudes to teleworking varied in terms of gender but millennials certainly favoured this approach more than the older generation (Raišiene et al., 2021). Mhangwani further adds this generation views technology favourably as it allows them to give organisations some of their time and using their other time to freelance or create start-ups (Mhangwani, 2022). They travel more and are able to also extend their business travel by combing work trips with vacations and posting their travel on social media (Forrest, 2014). It is clear that technology offers this generation the flexibility and freedoms they don't necessarily have in the offline (choice, freedom of speech and expression) but are important characteristics of their time. Even though findings from a recent study (2020) in Spain show that this generation are mainly motivated to use digital technology for entertainment and hedonic purposes (Calvo-Porral & Pesqueira-Sanchez, 2020), there is more value for them in other areas of their lives which is why they perceive digital technologies in a more positive way than previous generations.

2.3.2 *Gen X attitudes towards digital technology*

Literature (Lissitsa & Laor, 2021) indicates that gen x cohort are considered to be digital immigrants because technology did not form part of their formative years, however the introduction of digital technology in the form of personal computers and the internet brought a big shift in the way that this generation worked and communicated. They were at the forefront of using email, computer programs and other digital technology tools. This major change and exposure to digital technology has had a big impact on their attitudes towards it.

This generation therefore shows a great commitment to learning when it comes to technology and possibly as a way to ensure that they are not left behind. They are considered tech savvy because they dedicated time and effort in getting digital skills and practicing these skills in their daily tasks. Seeing that this generation only encountered technology later in their lives, they tend to have better human skills that have helped them in their professional and private lives (Lissitsa & Laor, 2021). Even with the commitment they show they still view technology as just a tool that can help them get them further.

Smith found that while a vast majority of gen xers agree that people lacking internet access are at a disadvantage, they still found it challenging to learn to use new technology on their own. They will then rely on younger colleagues in the workplace to assist them with using technology. In their private lives, they may rely on their children or younger family members to help them learn to use digital technology (Smith, 2014).

During the recent COVID-19 pandemic, many gen xers were forced to learn as work and life needed to continue while at home. A few communication technologies like Zoom and Teams were used for meetings and day to day work. It took a huge effort for many of the older generations including gen xers to learn to use these tools and to be comfortable with accepting them as the new way of work. There are popular phrases like “Sorry, I was on mute”, “Can you hear me? Can you see me?”, “Can you see my presentation?” which formed part of many meetings that took place on these communication platforms.

Furthermore, some gen xers indicated physical and health conditions that make it difficult for them to use new technologies and others going as far as questioning the benefits. This report also indicated that gen xers have strong concerns over their privacy when using digital technology. Just like generations before them, they are more cautious when sharing their personal information over the internet and are more likely to take time to understand how their privacy will be protected before using digital technology. Unlike millennials, gen xers often express concern about the amount of personal information that is available online and that is cited as one of the reasons they would consider not using digital technology (Smith, 2014).

This generation typically displays a work to live attitude (Angeline, 2011; Lissitsa & Laor, 2021) and their motivation for using technology is mainly for searching for information and using what technology has to offer to make their lives easier and better (Calvo-Porral & Pesqueira-Sanchez, 2020). It appears that even when circumstances demand that technology be used not as an alternative but as the primary tool, their pragmatic attitude shows up in the way they will use the technology just to solve problems and get some tasks done but would typically not use it for entertainment purposes like millennials would. A recent (2018) study however has shown that this is changing due to the ubiquitous nature of mobile phones and more gen xers were ranking quite high as social media consumers. This would explain why some social media sites like Facebook are now popular amongst the older generations including gen xers while the younger generation has moved on to newer social media sites like Instagram and TikTok (genhq.com, 2018). Privacy concerns still remain a concern and some gen xers have admitted to deleting a social media account because of these concerns (Smith, 2014).

It appears that the gen x attitudes towards digital technology are both complex and nuanced. Initially, their general characteristic of being more individualistic and prefer working alone, would suggest that they have a positive attitude to technology. However, this is if it helps them achieve their end goal while humanizing their experiences; examples include using email communication as a substitute for face-to-face communication.

As digital technology continues to improve and certain events demand that digital technology be used without an alternative, gen xers have shown to be willing to adapt. This evolution in their attitudes towards technology will be important for the future of digital technology considering that this generation is mostly senior in the workplace today and often leading teams that work with digital technology.

2.4 The diffusion of digital technology in the African Aviation Industry

2.4.1 *Digital Technology and Innovation in Africa*

Over the years, the global community has become more and more connected, but Africa has come out as the one continent that is lagging behind when it comes to being part of digital technology evolution. A recent article from AllAfrica (2021) has found that some of the reasons why Africa is lagging behind are weak connectivity, high education gap and illiteracy, outdated government policies (which are an important element in technological innovation and industrial growth), poor infrastructure that needs to support the connectivity for both the rural and urban areas and sadly corruption which worsens the already dire situations that exist in a lot of the African countries (“4 Reasons Why Africa is Lagging Behind the World in Technology”, 2021).

When it comes to participating in the digital technology world, having access to the internet and a device in hand to help you to be part of the internet are the key ingredients. Research points out that at the end of March 2020, only 39.3% of the population in Africa had access to the internet (“Internet usage statistics for Africa”, 2020). Figure 2 below shows how this compares with the rest of the world. Furthermore, an article by statista.com showed that 89% of the web traffic was generated by mobile devices across the continent, which are much cheaper and don’t require the fixed-line internet connections which would be typically needed for personal computers (Johnson, 2022).

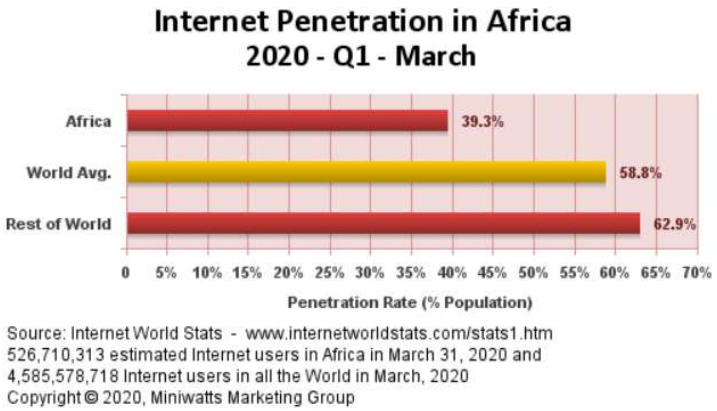

Figure 2-1 Internet Penetration in Africa ("Internet usage statistics for Africa", 2020)

This access is shown to have contributed to innovation which has fuelled the growth of economies in African countries like, South Africa, Cape Verde, Kenya, Nigeria, Rwanda (Counted & Arawole, 2015). Realising that connectivity is the backbone of all industries in the future and the key for communities to solve problems in their environments, telecommunication companies have been vocal in the conversations around spectrum and giving access to mobile and have made big investments in the connectivity infrastructures. Furthermore, there is documented evidence of partnerships between industries to help more people in Africa to be part of the connected global world and to make the internet more useful. One example shows tech giants like Google investing $1 billion into Africa's digital transformation and going further to partner with Vodafone to distribute low end Android mobile phones to rural communities in Kenya and South Africa and even ("Google to invest $1 billion in Africa over five years", 2021).

These efforts lay the foundation for industries like aviation so that those who work in the industry can create new ideas, collaborate, and spread the ideas amongst each other to enable them to take advantage of the many opportunities that come with having a connected passenger.

2.4.2 *Digital Technology in the African Aviation Industry*

The African aviation industry has experienced significant growth made possible by consolidating routes in the intra-African air transport sector, creating room for Africans who could compete on a global scale (Njoya, 2016). Digital technology plays a very important role in the day-to-day running of the aviation industry and the success of players in this industry can often be accredited to investments made in technology. The CIO of the International Air Transport Association (IATA) explains that over the years, there has been an explosion of data in the aviation ecosystem (Thales Aerospace Blog, 2022) and technology is the best way to process this data in the quickest and most efficient way to be able to use it for important business decisions and flight operations (Debusmann, 2021).

Kaplan (2019) points out that the aviation industry has always been a leader in advancing technology. Innovative ideas around improving the safety features for the aircraft, software that allows pilots to map out routes more effectively, connectivity and Wi-Fi in the plane and smart solutions around the airport that allow passengers to use mobile phones to assist their travel journey. Recently however (2020) there have been hurdles to the growth and revenue in the industry with the International Civil Aviation Organisation reporting that the impact of the COVID-19 pandemic on the sector has resulted in huge financial losses with international passenger numbers dropping from 74 million in 2020 to 39 million in 2020 and domestic passenger numbers dropping from 41 million passengers in 2019 to 15 million passengers in 2020 (Wilheim & Wasike, 2021).

The CIO of the International Air Transport Association (IATA) further adds that another challenge in the industry is that airlines need to be better at investing in technology and reaping the benefits that come with such investments (Debusmann, 2021). A recent study conducted by Mosehlane (2020) also found that African airports typically display low digital maturity levels, which negatively affects their total revenues. The study finds that African airports with their current digital maturity levels are

not able to respond to their customers who are airlines and their passengers. It is therefore suggested that technology investment needs to be made to better serve these customers (Mosehlane, 2020).

In other developments, there over 20 billion devices that are connected to the internet (Kaplan, 2019), with that number still growing especially with more people in Africa being connected. Passengers in today's travel environment are comfortable with digital technologies and there are factors in their lives (like the COVID-19 pandemic and changes in the way of work and life) that have forced them to use technology and digital solutions more often. A recent survey done by Mckinsey and Company (2020) has found that the Covid-19 crises has brought years of change in just a few months in the way companies do business. Companies have also accelerated the digitisation of their customer interactions, supply chains and internal operations (Mckinsey & Company, 2020).

Former SITA CEO, Barabara Dalibard (Dalibard, 2022) added that the decline in passenger volumes due to the COVID-19 global pandemic has presented a great opportunity for airlines and airports to solve some of the pressing issues that they previously put aside due to the large number of passengers they had to service. A 2019 IATA global passenger survey showed that baggage was a huge concern for African passengers because there were often no systems in place to handle their bags or help them find them if they were missing upon arrival ("Global Passenger Survey", 2022).

Dalibard (2022) further adds that to better handle passengers and their bags 4IR technologies (like artificial intelligence to match images of a bag captured at the start of the journey and at arrival) will save the airlines money by ensuring that fewer bags are left behind. This will mean the costs associated with repatriating lost bags or reimbursing passengers for damaged bags will no longer be applicable (Dalibard, 2022).

Digital technology now forms part of the aviation industry's recovery following the Covid-19 crisis. It will necessitate huge investments in technology by airlines and airports to cater to a new and more digitised passenger that will be travelling in Africa. A recent global passenger survey by IATA (2021) shows that passengers are interested in using their biometrics information instead of passports and boarding passes, and there is a growing need to be able to track their bags from the moment they check in until they arrive at their destination ("Global Passenger Survey", 2022).

Some airlines like Safair, a low-cost airline in South Africa who have had to cut down their staff during the crises have turned to self-service solutions. They have deployed a mobile application which simplifies the travel experience for their passengers by centralizing all booking details and allowing registered passengers to manage their travel journey on their mobile at any time. This solution also helps to keep passengers up to date with the latest information regarding their flight status and baggage details like which baggage counter the bag will be after arrival and should the bag not arrive getting in touch with the airline (Hanleigh, 2021).

Ethiopian Airlines on the other hand has used the time (2021) to re-imagine what the airport should like when passenger numbers pick up again. They have implemented a bag drop technology at Bole airport in Ethiopia which aims to reduce the number of queues at check in counters and decongest the airport. Passengers who will have checked through their website or mobile application will only need to walk to the unassisted self-bag drop counters and drop off their bags where a bag tag will be printed and presented to the passenger before the bag moves through to sortation, security and into the belly of the aircraft ("SITA deploys bag drop technology for Ethiopian Airlines at Bole Airport", 2021).

Augmented reality and virtual reality used in digital twin modelling in aircraft and airport environments are also currently being trialled in the

African aviation industry with a specific focus on digitising operations and moving from error-prone paper-based systems. Digital modelling uses computer software to create a virtual representation (the twin) of a physical object or system. There are major benefits associated with this and the biggest one is being able to test the object and different conditions digitally and having more information about how this would play out in the physical world (Andersson et al., 2018, Dalibard, 2022). A great example of where this is used would be in aircraft production. A are very expensive pieces of equipment which require specific material to manufacture, and this requires high accuracy using the correct materials. Building digital twins of an aircraft which show the engine and all the other parts required at the assembly will allow for testing to take place virtually. This will allow for data to be gathered about the aircraft and the different conditions it can withstand. It results in huge savings from a production side and will save time and money by ensuring that all potential problems are identified before the engine can be manufactured (Jin et al., 2023).

Conde et al. (2022) applied this concept to the management of information in turnaround event operations in airports by taking advantage of the vast amount of data that flows through the airport environment and using that to improve its operation and management (Conde et al., 2022). This starts with the digitisation of the airport operations and as the industry is actively working towards a post-pandemic recovery, modelling what the airports will look like will present an opportunity to make decisions about how resources can be moved to better serve passengers and decongest the airport. A big advantage is saving on the cost of staff and digital technology because decisions to increase staff or invest in new technology for the airport environment can be planned ahead of time.

The literature around digital technology in the aviation industry shows that this industry will experience an uptake in digital technology and low-skilled physical and administrative jobs like check-in staff and flight attendants will disappear (Spelman et al., 2017). The focus on the South African industry however is to bloom to where one is planted by using digital technology to

improving passenger overall journey and digitalising the operations of the airports. The next waves will include re-designing how passengers will move in the airport environment even with the realities that the country faces (no funding from the government, old models of aircraft which is are not compatible with new technologies etc.).

Proposition 1: There are differences in attitudes towards passenger digital technology between the two generational cohorts in their capacity as passengers.

Proposition 2: There are similarities in attitudes towards passenger digital technology between the two cohorts in the workplace.

2.5 Analytical Framework

A definition of innovation by Everette Rogers describes innovation as an idea, practice or object seen as new by an individual that will be adopting the innovation regardless of when the innovation was first discovered or used by others (Rogers, 2003). This definition sets the scene for why new ideas are currency in the Fourth Industrial Revolution. New ideas are what will help achieve success in organisations and in the aviation industry, it is what will help to cater to a more digitised passenger (Uslu, 2015). Literature further points out that the generation of new ideas alone will not bring the change or success which organisations in the fourth industrial revolution envision.

A view from Lunbald (2003) uncovered a common problem in organisations where a new ideas, processes and products are created by one part of the organisation but are not adopted or used by other parts of the organisation, creating a problem where the organisation does not get the return on investment for the efforts spent on bringing about the innovation (Lunbald, 2003). It other cases, the adoption of the innovation will happen, but it will take a long time until that is a reality, and this is the reason why diffusion is a topic of interest for individuals and organisations (Rogers, 2003).

This process of adopting innovation has been an area of interest for many years and researchers like Rogers is one of the theorists that laid the foundation on the topic of diffusion of innovation and has incorporated the work of other scholars into what we know as the diffusion of innovation theory (Lundblad, 2003). Rogers further proposes that in a given population, groups of people (which could include generational cohorts but is not explicitly stated) adopt innovations at different phases from the time the innovation is introduced (Sahin, 2006, Rogers, 2003).

2.5.1 *Diffusion of Innovation*

Rogers' diffusion of innovation theory has therefore been found to be the most suitable for this study. This section will cover the main elements of theory.

The innovation: An idea, practice or object that is seen as new by an individual that will be adopting the innovation regardless of when the innovation was first discovered or used by others (Rogers, 2003).

Communication channels - Rogers describes this element as the process by which individuals will develop or share information with each other to achieve the same understanding. Other communication channels are external of the participants. In Roger's theory, the source of communication regarding the innovation has an effect of the rate of adoption.

Time - This element describes how much time it takes to move from the first time an individual hears about an innovation and to either adopting of rejecting the innovation. Individuals in this system are referred to as adopters and Rogers' theory places them in five categories to show how time plays a role in adoption process by determining the rate of adoption.

The adopter's categories: Figure 2.4 graphically represents these categories of people as:

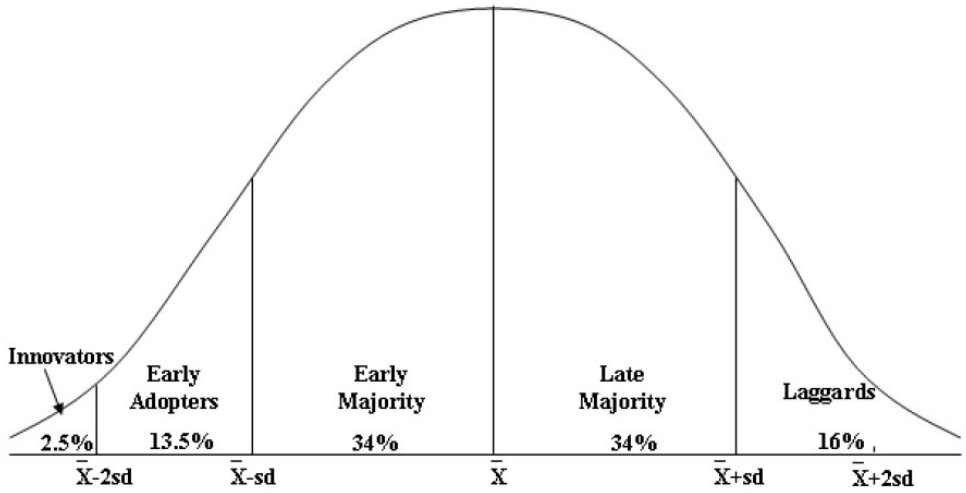

Figure 2-2 Adopter Categories on the Basis of Innovativeness (Rogers, 2003)

Innovators: Rogers describes this small population as being willing to experience new ideas and will serve as the gate keepers who bring the innovation in to the rest of the population. It requires a deeper level of technical knowledge to be an innovator, but their opinions are not valued much by the others.

Early Adaptors: Literature usually covers this category at the beginning stage of because they are the change agents in this system. As the name suggests, they tend to hold leadership roles in the system, making their opinions on the innovation very valuable as they influence an uptake of the innovation, causing it to spread to the rest of the population.

Early Majority: They usually take more time than the previous two to adopt innovation. Rogers pointed out that they have a good interaction with the other members of the social system but have a different leadership status in the social system.

Late Majority: These make up the same number as the early majority, but the difference is that these are members of the social system who choose to wait until most of their peers have adopted the innovation and then only do they follow. The saying that there is safety in numbers applies to this group.

Laggards: This last group tends to be very sceptical about innovations and will only adopt an innovation once all the other groups have adopted it because the important thing is for them to know that it works and that by the time, they adopt it all risks and issues with the innovation are fixed.

Following this categorization, Rogers (2003) divides the five categories of adopters into main groups consisting of early adopters (made up of innovators, early adopters, and early majority) and later adopters (made up of the late majority and laggards) to explain that differences in their social economic status, personality and communication behaviour will influence which category they fall in (Sahin 2006, Rogers, 2003). Although Rogers (2003) does not include age or the generational cohort of the adopters, this study aims to test the following propositions based on what literature reviewed in this chapter.

The social system – All diffusion happens in a social system and opinion leaders or those that hold a leadership role in the organisation can influence the diffusion of innovation in an organisation. Roger (2003) therefore describes these influential individuals the champions (Rogers, 2003).

2.5.2 *Diffusion of innovation in the organisation*

There's a growing interest in understanding how technology and new ideas as a result of technology diffuse amongst individuals but also in organisations. Evidence in literature shows that Rogers' diffusion of innovation theory has been used to explore how and why innovations are diffused in organisations and different industries (Lundblad, 2003, Sahin, 2006), to address issues relating to diffusion of innovation and to investigate the adoption of innovation. Lundblad (2003) contributed with a study that reviewed and critiqued Rogers' diffusion of innovation theory pointing out that although the theory mentions innovation diffusion in organisations, it was primarily focused on the diffusion of innovations among individuals. The study found that the four elements that make up Rogers' theory, namely, the innovation, communication, time, and the social system are important contributors but would need to consider additional features in an organizational context to provide a better view of how diffusion takes place in the organisation (Lundblad, 2003). Other frameworks that address to the

shortcomings of Rogers' theory in an organisational context have helped researchers with findings relating to the diffusion of innovation considering the complexities of organisations. To address the diffusion of innovation in a project -based firm which links contractors and permanent employees, Crespin-Mazet et al. (2021) found that adopting the Agterberg framework (2010) together with Rogers' theory (2003) will allow them to frame the research using communities of practice and focusing on their characteristics to address the problems around the diffusion of innovation (Crespin-Mazet et al., 2021). In Nepal another study was undertaken to explore how and why corporate social responsibility (CSR) was diffused in an organisation in the airline industry using both Rogers' framework and Abrahamson's framework (1991). Abrahamson's framework provided additional perspectives which helped the researchers to arrive at insights on supply and demand side factors which influence the diffusion of CSR in a developing country (Upadhaya et al., 2017).

Proposition 3: The millennial will find it easy to learn and diffuse passenger digital technology in the workplace.

Proposition 4: Millennials are early adopters, while gen x ranks as the early majority in the organisation.

2.6 Conclusion of Literature Review

This chapter has managed to critically explore the generational gap between Gen x and Millennials through literature that exists on the topic. It has provided both the global context and that of South Africa on digital technology and the two generational cohorts. Furthermore, the literature also helped to give an understanding of digital technology in African aviation organisations and how the two generations are drivers of digital technology in these organisations. The chapter also explored literature that investigated the diffusion of innovation within organisations and Rogers' diffusion of Innovation framework (2003) was presented the analytical framework that underpins the study. The next chapter will outline the research methodology for the study.

CHAPTER 3. RESEARCH METHODOLOGY

This section outlines the research methodology which was followed for this study. All details regarding how the research questions will be answered starting with the research approach followed, the research design and the data collection methods and sample of the study will be covered.

3.1 Research approach

A qualitative research approach was adopted in order to answer the research questions in the study. This research involves people who work in an industry shaped by digital technology and have experiences with it both as contributors and consumers. The individuals belong to different generational cohorts, presenting different attitudes shaping their experiences. In order to capture this in the most authentic way possible, a qualitative approach has been found to be suitable as it aims to achieve an in-depth understanding of the individuals under study. This was done by collecting data that extracts attitudes, motivations, and perceptions of their experiences in their own voice or the best way they can express themselves (Cooper & Schindler, 2014). This approach does, however require a significant amount of time to collect, transcribe, code, and analyse the data, which could be a challenge when working with tight timelines. This meant that the study had to be planned to include all these steps to maintain the quality of the report.

This approach was also found to be appropriate because the research questions in this study are exploratory in their nature and therefore the interview process managed to produce rich and detailed data through transcripts. A qualitative research approach also provides the flexibility to adapt methods and questions to suit the research setting and the participants by tailoring the research questions as required, something that a qualitative approach does not offer. This is made possible due to the sample size but that, unfortunately makes it difficult to generalise the findings of the study to a larger population. This study however found the approach to be more suitable as it allowed for an understanding of the

experiences and attitudes of the individuals under study (Cooper & Schindler, 2014).

Furthermore, an advantage of this approach is that it allowed for the participants to be in in their natural settings when the data was gathered and also allowed data to be gathered, organised, interpreted, and presented back to the participants for feedback. Another disadvantage of this approach is that the research is subject to the researcher's interpretation and there could be bias purely based on the amount of time spent in data collection and analyses. It is therefore important to allow the participants to give feedback once data is collected and transcribed to ensure that it does indeed represent their true experiences, beliefs, and attitudes. Finally, qualitative data can sometimes be rich and complex, making the data analysis process challenging. Once the data is collected, coding, categorising, and developing a way to interpret will require skills (Denzin & Lincoln, 2011, p.3; Cooper & Schindler, 2014).

3.2 Research design

This study used a generic qualitative design as this helps to uncover individual meaning of the participant's views and experiences with digital technology in the South African aviation industry. A generic qualitative design has assisted in answering the research questions by creating a focus on how each generational cohort interprets their experiences as individuals and not a collective, it allowed the study to capture the participant's unique responses. This is done by analysing how the individuals construct their worlds and the meaning they attribute to their experiences, and it brings an important contribution to the diffusion of digital technology (Merriam, 2009).

Although Merriam and Tisdell (2016) pointed out that all of the qualitative research methodologies have similar characteristics because they belong to the qualitative research approach, there are differences in the focus of the design which would dictate the sampling methods, data collection, analysis, and the presentation of the data (Merriam & Tisdall, 2016; Jahja et al., 2021). RQ1 and RQ2 of this study require rich descriptions of their attitudes towards digital

technologies and a generic qualitative design will allow for an understanding of how the participants construct their reality. A generic qualitative design is a very useful tool for researchers because it can be used to explore a wide range of topics and be applied to different settings and contexts (Merriam, 2009). RQ3 of this study requires an in-depth understanding of the participants responses and nuances to be picked up in order to determine which adopter categories the participants would belong to; this research design will allow for that.

As discussed in the previous section, the researcher role is important in helping to provide meaning obtained from the interviews. Using this design, the data was analysed both deductively and inductively using the main themes from the analytical framework of the research. Thereafter, they were discussed using rich descriptions guided by the framework (Merriam, 2009). The following sections of this chapter provide detail on the sampling method used, the data collection and the analysis of the data.

3.3 Data collection methods and procedure for data collection

The process started with seeking permission from the HR Director of SITA Africa before conducting the interviews. Appendix A details the letter of permission which was sent out and Appendix B shows the approval letter which was sent back after permission to conduct the research at SITA was granted. Once permission was granted, appendix C and D details the consent letters and participant information letters sent to the identified participants.

The participants were approached by email with the appendixes as attachments.

Data for the study was collected using in-depth interviews which were conducted online using the Microsoft Teams software. This platform presented an opportunity to record the meeting and will be saved securely the cloud where only the researcher will have access to it. Participants were also offered the option to record the sessions on a separate audio recording device instead of the Teams software and the recording would be saved on a password protected computer and would only be accessed on the cloud. These details are captured in appendix

A, C and D. There are two participants who opted for the latter due to issues experienced on their Teams software during the interview.

The duration of the interviews was on average 40 minutes; however, participants were informed that the interviews would take a maximum of 45minutes. During the interviews, there was no one else part of the interviews except the researcher and the participant. At the start of each interview, the video cameras were switched on in order to introduce each other and to assure the participants that they were only having the interview with the researcher.

The interview guide was shared with the participants ahead of the interview to give them an idea of what the conversation was about. It was also noted after the first two pilot tests that people tend to be more relaxed and calmer when they have an idea of what they are about to partake in. In the end there was only two repeat interviews which were carried out because there were power cuts that interrupted the connectivity to the internet and caused a break in the interview. The participants were available on the same day to carry out a repeat interview.

In depth interviews were selected as they allow for capturing rich responses, nuances in answers relating to their experience or attitudes will not be lost. The interviews were set up to be semi-structured which allowed for participants to have the freedom to express themselves fully with the researcher being able to probe for more.

Strategies like asking the 5 why's were used to drill down to the meaning of answers provided and have allowed to test if what participants say is indeed what they mean. During the interview field notes were taken down to capture the observations made during the interview and ideas that were inspired by the participants answers. Following the interviews, the transcripts were produced with the help of artificial intelligence built into the Teams software and were refined by using the field notes which were captured during and after the interview. Transcripts were returned to the participants for comments and corrections which was sent back to the researcher.

3.4 Population and sample

3.4.1 *Population*

SITA operates in 22 countries in Africa (Cornu, 2020), high level company records shared by the human resources team with no identifiable data indicate that there is a total of 25 employees who are classified as gen x and 16 employees classified as millennials in their South African entity. The focus of this research is on this group however data has been collected from a sample of this group in order to have more rich responses as guided by the research design.

3.4.1 *Sample*

From this data above, the sample was then be made up of participants who meet the criteria of being employees of SITA (permanent, contractors or learners and graduates who have been with the company for at least 12 months). They should belong to the two generational groups: generation x, born between 1965 and 1980 and millennials, born between 1981 and 1996. The participants were based in South Africa or working in the South African Aviation Industry. Since the study was focused on the South African Aviation Industry, other participants in the South African Aviation Industry who are not necessarily employees of SITA were considered as well. Two participants who fit the above criteria, one of which used to be an employee of SITA and the other is working directly with SITA but not employed by the organization formed part of the sample.

3.4.2 *Sampling method*

Literature indicates that qualitative research's sampling method is theoretical or purposive (Patton, 2015). Since this research is trying to get rich information about the experiences and opinions of the gen xers and millennials, purposive sampling is therefore appropriate. The biggest advantage will this method is that the sample will be selected on with the idea that they would be able to provide insights that can be used to answer the research questions. The idea was also to focus without wasting time on participants that may not be reachable or be able to contribute to the study (Merriam & Tisdell, 2016).

This research is exploratory in nature and required that participants who are accessible and can provide as much data as possible were selected. The researcher was guided by the human resources at SITA to select the participants who will be best for this research. Although some of the participants were not in the organisation, the HR Director recommended them as participants because of their work in the aviation industry in South Africa.

While there are different views and no specific answer on the number of participants required (Creswell & Poth, 2018), this study was guided by the generic qualitative design and the advantage here is that it borrows from other approaches like phenomenology (includes 3 to 10 participants), grounded theories (20 to 30 participants) etc. to create what is best for the study. This study, therefore, settled on the sweet spot of 12 participants with an equal representation of gen x and millennials.

3.5 The research instrument

The themes that were covered in the interview are:

3.5.1 *To answer RQ 1 & 2 the following themes were covered in the interview:*

- Work experience: This theme relates to the question about how long the person has worked at SITA or in the South African Air transport industry. It suggests an interest in the person's background and experience in the industry.

- Job responsibilities: This theme is related to the question about the person's role at SITA. It suggests an interest in the person's position within the company and what their specific job duties entail.

- Technology and innovation: This theme is related to the question about how the person contributes to passenger digital technologies in South African airports and airlines. It suggests an interest in how technology is

being used in the industry and how it is impacting the passenger experience.

- Personal experience: This theme relates to the question about the person's experience with air transport within South Africa or Africa. It suggests an interest in the person's personal experiences and how they relate to the industry.

- Use of technology: This theme relates to the question about which digital technologies the person has used as a passenger. It suggests an interest in how technology is being used by passengers in the industry.

- Advantages and disadvantages: This theme is related to the question about the person's perceptions of using passenger digital technologies. It suggests an interest in the pros and cons of using technology as a passenger.

- Comparison of roles: This theme relates to the question about how the person's perceptions of using technology as a contributor compare to their perceptions as a consumer. It suggests an interest in how the person's professional experiences influence their personal experiences with technology.

- Challenges: This theme relates to the question about the challenges the person has encountered in using passenger digital technologies. It suggests an interest in the difficulties people may face when using technology in the industry.

- Concerns: This theme relates to the question about the person's concerns about using passenger digital technologies. It suggests an interest in the potential drawbacks or risks associated with using technology in the industry.

3.5.2 *To answer RQ 3 the following themes were covered in the interview:*

- Discovery and motivation: This theme is related to the question about how the person found out about passenger digital technologies and whether a specific person introduced them to it. It suggests an interest in how people become aware of technology in the industry and how they are motivated to use it.

- Learning: This theme relates to the question about how the person learned to use passenger digital technologies. It suggests an interest in the process of learning how to use technology in the industry.

- Age and experience: This theme is related to the question about whether younger or older colleagues approach the person with their experiences of using passenger digital technologies. It suggests an interest in how age and experience may affect people's approach to technology in the industry.

- Reasons for adoption: This theme relates to the question about why some colleagues adopt passenger digital technologies while others do not. It suggests an interest in the factors that influence people's decisions to use technology in the industry, and whether age plays a role in this decision-making process.

3.5.3 *To answer RQ 4 the following themes were covered in the interview:*

- Adoption and communication: The theme relates to the question about how the person decides to use a new passenger digital technology and whether they share information about it with colleagues. It suggests an interest in how people adopt and communicate about technology in the industry.

- Attitudes towards technology: This theme relates to the question about whether the person is an early adopter of new passenger digital technologies or prefers to wait until they are tried and tested. It suggests an interest in people's attitudes towards technology in the industry.

- Influence and leadership: This theme relates to the question about how the person's views on passenger digital technologies filter down to their colleagues in their role within the organization. It suggests an interest in how people in leadership positions can influence the adoption and implementation of technology in the industry.

The interview guide and participant information sheet provide further detail and have been attached as annexures.

3.6 Data analysis strategies and interpretation

During the interviews, the process of producing field notes started and continued after each interview. Thereafter, written transcriptions of the interviews were produced with the assistance of the field notes. Thematic analysis was used to analyse the data from interviews with participants. This method for describing qualitative data provided the advantage of flexibility to capture as much meaning as possible and had allowed this to be presented back in this research in a structured manner that answers the research questions.

The themes were derived both deductively and inductively from the data which was coded and then categorized. Roger's diffusion of innovation theory underpinned this study and was a key starting point in the deductive approach to theme development. This has also served as an important guide for constructing the questions which were part of the interview guide. The main advantage of deductive analysis was that it allowed for the themes to come from the framework, it was quick, and it was rooted in the literature. The disadvantage of this approach however was that it is inflexible and leads you to go through the data in a biased manner. This was then addressed by also adopting an inductive approach. The researcher's supervisor acted as the co-coder who was part of theme

development process and sub themes and extract meaningful statements (Kiger & Varpio, 2020).

Although the inductive approach offered flexibility and allowed for the themes to emerge from the data that was collected, the disadvantage experienced was that it was time consuming and required one to be through (Kiger and Varpio, 2020).

To help achieve this, Kiger and Varpio (2020) provided a worked example which used six steps of thematic analysis. The steps below were used from the moment an interview is completed and are as follows (Kiger & Varpio, 2020):

- Step 1: Familiarization with the data gathered
- Step 2: Generating initial codes
- Step 3: Search for themes
- Step 4: Analysing the themes
- Step 5: Reviewing themes
- Step 6: Producing the report

3.7 Quality Assurance

3.7.1 *Trustworthiness*

It is important to ensure that the data that is collected and processed for results is trustworthy. Polit and Beck (2012) describe the idea of trustworthiness as a measurement of the confidence that the researchers have in their research. This filters through the actual quality of the research (Polit & Beck, 2012, pg. 157). To achieve the trustworthiness of results, there were a few strategies implemented there was constant ongoing engagement with the data to provide concrete details about the findings. Having an equal number of participants from each generational group allowed for consistency of the data and in the end will allow the readers to be able make up their own understanding of the answers to the research questions.

The participants under study already come with different generational perspectives, this research was mindful of the differences in perspectives that

could be cultural, as a result of gender etc. Therefore, an emphatic understanding of the responses has helped to promote multivocality and add to the credibility of the findings (Tracy, 2010).

3.7.2 *Credibility*

According to Korstjens and Moser (2018) credibility in qualitative research refers to the level of confidence that can placed on the research findings. This speaks to showing that the findings from the research report was drawn from the participants views and that the interpretation of the findings was done accurately and correctly (Korstjens & Moser, 2018). The strategies used to ensure credibility of the research findings in this study were prolonged engagement and triangulation. There was a lot of time that was invested in the interviews starting with dry runs and pilots to ensure that the research is able to understand the context in which they are asking the questions and to become familiar with the interview guide.

There were also test runs with the Teams Online meeting software to ensure that when the interviews take place participants can be assured of, they can trust the participants and express themselves freely. This was done through switching on the video for introductions and set the scene for the interview. Triangulation was used by scheduling the interviews over two weeks with some interviews taking place in the morning, some during lunch time and others at the end of the day. The Teams Online transcription service was used during the interviews along with field notes. This helped to produce the final transcriptions and allowed for the coding process to happen with researcher with the support of the supervisor.

3.7.3 *Confirmability*

Confirmability refers to the extent to which the findings of the research can be confirmed by other researchers and how objective the researcher was (Korstjens & Moser, 2018). This was ensured by maintaining an audit trail which was made up of the steps which were taken from the start of the research to the end. As communicated to participants, the records from the interviews were stored

securely on the cloud where only the researcher and the supervisor had access to them.

3.7.4 *Transferability*

The participants of this study were mainly in technological roles within the Air transport Industry. Transferability would measure the degree to which the results of this study can be transferred to other contexts within the South African Air transport industry (Korstjens & Moser, 2018). Using the field notes, which helped to describe the context and additional information that was added during or after the interview, thick descriptions were able to help the findings become more meaningful even to other millennials and gen x in the South African industry.

3.8 Ethical considerations

Confidentiality of the data and anonymity of the participants have been considered and maintained in this research. In the interest of transparency, information on the confidentiality of the data (including the data collection phase in interviews and beyond) were shared in the participant sheet and the interviews to ensure that the participants have indeed received the information and that they understand what it means. The anonymity of the participants has been guaranteed in the participant information sheet and participant consent form (Tracy, 2010).

The participants in the interviews were in the same organisation as the researcher and may be known to the researcher. Participants were therefore told that while confidentiality is desirable, it cannot always be guaranteed but they have a right to remain anonymous in the final report which will be respected in the handling of all data relating to them. The participants were also be informed that this study will only disclose the name of SITA as the organisation, but it will not be disclosing any individual identities of the participants in the final report.

Other procedural ethical considerations which were upheld include:

- Formal permission was asked to conduct research at SITA

- Respect for research participants was maintained at all times by ensuring:
    - Informed consent
    - Protecting their identities
    - Protecting data (After the research, data was stored in digital form with all identifying features removed)

3.9 Conclusion

This chapter has outlined the research methodology, which was followed for this study, including details of how the research questions were answered starting with the research approach followed, the research design and the data collection methods and sample of the study. Chapter 4 will therefore present the findings of the interviews.

CHAPTER 4. PRESENTATION OF RESULTS / FINDINGS

4.1 Introduction

Following the methodology presented in chapter three, the literature review, and the research objective from chapters two and one, this chapter presents the data analysis. The data analysis is aimed to answer the research questions using the responses from the semi-structured in-depth interviews.

This section will be broken down into three sections. The chapter will begin by providing a demographic profile of the participants, followed by the findings broken down by the themes and finally a conclusion will be provided. The findings were analysed using thematic analysis and quotes from the interviews were then used to support the themes that were derived from the analytical framework, and which have emerged through the interviews. The aim is to answer the research questions appropriately. The participants were asked sixteen questions that seek to extract answers to the above research questions.

4.2 Demographic profile and background of participants

The research managed to interview 12 participants. half of the participants belong to the gen x generation, people who were born between 1965 and 1980 are generally regarded as slow in adopting digital technology. The other half of participants are made up of the millennials who are people born between 1981 and 1996.

Looking at the generation group and experience, it is easy to say that gen x has higher work experience compared to the millennials. The responses to this question range from the lowest duration of 1 year to a maximum work duration of 30 years. The maximum work duration at SITA of 30 years is consistent with the age of Société Internationale de Telecommunications Aeronautiques (SITA).

Participant's use of Air Transportation Domestically and Internationally

All the participants mentioned that they had used air transport at least once for leisure and some also for business. Most participants indicated that they have travelled in and outside of South Africa. Figure 4.1 shows a word cloud of the places and countries visited by the participants using air transport. A word cloud is a visual representation of text data, often used to depict keyword metadata from a text. The size of the word shows the number of times the work has been mentioned in the text. Generally, we can see that the participants are well-travelled. The analysis shows that gen xers have travelled relatively more frequently and mostly outside South Africa compared to the millennials. This could be linked to the fact that they have had more years of work experience than millennials, which came with opportunities to travel using air transportation.

The participants reflect diversity in their demographics and backgrounds. They were selected in order to get their different views and experiences which would be beneficial to the study.

Figure 4-1 Places travelled to using air transport by the participants.

4.3 Emergent and Deducted Themes

This study aimed to explore the generational gap between gen x and millennials in the South African Aviation Industry and how that influences the diffusion of digital technology in the organisation to cater to a digitised air transport passenger.

This study investigated the following research questions:

> RQ1: What are the perceived differences in attitudes towards passenger digital technologies between millennials and gen x?
>
> RQ2: What are the perceived similarities in attitudes towards passenger digital technology between millennials and gen x?
>
> RQ3: What role does age play in the diffusion of passenger digital technology in the workplace?
>
> RQ4: Which adopter category do they belong to and how does that hinder or help the diffusion of digital technology in the workplace?

The following themes have emerged from the findings of the study and the analytical framework, and they have been related to the study's propositions. The following sections of this chapter will unpack them in detail.

- The Implementation and Use of Passenger digital technologies
- The role of leaders in the adoption of digital passenger technologies
- The role of communication channels in diffusion
- Time as a catalyst for diffusion

4.4 The implementation and use of Passenger Digital Technologies

After coding the data and categorising the codes, one of the themes that emerged in the study was the implementation and use of digital technologies. To unpack this theme, four sub-themes were identified namely, the role of participants in

passenger digital technologies, the technologies used by passengers and the challenges and concerns with using passenger digital technologies.

4.4.1 *Understanding the role of participants to Passenger Digital Technologies*

The study found that all the participants contribute to these technologies in their roles within the organisation. With the different interviews, it was clear that the participants work closely together in many parts of the ecosystem to ensure that the technologies are deployed into the passenger environment. Their contributions to transport digital technologies, therefore, range from marketing and costing the technologies, training, spreading awareness, and providing customer guidance and after-service of the technologies. Regardless of the generation type, both generations provide a significant contribution to digital technologies.

One participant shared:

> *"I work very closely with the bid teams and the sales teams to prepare commercial costings for the solutions we sell in the market"* – **Participant 9**

Another participant added:

> *"My role is to assess certain issues relating to the applications, the computers, the technology that is around digital products."* – **Participant 3**

There were two other participants whose roles were focused more on sharing information about the technologies to people outside the organisation:

> *"My contribution to the technologies is from an information perspective because I am there to spread information to do with new technologies that are coming through."* – **Participant 6**

> *"My contribution is mostly from a social perspective, we open up a platform for students to know more about the air transport industry, end to end*

passenger processing services and SITA offerings. Allowing them to learn better about the industry." – **Participant 1**

Age was seen as separating variable regarding the respondent's seniority in the workplace with gen xers holding more senior leadership roles and millennials having specialist roles. It does however seem that each participant plays an important part in the implementation of the technologies. Their skills and experience with using the technologies while travelling was found to be important. This finding supports the notion that even though the millennials seem enthusiastic about digital technology, the gen xers are in fact skilled and are leading the evolution of digital technologies.

There were mixed responses regarding the comparison roles of the participants as contributors to the technologies on one side and as consumers of the technologies on the other side. Most participants expressed an appreciation of the passenger digital technologies as consumers because of their role in the workplace. They have found that this gives a deeper understanding and trust for the technologies because they are mandated to know them well enough to be able to sell them to different players in the air transport industry. Participant 6 shared his views as follows:

"As a contributor I should know a little bit more than the consumer, I should be more comfortable with the technology." – **Participant 6**

The role of a contributor requires more knowledge about the products than when one is a consumer. Eight of the participants found it very interesting to experience the products on both sides and they take the opportunity to suggest ways of improving the technologies hence the two sides were viewed as complimenting each other.

One participant did however point out that the role of using the technologies as an airport manager as an example would be more challenging because there are more variables that must be considered before installing or launching a digital technology and targets linked to usage and improvements because of the technology. So, while that is not the case as a passenger, it actually is more serious consuming the technologies withing the workplace context.

Participant 12 slightly differed with this view and mentioned that she would rather be a contributor even with all the responsibility it comes with. She shared her views as follows:

> *"By comparison, I'd rather be a contributor, and then a consumer. My view is the same both ways. I believe in what I sell."* – **Participant 12**

The conflicting views and attributes of the two sides were also highlighted in the responses. In all the analysis both generations groups expressed delight with being both contributors and consumers of the passenger digital technologies and expressed that they see value in this because they get to have insights about how to make the technologies better.

4.4.2 *Technologies used as passengers*

The participants were asked to mention the passengers' digital technologies that they used in their travelling. Almost all participants mentioned that they have used online booking services. Some of the passenger digital technologies that were most mentioned include self-service check-in, self-service booths, Self-service - bag-drop, mobile travelling applications and self-service kiosks. The study found that all 12 participants within both generational cohorts have used self-service solutions. There was an interesting comment from one millennial participant who said:

> *"I have a moto in my life, and it is, drink your own champagne! I cannot sell you something that I haven't used before. For instance, I don't remember the last time I had to walk in front of a person at a check in counter. I use digital technology to do 90% of my travel."* – Participant 5

One of the least used passenger technologies is the Wi-Fi connectivity in the plane. This service allows a passenger to communicate without interfering with aircraft systems however it is rarely offered on domestic flights. One participant mentioned that they have used it while flying with Emirates internationally. Participant 11 shared his views as follows:

“I have used the technologies across the entire spectrum, so from the beginning of the passenger, Journey obviously when we are booking tickets and so on. So, reservations I have used the online booking platforms I have used travel agents in order to secure my bookings. I have used the digital technologies during departure in order to obtain my boarding passes and so on I have used the same technologies to help with my bags.

Obviously, because I'm involved in the industry. I'm very keen to look at what happens across the board. From the point of ensuring that my bag is identified properly when I hand it in to ensuring my bag travels with me in the air to ensuring it arrives with me, I have been able to, you know, use that. I have used self-check in facilities at various airports I have used both the dedicated and the common use platforms within the airport itself, you know, during the process of checking in. And there are other digital technologies that I am not directly providing but have been a consumer of, so you know visa processing and so on. So, I have consumed air transport digital footprints across the entire spectrum. Yes, as a passenger.” – ***Participant 11***

Another digital technology that was least mentioned is the internal Bluetooth technology system which allowed passengers in different seats to talk through the airwaves and passengers can speak via Bluetooth technology. This was used before WI-FI in the plane was introduced. One gen x shared their views follows:

“I have used some of the internal connectivity Digital platforms. I have also used some of the technologies that allows you to actually communicate while you are in the air without interfering with any of the aircraft systems. I've also used systems where you are able to basically talk to someone at a different seat just by knowing their seat number. Which is not, the normal line telephone, but it's something that works through the airwaves and then you are able to speak via what we call the Bluetooth technology of today.” – ***Participant 10***

It was noted that the participants were enthusiastic about these technologies with some participants sharing the importance of these technologies to the operations of the airports and airlines. It was also noted that gen xers had a deeper appreciation of these technologies because some of the examples which were shared were from when they started working in the industry and they pointed out how digital technology has evolved over time. What most of the participants had in common was the use of their mobile phone as the instrument to start their travel (booking tickets, finding information about their flights, editing their booking etc.), navigate their way through the airport (check in, finding their boarding gate) and ending their journey by finding out which carousel has their checked in bag or reporting mishandled bags. Participant 7 shared their view as:

> *"The fundamental instrument I use is the mobile phone because I mean most of us are constantly on our phone. Airlines understand this and have now adopted self-service check using application on your mobile."* - **Participant 7**

4.5 Similarities in Attitudes

4.5.1 *The Advantages of Using Passenger Digital Technologies*

Using passenger digital technologies has been shown to have benefits. The participants were asked to mention the advantages they perceived when using passengers' digital technologies. Both generations showed similarities when sharing how they have benefited from using digital technologies and there is no distinct differences between the two groups pertaining to the advantages of using passengers' technologies. In general, it was noted that digital technologies have made travelling easy, more enjoyable and it helped to save time in queues. Participant 1 shared her views as follows:

> *"We book our tickets online and make changes online to our tickets or whatever that may be. So, from an efficiency point of view, I think that's excellent. We do everything online."* - **Participant 1**

Participant 8 also had this to add:

"The advantages are really convenience. You can do it yourself and accurately because you are the one inputting the information required." – **Participant 8**

Participant 9 also shared her views as follows:

"The biggest advantage for me is that these technologies simplify my travel and they cut down on the amount of time it would normally take to process information. I started my career in the aviation industry as a check in agent for SAA and back then technology had not developed to where it is now. We used to check in passengers manually using small pieces of paper and as you can image it took time and the process was prone to human error and allowed for so many inconsistencies. So, a huge advantage is the ability to have records of the different steps in the journey as a passenger and always know what's happening with your flight." – **Participant 8**

4.5.2 *Concerns with using passenger digital technologies*

Several concerns were raised by both generational cohorts regarding passenger digital technologies including the rolling power blackouts being experienced in South Africa which would reduce the performance of most technologies. If this issue persists, then internet connectivity will be scarce, and this can cause usage of the technologies to drop because connectivity is the backbone of these technologies.

There was also a shared concern between the two generational cohorts around a fear that the technologies might replace humans thus fuelling a high unemployment rate. South Africa's unemployment rate is currently at 32.7% (statssa.gov.za, 2023) and there is a genuine concern that the digital technologies will drive this number higher. One millennial shared his view as follows:

"My concern is hopefully these technologies will not eradicate our contribution as humans, replacing human labour with digital technologies." – **Participant 2**

Ten of the participants expressed a deep concern around privacy, security of users' personal information. There was an appreciation that travel generally cannot happen without providing your personal details however that was just limited to your identity information, payment information and a few other details that you as the passenger would provide to the airline and partners. The introduction of your own personal devices opened up a can of worms because one would need to consent to the airlines and partners having access to phone data and anything else on your personal device just so that you can use the mobile application.

Participant 11 shared their view regarding this concern as follows:

> *"Over the past years we have used fairly benign technologies. We have used machine visualization. We have used data communications. We have used various algorithmic approaches to managing flow of traffic in an airport, managing flow of Cargo, flow of equipment in an airport and for quite a long time these technologies have been fairly benign, and we haven't seen much. We are moving towards an era of especially the deployment of biometrics, we are moving into an era where data and analytics are becoming more important in getting things moving and with that becomes the invasion into, you know, privacy and having your personal data floating all over the place, monetizing personal data of people for sales. This is a big concern I have in thew direction the technology is moving, we are moving from purely processing passengers to getting a lot of information about them and using that information, either directly or indirectly and reselling that information, I'm a bit concerned that that direction may not be, great for the industry going forward."* – **Participant 11**

Participant 1 further added the importance of communicating what will be done with the personal information.

> *"We process a lot of our personal information, and I think it's very important for all of us to also know how our information gets processed and how it's*

being kept and recorded and safeguarded for our own interests as well." – **Participant 1**

4.6 Differences in Attitudes

4.6.1 *Challenges with using passenger digital technologies*

The study has found that there are generational differences in opinions regarding the challenges encountered with using passenger digital technologies. Four of the millennials mentioned challenges around poor technological infrastructure to support digital technologies. The challenges under this topic covered issues like weak connectivity, poor network speeds, poor network access, poor internet coverage, the rising cost of data and smartphones in South Africa and power cuts which are affecting the functioning of some of the technologies. One millennial pointed out that the challenges relating to the cost of technology really depend on who is using the technology because a passenger vs an airport manager have a completely different outlook and requirements. The passenger however will only ever get to experience the technologies implemented by the airport and airline and if cost is challenge, then they will be limited.

"The requirements are different; the needs are different. As an airport manager, if I can handle 500,000 passengers with a spreadsheet, with a speaker then that works within my budget. So, they're not necessarily forced to have the same level of technology compared to the 10 to 20 million passenger airports, those people who have the means and the ways to implement the best technology, because they're world leaders. So that's the difference. Every single airport will engage with technology as they feel ready, as they feel the need, and also the environment allows them to do so. Yes, if I can take that example a little bit further, bobo-Dioulasso is the second city in Burkina Faso. Burkina Faso is an inward country with no access to the sea, which means internet is not as great as it is in South Africa. So, they don't have the means and ways to implement technology as we do here in South Africa. So, you see that every single

airport has to face the reality of the environment before they decide what technology or what level of technology." – **Participant 5**

Five of the millennials admitted that they have personally not experienced any challenges with using passenger digital technologies because they are so used to interacting with digital technologies in their personal and professional capacities. The only challenge that came through quite strongly was the rate at which technology was evolving. This makes it challenging to keep up with the technologies and could be why most of the technologies remain unused. Participants shared his view on this as follows:

"I personally never met any challenges on a personal level, yet other people definitely meet challenges. Technology evolved so rapidly; things change very fast. And you see other people who are not regular travellers like myself, who have maybe the luxury of travelling twice a year or three times a year. When I was at the airport in January, I used a certain type of technology. Coming back in November, there's a brand-new technology to use. The challenge was to keep up with technology advancements." – **Participant 5**

Contrary to popular belief, two of the millennials shared that while they may be digitally savvy, the increasing number of passenger digital technologies meant that there is less interaction with humans while travelling. They found this challenging. Participant 1 shared her views as follows:

"Some of the challenges could be simply because of moving from human assistance to a point where now it's just you and the technology and if you encounter an issue there is no-one there to assist which makes the makes the process longer than it should be. Sometimes, I get so frustrated with the airline that I just want to shout at someone who will understand my frustrations, digital technology doesn't give me that opportunity. If you go to any kiosk, even at the airport, you won't even find one person available that may be located near the kiosk to help somebody who is not so technologically savvy and may have issues navigating their way on the kiosk or whatever online platform they're using. So that, I would say, is

very important to have because you still have an older generation who takes a little bit more time in learning and need somebody to hold their hand through the process, and then the next time they do it, they actually know how to do it." – **Participant 1**

The challenges from gen xers were more skewed towards the operational capabilities of the users. The challenges for most gen xers include the general fear of using the technology, low awareness of passenger technologies among consumers, security concerns regarding hacking, and cyber theft, too fast technology advances, too many passengers' digital technologies, too many commercial adverts on online services. Gen x is known as the generation that values human interactions. Participant 10 shared his views as follows:

"Some of the airline staff themselves do not understand the technologies" – **Participant 10**

Another participant also shared is views:

"There's a fear of using the technology. There is a misunderstanding of what the capabilities are." – **Participant 8**

One millennial participant also shared a similar view to gen xers by saying:

"With the apps, I think you get a little bit more than you ask for because then you get flooded with all sorts of commercial adverts." – **Participant 6**

4.6.2 *The Disadvantages of Using Passenger Digital Technologies*

The disadvantages cited by the gen x participants can generally be grouped into three categories: poor infrastructure, high cost of data bundles and information security concerns. The participants mentioned that African countries do not have good infrastructure to support digital technologies. Issues that were raised include poor internet connection and weak network coverage. The participants mentioned the increasing cost of data bundles and the cost of acquiring devices like smartphones and laptops. These contribute significantly to the reasons why passengers would choose not to use some passenger digital technologies.

In addition to this, gen xers seemed to be more concerned about the cost of travel. Travel is expensive and most people would want to save as much as they can through the process, having airline agents along the process would help passengers get tips and tricks to save some money. Technology does not do that, which could be seen as an advantage for airline to increase their revenues definitely a disadvantage for passengers. This was mentioned by participant 9 as follows:

> *"Some disadvantages for people like myself would be the fact that there are fewer opportunities to talk to a human in the process. You know sometimes I'll have an issue online or with app and it would frustrate me because I simply cannot walk up to a counter and get it fixed. I also worry sometimes about what they do with my information that is stored online and the app. I guess I don't have control over that. Another disadvantage is the cost of using the technology. The apps are not free, and I need to buy data to ensure that I am connected and can use the technologies. This is in addition to the fee I already paid for the ticket. At least with using the facilities provided for at the airport, you don't have to pay a cent more than you paid for your air ticket."* – **Participant 9**

After sharing the transcript of the interview with participant 9, she responded by adding to the perceived disadvantages as follows:

> *"Airlines normally give you a limit of what your bags should weigh and if your bags are overweight you would need to pay an additional fee. Now when checking in at the airport while being assisted by the airline staff, I normally get away with being 2 or 3 Kg's overweight but recently I used this self-service check in, and bag drop in Dubai where there no staff to assist. I had two bags, the first was 2Kg overweight, I scanned it and it was taken away by the baggage belt with no issues. I scanned the second bag and was within range and that was taken away. The next screen, I was asked to pay an additional R3000 for the first bag that was overweight. I couldn't get the bag back so that I can take out things because of airline security policies and there was no-one to assist. This experience ruined*

my travel, and I just thought it would probably not have happened if there a human to assist me with checking in." – **Participant 9**

Some of the participants cited the fear of hacking and cyber-crimes. The understanding among most participants is that using passenger digital technologies increases the risk of being exposed to cyber-crimes and hacking. Users feel like they are providing too much personal information to the public platform and that information can be used to commit crimes. One millennial, Participant 6 also shared this view.

"I don't tend not to use apps because I just feel like there are too many apps. For example, in the last two months I've flown like eight different airlines or something like that. So, I'm not going to have each one of their apps. I'm definitely not going to. And also from my data perspective, I don't know if where the data is going, so I feel like it's just too much information. There are different companies that are manufacturing this technology, everything is different. So, you get to this airport, they've got scanners around, another airport, they've got something else. So, in my point of view, we need a single technology that does everything that every other airline does, even travel agents. It can have digital passport and integrate passenger journeys. I think that would be better than me trying to go download the all the apps from the airlines, so just go download one app." – **Participant 6**

Two millennials shared that they did not see any disadvantages to using the technologies. The rest however were more concerned about the technologies leaving others behind. The cost of having the technology will mean less staff at the airports which mean less or no assistance for people who are not digitally savvy. Passenger digital technologies will leave others behind in a country where the digital divide has worsened.

Participant 5 and participant 9 who is a gen x also shared:

"It makes your travel experience smarter, smoother and faster. But at the end of the day, it still requires a certain knowledge or certain training for you to be able to benefit from those experience." – **Participant 5**

“Another huge disadvantage is that the technology doesn’t always consider your digital skills level and people my age or older often find it challenging to try and operate this technology.” – **Participant 9**

Some millennials questioned if some of these technologies add value. The example discussed was using the self-service counter to check in and then queue again to check in luggage; this has clearly not added any value. One participant mentioned the burden of having too many apps to deal with. Participant 1 shared her view as follows:

“Now, the disadvantages, I would say sometimes I think the process needs to be a little bit more thought through, especially from the airports to make sure again, that every kind of digital technology that is available to us is actually efficient. It saves time, it reduces queues, and from my experience, I don't really see that happening.” – **Participant 1**

4.7 The Role of Leaders in the diffusion of Passenger Digital Technologies

The analytical framework which underpins this study suggests that all diffusion happens in a social system and those that hold a leadership role in the organisation (often referred to as champions) can influence the diffusion of innovation in an organisation (Rogers, 2003). When participants reflected on how they found out about the passenger digital technologies, four of the millennials shared that it was in fact a senior member in their organisation that introduced them to a new passenger digital technology.

4.7.1 *Senior Leaders as champions in the diffusion of passenger digital technologies*

Senior people in the workplace play an important role in the discovery phase of passenger digital technologies, and it often leads to individuals trying out the technologies. The social system in the workplace was also noted as an important ingredient for diffusion. Even when millennials shared that they explore most products on their own and would learn to use the technologies themselves, four of the millennials indicated that this happens only after they have been pointed in that direction by a senior person in the organisation. Participant 1, 3 and 5 shared their views as follows:

> *"My first time using an online kiosk was through and Account Manager and this was at Lanseria Airport. That was my first interaction with the online kiosk that the organisation SITA had deployed."* – **Participant 1**

> *"The person that introduced me to the technology on my first day was my Senior Field Engineer. So, he pretty much deals with the actual implementation of these machines at airports all over South Africa."* – **Participant 3**

> *"I was introduced to passenger digital technology by my sales Director who I met on a plane. He told me about the aviation industry and how technology can really help improve travelling."* – **Participant 5**

The study found that gen xers mainly attributed their discovery of new passenger digital technologies to their own education and their inquisitive nature and so the social system in the organisation did not play a big role. Two of the participants however indicated that working with Product Managers and Business Development Managers in the organisation helped introduce them to new technologies which they needed to present to clients. Participant 7 shared his view as follows:

> *"We always worked with the product manager or the technology department, and the SITA innovation lab. They also had webinars to introduce us to these technologies."* – **Participant 7**

On the contrary, one participant indicated that they now find that junior colleagues are the ones playing the role of influencing them to adopt new technologies. Participant 11 shared his view as follows:

> *"When I was younger, I was a little more self-driven and curious. I would go out and look for this information myself. Later on, I am learning more from the more curious people who came behind me."* – **Participant 11**

4.7.2 *Participants as champions in the diffusion of passenger digital technologies*

The study also found that the social system is just as important in diffusing the technologies when participants where passengers, but the leadership role was filled by the participants friends and family whose opinions matter to them. The participants themselves acted as champions in the social system. All the participants reported similar experiences and shared that when they find out about new technology, they first try to understand what it is, and how it works and then try to use the product. If they find the product to be useful, convenient, saving time and affordable then they will continue to use the technology. If they are not happy with the technology, then they stop using it.

Most participants said that they do share with colleagues about their experience of the various technologies that they used. More participants said they only share with their colleagues if they had a good experience with the technology. Millennials were usually enthusiastic about sharing their experiences with new technologies but were more careful in the workplace as it could be career limiting. Participant 2 shared his view as follows:

> *"It depends on my experience with the particular technology, it will determine whether I go and tell my colleagues about it or not. The conversation is easier if it is an informal one, but you don't want to tell a senior who may have worked on the technology that you used it and it's*

doesn't work. There's more to lose in that case. With friends and family, it's easy to encourage them to try the technologies even if you had a bad experience." – **Participant 2**

Participant shared 11 shared his view as follows:

"I am never comfortable talking about things I don't understand very well, and I would rather be quiet than talk about it. If I wasn't comfortable with it, really my approach would be to approach colleagues when I feel comfortable." **– Participant 11**

4.8 The Role of Communication Channels in Diffusing Passenger Digital Technologies

Rogers (2003) describes the role of communication channels as the process where individuals develop or share information within the organisation to achieve the same understanding. This understanding often leads them to adopt the innovation which was communicated and sometimes sees them playing the important role of sharing information. Other communication channels are external of the organisation. In Roger's theory, the source of communication regarding the innovation has an effect of the rate of adoption (Rogers, 2003).

In addition to senior leaders playing an important role in the social system, seven of participants then pointed out that the corporate marketing teams also played an important role in them finding out about the technologies. This may have not been a senior member of the organisation introducing them to the technologies, but it was an important function in the organisation. Diffusion happens when communication channels can push communication down to the individuals in the system but also take feedback in to share with the rest of the group.

Both millennials and gen xers indicated that while they are happy to learn about new technology through internal marketing channels, they also use forums which are set up by the organisation to share feedback and better the products that they put out in the industry. Their views about passenger digital technologies filters

through to their colleagues using different channels. The channels are both formal and informal. The formal channels cover workshops which discuss digital technologies, report on the travel experience, and training is done to demonstrate and teach various technologies. Informal channels include small chats with colleagues at work during lunch or work breaks.

Internal feedback forums where employees can share feedback and their experiences about the technologies in the field gives the company a competitive advantage. They will be able to get valuable insights before their competitors do. This also strengthens the social system and the teams by adding a layer of trust to allow employees to diffuse passenger digital technologies. Participant 9 shared her view as follows:

> *"As part of my job, I have a responsibility to ensure that the work we do makes us a market leader. I use the forums we have internally to share my views and experiences. I am quite close to the product and marketing team, so I occasionally share my views and feedback from clients as well as other passengers. So, it is normally in formal work settings, but I also have informal conversations with some of the solution engineers with the aim of showing them my views and hoping that that will filter to the engine room so that we can focus on the right solutions."* – **Participant 9**

> *"When the opportunity presents itself and there is a forum for it, yes I do put in my views whether it is good or bad so that we try either to improve on the product, or at least get the people who are working on the product to know this is the view that either I have heard or that I have had a customer expressed to me."* – **Participant 8**

One participant whose role is in the industry is in media and marketing shared his view as follows:

> *"It's definitely right up my alley. I think it's just natural that I share with the network."* – **Participant 6**

4.9 Time as a Catalyst for Diffusion

The analytical framework describes time as important because it allows us to measure how long it takes to move from the first time an individual hears about an innovation to when they decide to adopt or reject it. Individuals in this system are referred to as adopters and Rogers' theory places them in five categories to show how time plays a role in the adoption process by determining the rate of adoption. Time, therefore, acts as a catalyst in the diffusion process (Rogers, 2003).

When participants reflected on the time it takes to adopt passenger digital technologies after learning about them for the first time, there was a very clear difference between the two generational cohorts. After learning about the technology, their actions have shown that they either help or hinder the process of diffusing the technologies amongst each other.

Five of the millennial participants pointed out that they will quickly jump and play around with the new technology and if it works well with real benefits then they will adopt the technology. What was observed from their responses was excitement about exploring something that no-one else knows about which would end with the emotional reward of sharing this discovery with others. They also indicated that the idea of waiting around to see what happens was definitely not helpful because if there were any areas of the technology that needed improvement then the teams wouldn't know. This would give passengers a bad experience, which would reflect badly on their organisation. There was a shared feeling that their experiences as passengers play a big role to the product strategy and designs within the organisation. All the participants showed a real commitment to the industry but also to their organisation.

Below are some views expressed by the millennial participants:

> *"When I find out about a new technology, I'm all for digital technology in all that we do in life. So, if I find out about something, I'm very curious. I want*

to see how it works, how it adds value to me, and even from that, I can tell what's missing or what needs to be improved. So, yeah, I think I'm very curious about it. And if I find value in it, I want to tell everybody about it and share my experience about using it and all the values about it." – **Participant 1**

"I like to jump. I'm excited. I'm curious about it. Since I'm in the industry, I am more willing to use the technologies. I will then share on social media and with my colleagues." – **Participant 4**

"In my personal experience, every new technology that comes across my I want to know more about it. I want to test it. I want to try it." – **Participant 5**

Participant 2 however, indicated that the technology's cost hinders adoption for him. He would rather wait until it is tried and tested and that point hopefully more affordable and then he would adopt. This would put him a different adoption category than most of his peers.

"Prior to this, I mentioned cost was a thing for me. So, I'm one person who waits for something to be tried. I would like to jump on it. I do adopt the technology, but in terms of actually going out there and trying it, it's a different factor. But I'm quick to adopt. If it's something I honestly see, that, okay, you know what? Here we've got the next best thing since sliced bread. So, I'm willing to but I first have to at least wait for feedback from others to actually decide on whether I will try it or not." – **Participant 2**

However, a fair amount of the interviewees pointed out that they prefer to wait to see the product's market response before they can adopt it.

Below is a view from participant 11 which encapsulates their sentiments:

"*When I find out about a new technology my first port of call is obviously, to try to understand what it does, how it does it, I try to go behind the forward screen to see what lies behind it. so not so much as a consumer*

but as an engineer that usually is my first step, so I would get curious. Do I adopt it? Do I use it?

More often than not I will go through the 1st process of using it end to end to make sure that I am able to separate what would be a hype from what is an actuality. So, I do go through it from the mindset of does it do what it promises that it will do and how easily does it do what it promises it will do and only based on that experience do I then say: I love this thing and I can ask somebody else to adopt it because it helped me in this manner or it says it will do this and it actually did it, but it also did this other thing for me and so on. So, I wouldn't just click a few things and say great and go talk to somebody about it. I am never comfortable talking about things I don't understand very well, and I would rather be quiet then talk about it. If I wasn't comfortable with it, so that that really is my approach, so I talked to colleagues when I feel comfortable." – **Participant 11**

Participant 10's view deviated from the group and suggested that he would fall under the category of innovator like most of his millennial colleagues:

"In fact, that's one of the things that I like doing because we also have a moto here at work that says try fast and fail fast. So, I'm one of those, if anything is introduced, I'm one to be the first one to use it so I can make my own determination or whether this thing is going to work for me or not because the danger in waiting is that you could find that, you know you have wasted most of a lot of your time because people are not the same. The experiences are not the same brother. You go in there yourself and experience it yourself right, at the beginning and decide whether to use it or not." – **Participant 10**

4.10 Linking Research Themes to Research Propositions

Themes relating to Proposition 1 and 2:

Proposition 1: There are differences in attitudes towards passenger digital technology between the two generational cohorts in their capacity as passengers.
Proposition 2: There are similarities in attitudes towards passenger digital technology between the two cohorts in the workplace.

The first part of the interview, questions 5 to 9 were asked to participants in order to get an understanding of which passenger digital technologies the participants have used. This was then used to unearth their attitudes towards the technologies. The participant's responses were compared and contrasted in their roles as contributors to in the industry and also as passengers.

The study found that the participants had perceptions about the technologies as a result of working with the other cohorts and supporting each other's roles to release the technology in the industry. Through using the technologies while travelling (as passengers) they managed to form these perceptions about the advantages, disadvantages, concerns, and challenges about the technologies.

Age does not look like a separating variable regarding the respondent's contribution to the passenger digital technologies. It does however seem that each participant plays an important part in the implementation of the technologies. Eight of the participants found it very interesting to experience the products on both sides and they take the opportunity to suggest ways of improving the technologies hence the two sides were viewed as complimenting each other. Although there were different opinions and views expressed by both cohorts, there were clear similarities and differences in attitudes in their capacity as passengers.

Theme 1: The implementation and use of Passenger digital technologies is broken up into subthemes related to proposition 1 and 2:

- The role of participants
    - contributors to the technologies

- Consumers of the technologies (passengers)

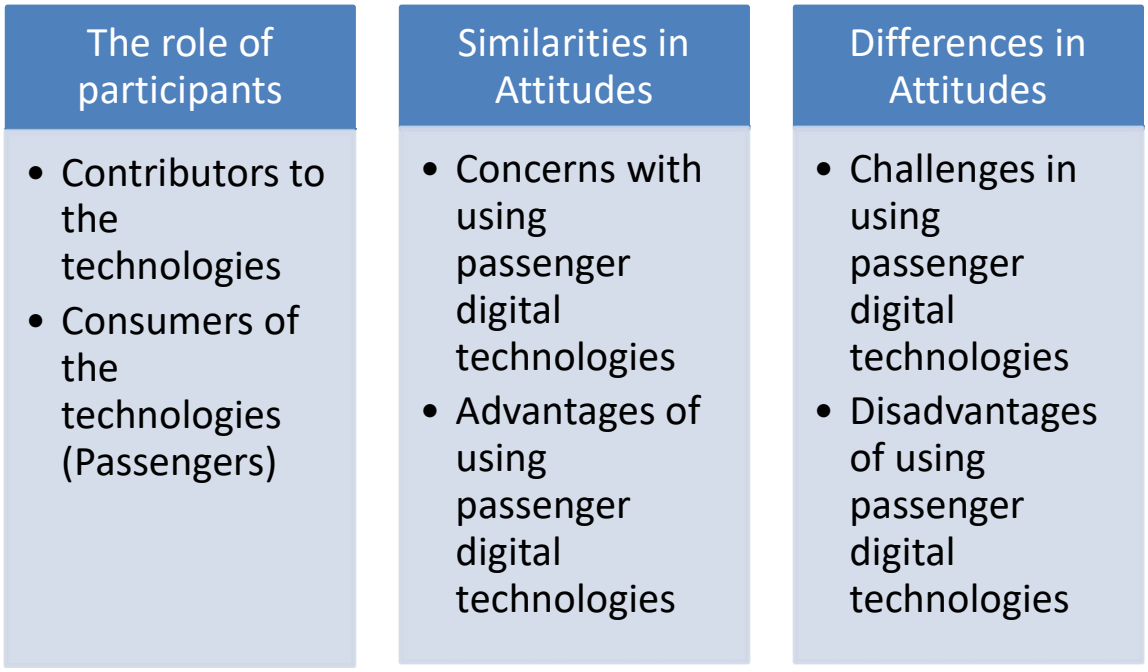

Figure 4-2 Theme 1: The implementation and use of Passenger digital technologies

Themes relating to proposition 3:

Proposition 3: The millennial will find it easy to learn and diffuse passenger digital technology in the workplace.

Questions 10 to 13 of the interview focused on investigating the role that age plays, if any, in the diffusion of passenger digital technologies in the workplace. There were different views about how the participants themselves found out about these new technologies with four of the millennials indicating strongly that senior leaders in the organisation played a big role. This led them to adopting the technologies and spreading them with others. What come out strongly was that diffusion does indeed happen within a social system and the participants also found themselves playing the important role of being a champion within the system.

Gen xers on the other hand attributed finding out new passenger digital technologies to their own background in the aviation industry (with some participants having aviation engineering degrees and technology qualifications)

and their deep interest in the industry and different subjects within the industry. While the social system was still important, the study found that gen xers were the ones playing the role of the senior manager who introduce the technologies to millennials.

Participants were also asked how their views about the technologies filter to their colleagues in the workplace through question 16 of the interview guide. All 12 participants shared that they play an important role in the social system by using communication channels to diffuse passenger digital technologies. Seven of participants then pointed out that the corporate marketing teams played an important role in them finding out about the technologies. Both millennials and gen xers indicated that while they are happy to learn about new technology through internal marketing channels, they also use forums which are set up by the organisation to share feedback and better the products that they put out in the industry. The importance of pushing information about technologies down to participants was found to be just as important as them pushing information back up into the social system with the aim of sharing and improving the technologies.

Themes relating to proposition 4:

Proposition 4: Millennials will rank as early adopters while gen x as early majority in the organisation.

Millennials and gen x were asked to describe what they do after finding out about a new passenger digital technology, how they decide to use it. The participants were also asked to introspect and explain how they describe themselves as someone who jumps to use new technologies or one who rather waits until it is tried and tested before using them. These questions were covered through questions 14 and 15 of the interview guide.

Five millennial participants pointed out that they will quickly jump and play around with the new technology and are sometimes the ones that bring new technologies to the system. Their deep level of technological skills makes it easy to jump and use new technologies all the time however their opinions are not heard or picked

up in the formal platforms within the workplace. This suggested that most of them fall under the innovators category because while they may experience new technologies first, their unwellness to share in formal platforms could be seen as gatekeeping.

Five of the gen xers were placed in the early adopter's category as they indicated that that they too jump to use new technologies however they do prefer to wait to understand the technologies more before they can adopt it. Their opinions tend to be more valuable in the workplace and this could be because they share their experiences in formal settings in the workplace and will only do so when they are comfortable with the new technology. As covered in theme 2, gen xers played an important role in the social system because they mostly hold leadership roles in the organisation, and this could be another reason why their opinions are valued. As the study has found, they influence millennials to adopt the passenger digital technologies. Two participants were found to be outliers as their opinions differed sharply from that of the generational cohort they belong to.

4.11 Consistency Matrix

The following table provides a summary of the research questions, research propositions as well as research themes related to the research propositions.

Table 4-1 Consistency Table: Research Questions, Research Propositions and Research Themes

Research Question	Research Proposition	Research Themes
1. What are the perceived differences in attitudes towards passenger digital technology between millennials and gen x?	**Proposition 1**: There will be differences in attitudes towards passenger digital technology between the two generational cohorts in their capacity as passengers.	**Theme 1**: The implementation and use of Passenger digital technologies - The role of participants - Similarities in attitudes - Differences in attitudes
2. What are the perceived similarities in attitudes towards passenger digital technology between millennials and gen x?	**Proposition 2**: There will be similarities in attitudes towards passenger digital technology between the two cohorts in the workplace.	
3. What role does age play in the diffusion of passenger	**Proposition 3**: The millennial will find it easy to learn and	**Theme 2**: The Role of Leaders in the diffusion of

digital technology in the workplace?	diffuse passenger digital technology in the workplace.	Passenger Digital Technologies - Senior leaders as champions in the diffusion of - Participants as champions **Theme 3**: The Role of Communication Channels in Diffusing Passenger Digital Technologies
4. Which adopter category do they belong to and how does that hinder or help the diffusion of digital technology in the workplace?	**Proposition 4**: Millennials will rank as early adopters while gen x as early majority in the organisation.	**Theme 4**: Time as a catalyst for diffusion

4.12 Summary of the results/findings

The first two themes focused on understanding the implementation and use of passenger digital technologies and evaluating the similarities and differences in attitudes between the gen x and millennial generations regarding the technologies. We discovered that gen xers have higher years of experience than millennials and are more senior. But in general, both Gen x and millennials contribute significantly in their roles to the technologies in in the industry.

Both generations do contribute significantly to digital technologies and both generations have travelled by air in and outside South Africa. In their travelling, both generations have extensively used various digital technologies and they both derived advantages and disadvantages of using the technologies. The millennials raised challenges which are more infrastructure related while gen x raise challenges and concerns that have to do with the operation of the technologies.

Theme 3 reviewed the responses of the participants but focused more on the questions about the role of age in diffusing innovation in the workplace. The analysis showed that both generations accept that age has a big role in the adoption of passengers' technologies. Gen x was cited as having more experience with digital technologies at the workplace given their high number of years of experience.

On the other hand, the millennials were observed to be more curious about life which is why they are taken as sources of new features to improve the existing digital technologies. The millennials also share more of their experience with new features of passengers' digital technologies in their role as passengers but are more careful in the workplace. Age was observed to be a big factor in the diffusion of technology at the workplace but other factors like environment, culture, education, and access to resources were also mentioned as an important factors in the diffusion of digital technologies.

The last section of the chapter analysed the fourth theme. The section focused on the dynamic of digital technology categories at various organisation and assessing if the categories hinder or improved technology diffusion at the workplace. We observed that users decide to use the various technologies based on their experience with the products. Passenger digital technology users first seek to understand the product, try the product then share their experiences with colleagues. Most people prefer to quickly jump into using the new digital technologies instead of waiting to see the market responses. We also observed that views on passenger digital technologies filter through formal and informal channels in the workplace and that filtering can improve or hinder the diffusion of digital technologies at the workplace.

CHAPTER 5. DISCUSSION OF THE RESULTS OR FINDINGS

5.1 Introduction

Chapter one provided a layout of the research objectives, chapter two reviewed the theoretical and empirical literature of passenger digital technologies, chapter 3 presented the methodology to be used in meeting the research objectives, chapter 4 analysed the collected data thematically and presented the findings that speaks to the respective research questions. This chapter seeks to discuss the findings obtained in chapter 4. The focus will be linking the findings to the empirical literature. In addition to that this, the chapter will also explain the story behind each of the findings obtained in chapter 4. The discussion of the findings will be broken down by the themes.

5.2 Discussion pertaining to Proposition 1 and 2

The study's first two propositions were that **there will be differences in attitudes towards passenger digital technology between the two generational cohorts in their capacity as passengers** and **similarities in their attitudes in the workplace**. The findings from chapter 4 were that there are some areas where the two generations are similar and there are also other areas where there are some differences. The two generations are similar in several areas including the fact that both generations provide a significant contribution to digital technologies in their roles in the organisation and the two generations both have used several sophisticated travelling technologies. While literature does indicate that these cohorts of people living in South Africa have different lived experiences than their global counterparts who belong in the same generational cohorts (Reiersgord, 2021), what it consistent is that they are competent in using digital technology and are experienced in using travel technologies. This finding is also consistent with the 2018 study in India on the perspectives, engagement, expectations, preferences, and satisfactions from the workplace for generation y, which also found that many of the global propositions on generation y were

indeed reflected by the participants in India (Arora, 2019). Even as a developing country, what was reflected by the participants in this study was that the global propositions on millennials and gen x were reflected. It was interesting to observe that even with the inequalities and issues that they may face as a country, the participants seemed to have risen above. Their education levels and positions that they hold in the organisation placed reflected the global propositions on the two generational cohorts (Arora, 2019). It is also important to add that this industry under study is known to have always been a leader in advancing technology (Kaplan, 2019) and relies on digital technology for a successful running of their operations and this would demand employees with high education levels (Debusmann, 2021). This creates a great starting point for understanding what their attitudes are when using passenger digital technology.

Professional background of the participants

The participants roles in the organisation range from managers to graduate trainees. All gen x participants have senior roles and not all millennials have relatively junior roles. The two graduate trainees are all millennials. The study also observed some millennials with key roles like a senior manager in sales and accounts management. Most of the contributions to passenger digital technologies, range from marketing and costing of the technologies, training, spreading awareness, providing customer guidance and after-service of the technologies. It was also noted that regardless of the generation type, both generations significantly contribute to the passenger digital technologies in the industry. Age does not seem to be a separating factor regarding the participants contribution to the passenger digital technologies, however their seniority in the organisation is what set them apart.

When evaluating the characteristics of gen xers in the workplace, Jones et al (2019) found that they are currently in middle and senior management roles in the workplace. Johnson (2016) further added that this generation shaped and continue to influence organisations and the world at large. Previously, they may have not been considered leaders when compared to the more bold and loud Baby Boomers and flashier millennials, but they have earned their stripes as the generation that lived through the bubbling stages of digital transformation and

being active in its current matured state. This contradicts literature from Lissitsa & Laor (2021) which considered the gen x cohort as digital immigrants. They have in fact been part of the evolution of technology in South Africa.

As a result, this study has found that indeed gen x participants were in more senior leadership roles and that had a bearing on their attitude towards passenger digital technologies and even how they would interact with the technology in their capacity as passengers. In addition to that, the study found that the two generations derived advantages and disadvantages of using the technologies which also contributed to the attitudes that they hold towards passenger digital technologies.

5.2.1 *Similarities in Attitudes towards passenger digital technology*

The main drivers to the similarities mentioned above are largely brought about by the fact that the participants all work in the same industry which could explain why they have some common appreciation of the passenger digital technologies. Even though there were clear differences in work experience (as a result of their age) the participants were all important contributors in the workplace. This also speaks to the high level of education they had received and the high amount of exposure to technology in their lives outside of work, which could explain why they agreed on many issues.

The study found that both generational cohorts have similar attitudes regarding their concerns about using passenger digital technologies and the advantages that the technologies bring in their travel. Most of these concerns are consistent with the reality that digital transformation could further exasperate inequality in society and continue to leave a big population of people behind (Reiersgord, 2021; Van der spy, 2022; Adeniran, 2022). The aviation industry is already an industry that is accessible to the middle and upper class and those who travel mainly for business purposes and participants showed some concerns about this. This could be because both generational cohorts are affected by the realities of unemployment and social issues that face the country and understand that access to the internet and device will contribute to innovation which has fuelled the growth of many economies in Africa (Counted & Arawole, 2015).

The study has also found that both generations are drivers of innovation and change, consistent with the findings of Johnson, (2022) and Angeline, (2011). The study also observed a great level of pride that the participants have in their work which explained why there were shared views around the passenger digital technologies as contributors in the workplace. Another study by Kalakou et al. (2015) provided a different view by analysing the changing dynamics of passenger processes in future airports as a result of pressures passengers and the aviation ecosystem as a whole. What they found was that concerns around privacy and security when using passenger digital technologies will continue to get rise as a result of wide penetration of smartphone applications. Section 4.5 presented the concerns that the participants have, and it was fascinating to see that both millennials and gen xers share these concerns around privacy and security of their personal data. While these concerns are important to them, the advantages, or benefits of using passenger digital technologies made them open to using and adopting the digital technologies. This is consistent with findings from Greghi et al. (2013) which indicated that passengers usually find air travel time-consuming, uncomfortable, stressful, and expensive (Kalakou et al., 2015) and so solutions that solve these issues were welcomed by the participants of this study.

5.2.2 *Differences in Attitudes towards passenger digital technology*

There are a few areas where the two generational cohorts differed regarding passengers' digital technologies. Chapter 4 found that gen xers have relatively longer years of working experience compared to the millennials and the assumption would be that they have travelled relatively more frequently and mostly outside of South Africa compared to the millennials. The above notion is consistent with the findings of Lissitsa & Laor, (2021), however, Forrest (2014) has indicated that millennials are the new generation of business travellers, and they travel more than previous generations. This was evident with the millennial participants that were interviewed and their attitudes towards passenger digital technology. Lissitsa & Laor, (2021) considered gen x as tech-savvy because they dedicated time and effort in getting digital skills and ensuring that they are not left behind. The study found that the generational cohorts hold contracting views

when it comes to the challenges, they have experienced with using the technologies and the disadvantages they associate with using passenger digital technologies. Gen xers challenges were more skewed towards the operational capabilities of the users while millennials mainly indicated that they themselves did not experience any challenges with using passenger digital technologies but cited challenges around poor technological infrastructure to support digital technologies. This is consistent with the article from AllAfrica (2021) which lists poor infrastructure that needed to support connectivity as one of the reasons why Africa is lagging behind ("4 Reasons Why Africa is Lagging Behind the World in Technology", 2021).

The millennials did not have much operational challenges around using technology as they grew up in the period marked by accelerated technological development. The period in which mobile and connected world technology has introduced new ways of communicating, socializing, hence the millennials find it easy to use the various digital products. Similar findings were also found by Au-Yong-Oliveira et al., (2018) in their study on the social impact of technology on millennials and consequences for higher education and leadership. Both generations did however indicate that other passengers may experience challenges especially if they are not comfortable with using digital technology. Greghi et al., undertook a passenger survey of Brazilian air travellers' perceptions regarding their experiences in airports and in aircraft cabins and the findings indicated that challenges emerge in mainly of airport facilities. Some of these facilities include passenger digital technologies that are stationed at the airport (Greghi et al., 2013). These insights from a developing country like South Africa are consistent with participants responses of this study.

Another challenge that was cited by one of the generational cohorts was that passengers will only get to experience some these different digital passenger technologies if the airport and airlines have the finances to invest in the technologies. Kalakou et al. (2015) have discussed some short- and long-term development plans that involve technology that would be necessary in future airport terminals (Kalakou et al., 2015). The challenge here is that there can never be a consistent global experience because that depends on the finances of the

aviation industry of each country. In South Africa, where the national airline is dependent on bailout from the government, their operational budget becomes limited, and they may need to focus only on the essentials. Passengers will therefore only be limited to the passenger digital technologies offered. This may even make recovery post the COVID-19 pandemic difficult (Dalibard, 2022).

In conclusion, the findings do point to some areas of similarities in their roles in the workplace but there is also evidence of some perceived differences in attitudes towards passenger digital technology in their role as passengers between millennials and gen x. These similarities and differences are well supported for in empirical literature. There are both similarities in attitudes towards passenger digital technology in their roles in the workplace and differences in attitudes towards passenger digital technology when they are passengers.

5.3 Discussion pertaining to Proposition 3

Proposition 3 stated that **the millennial will find it easy to learn and diffuse passenger digital technology in the workplace while gen x will have some challenges**. This proposition is generated from the second research question which asked the question, “what role does age play in the diffusion of passenger digital technology in the workplace?

The findings from chapter 4 suggest that age has a significant role to place regarding the adoption and use of passenger’s digital products. Both generations do agree that age is matters. While it is perceived that young people usually self-learn the use of the digital products while most gen x use work training to get to know how to use the digital products, the study found that two of the gen x participants interviewed were mostly from engineering backgrounds. They typically spent a lot of time reading about new technologies in the industry and showed the same drive as the millennials regarding digital technology. This is similar to the finding by Raišiene et al., (2021) who found that millennial find it easy to learn and understand new digital products, however it was clear that educational background and the role in the organisation would dictate how much

time they would need to spend researching and learning about new technology. Mhangwani's contribution (2022) added that millennials view technology favourably as it allows them to save time and allow the millennial time to freelance or create start-ups and this contributes to them finding it easy to learn and diffuse passenger digital technology. This study found this this be true as millennials expressed that passenger digital technologies make their travels easy, more enjoyable and saves time in queues. Calvo-Porral & Pesqueira-Sanchez, (2020) put forward that technology offers the millennials flexibility and freedoms they don't necessarily have in the offline. Their study also that the millennials are mainly motivated to use digital technology for entertainment and hedonic purposes. It was however found that millennials interviewed for this study were not motivated by hedonic purposes when it came to the passenger digital technologies but were similar to gen xers in that they wanted the technologies to simplify their travel in a convenient way.

The findings from chapter 4 highlighted that passenger digital technologies are diffused within a social system as suggested by the analytical framework underpinning this study. The Social system is important in both the workplace and when the participants were passengers. In the workplace, the role of the leader was seen as important in introducing participants to new passenger digital technologies and them adopting the technologies (Rogers, 2003). Four of the millennials indicated that it was in fact a senior leader in the organisation that influenced them to adopt a new passenger digital technology.

Another important part of diffusion was using communication channels to filter views about the technologies which helps in their adoption (Rogers, 2003). The study found that the views of the two cohorts about passenger digital technologies filters through to their colleagues using different channels. The channels are both formal and informal. The formal channels cover workshops which discuss digital technologies, report on the travel experience, and training is done to demonstrate and teach various technologies. Informal channels include small chats with colleagues at work during lunch or work breaks.

Millennials came across as more curious and easily learn and adopt technologies than gen xers. Four of the millennials have indicated that they share their opinions

and experiences with colleagues easier in an informal setting and would prefer to only share in a more formal setting once they have had a great experience or have more information about the technology as this may have consequences for their careers. Another millennial whose role was in the media space in the industry indicated that it is in fact his responsibly to share his views and experiences regarding new technologies in the industry. All six gen xers however indicated were very clear that adoption of the technology would only happen once they have done more research, they understand the technology more and will only share their views and experiences when they are confident about what they are talking about.

The findings suggest that the millennial will find it easy to learn and diffuse passenger digital technology in the workplace while gen x has a bigger reputation to uphold and so are more cautious with sharing their views. Although age has been found to matter regarding the adoption of passenger's digital technology, this study showed that age is not the only factor. Other factors that have been found to matter are infrastructure, education, electricity, cost, environment, and culture among others.

5.4 Discussion pertaining to Proposition 4

Proposition 4 states that millennials **will rank as early adopters while gen x as early majority in the organisation**. When introduced to passenger digital technology in the organisation, the attitude of the millennial had been found to be enthusiasm to use the technology first and then learn it in the process. Gen xers on the other hand have been found to take time to upskill themselves first and once comfortable, they will use the technology. These approaches are both beneficial in the workplace because the one group will be able to start tasks involving new technologies but be able to have support from the gen xers later to solve issues with the technology should they encounter them. This proposition is developed from the fourth research question which asked the question: which adopter category do they belong to and how does that hinder or help the diffusion of digital technology in the workplace?

The findings presented in Chapter 4 found that regardless of generation type most people prefer to quickly jump onto using the new digital technologies instead of waiting to see the market responses are. There were nuances in their responses, and these were important to pick up because it indicated that gen xers are categorised as early adopters while millennials fall in the innovators category. Figure 5.1 below illustrates the adoption categories of the participants as per the findings in chapter 4. The findings contradict the proposition and the study by Dholakia et al, (2003) and Counted and Arawole, (2015) who found that both Gen x and the millennials are digital innovators and the innovation have been exacerbated by the access to the internet. The reasons are largely due to the nuances in the participants responses which could only be picked up by the rich detailed data in the transcripts.

After the interviews, one participant suggested the subject of growth mindset as a way to explain what the two generational cohorts are displaying. Individuals with a growth mindset have consistently shown to learn by a mastery approach and see any challenges that may be experienced with interaction with a new innovation or new subject as part of the learning process which does not stand in the way of adoption and diffusion (Ng. B, 2018). Gen xers are found to be very skilled when it comes to technology, they are often called tech savvy and the study has found that many of the participants indicated their commitment to learning more about the technologies and generally not being swayed by hype around the new technologies. Millennials are not strangers to technologies but their natural inclination and strong digital skills they have are key traits for the individuals in the innovator adoption category.

This study presents findings about the millennial and gen x cohort in the South African industry who belong to the first two adopter's categories which are consistent with the empirical literature on the growth mindset. Together they help the diffusion of digital passenger digital technologies in the workplace. This study also observed that views on digital technologies filter through formal and informal channels in the workplace and that filtering can improve or hinder the diffusion of digital technologies at the workplace.

5.5 Conclusion

This chapter presented the findings from chapter 4 and then discussed the findings through the propositions of the study. The drivers behind the given findings were explained and the empirical literature was cited to support or contradict the finding of this study. The first 2 propositions were accepted while the last proposition was rejected. Chapter 6 will therefore conclude on the findings and a few recommendations to future studies will be presented in chapter 6.

CHAPTER 6. CONCLUSIONS & RECOMMENDATIONS

6.1 Introduction

This chapter presents the conclusions of the study, guided by the research questions as outlined in section 1.4 and section 4.3. Following that, the chapter will provide recommendations to the key players in the South African Aviation Industry, B2B service providers in the industry and passengers on how the findings of the study can help them have passenger digital technologies in ACSA's nine airports which will be diffused to help with their efforts to post-pandemic recovery. Finally, suggestions of future research and the limitations of the study will also be presented.

6.2 Conclusions regarding research question 1: What are the perceived differences in attitudes towards passenger digital technologies between millennials and gen x?

This study has found that the two generational cohorts have differences in their attitudes towards passenger digital technologies regarding the **challenges they have experienced when using the technologies and the concerns they hold about the technologies** (section 4.6).

6.2.1 *Challenges with using the passenger digital technologies*

Five of the millennials indicated that they have personally not had any challenges with using the passenger digital technologies because just like most digital technologies, there is a user interface and one can just navigate through relatively easy to use the digital technology. In fact, most passenger facing technologies are designed in the same way the modern-day smartphone works. This was demonstrated their high digital skills and that they are comfortable with digital technology. A majority of the group did however mention that the challenges they do see through other people are around poor technological infrastructure to

support digital technologies. The challenges under this topic covered issues like weak connectivity, poor network speeds, poor network access, poor internet coverage, the rising cost of data and smartphones in South Africa and power cuts which are affecting the functioning of some of the technologies. All these issues pose a risk of passengers not using the digital technologies because they might dampen their travel experience.

Gen xers on the other hand presented operational capabilities of the users as an umbrella for the various challenges which they have faced. These issues include the general fear of using technology, low awareness of the technologies among consumers, too many technologies that exist and different ones at each airport you land at and too many ads being placed on the digital technologies.

6.2.2 *Disadvantages of using passenger digital technologies*

The disadvantages of using passenger digital technologies were also an area were the two generational cohorts differed in their attitudes. Millennials shared that the disadvantages are mainly around the fact that after the covid-19 pandemic we experienced many people in South Africa being left behind while those who are mainly in the middle class and upper class managed to continue life and different activities through the power of digital technologies. This has widened the so-called digital divide that already existed in the country.

While passenger digital technologies present many advantages, they will unfortunately only be experienced by a few people and are therefore not inclusive. The other disadvantage they found was that some passenger digital technologies do not actually add value to their travel. The example cited was the self-service check in kiosks at some airport where you could check in through the machine, print a boarding pass but would need to still queue up at regular counter to check in your luggage. This would mean a passenger would need to queue u twice when they could just use a regular check in counter and get assistance from the airline staff.

The study found that the gen xers attitudes towards passenger digital technologies could be summarised in four main disadvantages: Poor

infrastructure, high cost of data bundles, information security concerns and the cost of using technologies making travel more expensive. Their attitudes were that air travel is already quite expensive and these passenger digital technologies come at a cost themselves. Passengers would need to use their own data bundles to be online to complete their travel functions themselves. Before the technologies were offered, the cost of your ticket covered having airline staff at the airport and various points of the journey to assist and now that falls away and there are additional fees that passengers end up paying. In addition to this there is the risk of their information (like identity, banking details etc.) being stolen and used for the wrong purposes. From a cost perspective, digital technologies aim to maximise the revenue of the airlines.

6.3 Conclusions regarding research question 2: What are the perceived similarities in attitudes towards passenger digital technology between millennials and gen x?

The two generational cohorts generally agreed and shared similar views in their attitudes towards passenger digital technologies. These perceived similarities can be consolidated into two main groups: Concerns with using passenger digital technologies and Advantages of using passenger digital technologies (Section 4.5).

Concerns with using passenger digital technologies.

Participants indicated that the rolling power blackouts reduce performance of technologies and if they are to persist then passengers may end up abandoning the digital technologies and relaying on the services offered at the airport because airports would make provision for back-up power. This would possibly render the huge investments made in digital technology fruitless.

There was also a fear expressed by the two cohorts that the technologies would replace humans thus fuelling an already high unemployment rate in South Africa. The aviation industry was one of the important contributors to the GDP of South Africa and digitising the operations of the airport environment could mean a reduction in the number of staff as technology would help to cut out inefficiencies.

Ten of the participants expressed a deep concern around privacy, security of users' personal information. The amount of personal information some of these passenger digital technologies can access was concern for the participants and they worried that this may fall in the wrong hand but generally not knowing what will be done with the information is worrisome.

Advantages of using passenger digital technologies

The study found that the participants all share the same sentiments around passenger digital technologies makes travelling easy, more enjoyable and saving them time in queues. Many of the technologies are designed to decongest the airports, simplify travel, and just offer a convenient way of going through the travel process. The participants indicated that they have all experienced this and shared the same attitudes regarding the advantages of using passenger digital technologies.

6.4 Conclusions regarding research question 3: What role does age play in the diffusion of passenger digital technology in the workplace?

The study found that age plays an important role in the diffusion of passenger digital technologies. The empirical literature tells us that the process of diffusion happens in a social system. There are people in the system whose opinions are valued and that influence the other people in the system to adopt digital technology (Rogers, 2003). The study found that senior leaders in the organisation were the ones whose opinions were valued by millennial participants and that introduced them to new passenger digital technologies. The study also found that gen xers were the ones that held more senior roles in the organisation, owing to the years of work experience and their age.

Millennials were found to be inclined to diffuse any new technologies which they have found out about to colleagues much easier than gen xers would. Gen xers indicated a preference to share their experiences with the technologies in more formal structures within the organisation (section 4.7).

6.5 Conclusions regarding research question 4: Which adopter category do they belong to and how does that hinder or help the diffusion of digital technology in the workplace?

Section 4.9 and section 5.4 present the findings from the interviews and discusses the finding relating to the proposition 4. The conclusion drawn from this was that **Millennials** displayed similar characteristics as people who would typically belong to the **innovator category** as described by Rogers (2003). This cohort indicated that they were willing to experience any new passenger digital technologies and they were slow to share their experiences with others in formal platforms in the organisation unless it was a positive experience. Millennials are also known to have exceptional digital skills because they grew up with technology. Their ability to jump and use new passenger digital technology in their early stages is important in improving the usage of the technologies however another important part the diffusion process is the using communication channels to spread the technologies in the social system. Millennials indicated that they comfortable to do this informally but could be seen as gate keepers which hinders the diffusion of the technologies in the workplace.

Gen xers were found belonging to the **early adopter's category** as they have shown characteristics of being change agents within the social system of the workplace (Rogers, 2003). Their seniority in the workplace makes their opinions about the passenger digital technologies valuable and millennials have admitted having been influenced by this generational group to take new technologies and they spread through the system thereafter. Their natural desire to read more and learn about the technologies before they can share their opinions and experiences with the rest of the system makes their opinions valuable and this helps the process of diffusion.

6.6 Recommendations

The recommendations are based on what the study finds as critical areas for improving passenger digital technologies for the industry and for organisations who provide B2B digital technology for the industry discussed in chapter 4 and 5 of this study.

Recommendations for the South African Air Transport Industry

The industry is not shielded from the realities of South Africa. Poverty, the widening digital divide, injustices of the past etc. In addition to that, air travel is mostly used by middle class and upper class. In contrast, the majority of employees in the industry can be classified as pink-collar and blue-collar workers which means they probably cannot afford to use air transportation as an option for travels around the country. When looking to improve on the passenger experience and implement digital solutions that will add value to a passenger's journey, the industry will normally look to their employees for ideas and suggestions, however if a vast majority has never experienced air travel before it becomes an impossible task. The study has however found that the employees contributing to passenger digital technologies showed an interest in finding out about new technologies but most importantly the concerns cited show a genuine interest in improving the technologies for the greater good of passengers (section 4.5).

- Industry should therefore encourage industry wide travel programmes and incentives to employees (especially blue-collar workers and pink-collar workers) with the aim that they will then be both contributors and consumers of the passenger digital technologies. Their motivations to improve on the technologies and overall passenger experience will be greater.
- Inclusion has to be at the heart of innovation if the industry wants to see meaningful change through useful and practical solutions that will make a difference to passengers in this part of the world. The study found that both generational cohorts were concerned about the technology possibly replacing staff and fuelling unemployment in the country. The industry has

a moral duty to balance the introduction of technology and encouraging staff to have meaningful work by re-skilling and supporting the technologies introduced. There may be cost savings by having in-house staff that is able to support the technologies rather than outsourcing this work to services providers outside of the industry.

- When purchasing passenger facing digital technologies, industry players need to interrogate the value the digital technology before making investments as the contracts can be long and difficult to get out of. A great example found through the study was the value that self-service check-in kiosks provide without the option to check in luggage at the counter. Participants indicated that they do not use these kiosks at airports because they just end up queuing too many times. The process needs to be thought through. If I use the self-service counter to check in then still need to queue to hand in my bag, you have not added value to me as a passenger and therefore industry should demand value from service providers before rolling out the technologies across the airports.
- Many participants expressed a concern around the privacy of their data when using the passenger digital technologies. It is recommended that the industry addressed these issues by assuring passengers that they personal information is safe when using the technologies and routinely send out messaging to show what they are doing to ensure their safely. This will build more confidence in the technologies and increase the usage of the technologies.

Recommendations for B2B Service Providers in the industry

B2B service providers in the industry typically employ white-collar workers and benefit greatly from their employees being both passengers and contributors to digital technology in the workplace (section 4.2). To ensure that organisations are getting the best out of the two generational cohorts in the workplace, organisations need to:

- Continue with the important work of communicating new passenger technologies through their internal marketing channels to increases the awareness of the new technologies and follow up with innovation forums to allow employees to share their thoughts and experiences. These will generate insights that can be used to better the technologies before they are presented before the industry players (section 4.8).
- Organisations need to start seeing competitors in the field as potential partners who can work together to minimise the number of similar technologies from different service providers across the airports. The passenger has to be at the core of their strategies and together they can possibly consolidate all the deferent applications and provide one platform (or a super app) where passengers can access functionalities from booking, to check in, to baggage claims and all other value-added services across different service providers (section 4.6.2). This will make it easier to market the technology and provide simplicity which participants have indicated was important to them in their travel journey.
- Service providers need to stop presenting solutions that only solve half the problems of passengers in the airport. This frustrates the passengers and leads them not to use passenger digital technologies. It becomes difficult to convince them of new technologies in future. The two generational groups in the workplace should be included in the decisions around releasing new technologies in the industry to understand if it will indeed add value and make the organisation profitable or not. The profitability and sustainability of these organisations are closely linked to the value they provide to passengers.

6.7 Suggestions for further research

This study qualitatively analysed the adoption, the use and the spreading of the passenger digital technologies, and issues around the passengers' digital products. Future studies are recommended to apply both qualitative and quantitative techniques in dissecting issues of digital technologies. A mixed methods approach may improve findings of passenger's digital products.

- This study managed to collect data from 12 interviewees 6 who are gen x and the other 6 which are millennials. Future studies are recommended to increases the sample size from 12 to at least 30 and more. Increasing the sample size will widen the variation in the analysis thus improve the data analysis and the findings.
- With a larger sample size, future studies are recommended to have a variety of participants in different organisations within the industry to increase the transferability of the study to other areas like other countries in Africa.
- The use of digital technology by passengers would be a strong addition to the academic body of knowledge. To investigate if the investments made by the industry players are worth it.

6.8 Limitations and challenges of the study

- Possible observer or participant bias

  Some participants may be known to the researcher, and they may feel the need to tweak their answers to what they think the researcher may want to hear. In the same light the researcher may already have a bias towards some participants and may capture their responses incorrectly. A recording of the interviews has assisted to overcome this challenge and offer the researcher an opportunity to analyse the data away from the participant.

- Recording of the interview can lead to participants filtering themselves.

  Interviews took place during work hours and an assumption was made that participants will be using work resources (laptop, Teams access and possibly workspaces) to particate in the interviews. Adding an element of recording can lead participants to filter themselves and not give their true encounters knowing that their responses can be accessed by their employees.

- Internet connection and electricity issues

Structural issues including connectivity and electricity issues in South Africa remain a reality and can be a challenge when setting up the online meetings with participants. The quality of the internet access can create barriers in the conversation and power cuts have proved to be a challenge and has caused some interviews to be re-scheduled or cut short. This has sometimes meant that participants have to be brief in their responses and also be quick in answering questions to ensure that the electricity doesn't switch off during the interview.

- Requesting time in the participants diaries during December

  The December period is typically summer break in South Africa and also the busiest time in the air transport industry as everyone is working hard to ensure that passengers are flying safely to their holiday destinations for the Christmas and New Year. The interviews were scheduled with the participants before the week of Christmas and many of the participants did indicate that it was their last week in office and had many deadlines to reach before they could go on vacation. This may have impacted the quality of answers as some were already in holiday mode. It also made it difficult to get time committed in their calendars in order to have the interviews.

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APPENDIX A: Letter of Permission

University of the Witwatersrand,
WITS Business School
Faculty of Commerce, Law and Management
Tel: +2711 717 3038

Mr Mpho Nkadimeng
SITA
18 Eglin Road, Sunninghill, Sandton, 2157
30 June 2022

Dear Sir,

Re: Permission to conduct research at SITA.

My name is Kabelo Kgodane.

I am studying for a Master of Management degree in the field of Digital Business in the WITS Business School at the University of the Witwatersrand. I am seeking permission to do research at SITA.

I am conducting research to explore the generational gap between Generation X and Millennials in Africa within the Aviation industry and how this gap influences the spread of digital technology in the organisation to cater to a digitised air transport passenger.

Not much research exists on the aviation industry in Africa which is why I was inspired to contribute to the academic body of knowledge on this topic. To help focus the study, participants will be employees of a business-to-business (B2B) service provider in the African aviation industry. SITA's contribution to the industry over the years makes it the ideal organization to do this study in.

The research will entail collecting data from employees in Africa belonging to the two generational groups:

- Generation X, born between 1965 and 1980
- Millennials, born between 1981 and 1996

I request permission to get access to a list of potential participants who should meet the criteria of being employees of SITA (permanent, contractors or learners

and graduates), they should belong to the two generational groups mentioned above and they should be working in Africa. The selection process will favour countries that have representation of both gen x and Millennials and then countries that have representation of only one of the generational cohorts.

I will invite between 6 to 12 individuals from your organisation to participate in this study. If they agree, they will be asked to be interviewed for 45 minutes, online via the Teams meeting platform during work hours.

Participants will be asked to give their written or verbal consent before the research begins. Their responses will be treated confidentially, and identities (their names and the name of the organisation) will be anonymous unless otherwise expressly indicated. Individual privacy will be maintained in all published and written data resulting from the study.

The results will be communicated in the final research report which will be available online through the university's library website.

The research participants will not be advantaged or disadvantaged in any way. They will be reassured that they can withdraw their permission at any time during this project without any penalty. There are no foreseeable risks in participating in this study. The participants will not be paid for this study.

All research data will be preserved anonymously for reuse by other researchers.

I therefore request permission in writing to conduct my research at your organisation. The permission letter should be on your organisation's headed paper, signed and dated, and specifically referring to myself by name and the title of my study: ***The diffusion of digital technology among Millennials and GenX in the South African Aviation Industry.***

Please let me know if you require any further information. I look forward to your response as soon as is convenient.

Yours sincerely,

Kabelo Kgodane, +27 72 0101 545, 2504288@students.wits.ac.za

Supervisor Details:
Ms Ayanda Magida
ayanda.magida@wits.ac.za
+27 11 717 3953

APPENDIX B: Permission Granted to Conduct Research

Africa Region
18 Eglin Road
Sunninghill 2157

Postnet Suite No 24
Private Bag X43
Sunninghill 2157
South Africa

T: +27 (11) 517 7000

www.sita.aero

08 December 2022

University of Witwatersrand – Johannesburg
Private Bag 2
WITS
Johannesburg
2050, South Africa

RE: Permission to conduct Research at SITA Granted

This letter serves to confirm that Kabelo Kgodane (the reseacher) may conduct research at SITA IT Services South Africa under the topic: ***The diffusion of digital technology among Millennials and GenX in the South African Aviation Industry.***

This study is understood to contribute towards the Master of Management degree in the field of Digital Business in the WITS Business School at the University of the Witwatersrand which she is currently registered for.

Should you have any queries, please contact the undersigned.

Yours sincerely,

Mpho Nkadimeng
Snr People Country Manager – Sub-Saharan Africa, SITA
E-mail: mpho.nkadimeng@sita.aero
Direct: +2711 517-7072
Mobile: +2779 349 2424

APPENDIX C: Participant Consent Form

UNIVERSITY OF THE WITWATERSRAND, JOHANNESBURG

Participant Consent Form

Research Project: The diffusion of digital technology among Millennials and GenX in the South African Aviation Industry

Researcher: Kabelo Kgodane

I, ……., agree to participate in this research project. The research has been explained to me and I understand what my participation will involve. I agree to the following:

(Please circle the relevant options below).

I agree that my participation will remain anonymous.	YES	NO
I agree that the researcher may use anonymous quotes in his / her research report.	YES	NO
I agree that the interview may be audio recorded.	YES	NO
I agree that the interview may be recorded on MS Teams	YES	NO
I agree that the information I provide may be used anonymously after this project has ended, for academic purposes by other researchers, subject to their own ethics clearance being obtained.	YES	NO

……...
(Signature)

……
(Name of Participant)

……
(Date)

……...
(Signature)

……...
(Name of Researcher)

……...
(Date)

APPENDIX D: Participant Information Sheet

Participant Information Sheet

Good day,
My name is Kabelo Kgodane and I am a Masters student in Management in the field of Digital Business at the University of the Witwatersrand, Johannesburg. As part of my studies, I have to undertake a research project, and I am investigating the generational gap between Generation X and Millennials in the South African aviation industry under the supervision of Ms. Ayanda Magida. The aim of this research project is to find out how this gap influences the spread of digital technology in the organisation.

As part of this project, I would like to invite you to take part in an interview. This activity will involve you answering questions about your experience with digital technologies as a passenger and as someone who works in aviation industry in South Africa. It will take around 45 minutes online via the Teams meeting platform during work hours. With your permission, I would also like to record the interview using the Teams or a digital device. This recording will be stored on the cloud and only the researcher will have access to this recording.

There will be no personal costs to you if you participate in this project, you will not receive any direct benefits from participation but there are no disadvantages or penalties if you do not choose to participate or if you withdraw from the study. You may withdraw at any time or not answer any question if you do not want to. The interview will be completely confidential and anonymous as I will not be asking for your name or any identifying information, and the information you give to me will be held securely and not disclosed to anyone else. I will be using a pseudonym (false name) to represent your participation in my final research report. If you experience any distress or discomfort at any point in this process, we will stop the interview or resume another time.

If you have any questions during or afterwards about this research, feel free to contact me on the details listed below. This study will be written up as a research report which will be available online through the university library website. If you wish to receive a summary of this report, I will be happy to send it to you. The data collected from this research project will be stored in digital form with all identifying features removed. With your permission the data collected from this research project may be used by other researchers in an anonymized format. If you have any concerns or complaints regarding the ethical procedures of this study, you are welcome to contact the University Human Research Ethics Committee (Non-Medical), telephone +27(0) 11 717 1408, email hrecnon-medical@wits.ac.za.

Yours sincerely,
Kabelo Kgodane
Researcher: Kabelo Margery Kgodane, 2504288@students.wits.ac.za
Supervisor: Ms. Ayanda Magida, ayanda.magida@wits.ac.za, +27 11 717 3953

APPENDIX E: Interview Guide

INTERVIEW GUIDE

Research Project: The diffusion of digital technology among Millennials and GenX in the South African Aviation Industry

Researcher: Kabelo Kgodane

RQ1&2: What are the perceived differences in attitudes towards digital technology diffusion between millennials and gen x? What are the perceived similarities in attitudes towards digital technology diffusion between millennials and gen x?

1. How long have you worked at SITA or in the South African Air transport industry?
2. What is your role at SITA?
3. How do you contribute in your role to the passenger digital technologies in South African airports and airlines?
4. Have you used air transport within South Africa or Africa? Where? How often do you use it?
5. Which digital technologies have you used in your capacity as a passenger?
6. What advantages and disadvantages do you perceive in using these passenger digital technologies as a passenger?
7. How do these perceptions compare in your role as a contributor to the technologies vs your role as a consumer of the technologies?
8. What are some challenges that you encountered in using these passenger digital technologies?
9. What are your concerns about using passenger digital technologies?

RQ3: What role does age play in the diffusion of passenger digital technology in the workplace?

10. How did find out about the passenger digital technologies? Was there a specific person that introduced you to it and motivated you to use it? If yes, who and describe their role in the organization?

11. How did you learn to use these passenger digital technologies?
12. Do you find that your younger colleagues or your older colleagues approach you with their experiences of using these passenger digital technologies in the industry?
13. In your opinion, why do think that some of your colleagues adopt passenger digital technologies and other don't? Does age play a role here?

RQ4: Which adopter category do they belong to and how does that hinder or help the diffusion of digital technology in the workplace?

14. When you find out about a new passenger digital technology, describe how you decide to use it and if you tell your colleagues about it with the aim of getting them to use it as well.
15. Would you describe yourself as someone who jumps on to use new passenger digital technologies or one who rather waits until it tried and tested before using them?
16. In your role in the organization, how do your views on passenger digital technologies filter to your colleagues?

APPENDIX F: Ethics Clearance

Graduate School of Business Administration
University of the Witwatersrand, Johannesburg

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

Ethics Clearance Certificate

Ethics protocol number: WBS/DB2504288/508
This certificate is only valid with a legitimate ethics protocol number and signed by the Researcher (below).

This certificate is only valid if accompanied by formal permission from the relevant stakeholder(s).

Project title	The diffusion of digital technology among millennials and genX in the South African aviation industry
Investigator / Researcher	Ms Kabelo Margery Kgodane
Nature of Project	MM (Digital Business)
Decision of the Committee	Approved, provided stakeholders and participants are guaranteed confidentialty.
Issue Date of Certificate	2022-12-15
Expiry date	Date of submission of the project / research report
Chairperson	Prof Anthony Stacey ☎ +27 11 717 3587 +27 82 880 4531 anthony.stacey@wits.ac.za

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Declaration by Researcher

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

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

Signature

2022-12-15
Date:

APPENDIX G: Consistency Table (Research questions, propositions, data collection and data analysis)

RQ #	Research Question	Prop #	Proposition	Data collection detail	Data analysis method
1	What are the perceived differences in attitudes towards digital technology diffusion between millennials and gen x?	1	Proposition 1: There will be differences in attitudes towards passenger digital technology between the two generational cohorts in their capacity as passengers.	Interview guide questions 5 to 9	Thematic analysis, Inductive approach
2	What are the perceived similarities in attitudes towards digital technology diffusion between millennials and gen x?	2	Proposition 2: There will be similarities in attitudes towards passenger digital technology between the two cohorts in the workplace.	Interview guide questions 5 to 9	Thematic analysis, Inductive approach
3	What role does age play in the diffusion of passenger digital technology in the workplace?		Proposition 3: The millennial will find it easy to learn and diffuse passenger digital technology in the workplace.	Interview guide questions 10 to 13	Thematic analysis, deductive approach
4	Which adopter category do they belong to and how does that hinder or help the diffusion of digital technology in the workplace?	3	Proposition 4: Millennials will rank as early adopters while gen x as early majority in the organisation.	Interview guide questions 14 to 16	Thematic analysis, deductive approach