

Title:

**Technological change and its influence on
institutional culture at the University of the
Witwatersrand, Johannesburg**

Dawn Habanyana

**The research report submitted to the Faculty of Commerce, Law and
Management, University of the Witwatersrand, in partial fulfilment of
the requirements for the degree of Master of Management in Digital
Business**

Johannesburg

2023

ABSTRACT

Author: Dawn Habanyana

Supervisor: Dr. Jenika Gobind

Research Report Title: Technological change and its influence on institutional culture at the University of the Witwatersrand, Johannesburg

The purpose of this research has been to explore the technological change and its influence on institutional culture at the University of the Witwatersrand, Johannesburg. The main problem identified is attributed to by human-dependant manual and paper-based processes that affect the culture of the institution. This research paper selected the university of the Witwatersrand as its case study, as it is one of the leading universities in Africa. A qualitative research methodology was used, where three main research questions were answered based on the chosen case study. Data was collected through face-to-face semi-structured interviews with participants who belonged to the university community. Data collection was analysed, and the finding were presented in phases. The first phase was capturing and reporting on the on the response received from the participants. The second phase is the analysis and interpretation of the data. Then the last phase brought through a clear understanding of the data by presenting the data through categories and themes. The research paper triggered the notion that the COVID 19 pandemic regulations has fast tracked the use and dependency of technology. Making it evident that technological change has its influence on institutional culture especially at the university of the Witwatersrand.

Key Words: Technological Change, Digital Culture, Higher Education, University of the Witwatersrand.

Declaration

I, _____Dawn Habanyana_____, declare that this research report is my work, except as indicated in the references and acknowledgments. It is submitted in partial fulfilment of the requirements for the degree of Master of Management in 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: Dawn Habanyana

Signature:

Signed at: Johannesburg

On the ...08..... day ofAugust..... 2023.

Dedication

This degree has been a journey and one of the most adventurous challenges I have experienced in my life.

I dedicate this to my mom and my dad, who sacrificed a lot for us, who are also hardworking and strive to do their best in life. It is by your prayers that I can achieve this level in my life. Aubrey and Bonolo (you guys are my best hype-man). Thank you for your constant advice, believing in me and always showing me support. To the apple of my eye Ayanna, thank you for being a miracle in my life, and to Mweene my husband, thank you for your love, support, and constant encouraging. Thank you all for inspiring me to soldier on and finish my research report.

Lastly, I would like to thank God for caring for me through all difficulties. It is not by my will but by your efficient grace upon my life that I have made it thus far. Lord, it is by your will that I completed this degree, and I will forever love and trust you.

Acknowledgements

The Masters of Management in Digital Business Degree was a challenging experience and I would like to acknowledge and give my warmest appreciation to my supervisor Dr. Jenika Gobind who shared comprehensive knowledge of the topic. Her guidance and advice has carried me through all the stages of my research project. Through her kind words, constant encouragement and personal advice has given me confidence and courage as an individual.

I would like to thank my university colleagues who participated in and contributed to the research.

I would also like to acknowledge and appreciate Wits Business School and the University of the Witwatersrand and all those who assisted on this journey.

Table of Contents

ABSTRACT	i
Declaration	iii
Dedication	iv
Acknowledgements	v
Table of Contents	vi
LIST OF TABLES	x
LIST OF FIGURES	xi
LIST OF ACRONYMS/TERMS	xii
CHAPTER 1. INTRODUCTION	1
1.1 Statement of purpose	1
1.2 Background of study	1
1.3 Research problem	3
1.4 Research questions	5
1.5 Rationale	6
1.6 Delimitations	7
1.7 Assumptions	8
1.8 Terms and Definitions	10
1.9 Chapter outline	11
CHAPTER 2. LITERATURE REVIEW	12
2.1 Introduction	12
2.2 Background	12
2.3 In what way can technology influence institutional culture in higher education?	14
2.3.1 Digital transformation	14
2.3.2 Technology	15
2.4 How and why does technology influence institutional culture in higher education	18
2.4.1 Higher education	18
2.5 What role does technology have on institutional culture within higher education	19

2.5.1	Institutional culture	19
2.5.2	Digital culture	20
2.6	Analytical framework	22
2.6.1	Theoretical framework	23
2.6.2	Conceptual framework	24
2.7	Conclusion of literature review	26
2.7.1	Proposition 1	27
2.7.2	Proposition 2	27
2.7.3	Proposition 3	27
2.8	Summary	28
CHAPTER 3. RESEARCH METHODOLOGY		29
3.1	Research approach	29
3.2	Research design	30
3.3	Data collection methods	31
3.4	Population sample	32
3.4.1	POPULATION	32
3.4.2	Sample	32
3.5	Research instrument	33
3.6	Procedure for data collection	34
3.7	Data analysis strategies and interpretation	34
3.8	Limitations and challenges of study	35
3.9	Quality assurance	36
3.9.1	Transferability	36
3.9.2	Credibility	37
3.9.3	Confirmability	37
3.9.4	Dependability	37
3.10	Ethical considerations	38
3.11	Ethical considerations	40
3.12	Summary	41
CHAPTER 4. Presentations of Findings		43

4.1	Introduction	43
4.2	Demographic	43
4.3	Technological influence on institutional culture in higher education.	43
4.3.1	Technological influence on institutional culture at the university of the Witwatersrand	43
4.4	Technology being a major force behind the digital culture at the university of the Witwatersrand.	47
4.4.1	Technology promoting digital culture.	47
4.5	Technology and its role in digital culture within higher education.	50
4.5.1	Technology’s role in a digital culture in higher education, specifically at Wits University?	50
4.5.2	Most used technology and its impact on digital culture at Wits University -	51
4.5.3	The impact that technology has on digital culture at Wits University.	51
4.6	Participant — Further insights.	54
4.7	Summary	55
CHAPTER 5. Discussion of Findings		56
5.1	Introduction	56
5.2	Technology influence on institutional culture in higher education.	56
5.2.1	Technological influence on institutional culture at the university of the Witwatersrand	56
5.3	Technology being a major force behind the digital culture at the university of the Witwatersrand.	57
5.3.1	Technology promoting digital culture.	57
5.4	Technology and its role in digital culture within higher education.	58
5.4.1	Technology’s role in a digital culture in higher education, specifically at the university of the Witwatersrand.	58
5.4.2	Most used technology and its impact on digital culture at the University of the Witwatersrand.	58
5.4.3	The impact that technology has on digital culture at the university of the Witwatersrand.	59
5.5	Summary	60

CHAPTER 6. Conclusion, Limitations, and Recommendations -----	62
6.1 Introduction -----	62
6.2 Technology can influence digital culture in higher education-----	62
6.2.1 Technological influence on institutional culture at the university of the Witwatersrand -----	62
6.3 Technology being a major force behind the digital culture at the university of the Witwatersrand-----	64
6.3.1 Technology promoting digital culture -----	64
6.4 Technology and its role in digital culture within higher education-----	65
6.4.1 Technology’s role in a digital culture in higher education, specifically at Wits University -----	65
6.4.2 The impact that technology has on digital culture at Wits University -----	65
6.5 Limitations-----	66
6.6 Recommendations -----	67
6.7 Practical Implications. -----	70
6.8 Future Studies. -----	75
6.9 Summary -----	76
REFERENCES -----	78
APPENDIX A -----	84
APPENDIX B -----	85
APPENDIX C -----	87
APPENDIX D -----	88
APPENDIX E -----	89
APPENDIX E -----	90

LIST OF TABLES

TABLE 0-1 - LIST OF ACRONYMS	XII
TABLE 1-1 DEFINITIONS	10
TABLE 3-1.11 ETHICAL CONSIDERATIONS.....	40
TABLE 3-2-RESEARCH QUESTION	42

LIST OF FIGURES

FIGURE 2-1 THE CONCEPTUAL FRAMEWORK OF THE STUDY	24
FIGURE 4-1 PARTICIPANT RESPONSE.....	46
FIGURE 4-2 PARTICIPANT RESPONSE.....	49
FIGURE 4-3 PARTICIPANT RESPONSE.....	53
FIGURE 6-1 GARTNER HYPE CYCLE	68
FIGURE 6-2 SKILLS OF BLENDED LEARNING	71
FIGURE 6-3 FACTORS FOR BLENDED LEARNING	72
FIGURE 6-4 HOUSEHOLD COMPUTER STATISTICS.....	74

LIST OF ACRONYMS/TERMS

ACRONYMS	TERMS
Apps	Applications
AI	Artificial Intelligence
AR	Augmented Reality
COVID-19	Coronavirus Disease
DX	Digital Transformation
4IR	Fourth Industrial Revolution
HE	Higher Education
ICT	Information and Communication Technology
LMS	Learning Management System
ML	Machine Learning
VR	Virtual Reality
Wits	University of the Witwatersrand

Table 0-1 - List of Acronyms

CHAPTER 1. INTRODUCTION

1.1 Statement of purpose

Technological advancements have become an integral part of modern society, revolutionising various aspects of our lives, including the education sector. Universities, as centres of knowledge and learning and have had to adapt to these changes to ensure they remain relevant and effective in providing quality education. The objective of this qualitative research has been to look into the technological change and its influence on institutional culture at the University of the Witwatersrand, highlighting its impact on teaching, research, and student experiences.

1.2 Background of study

This paper's context is driven by the rapid growth of the fourth Industrial Revolution (4IR). There are societal norms that contribute to how things operate and how things are performed. At times societal norms subscribe to cultural norms, in a positive or negative way. In this case a global pandemic shifted societal norms which also challenged everything people knew as normal. Firstly, understanding that institutional culture refers to the shared values, beliefs, behaviour, assumptions, and behaviours that influence how an institution interacts with and contributes. The culture of an institution is made up of norms and daily activities. The term culture refers to how things are done that touch on personal and social perspectives. Everyday organisations, institutions, as well as society, are examples of culture. Technology has made it possible to integrate technology into a culture and the way things are done. Technology is now a key component of most activities. It's more than just the process people follow or how things are done.

An example of digital culture is a group of people who share a common belief, follows the same norms, and display attitudes and actions that are influenced by technology (Angela Andal-Ancion & Yip, 2013). Digital culture can be found in all spheres of society (Mahlow & Hediger, 2019). This has changed the idea of a singular explanation of what a student in higher education is. You can find students with a wide range of backgrounds. Some have had access to technology since childhood, while some prefer to use digital learning spaces.

In qualitative research, a case study entails an in-depth examination and analysis of one or more examples in the context of real-world events in order to develop a thorough knowledge of the topic being researched. In this research, the case study will be the university of the Witwatersrand. As the university is part of the top universities in South Africa, is incorporating and promoting digital and technological change. A number of corporate students multitask and have different jobs, which means they require different technology platforms for communication and remote access to learning content. The new norm in the era of a global pandemic was to communicate with others and to have quick access to information via technology (Istenic, 2021). Online and digital, classes, syndicates, team building, conferences and webinars, and team building were all established. Digital transformation refers to the modernisation or change of processes from paper-based or analogue processes to digital ones (V. Mezinov, M. Zakharova, & N. Nekhoroshikh, 2022). The technology is used to improve or produce current business, operations, and organisational processes. This enhances customer experience and increases work efficiency.

The definitions provided for culture show how things are done at work, and the impact on behavioural components. Digital transformation is a term used in higher education to describe an organisational change that uses digital technologies and commercial models to improve the institution's operational performance.

Higher education institutions have the potential to transform their teaching and learning through digital transformation and improve their technology. This can also help them to manage the institution more effectively (Amaral, Jones, & Karseth, 2002). Digital transformation can have a positive impact on the organization and bring about a change in culture (Armstrong & Lee, 2021). Higher education already embraces digital culture. They must promote it and encourage the increased use of digital technology (Hayman & Smith, 2015).

1.3 Research problem

Technology has challenged manual-paper based processes and assisted in highlighting the need to change operational, strategic, and institutional or organisational culture. Higher education institutions have built their legacy based on traditional educational and cultural norms. Consequently, things have been done similarly from generation to generation. The digital revolution is changing sufficient things across every sector. This is forcing traditional spaces into a new culture. While attending a higher education institution has been an honour, it has not changed the way work is done in recent decades (Walliman, 2010). It is currently in an environment and era where it faces numerous challenges and has to find ways to enforce change. These forces of change relate to digital, technology, and competitiveness, as well as how things are run at the university (workforce). As academic content, learning, and lecture become more modernized, it is necessary to change the operations of the university. To make things run more smoothly, infrastructure and new skills must be learned and developed.

The problem is that higher education institutions cannot operate the same way they have been operating for decades. The pandemic has forced change on so many things that, changing or reverting back to how things functioned would not be futile for higher

education institutions. While many higher education institutions have entered the digital realm, there are still many that are not digitising or failing in their endeavours. This is leading to increased technology spending and poor returns on investment (Tømte, Fossland, Aamodt, & Degn, 2019). The University of the Witwatersrand was one of the higher education institutions that adopted technology and moved towards a digital culture. However, various universities are returning to the way they were doing things before COVID. These are often human-dependent and manual processes. Digital transformation will help them reach their goals of being the best in their field, increasing revenue, improving student experience, and increasing agility.

While some higher education institutions are active participants in the digital revolution, a few others are not (Kopp, Gröblinger, & Adams, 2019). Higher education institutions spend more on technology than their counterparts to catch up and get lower productivity and a lower return on investment. Every higher education institution, including the university of the Witwatersrand, strives to be the best globally and its essential for wits to keep up or beat its competitors.

Prior to COVID-19 pandemic, university of the Witwatersrand like many other institutions operated on foot traffic (the number of physical people on campus) and manual processes. The student life made the institution what it was cordially. But after the pandemic students no longer want to experience things the same way. Academics and operational staff members experienced a big gap in trying to offer a service to the university and its students (Ebner et al., 2020). Legacy systems are a problem, manual possess, human depended on processes and institutional culture were also challenges as these had to change within a short space of time.

While several industries are still going through the COVID-19 epidemic and just recently recovering from a national catastrophe, the main problem for most of them, including higher education institutions, has been the digital transformation and technological adoption. This has been faced by various organisations, including higher education institutes (Pham, Tran, La, Doan, & Vu, 2021). The digital transformation of education institutions affected every aspect of their operations and forced significant changes in the way they function. Digital transformation and technological change has posed a challenge to organisational culture. It forces people to change from the way they do things to a new way, which is a sign of a digital culture. These operations may include the introduction of digital technology (Branch, Burgos, Serna, & Ortega, 2020). Employees/staff members must also adapt socially and mentally to accommodate, normalise, and not resist the new technological changes. Higher education is known for its ability to preserve tradition and the way things were done previously. This can be seen as a challenge.

Higher education institutions often rely on old or legacy obsolete technology. This can cause problems when trying to incorporate it with newer technology. Digital transformation is often too difficult and costly for those who are entrusted with this process (Armstrong & Lee, 2021). This can lead to undue delays, duplications of tasks, unsatisfied clients, and slower processes. This study will examine the impact of technological change on institution culture at the University of the Witwatersrand. Particularly, it will be focusing on technological change and its impact on institution culture at the University of the Witwatersrand in Johannesburg.

1.4 Research questions

The following questions will be investigated:

1. In what way can technology influence institutional culture in higher education?

2. How and why does technology influence institutional culture in higher education?
3. What role does technology have on digital culture within higher education?

1.5 Rationale

All things are constantly changing and in transition due to globalisation. This means that things will not be the same for long periods of time. The way things were done in the past has changed or been modernised. This transition is currently evident in higher education (Seres, Pavlicevic, & Tumbas, 2018). Wits university infrastructure and administration were slow, repetitive, manual, paper-based, and outdated. The university's busiest period is when students have to physically arrive on campus to complete registration. The administrative staff is then moved to a central location for students' access.

Students no longer want to stand in long queues and spend the whole day busy with registration. This gap is because people do not want to wait in long lines and need immediate assistance. The next step for a student who has completed all their applications online should be accessing the course content. The operative staff can become overwhelmed during this period. They must be available by telephone and in the office to answer any applicants' questions. Network connectivity needs to be stable to maximize system functionality. Knowledge databases also need to be regularly updated to ensure data flows between systems is seamless (A. W. Bates, 2015; Mahlow & Hediger, 2019).

Students want to see a digitalisation of administrative processes. They also demand that all information and services be available 24/7 and accessible via multiple platforms. Witwatersrand is under pressure to choose the best digital approach for students and employees, while also being able to compete with other high-ranking higher education Institutions (Mahlow & Hediger, 2019). Both in the academic and administrative systems,

there are several changes that need to be made. This would encourage digital literacy and increase technological use. It also reduces the dependency on manual labour.

Higher education institutions like the university of the Witwatersrand face a lot of pressure because of the increased competition for students. The restrictions on financial resources (as everyone knows, the fees must fall movement). The rising demand from the labour force and student expectations for creativity and new learning experiences are some factors that contribute to the pressures. Wits university is one of many higher education institutions that are using digital transformation and technological change to improve their current work processes and digitise existing operations. This will also help to create new digital models and make it more efficient for the transformation adoption of new technology (Rodrigues 2017,). Although the university of Witwatersrand already has the latest technology, they are not using it to its full potential.

This study is important because it examines the impact of technology on higher education. Understanding the digital culture and lack thereof from the institution will help bring forth an understanding on how technology drives higher education's adoption of digital culture (Zhu, 2015). It will inform universities on how to enhance their existing business and organisational processes, increase customer experience, and enhance efficiency and be more innovative. This will allow students and academics to receive efficient and speedy service.

1.6 Delimitations

Delimitations are the set boundaries created by the researcher as a way of control for the study. These delimitations assist with aligning the goal of the study and not making the research element large, complicated, and incomplete. These are the factors and

variables that will not be included as part of the investigation. The limitations of this research paper are the potential shortfalls that maybe beyond the researcher's domain. To accomplish certain research goals, the study uses quantitative technique that excludes qualitative methods. This also set borders that research will create, to not go beyond their research topic. The research conducted in one language, limiting language barrier, and excluding data from other languages due to translation issues.

Digital culture will be looked at as a subsection of organisational culture. The use of the term technology will be used interchangeably with digital transformation. The data collection method used were face-to-face semi structured interviews which excluded secondary data from existing sources. The sample size involves a specific number of participants, who only belong to the university of the Witwatersrand. The participants identified are not entry level technology users.

1.7 Assumptions

In this section, the assumptions as they apply to the study are presented. It is believed that technology is forcefully changing society, and that technology can affect digital culture in higher education. Additionally, there is a presumption that technology contributes to the development of digital culture at the university of Witwatersrand.

Research outcomes can be influenced by the assumption that all participants have different experiences, backgrounds, ages, and qualifications. Therefore, could contribute to the research on opinion from a different perspective. Different operational business units are different and have different strategical outcomes where digitalisation is not a priority. There is no definition and understanding of digitalisation and culture combined. Therefore, work culture is something that is not taught but that people adapt to, to be able to perform their duties and to have relations with other colleagues. How operational duties are performed could not be a traditional way but could be a systematic way that is not

looked at as traditional. Digitisation can also be looked at from different phases whereas others could look at it as digitising paper-based processes, others could look at it as the automation of manual processes and others could be looking at AI and virtual realities (meta-universities).

1.8 Terms and Definitions

Term	Definition
Culture	A set of shared beliefs, behavior, values, knowledge, habits, and social practices that people partake in, whether in a society, organization, or any other institution (Merriam-Webster 2022).
Digital Culture	Digital culture is described as people incorporating online technology into their daily lives. People’s beliefs, attitudes, norms, and performing their work with the usage of digital technologies and networks.
Higher Education	Higher education is the highest level in the education system. It encompasses different institutions, such as colleges and universities, that could lead to a variety of different subjects and career paths. You can obtain different certifications such as higher certifications, diplomas, and degrees.
Digital Transformation	Digital transformation is the integration and usage of technology into all functional areas of an organization. Changing or impacting performance, operations, and processes and delivering value to customers.
Student	An individual who has enrolled at a university or other higher education institution for studying.
Technological change	Technological change is a way of improving processes by using existing and new technologies to promote efficiency through innovation and integration.

Table 1-1 Definitions

1.9 Chapter outline

The research's introduction and framework are presented in Chapter 1. It gave the research a purpose. By emphasising the study's historical context, outlining the research topic, and demonstrating purpose through targeted research questions. It provided a rationale and highlighted some delimitations that could be experienced in this study. It gave a tabled definition of terms and discussed the assumptions that could be interpreted in the study. The literature review and theoretical framework will be covered in Chapter 2.

CHAPTER 2. LITERATURE REVIEW

2.1 Introduction

Digital transformation is not only about incorporating technologies into an organisation but also more of the idea of transforming the structure of an affected point and domain and their central models in an organisation. Chapter 2 will investigate the literature review and look at the theoretical framework which will serve as a critique and analyses of the relevant scholarly literature about technological change being a driving force behind the digital culture in universities. The literature review assists with supporting theory for the topic selected for the study and helps with providing more clarity and understanding of the selected topic. The literature review can provide a framework for the study and allow for it to be compared to other studies. This chapter will also be giving a background discussion about the topic, it will investigate the research questions addressed in the previous chapter and will add context and a proposition for each question.

2.2 Background

Recent years have seen student anger explode, leading to university closures, student protests, financial difficulties, and increased competition for student placements. All this creates a challenging environment for learning. It is crucial to address these issues. The digital wave is here, and higher education institutions will be forced to participate in the digital space. Students, parents, guardians, government officials, and regulators are the main stakeholders in education. Universities share similar demands as the corporate sector for efficient operation, cost management, and achievement of goals, targets, and other criteria (Kleijnen, Dolmans, Muijtjens, Willems, & Van Hout, 2009; Wilms et al., 2017).

A practical strategy for digital transformation and technological improvement is needed by higher education institutions. This will help them to stay relevant and bring in digital transformation (Branch et al., 2020). The new technology is a way to improve and redefine how things are done in higher education institutions and surrounding areas. The lack of technological knowledge or digital transformation is hindering the potential growth of these institutions. The staff members of the university of the Witwatersrand identified are currently trying to use technology for information sharing and engaging with students. For example, the university's learning management system (LMS), requires complex use of technology.

Many learning management systems have evolved into repositories where the lecturer's content can be downloaded. This has limited benefits for students. Operational staff are challenged to become a conduit for technology support in order to support students and academics. Because they are experts in their field and can provide technical assistance and improve service. They are now considered the most important skills of the university, especially subject matter experts in the ICT space (Maylawati, Priatna, Sugilar, & Ramdhani, 2020).

As there are legacy systems that still need to be updated, the business process is not being updated (Favoretto, Mendes, Filho, Gouvea de Oliveira, & Ganga, 2021). Digital transformation is the integration of multiple resources and new developments in technology (Armstrong & Lee, 2021). Higher education institutions must implement a realistic digital strategy. This involves a complex process that combines organisational culture, processes, and technology to make them more competitive with other higher-ranked institutions.

2.3 In what way can technology influence institutional culture in higher education?

2.3.1 Digital transformation

Digitisation is a key trend that has had a major impact on society and the rest of the world. Digitisation refers to the conversion of physical objects, such as physical books, into digital books that can be used on computers and other digital devices. Digitisation can transform things from tangible to intangible, from a physical form to a digital one (Van Veldhoven & Vanthienen, 2022)

Digital transformation refers to the transition from analogue or manually operated elements to online or automated platforms. It is the use of technology to enhance or improve agility with less human interaction (Mahlow & Hediger, 2019). Digital transformation refers to the change taking place within an organization or an institution. It broadens the institutions potential for growth as long as the strategy is aligned and has knowledge about technology and digital transformation.

Nikolaeva states “that digital technologies have become so embedded in modern life and have had such a profound impact on all aspects of modern life, that we can refer to it as digital transformation or digitalisation” (Nikolaeva et al. 2020).

To describe digital transformation as not only the act of bringing in digital technologies to an organisation. But transforming the structure of affected items and domains and their central models in an organisation.

Several higher education institutions can also see digital transformation as an imperative growth measure. It can force them to rethink the impact of technology on performance and growth. Digital culture is often misunderstood as being inextricably linked to technology (Mahlow & Hediger, 2019). It is widely accepted that technology has a significant influence on digital culture. This notion is often unsupported by data. The culture of higher education has been influenced by digital technology. It has helped to raise educational standards and made it easier for students to access vital data and resources. As a result, there has been an increase in the engagement between students and lecturers and administrators.

2.3.2 Technology

Technology is a tool that has the scientific knowledge and aims to make life easier and is constantly being improved and modernized. This means that more scientific knowledge is being integrated into these applications. These tools can produce more analytic results. The use of new technologies is on the rise because of digitisation. Technology such as artificial intelligence (AI), bitcoin, cloud, block chain, and IoT are integrated into everyday activities (Armstrong & Lee, 2021).

Technology can be used to provide educational experiences that help overcome the challenges associated within higher education institutions. Digital transformation can help institutions to better meet the needs of students and faculty. Digital transformation does not only involve the installation of technology but also involves changing organisational and educational practices to make the most of these technologies. A digital revolution in education is a deliberate attempt to make technology more effective in order to create a positive learning environment, encourage student learning, and provide a supportive work environment for students.

According to Bloomberg who states that the whole nature of organisational change as different entities make use of “digital technologies” defined in an organisational context as “computers and other information technology” (Bloomberg,2018,). This can also be referred to as digital infrastructure, which is hardware and software that are used to carry out a digital action. Digitalisation, digitisation, and digital transformation all go hand in hand because they are interdependent. Sometimes, the same explanation or understanding could be given to them. Digital transformation refers to the integration and use of technology in all functions of an organization. Change or impact on performance, operations, processes, and customer value. Technology change can be seen as the process of advancements and innovations in technology. That could lead to significant improvement, transformation, and cause disruptions in varies industries, societies and culture. Technological change refers to development of new technologies while improving on existing ones. It is also the widespread adoption and integration of these technologies into everyday life.

A digital transformation is the creation of new businesses that produce digital products in addition to their traditional products (Angela Andal-Ancion & Yip, 2013). Technology and digital transformation go hand-in-hand as each other is required for the other to occur. Technology cannot be used to change the strategy, production, and processes of an organisation. Higher education is a key component of technology/digital transformation, particularly for students who can experience digital culture and the benefits it brings. Higher education institutions can improve their agility, customer satisfaction, and operations by incorporating digital transformation. They will also be able to improve their end-to-end processes. This will reduce process variation and fix any waste or gaps in processes and there will be inter-departmental workflow synchronisation.

Digital transformation is the use of technology to change a process, resulting in a shift in organisational and operational structure. Technological change is the action part of digital

transformation. To transform is to change. So, changing and adapting to the usage of new technology allows positive growth in an institution or organisation. Technological change makes it possible and plausible to enhance efficiency of an institution – for instance automation to get agile service. Take for instance automation for agility, for example, is customer centric. Automation refers to the use of technology to automate processes and procedures in a simplified manner and with less interaction from humans. Automation speeds up manual processes and allows people to do repetitive tasks more quickly. Andal-Ancion states that digitising and automating processes can help organisations focus their attention on their research and development employees. This would allow employees to invest their time in innovative ideas and take on fewer repetitive and manual tasks that are not challenging (Angela Andal-Ancion & Yip, 2013).

2.4 How and why does technology influence institutional culture in higher education

2.4.1 Higher education

Higher education refers to post-secondary education. It offers a variety of learning and study options. There are many institutions, such as colleges or universities, that can lead to different career paths and subjects, such as art, history, philosophy, and theology (Branch et al., 2020). Are subjects that can be thoroughly investigated and studied, which are mostly not offered in lower education institutions Professional learning and training are also available for those interested in pursuing a career in medicine, law, or engineering. Secondary education is a requirement for most higher education institutions. A university is a higher education institution that offers undergraduate and graduate programs in many subject areas. Many universities conduct research and provide students with a solid education that prepares them to work in academia or industry.

Higher education is a place where knowledge sharing, intellectual property, research, and one of the most important phenomena is discovery. The demand for higher education institutions is increasing. They must be able to meet applicants' needs, develop their research and learning, as well as make information tangible. The business side of higher learning requires funding, operations costs, and management of infrastructure (Branch et al., 2020). Traditional higher education institutions will have to rethink their market strategy because of digital transformation. Online education is becoming a vital component of learning and teaching.

The COVID-19 crisis is quickly highlighting the fact that online learning can be used by lecturers to enhance their teaching skills. Making classes more fun and interactive rather than using online learning as a management tool. (Mhlanga, Denhere, & Moloji, 2022).

Effective use of digital learning technologies in the classroom can increase student engagement, improve teacher planning, and encourage personalized instruction. It also helps students develop 21st-century skills (Bygstad, Øvrelid, Ludvigsen, & Dæhlen, 2022). Technology is not an end. Educational technology's potential lies in the way educators use it, and how they can best serve their students.

As a means of digital transformation, the promotion and implementation of a new digital organization are how many institutional invent digital products that complement their existing ones (Angela Andal-Ancion & Yip, 2013). Digital globalisation refers to the trend that allows institutional to move from multi-national to truly global operations. Digital technology allows institutions to compete globally or outside their borders. Higher education has a significant impact on many aspects of society. Digital transformation and technologic change can be attributed to several deliverables, including the ability to transfer knowledge, conduct research, make discoveries, and rank high in institutions. Digital transformation has already led to the development of digital culture. Higher education institutions are required to provide technology-literate students with higher education.

2.5 What role does technology have on institutional culture within higher education

2.5.1 Institutional culture

The organisational culture can make a person's work life more meaningful. Every person in the workplace has different organisational responsibilities. Regularly performing these tasks can help to build relationships. You might share common beliefs, operational responsibilities, or even an understanding or feeling about your organisation. Digital transformation and technological change is a term that executives can use to describe changing the institution's culture. Understanding and identifying the culture of an

institution is key to determining the organisation's value and setting the direction for it (Tierney & Lanford, 2018). University culture refers to the shared values, norms, traditions, customs, and behaviours that characterize the environment and atmosphere of a particular university or higher education institution. It encompasses the beliefs and practices that shape the interactions and experiences of students, faculty, staff, and administrators within the university community.

The university's culture can have an impact on identity perceptions and willingness to accept change within the institution. It is an integral part of the institution's overall functioning. It is involved in the development of values, norms, and philosophy. It influences the way we behave. Schein also states that institutional culture refers to certain assumptions that were successful in the past, and are now accepted as useful expectations within universities (Schein, 2010). These expectations or assumptions are tested by human interactions, attitudes, behaviour, and other factors. The correct or appropriate way to do this and solve institutional problems is creating, adopting and promoting a healthy institutional culture.

2.5.2 Digital culture

Understanding the concept of transformation is acknowledging that change is taking place. Thus, the concept and understanding of culture have not changed and still have the same meaning, as clearly define above. In digital culture, it can be understood as the computer culture or the technology online culture (Lai, 2011). Digital culture is people are online constantly on different digital platforms. Mass media is the biggest platform for the promotion of modern digital living. The easiest way of being connected and getting access to these mass media platforms is via mobile devices, in which the majority of people in society possess one.

Digitalisation has pervasively influenced culture due to the rise of digital technologies and using them as easy and fast communication. Digital culture is the concept of digital technologies and human interaction and how that influences how things are performed, attitudes, and creating a new norm. (Zhu, 2015) It then is the usage of technology that assists in how people behave, think, perform, and communicate within a society or an organisation. Because digital technology is universal, and many technology devices are portable (mobile) the characterization of digital culture includes all aspects of everyday life. Ensuring that digital culture is not only limited to the internet and modern communication technologies (Knox, 2014).

Being in a fast society or being part of a higher learning institution and having ease of knowledge and access is essential for everyday life and makes it possible to perform tasks at a fast time and from anywhere (Amaral et al., 2002). In today's technologically advanced environment, both lecturer and students need to be digitally literate. Without these abilities, students run the danger of falling behind in their studies, careers, and even personal life.

Technology plays an integral role in driving digital transformation, but for the transformation to take effect the university's strategy will need to be updated or changed. Strategy to change the institutional culture will be impacted (Mohamed Hashim, Tlemsani, & Matthews, 2022). The implementation and adaption of the technological change go along with digital transformation and becomes and affects everyone's responsibility. Making digital transformation a people and culture matter. With everything being online digital materials are constantly being modified adding to the pressure that digital culture always has to be online as digital materials are ongoing processes and are never finished products (Casillas Alvarado & Ramírez Martinell, 2019). Digital technologies also influence the relationship between space and time. For instance, streaming services and classes can incorporate individuals who are in silos to be in one place virtually and actively participate (Tømte et al., 2019). The use of virtual reality technology shows that digital culture is always evolving and has unlimited possibilities for the norms that we have.

Andal-Ancion writes that institutions are opening up to utilize past investments in technology in order to acquire a deep understanding of targeted populations and market segments. They write about how certain institutions are using social media in order to understand what really satisfies their customers and what causes their dissatisfaction. The author also indicates that businesses are expanding the use of social media to market their brands more effectively and to build their online communities (Angela Andal-Ancion & Yip, 2013). This shows that understanding customers and what culture form they follow will add to the transformation and assist in the progress of an institution. Although most of the procedures in higher education were still conventional, university culture has historically been relatively traditional.

As globalisation has progressed, however, university culture has been progressively evolving (Lai, 2011). Digitalisation and the global pandemic have increased the presence of digital culture and altered the organisational culture in higher education. Expressing that technology, organisational culture in higher education has historically been quite traditional. However, as globalisation progressed, the culture of higher education progressively began to change, even while the bulk of the procedures remained conventional (Chijindu, 2018). Digitalisation and the global pandemic has made digital culture more pervasive and altered the organisational culture in higher education institutions can no longer go back to how they did things but would need to embrace and blend how things can be done presently and towards the future.

2.6 Analytical framework

Being able to analyse the data is very essential, therefore the way the data is characterised helps by giving meaning to the data. The framework for analysis serves as the foundation for the analysis of the gathered data. It provides a way to organise the data

which has been collected (Cameron, 2011). The theoretical and conceptual framework will be mentioned together with the analytical framework in this part.

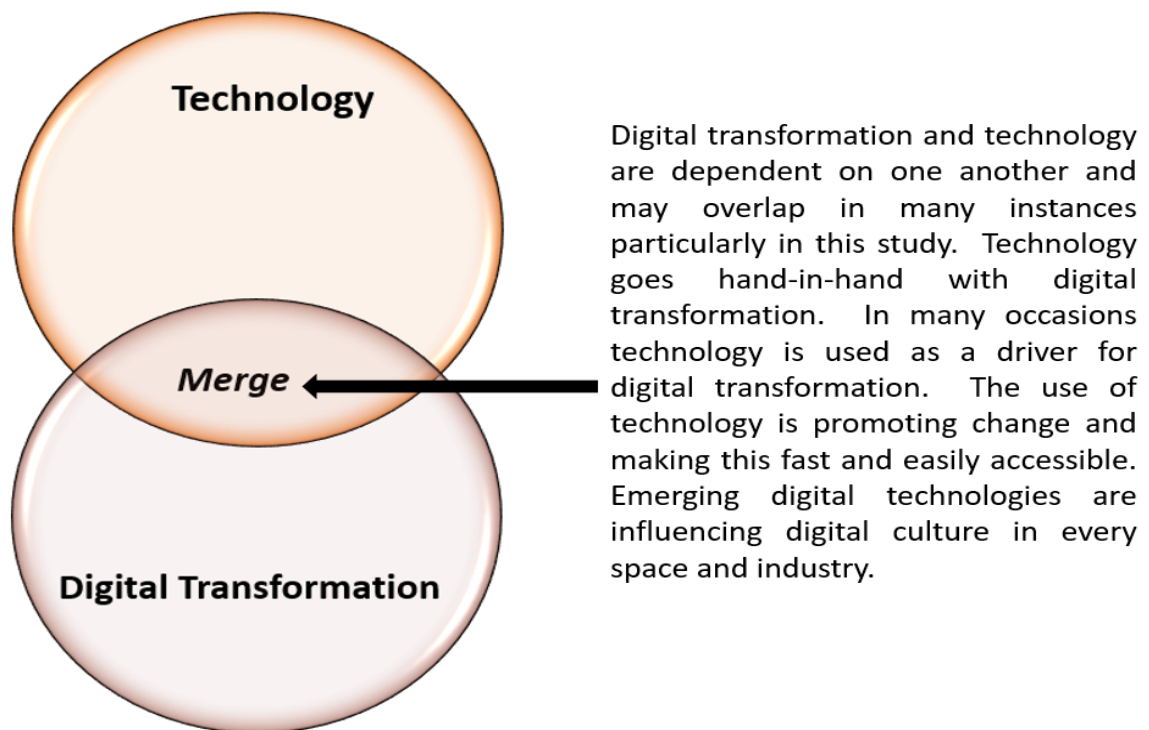
2.6.1 Theoretical framework

The theoretical framework in qualitative research is the background supporting evidence that has been compiled previously for this particular research. It is the guidelines that will assist in the types of questions that are asked and it also influences the method and analysis used for data collection. The theory is to demonstrate supportive evidence for the study (Testov, 2019). Digital transformation goes beyond only transferring paper records to computers and beyond merely implementing new technology to carry out corporate processes more quickly and effectively (Green, 2014). Digital transformation is a sequence of profound and coordinated adjustments in the workforce, culture, and technology that allow new operational and instructional models and redefine the business model, strategic goals, and value proposition of an institution. Digital transformation permeates every aspect of the university, necessitating inventive leadership at all levels and sophisticated cross-unit cooperation (Hanelt, Bohnsack, Marz, & Antunes Marante, 2021).

To achieve short, medium, and long-term goals, technological change in education can provide a number of advantages. It may assist Wits university in running successfully and economically, meeting students' expectations for a contemporary educational experience, and fostering digital literacy among educators, managers, and students (Imenda, 2014).

2.6.2 Conceptual framework

The study's conceptual framework explores technology as a force behind digital culture in higher education. The study's conceptual framework explores technology as a force behind digital culture in higher education (Ravitch & Riggan, 2016; Rocco & Plakhotnik, 2009). It explores the relationship between technology and digital transformation and how these two variables overlap each other and merge very well with each other to support the study of this research (Castro Benavides, Tamayo Arias, Arango Serna, Branch Bedoya, & Burgos, 2020). The evidence of these two variables merging promotes digital culture and influences the usage of digital culture in higher education. Technology is no longer a stand-alone thing; rather, it may be seen as a force behind higher education's digital culture.



Digital transformation and technology are dependent on one another and may overlap in many instances particularly in this study. Technology goes hand-in-hand with digital transformation. In many occasions technology is used as a driver for digital transformation. The use of technology is promoting change and making this fast and easily accessible. Emerging digital technologies are influencing digital culture in every space and industry.

Figure 2-1 The conceptual framework of the study

(Authors own)

Using the above illustration, higher education institutes will have to relook at their current framework and see how technology/digital transformation can promote change, for instance:

- Changes from traditional stakeholders to new stakeholders
 - New stakeholders (students, alumni, academics, administration, faculties, industries, researchers, societies)
 - Traditional stakeholders (students, academics, researchers)
- Emerging technologies
 - Mobile applications, social media, the internet of things, cloud computing, artificial intelligence, virtual reality, and blockchain)
- Core processes and operations
 - Administration, education (teaching and learning), and research.
- Student Learning Objectives:
 - This contains the particular learning outcomes that are anticipated to be attained via the use of technology and digital cultures, such as enhanced collaboration, critical thinking, and digital literacy.
- Faculty Development and Support:
 - The technical assistance, professional development opportunities, and mentorship that are offered to faculty to assist them in successfully integrating technology and digital culture into their classroom.
- Student Access and Equity:
 - This covers both the potential barriers that some students may face, such as a lack of access or digital literacy abilities, and how technology and digital culture can promote greater access to higher education, such as through online courses and digital resources.
- Evaluation and Assessment.
 - This component covers the techniques used to measure how well technology and digital culture support student learning and accomplishment. These techniques include formative and summative evaluations, learning analytics, and student feedback.

Technological usage and digital culture have become increasingly important in higher education, as it has the probability to enhance the learning experience for students, support new modes of teaching, and promote greater access to education. A conceptual framework for understanding the role of technology and digital culture in higher education might include the following Infrastructure and Resources (Brown-Jeffy & Cooper, 2011). This includes the technology infrastructure and resources that are accessible for assistance available towards teaching and learning, for example, LMSs, digital textbooks, online resources, and hardware and software. The university strategies and techniques need to align to deliver instruction in a digital environment, such as online or blended - courses, adaptive learning, and gamification.

By considering the points mentioned above a conceptual framework for understanding higher education and the position of digital culture and technology and how that can help institutions to develop and implement effective strategies for using these tools to enhance the learning experience and promote student success.

2.7 Conclusion of literature review

In conclusion, digital technologies are one of the most beneficial tools impacting businesses today, organisations today irrespective of size or industry, as well as those in the public sector and non-profits are being impacted by digital technologies, this process is referred to as digital transformation. Higher education institutions need to look at digitisation from a holistic perspective and apply digital thinking across everyone and everything that they do, such as how they operate with internal processes and source their core mission. The aim of this chapter has been achieved as it has looked into the literature review and the theoretical framework which has brought more understanding and theory into technology as a driver for digital culture in higher education. It has also

provided a background discussion about the topic and into the research questions addressed in the chapter one and added context and proposition for each of the research questions raised. Chapter 3 will look into the research methodology.

2.7.1 Proposition 1

From the literature review discussed above in the study, the first proposition spoke about technology and digital transformation. It defined these two concepts, showed similarities, and demonstrated how they interlink and merge regarding this particular study. Digital transformation and technology go hand in hand as for one to take place it is dependent on the other to be present. Technology/digital transformation are integral parts of higher education, especially for student experience through the emergence of digital culture. Emphasising the need for technology being a driver for digital culture in higher education.

2.7.2 Proposition 2

From the literature review delivered above in the study, the second proposition highlighted that higher education and how it could incorporate technology to cater to an already established digital culture. All the new applicants of higher education institutions are digitally literate as they have already used technology in their daily activities. The proposition also indicated that through digital transformation, traditional higher education institutions are being forced to relook into their market strategy. Demonstrating that technology as a driver for digital culture in higher education impacts the organisational culture, infrastructure, and operations of higher education institutions.

2.7.3 Proposition 3

From the literature review illustrated above in the study, the third proposition also defined digital culture, explained it in thorough detail, and illustrated its importance in the study.

Digital culture plays an especially important aspect in digital transformation. Providing an indication that technology can be a driver for digital culture in higher education. Complementing the notion that being in a fast-paced world, the ease of knowledge and access is essential for everyday life and making it possible to perform tasks in an agile manner and from anywhere.

2.8 Summary

In summary chapter 2 looked at the literature review and the observed theoretical framework which aided as a critique and analyse of the relevant scholarly literature about technological change and its influence on the institutional culture at the university of the Witwatersrand. The literature review assisted with supporting the theory for the topic selected for the study and helped with providing more clarity and understanding of the research. The literature review presented a framework for the study and allowed for it to be compared to other studies. In addition, the chapter gave a background discussion about the topic, looked into the research questions addressed in the previous chapter and I add context and a proposition for each question.

CHAPTER 3. RESEARCH METHODOLOGY

The research approach that will be used in this study is detailed in chapter 3, the place/location where the study will be conducted, the research design, the case site and the samples are thoroughly explained. The instrument that will be used for data collection, as well as the methods applied to preserve the validity of the study, are described. Ethical standards that will be followed will again be explained thoroughly. As Creswell explains that the researcher will select the study method in which they want to use in their research and this case qualitative method would suit this research paper (Cameron, 2011; Creswell, 2014). The researcher also decides on the type of study which they would like to use as part of their qualitative method.

3.1 Research approach

Cooper and Schindler wrote that qualitative research is mainly an investigative paradigm that is applied in order to acquire an understanding of fundamental explanations, motivations, and opinions (Cooper, Schindler, & Sun, 2006). This study will use a case study design and semi-structured interviews to collect data, using a qualitative research methodology. More information on them will be provided later in the chapter. This study will utilise a qualitative method to investigate how technological change and its influence on institutional culture at the University of the Witwatersrand.

A qualitative research approach will be adopted for this research, using a case study design strategy and a semi-structured schedule. The research approach that will be used in this research is qualitative. The reason is that it would allow for different observations and multiply insights from different perspectives (Sinclair, 2007). This method is used to interpret perspectives and expectations. Qualitative research aims to bring an understanding of the participant's frame of reference, thoughts, experiences, and beliefs

(Ishtiaq, 2019). As a result, different stakeholders or actors with distinct responsibilities will have varied experiences and interpretations of procedures

With reference to Creswell, the following features for qualitative research will be considered.

- **Qualitative research is seen as the major tool for data collecting and processing qualitative research:** In-person interviews or face-to-face interviews with the participants will be conducted by the researcher utilizing a semi-structured schedule.
- **Qualitative research uses inductive data analysis:** It is essential with qualitative research that the data collected and analysed by the researcher will be categories and used to build themes and correlate patterns.
- **Research that is qualitative is descriptive:** The researcher is curious about how the participants will make use of descriptive terms and words, how they bring meaning, and what understanding will be gained from them.

3.2 Research design

As Creswell puts it in terms of practice, the questions become broad and general so that the participants can construct the meaning of a situation (Ishtiaq, 2019). The research design that will be used in this research is to ask with the intent that the participants will answer honestly, validly, objectively, and with accuracy. This assisted the research with the collection of the data, analysing the data, and producing informative findings with the data. (Creswell, 2014; Ishtiaq, 2019). There are three main questions raised in this research and those questions shaped and guided the research investigation. The university of the Witwatersrand was used as the case study.

3.3 Data collection methods

Data collecting is one of the particular research techniques employed. It demonstrates the procedures that will be followed for data collection, analysis, and interpretation. Since this study used a qualitative approach and allows for individual opinions, beliefs, and experiences. Interviews will be conducted using a semi-structured interview schedule to acquire the data, these will be done face-face (COVID permitting in person) or will use Microsoft Teams or other technologies to conduct these interviews. The interview schedule will be used as a guideline process and participants will be informed as to ethical considerations. This approach involves direct, in-person interactions between the researcher and the study participants, allowing for in-depth exploration and understanding of the participants' perspectives, experiences, and insights.

The benefit of this method for collecting data is that the researcher does not have to directly observe the participants but ask for their input and opinions (Ishtiaq, 2019). The direct interaction between the researcher and the participants allowed the researcher to capture rich and nuanced data, including non-verbal gestures, emotions, and context, which are be valuable for understanding the participants' experiences. Also face-to-face interviews enable the establishment of trust between the researcher and participants, encouraging open and honest responses. Participants are non-biased and can also provide historical information or any other additional information (Cooper et al, 2007). The challenge for collecting data using the interview method is that some participants may struggle to articulate that their information is obtained in a systematic manner rather than in a natural environment, and it is correct.

Thematic analysis is a widely used qualitative research method for identifying, analysing, and reporting themes. That is reason shy the research report used thematic analysis by collecting data from the semi-structured interviews. The goal of thematic analysis has been to discover recurring themes, concepts, or patterns in the data that can help to gain a deeper understanding of the case study which is being investigated (Clarke, Braun, & Hayfield, 2015).

3.4 Population sample

The following section will discuss the population and sample for the study. The population and sample size for the study have to be determined so that the collection of data is not overlapping and in order to also create a controlled and monitored research. As much as the population is limited and particular, it still needs to be large enough to gather data and interpret the results.

3.4.1 POPULATION

The study's sample size can be somewhat small and narrow. As the population is only limited to a group of individuals who are at a higher education institution and those whose performance activities include the usage of technology (Kuckartz, 2016). The population for this study will consist of numerous participants who are part of the higher education community, these will be academics, operational/administrators, and students. As much as the population is limited and certain, it still needs to be large enough to gather data and interpret the results. The population variety is open to diversity, making use of participants in the space of digital culture in higher education institutions.

3.4.2 Sample

An incomplete representation of the population that a researcher is interested in researching is called a sample (Ishtiaq, 2019). Sampling is a useful technique for gathering information from a big population. A sample contains a small piece of something big. Regarding research, a sample is a small grouping of data that is part of a large collection of data. The researcher will focus on participants who have maintained more than a year at Wits university and who use some form of technology (Cameron, 2011). The sampling technique used is purposive, Using their knowledge, the researcher

chooses a sample that will be most beneficial to the research's objectives (Kivunja, 2018). The participants were chosen to know how to use a technological device and use it frequently in their daily life. The characteristics of the participants was that of different background in the university, but they had some knowledge of some of the university systems and have used some of the university systems.

The sample size chosen, because often it is not feasible or practical to survey or interview the entire university population/community. Instead, it is better approachable to use a sample to draw conclusions and make inferences about the broader population of the university. The intended sample size is 15 participants, which is composed of participants that engage with technology.

3.5 Research instrument

The research instrument aims to assist with the manner of gathering good data. With qualitative research, the focus on gathering data is via interviews and group discussions (Ishtiaq, 2019). In this study, a semi-structured interview schedule will be utilised. Semi-structured interview/questionnaire permits a change of the order in which the questions are posed and also allows for additional questions to arise if it seems necessary (Kuckartz et al., 2016). A semi-structured interview has been chosen because it entails a number of benefits, including the capacity to lessen the likelihood of researcher bias. After all, questions are given consistently. As stated by Rowley, a semi-structured allows a researcher to make contact with and gather responses from a relatively large number of people which helps in increasing the amount of data a researcher has at their disposal and it's utilisation thereof (Rowley, 2014). Semi-structured interviews help with aligning the theme of the questions asked and assist with keeping the discussion focused on the theme of the study which is that technology is a driver of digital culture in higher education (Mhlanga et al., 2022)

3.6 Procedure for data collection

A method for gathering data or one connected to that study paradigm is defined by Maylawati as being a complete structure or system that informs the research and practice in a specific way (Maylawati et al., 2020) . Since this study is qualitative, an interpretive approach will be undertaken whereby participants are given a questionnaire to complete which will highlight specific concepts, ideas, propositions, and submissions. In this section, the matter in which the data will be collected will be discussed.

As this is a qualitative study, the data that will be collected will be in the form of text and not numbers, as with quantitative research. The researcher will try not to generalise the results and each individual participant will be encouraged to be objectively truthful in their responses about their views in the semi-structured interview in order to obtain as close to accurate data as possible. As indicated previously the data collection will be done by conducting interviews that will be face-face using teams or COVID permitting in person. The interview schedule will be used as a guideline process and participants will be informed as to ethical considerations.

3.7 Data analysis strategies and interpretation

Cohen describes qualitative data analysis as the procedure of making sense of the research participants' views and opinions of situations, and finding patterns, themes, categories, and similarities from the data collected (Cohen, Manion, & Morrison, 2002). Qualitative data analysis delivers declarations about associations amongst classes of data (Marshall & Rossman, 1999). Qualitative research methods according to Marshall assist the researcher to search for meaning from descriptions of specific events or circumstances, as this particular approach and analysis are appropriate for this study, as the question of technology as a driver for digital culture in higher education is of a unique and specific phenomenon. The information on how analysis of this data is going to take place will be down in a series of phases. Giving a roadmap and a descriptive clear

understanding of the data analysis and interpretation process. The first phase will be reporting on the number of replies received by the interviews. The second phase will be the feedback from the interviews. Those would be the non-responsive and those participants who have responded. The third phase will be the analysis state, whereby all responded data is analysed and categorized. Then finally the data will be interpreted.

- Phase 1: Generating and generating gathered data.
- Phase 2: Codes, themes, and forming patterns for analysing the data.
- Phase 3: Produce and report data.

A table of four columns will be created, the first section which will consist of the research questions and sub-questions from the questionnaire, the second section will consist of the participant's responses; the third column will consist of category codes (themes) and lastly, the fourth column will consist of higher-level codes. Participants' selected replies will be assembled into categories and repeated themes and subjects will be identified. For example, marking better communication and increased productivity would both be given the code Operational inefficiency (María et al., 2020). The codes will then be used to identify important themes or higher-level codes which will then be analysed. The interpretation can be completed manually with a simple word processor software program which could be used for qualitative data analysis (Amaral et al., 2002).

3.8 Limitations and challenges of study

The problems of this research study that the researcher cannot control or anticipate are its limits. They are also the set borders that the researcher has created to not go beyond their research topic(Ishtiaq, 2019). Limitations and challenges predicted for the study may assist the researcher to minimize and action those challenges.

Some challenges predicted are:

- **Sample:** The sample size proposed may prove to be insufficient during the data analysis phase of the study, as there is no way of knowing before that stage, specifically the required appropriate sample.
- **Accuracy of responses:** Not all participants may provide an accurate or truthful reflection of their views and convictions.
- **Researcher bias:** As this is a qualitative study, the interpretation of the data and conclusion thereof may be subject to researcher bias.
- **Data:** because of the confidentiality policy, some information/data required to accurately answer the research question may be unobtainable.

3.9 Quality assurance

Make note that assessing the quality of research is vital if its conclusions are to be used in a real-world setting, they write how dissimilar to quantitative research, which uses mathematical methods for proving the validity and reliability of research results (Rowley, 2014).

The following will assist with discussing quality assurance further.

3.9.1 Transferability

The term transferability in this qualitative study denotes the extent to which the research outcomes can be implemented and relevant to contexts other than the specific study population. Information on the ensuing matters will be provided from the beginning; The individuals participating in this research, where it is located, have any limitations in the type of respondents who provided the data; the number of people involved in the information-gathering, the data collection methods and instruments that were used, the

amount and extent of the data collection session, and the period when the data was collected. This research will make use of purposive sampling, therefore making the study population exclusive in order to gain insight into the research questions.

3.9.2 Credibility

Quality assurance and credibility are critical aspects of ensuring the trustworthiness and rigor of qualitative research about technological changes and its influence on institutional culture at Wits university. In the development of an initial awareness of the values of the participating higher education institution, the first data collection process takes place. This research has conducted semi-structured interviews with credible participants and will ensure that their role in the study is non-biased.

3.9.3 Confirmability

The notion of dependability within qualitative research pertains to the stability and consistency of research outcomes as time passes, as well as across various research. Using a data-oriented approach and presenting how the data gathered led to the establishment of the suggestions that will be gathered and processed during the development of this research. Confirmability refers to the extent to which the research findings are based on the data and the researchers' interpretations, rather than being biased or influenced by their preconceptions. The researcher will ensure that the finding of the study will represent the true experiences and opinions of the participants.

3.9.4 Dependability

This will allow readers of the study to have a detailed comprehension of the research methods and their efficiency, the writing will include units dedicated to them. The research design and its execution, reciting that which was identified, proposed, and performed on

a premeditated level, the collection of data components describing workings of what was performed in the study, and evaluation of the research looking at the efficiency of the methods of examination which were assumed.

3.10 Ethical considerations

In terms of ethical clearance for this study, the main ethical principles of research are **consent**, **autonomy**, and **permission**, these will be further elaborated upon below (Creswell, 2014):

- **Consent:** All the participants in this study will voluntarily agree to take part in the proposed research/the respondents will not be coerced into doing the questionnaire. Relevant consent will be acquired from the relevant individuals from within the institution identified, as this would be a case study. The participants would be made aware of the sort of information the researcher is seeking, the rationale for its requirement, the aim of the study, and the style in which the participants are expected to offer feedback.
- **Autonomy:** The participants would be made aware of the kind of data the researcher is seeking, the rationale for its requirement, the aim of the study, and the manner in which they should submit their response and complete autonomy and it will be up to them whether they decide to finish with the study or not.
- **Permission:** Before the study can commence, permission was obtained from the university of the Witwatersrand where the case study has been conducted. An ethics clearance permission will be granted and also permission from the university's registrar's office.

Other ethical principles pertaining to this study are:

- **Confidentiality:** The information/data shared by the participants with the researcher will not be shared with any other parties. The research report will provide a succinct explanation that ensures the confidentiality of all materials.
- **Anonymity:** All the respondents can choose to remain anonymous. The researcher will formally explain or draft a short description clarifying anonymity (Cameron, 2011).
- **Privacy:** The semi-structured interviews were conducted in a confidential way, following the appropriate procedures.

3.11 Ethical considerations

Activity/Description	Timeline
First submission: <ul style="list-style-type: none"> • Research Proposal and research tool • Ethical Clearance and accompanying documentation 	May 2022
Present Proposal	May 2022
Title tabled for approval	June 2022
Ethics application submitted to the ethics committee	June 2022
Data collection, analysis, and write up	July 2023 - 2023
Completion of the first final draft of the project report	January 2023
Final editing and electronic submission to the faculty office	February 2023
Examination process is complete, submission of final documentation	June 2023

Table 3-1.11 Ethical Considerations

The above information is taken from the shared date of the MMDB course coordinator.

3.12 Summary

The research technique and its application to the study were discussed in Chapter 3. It also concentrated on the study's sampling strategy and research methodology. The chapter also included information about the study's approach to gathering data. Additionally, it goes into great length on the research techniques employed before presenting the study's limitations. The fact that the study is an experimental is one of the main justifications for performing a qualitative investigation. This implies that the research is ongoing and that new findings can be drawn from it by more researchers.

Consistency Table: Research Questions, Proposition, Data Collection, and Data Analysis

RQ	State Research Question	Proposition	State Proposition	Data Collection Details	Data Analysis Method
1.	In what way can technology influence institutional culture in higher education?	1. Digital transformation and technology	Technology is also a driving force for digital transformation.	Interviews and Literature	Qualitative Themes and Codes
2.	Why does technology influence institutional culture in higher education?	2. Higher Education	Technology/digital transformation is shifting the culture to higher education.	Interviews and Literature	Qualitative Themes and Codes
3.	What role does technology have in digital culture within higher education?	3. Digital Culture	Technology promotes digital culture in higher education	Interviews and Literature	Qualitative Themes and Codes

Table 3-2–Research Question

CHAPTER 4. Presentations of Findings

4.1 Introduction

Chapter 4 examines the study's quantitative results and the outcomes and analysis of the qualitative data, interview compilation, and quantitative findings. In chapter three, the paper highlighted that it would be using a qualitative methodology. Face-to-face interviews were had with participants and in this section, the presentation and findings from the interview will be presented. The interview process aims to answer the main questions raised by this research paper.

4.2 Demographic

The participants that were interviewed for this research were all part of the Wits community. There was a mixture of representatives, although all participant information is anonymous, there was a representative from both female and male gender. There were young and old people, there was also a representative from first-year students to postgraduate students. There was representation from Wits academic and administrative staff members from diverse backgrounds and those who have different uses for technology and university systems.

4.3 Technological influence on institutional culture in higher education.

4.3.1 Technological influence on institutional culture at the university of the Witwatersrand

Technology has an impact on university digital cultures. Social media, online learning platforms, and collaborative tools such as social media can change the way students learn and engage with technology. It also has an impact on how academics teach and conduct research. Online learning platforms can make it easier for students to learn by making it possible to do distance learning. Social media can also improve communication and collaboration between staff and students” (Participant 1). “Technology can also transform the way universities work by improving administrative processes and enhancing research capabilities and collaborations”. It is important to recognize that technology can also have negative effects on the digital culture of universities. This includes increasing distractions and reducing face-to-face interactions. These are both detrimental to the student experience.

“Technology could impact how people interact, communicate, and access information. This gives it the ability to modify or influence culture.” (Participant 4). As technology develops and becomes more common. “Technology could open up new avenues to connect and exchange ideas and new channels to speak and express oneself. Participant 3 stated that technology may change culture by making certain activities and information easier to access. Participant 15 stated that technology allows us to interact. Technology has a significant impact on our lives. All we need is at our fingertips.”

“The internet allows individuals to communicate and access information anywhere on the planet. This has led to the creation of new communities and the global exchange of knowledge. You don’t has to be present in class. You can go wherever you want and still connect with other students and lecturers. Digital technology is key to online learning. “Digital technology has been a crucial tool in achieving better education after the COVID-19 Pandemic,” (Participant 6-). It allowed the university to facilitate exams and made study resources more easily accessible” (Participant 13).

Wits may adopt a digital culture through technology. Wits may give students and academics access to digital resources and tools that can be used for communication, collaboration, and learning. Online meeting platforms, course administration systems, as well as digital library resources are just a few examples. “Technology can also promote digital culture by giving students an opportunity to acquire digital literacy, and other skills that are highly desired in the modern economy” (Participant 9).

“Technology has the potential to change culture by opening new avenues for artistic expression. “Technology has made it possible for people in previously impossible ways to create and distribute their content through digital platforms and tools such as social networking and music production software” (Participant 5) “I believe technology has promoted freedom of expression regardless of race, age, or education. Twitter has shown repeatedly that it is a place where people can express themselves without restrictions. “Technology could also alter culture by changing how people study, work and play. Technology integration has changed the way we learn and work, and therefore our teaching strategies and methods have changed. (Participant 7).

“For example, the increasing use of tablets, smartphones, and computers in classrooms has increased digital resource utilization and student-centered learning. It would be wonderful to integrate other social platforms into higher educational” (Participant 8). “To link Ulwazi to social events, clubs, and societies. Perhaps that would help students group themselves with like-minded people.” (Participant 10). “Back in the day, different societies were around. They would tell people about society. But now that covid has been introduced, people have to do extra research. This participant talked about how the world has changed and where distant people are now.” (Participant 2).

Research Question 1 - Responses

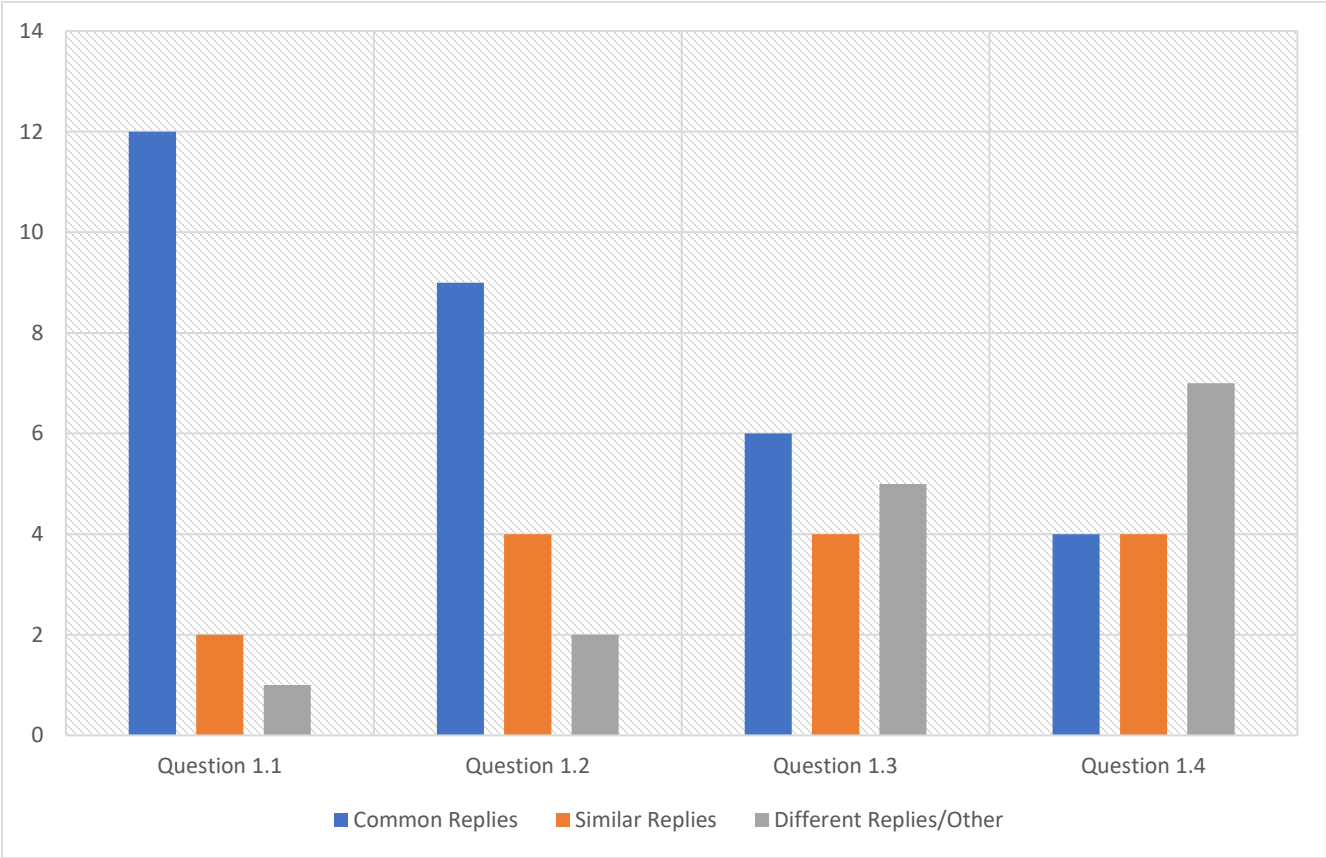


Figure 4-1 Participant Response

For the first research question asked via semi-structured interview "among the participants that were asked, a large majority of the participants provided common answers. The other participants provided similar answers. Then there are some participants who gave different responses from the selected group.

The graph above groups the respondents' answers".

4.4 Technology being a major force behind the digital culture at the university of the Witwatersrand.

4.4.1 Technology promoting digital culture.

“Yes, technology has a big impact on how universities’ digital cultures are developed. It makes it possible the usage of certain technologies that have become essential to the academic experience, such as communication tools, virtual classrooms, and resources. Large-scale data analysis is made possible by technology as well, and this data may be used to enhance teaching and learning results. Additionally, thanks to online courses and open access efforts, Wits may now reach a larger audience” (Participant 14).

“Higher education is embracing a digital culture that describes how technology is used in and outside the classroom/lecturer rooms and also how students and staff communicate with one another and the institution. Using technology in the classroom, online learning, and using social platforms and other digital platforms for communication and collaboration are all examples of this” (Participant 15). “The use of technology to provide a more individualized and interactive learning experience is one part of digital culture in higher education. For instance, learning management systems (LMS) are core systems that are used by universities to give students access to course materials and resources, as well as to allow them to take part in online conversations and submit assignments” (Participant 14).

“Using social media and other technologies to link students and lecturers and foster a sense of community inside the institution is another facet of digital culture in higher education” (Participant 5). “This might involve sharing knowledge, working on projects together, and offering support through social media sites like Facebook, Twitter, and Instagram. Since the pandemic, most things have been digitalized. You do not need to

travel to have a group discussion with fellow students or to consult with lectures. It encourages collaboration. Wits university and its usage of technology is fostering a more adaptable and dynamic learning environment and opening up new avenues for student and teacher interaction” (Participant 7).

“All student communication is now pushed via emails. There are fewer posters or pamphlets being handed out on campus. All student assignment results, and other related things are all online. Even the corrections that are relevant to assignments want to be seen are online” (Participant 10). “Because of COVID, the majority of everything that people do has forced everything to be online even though some lecturers are still on campus it was nice when they were online. It has also influenced those students who are afraid of speaking in front of people, technology had made it easy to engage with other students or do presentations in class” (Participant 8).

“By incorporating more outside elements into the university. So, for example, as a student, printing is difficult. If you did not put money on the Kudu card, then you cannot print. Whereas if he/she has their Wits Kudu card scanned and uploaded on his/her phone then they can print with the Kudu card from my phone and if there is an insufficient amount, then a person can link their Kudu card with their banking card. So, they can move money and buy, print with their student card which would be virtual on his or her phone” (Participant 2).

Research Question 2 - Responses

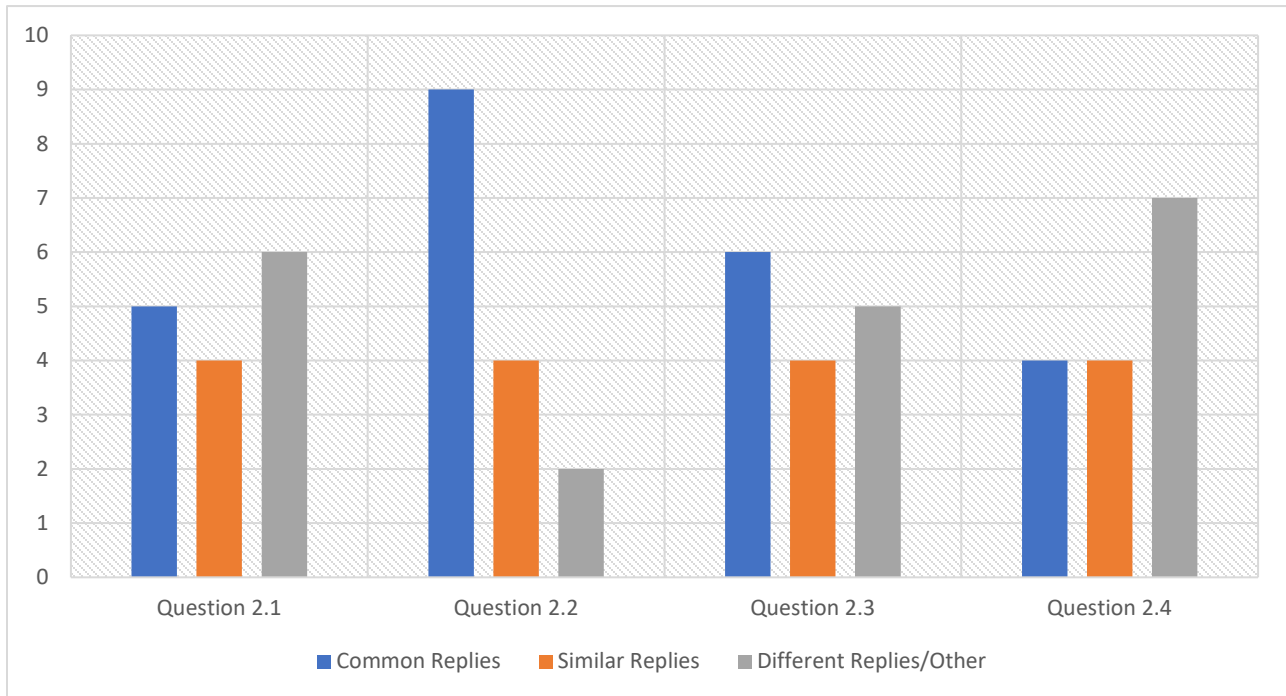


Figure 4-2 Participant Response

For the second research question which was asked via semi-structured interview was” among the participants that were asked, a large majority of the participants provided common answers. The other participants provided similar answers. Then there are some participants who gave different responses from the selected group.

The graph above groups the respondents’ answers”.

4.5 Technology and its role in digital culture within higher education.

4.5.1 Technology's role in a digital culture in higher education, specifically at Wits University?

“Since the pandemic, most things have been digitalised. You do not need to travel to have a group discussion with fellow students or to consult with lectures. It encourages collaboration. I can share an experience where, if you have a fear of speaking in front of people, technology had made it easy to engage with other students or do presentations in class” (Participant 11).

Technology influences the university's digital culture “yes, by giving Wits staff and students access to technology and information knowledgebase that can be utilised to promote knowledge, collaboration, and communication, technology may help the university adopt a digital culture. This can involve things like online meeting platforms, course administration systems, and digital library materials” (Participant 1). “By giving students access to digital materials and giving them chances to communicate and share knowledge with their peers, technology may also contribute to making learning more dynamic and interesting. Technology may also encourage digital culture by giving students and all staff members the chance to acquire digital literacy and other skills that are in great demand in the modern industry” (Participant 14).

“Wits students have googled Microsoft cloud Where they could upload and store all their schoolwork on the cloud. Sometimes when they struggle to email or upload their assignments and essays, they then can share a link and give course administrators and lecturers access to their assignments and essays. This makes it easy for file, sharing and online working in an agile manner. It has influenced people, especially students, to work online” (Participant 13).

“We would like to see technology influence digital culture at Wits by assisting students to prepare for the future or workplace because they will be familiar with how technology works in terms of online meetings and engaging with colleagues” (Participant 3). “It is strongly agreeable that technology influences digital culture at Wits as some students do not need to travel or relocate to get an education or get certain skills. Students can engage or communicate from different locations. Resources are easily accessible” (Participant 5).

4.5.2 Most used technology and its impact on digital culture at Wits University

“Digital culture is already there and people using it every day are just promoting it and making it easier for everyone to depend on it. A number of academic systems “technology” has made students and academics very dependent on them” (Participant 9). “Take, for instance, using Ulwazi if it accidentally crashed students could not hand in assignments, do exams or even see their marks. Learning management application is the biggest technology used in higher education. That is if you can refer to application as technology” (Participant 8).

4.5.3 The impact that technology has on digital culture at Wits University.

Technology plays an important role in shaping and encouraging digital culture within universities. It can support and facilitate many aspects of digital cultures, such as:

- Learning: Technology gives students and faculty access to information and technology knowledgebase (resources). These resources can be used to aid learning, such as online course management systems and virtual classrooms.
- Collaboration: Students and faculty can collaborate and share information in real-time, no matter where they are located. You can do this through online discussion boards and virtual meeting platforms (Participants 3 & 9).

- Communication: Students and faculty can communicate using technology. For example, through email, chats, and social media platforms (Participants 11 & 14).
- Digital literacy and skill development: Students are exposed to technology and can use these tools to help them develop digital literacy and skills which are highly valued by today's workforce. (Participants 13 & 2).
- Research: Technology has made it possible to conduct new types of research and has made it easier for faculty, undergraduates, and postgraduates to retrieve and distribute research data and publications (Participants 3 & 12).

“Overall technology plays a key part in shaping the digital culture at universities by providing students with access to technology, research, and information management, that could be used to facilitate education, collaboration, communication, and opportunities for digital literacy, skills development, as well as facilitating collaboration. It could also add an innovative, creative, and fun element to online/hybrid learning and working” (Participant).

Research Question 3 – Responses

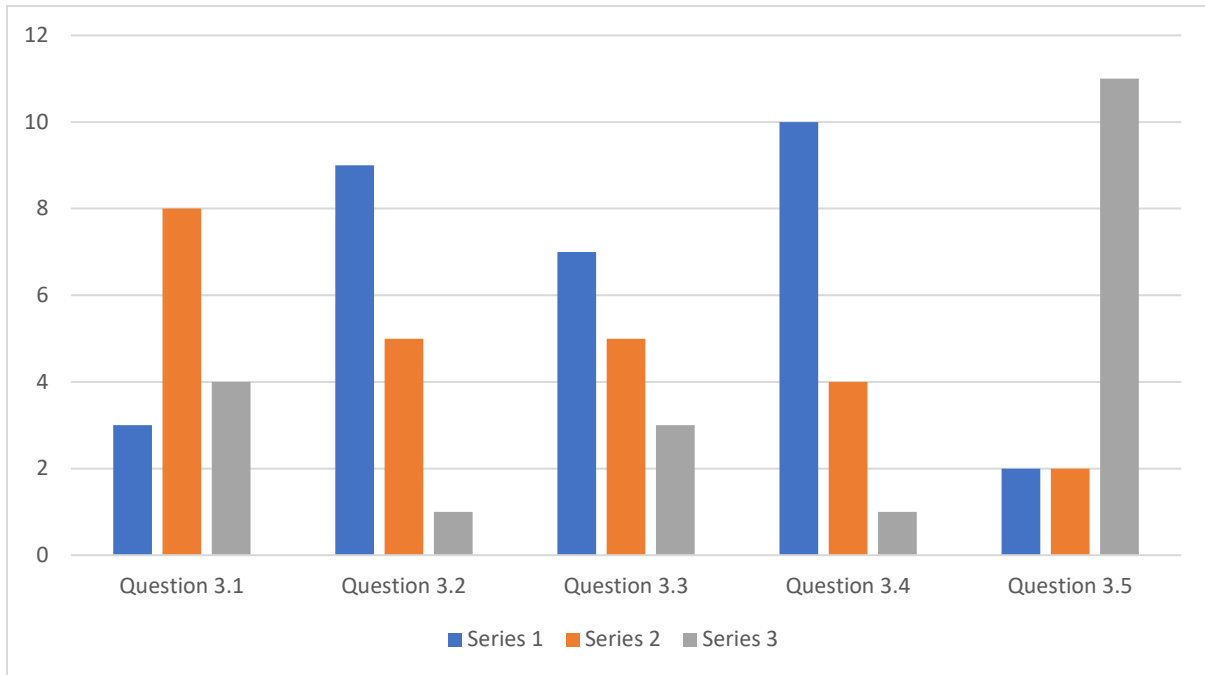


Figure 4-3 Participant Response

For the second research question which was asked was” among the participants that were asked, a large majority of the participants provided common answers. The other participants provided similar answers. Then the are some participants who gave different responses from the selected group.

The graph above groups the respondents’ answers”.

4.6 Participant — Further insights.

“Technology is a major force behind the digital culture at Wits. An example will be the use of online resources which a person can access from wherever they are and the use of smart boards (smart classrooms) and discussion boards. With the influence and reliance on technology, students can easily access resources or revert to a recorded lecture if they are struggling with their work while studying. Technology helps to store information/data and can be easily accessible” (Participant 13).

“In addition, the use of breakaway spaces and discussion boards has allowed for more interaction among students and made it easier for student participation in class. This is why hybrid classes are essential. Students have access to classrooms from wherever they are (Flexibility) and it still gives equal opportunity to those who still want to attend in person”. (Participant 15)

“Going online reduces costs by providing an immediate learning environment, improving evaluations, and increasing participation. Increasing the instructional information’s dissemination around the campus” (Participant 4).

“The other problem is that with everything going online, there are many people staff, and students who struggle to use digital devices and have not used some of the online applications. For example, there are students who have not received any form of laptop training and are expected to be using online to attend class and to upload assignments and other academic work. There is a big digital divide which is seen more in universities, where university executives think that everyone can use a computer or has access to a computer. Some students come from underprivileged backgrounds and might have never used a computer before” (Participant 6). “During the Covid-19 restrictions, all Wits

students who did not have laptops were sent laptops and given free data for them to access their classes online. A number of students have never used a laptop and for the first years, they had not used any LMS and thus did not know what Ulwazi was and how to use it. Some students when they went home, they received the devices, they were given data, but the infrastructure was not conducive for them to access their classes” (Participant 8). “Electricity issues and network issues were also contributing factors for the digital divide and could have contributed to the challenges of accessing classes and doing everything online. The academics also suffered, as some academics prefer to do things manually and are paper based. They had been teaching a physical of these years and now they are forced to go online whereby they still struggle with uploading class documentation and presenting online” (Participant 12).

4.7 Summary

“Technological innovation and the notion of digital change are imperative to Africa’s future. This will shape and develop the continent in ways that are almost impossible to anticipate” (Cilliers, 2021). This chapter looked at gathering information from the participants identified. Face-to-Face interviews were had for data collection. All the notes and data collected were transcribed in this chapter. The main questions raised in the research were directly answered by the response given by participants. With the response provided, it is clear that there is a role for technology in digital culture, that technology influences institutional culture and that technology plays a significant role in digital culture and how that influences culture at higher education and at the university of the Witwatersrand.

CHAPTER 5. Discussion of Findings

5.1 Introduction

In the present world, some see digital technology as a way of life that establishes emerging options for learning at any moment that is easily accessible and continuous learning (Bilyalova, Salimova, & Zelenina, 2020). This chapter is built based on the reference from chapter 4. Chapter 5 will look into the finding from the data collected and will be discussed and interpreted. All the themes and questions asked will be analysed and merged to bring forth clarity in the data collected.

5.2 Technology influence on institutional culture in higher education.

5.2.1 Technological influence on institutional culture at the university of the Witwatersrand

Technology could change how people communicate, interact, and access information. This gives it the ability to influence culture (Bilyalova et al., 2020). As technology develops and becomes more common, it may open new avenues for exchanging ideas and communicating with oneself.

One of the most important ways technologies can alter culture is to make certain activities and information more accessible. The internet, for example, has allowed people to communicate and get information from any location on the planet. This has led to the development of new communities and the global exchange of knowledge. Technology can also open up new avenues of artistic expression, which can alter culture. People can

now create and distribute their content using digital tools such as social networking, music and video editing software, and other digital platforms.

Technology can also change culture through changing how people learn, work, and play. Technology integration has led to changes in teaching strategies, learning methods, and work habits (Blikstad-Balas & Klette, 2020). The increasing use of tablets, smartphones, and computers in schools has led to increased digital resource utilization and student-centred learning.

5.3 Technology being a major force behind the digital culture at the university of the Witwatersrand.

5.3.1 Technology promoting digital culture.

Higher education embraces a growing digital culture. This describes how technology integrates processes for teaching and learning and shows how staff and students communicate with each other and the institution.

One part of the digital culture in higher education is to use digital tools to create a more personalized and interactive learning experience. For example, LMSs are used by universities across the country to provide content to students as well as to allow them to participate in online discussions and submit assignments (Olofsson & Lindberg, 2012).

Another aspect of digital culture is the use of online platforms and other technologies to connect learners and lecturers and foster a sense of community within an institution. This could include sharing knowledge, working together on projects, and offering support via digital platforms such as TikTok and Twitter.

The overall effect of technology in higher education is to foster a more flexible and dynamic learning environment and open up new avenues for teacher and student interaction (de Souza Lopes & da Silva Vieira, 2020) (de Souza Lopes & da Silva Vieira 2020).

5.4 Technology and its role in digital culture within higher education.

5.4.1 Technology's role in a digital culture in higher education, specifically at the university of the Witwatersrand.

Certainly, technology can have a significant impact on the digital culture of university students. Technology can have a significant impact on the way students learn and engage with technology. This includes how lecturers teach and conduct research. For example, remote knowledge sharing can increase access to education. Social media can improve communication and collaboration between faculty and students (Ohlman, 1971). Technology can also improve the efficiency of universities by enhancing administrative procedures, enhancing research capabilities, and creating partnerships (Theurer, Tumasjan, & Welp, 2018). It is important to keep in mind that technology can also have negative consequences for university digital cultures. For example, increasing distractions or decreasing face-to-face contact, both of which are vital for the learning environment.

5.4.2 Most used technology and its impact on digital culture at the University of the Witwatersrand.

Most commonly, the technology used in digital culture at universities is a combination of LMS such as Canvas, Moodle, and Blackboard, and collaboration tools like Microsoft Teams, Skype, and Cisco connect. These technologies are useful for scheduling meetups and online learning (Rapanta, Botturi, Goodyear, Guàrdia, & Koole, 2021). Universities may also use Turnitin to detect plagiarism, as well as Google Suite for Education and Microsoft Office 365 for document sharing and productivity (Knox, 2014). WhatsApp, Teams, and TikTok are all popular digital platforms for sharing content and communication between students and lecturers.

5.4.3 The impact that technology has on digital culture at the university of the Witwatersrand.

Technology may help promote a digital culture within higher education. Technology can facilitate new learning, communication, and collaboration by giving students and lecturers access to digital tools (Santos, Batista, & Marques, 2019). One way technology can encourage a digital culture in higher education (LMS) is to give students access to online courses, learning management systems, and materials. This will allow students to be more flexible and accessible, as well as the ability to learn at their own pace (Lebedeva et al., 2022).

Video conferencing and other technologies can be used to facilitate communication between students and lecturers. Even though lecturers and students may be physically separated, this can help to foster a sense of community and connection within the institution (Khan, Kambris, & Alfalahi, 2022). Technology can encourage a digital culture within higher education by offering students personalized learning opportunities. By using data analytics and machine learning, institutions can create tailored learning experiences to meet the needs and interests of students (Collins, 2015).

Technology can also be used to enhance the learning experience by allowing students access to online resources such as journals, books, and databases. Technology has the potential to create a digital culture within higher education. It can give students more personalised, interactive, and engaging learning opportunities and encourage a sense of community between students and teachers (Huang et al., 2021).

A lack of technology access is a key obstacle to poverty reduction (Garcez, Silva, & Franco, 2022). Although it is less prevalent than initially thought, the digital gap at universities remains. Many students might not have the technology they need outside the classroom. The digital divide is particularly affecting students from low-income families and those living in remote areas that may have an outdated technology infrastructure. Although universities offer internet and computer access, many find it difficult for students from low-income households to be satisfied.

There are many people with privilege around the globe. This divide can also be seen with digital access. There is inequity in access to information and ICT resources. This includes computers, internet access, and mobile phones. (Brooks & McCormack, 2020). Many studies have been done in South Africa on the digital gap and the disparity in access. This issue is important for many reasons. First, people have different needs when it comes to technology and the internet. It is important to ensure that people have access to the internet. However, just giving them a computer will not guarantee they will use it correctly. The technology may be in the home, but external factors can affect the proper functioning of the technologies. This can also be caused by poor infrastructure, load shedding, and other external factors.

5.5 Summary

Most of the participants indicated and agreed that presently people rely heavily on technology to perform tasks and to reunite with people who are distant from them. Technology allows people to create bonds, simplify tasks, and able to speed up processes. Processes and people are relying more and more on technology, but they are all dependent on each other to work and assist each other. This chapter has reviewed and analyse the data collected. Themes were acknowledged and all responses from the participants have been categorized accordingly. The themes were addressed and answered. The three main questions were converted into statements as these were no longer questions but were now statements as the data showed that technological change has an influence on institutional culture at the university of Witwatersrand.

CHAPTER 6. Conclusion, Limitations, and Recommendations

6.1 Introduction

Today's university campuses are more technologically savvy than ever. Students may access information whenever they want and wherever they are with the use of smartphones and computers. Students have access to tools and services on the internet that improve their educational experiences. (A. W. Bates, 2015). This chapter summarises the research. It considers the finding made by the research and concludes by linking the purpose of the research outlined in chapter 1 to what the research achieved. Based on the conclusions, this chapter will show that technological change and its influence on institutional culture at the university of Witwatersrand. Some limitations and recommendations are highlighted and thoroughly mentioned below.

6.2 Technology can influence digital culture in higher education

6.2.1 Technological influence on institutional culture at the university of the Witwatersrand

Technology may have a significant impact on the digital culture in higher education. Technology has made education more accessible and flexible. Online learning environments and virtual classrooms allow students to access their learning materials and take lessons from anywhere, anytime. The university has now collaborated through technology.

Technology has also affected how students and instructors communicate, and collaborate, as well as the exchange of information. This has led to student-centred learning and made learning more collaborative. Technological change has had a profound impact on the overall student experience at the university of the Witwatersrand. Students now have access to digital learning resources, online libraries, and research databases. This will enhance the student's ability to explore diverse subjects and deepen their understanding. Virtual classrooms and online discussion forums provide opportunities for students to connect with peers and engage in collaborative learning beyond the confines of physical classrooms. Additionally, technology has enabled universities to offer distance learning programs. This assists as it caters to students who may not have the means to attend campus-based programs. These advancements have contributed to a more inclusive institutional culture that values diversity and accessibility.

The way research is conducted and distributed has been significantly altered by technology. Digital technologies have made it possible for researchers to quickly and easily analyse large amounts of data, leading to new insights and findings (Kopp et al., 2019). Digital tools have had an impact on higher education to create innovative possibilities in teaching, learning, and research.

Technological advancements have also revolutionised the research landscape within the university. Researchers have access to vast amounts of data, sophisticated analysis tools, and collaborative platforms. This has not only facilitated groundbreaking discoveries, but has also fostered interdisciplinary collaboration (Kane, 2019). The integration of technology in research processes has led to a more inclusive and dynamic institutional culture, where academics from different disciplines can engage in meaningful knowledge exchange and innovation.

6.3 Technology being a major force behind the digital culture at the university of the Witwatersrand

Technological change has significantly transformed the way teaching is conducted at the university. Traditional classroom setups now incorporate digital tools and platforms that enhance the learning experience (Zaki, 2019). Online learning management systems have revolutionized course delivery, allowing for greater flexibility and accessibility. Lecture recordings, videoconferencing, and interactive online resources have become common practices, enabling students to engage with the material in diverse ways. As a result, the institutional culture at universities has evolved to embrace technology as an essential component of effective teaching.

6.3.1 Technology promoting digital culture

The impact of technology on higher education is remarkable.

- Enhancing student experience: Technology can help students personalize their learning experience, increase student engagement, and give real-time feedback.
- Facilitating collaboration, communication, and accessibility.
- Innovation fosters: Technology can be used for innovative teaching methods such as adaptive learning and gamification.
- Tracking and managing student progress: Learning management software (LMS), can be used to track student progression, assign grades, and manage assignments.
- Streamlining administrative tasks: Technology can automate administrative tasks like grade submission, class registration, student data management, and even class registration.

6.4 Technology and its role in digital culture within higher education

6.4.1 Technology's role in a digital culture in higher education, specifically at Wits University

Indeed, technology can have a major impact on university digital cultures. Social media, collaboration tools, and online learning platforms can change how students learn and engage with technology (Ebner et al., 2020). Online learning platforms, such as those that allow distance learning and individualized learning, can make it easier for students to access information. Social media can also improve communication and collaboration between students and staff.

Technology has an important impact on the digital culture of university students. Technology can have a profound impact on the way students learn and engage with technology. This includes how lecturers teach and conduct research. Learning remotely and autonomously can improve access to education (Castro Benavides et al., 2020). Social media can improve communication and collaboration between students and faculty members.

6.4.2 The impact that technology has on digital culture at Wits University

Wits' digital culture development gives lecturers and students online access to tools and resources that can support innovative approaches to education, communication, and collaboration (Aldhmadi, Itumalla, Kumar, & Perera, 2021).

Technology can also be used to create more personalized and dynamic learning environments for students. Blackboard and Canvas are learning management systems

that allow students to access online resources and content. Augmented and virtual reality apps may create immersive learning environments.

Technology makes it easier to communicate and collaborate with students and lecturers both online and in person (Abad-Segura, González-Zamar, Infante-Moro, & Ruipérez García, 2020). Online or hybrid students may find video conferencing and collaboration tools like Zoom, Teams, and Skype extremely useful for real-time communication. To foster a sense of community within the school, and to connect students, academics, and administrative staff, social media platforms can be used. Machine learning and data analytics allow universities to gather data and provide students with a personalized learning experience (Ehlers & Schneckenberg, 2010).

Technology is crucial in creating a digital culture for higher education. It gives lecturers and students easy access to digital tools, encourages collaboration and innovation, and provides individualized learning opportunities. It is possible to improve the accessibility and flexibility of education, as well as the overall learning environment.

6.5 Limitations

Since qualitative research is frequently conducted on a smaller scale and occasionally uses a non-random sample, it might be challenging to extrapolate the findings to more extensive populations. Small sample sizes, which might not be representative of the greater population, are prevalent in qualitative research.

Due to the time-consuming nature of gathering and interpreting vast volumes of data, qualitative research frequently takes longer than quantitative research. Given that

qualitative data may be complicated, analysis takes a long time and expertise. Administrative limitations entailed seeking permission to conduct the interviews for this research from (i) seeking clearance from the Wits Ethics Committee and (ii) seeking approval from the Office of the Registrar to conduct at the University.

6.6 Recommendations

By integrating technology and digital resources into their curricula, supporting online learning and collaboration, and promoting digital usage in research and other aspects, universities may embrace the digital culture. By giving teachers and students access to technology and digital resources and encouraging an innovative and experimental culture, they may also build a campus atmosphere that is receptive to digital technology. Universities can also collaborate with technology firms and other groups to remain up to date with the most recent advances in the digital world.

Hype Cycle for Emerging Technologies, 2021



gartner.com

Source: Gartner
© 2021 Gartner, Inc. and/or its affiliates. All rights reserved. Gartner and Hype Cycle are registered trademarks of Gartner, Inc. and its affiliates in the U.S. 1448000

Gartner

Figure 6-1 Gartner Hype Cycle

Using the Gartner Hype Cycle to look at the latest trends and emerging technologies, the following recommendations will be suggested. Also, taking note of what is currently happening in our society and especially at the universities (Prinsloo & Van Deventer, 2017).

Technology can affect or alter university culture.

1. Technology can help people from different backgrounds and areas to connect and collaborate more easily. This technology can also alter the way students and

instructors communicate and engage with each other. This could lead to a more diverse campus environment.

2. Technology can change the way education is delivered, which could impact students' learning experiences. Online education and remote learning, for example, can open up new avenues of education. However, they can also create a more hostile and passive learning environment.
3. The way education is delivered may change, and this may impact how students view their education. Remote learning and online courses, for example, can make education more accessible but can also create a more isolated learning environment.
4. Technology may change the way education is delivered, which could impact students' learning experiences. While online and remote learning may make education more accessible, it can also create an environment that is less collaborative, engaging, and engaging.
5. Technology has many advantages. However, it is important to consider the disadvantages and benefits of technology for university culture. Universities should not compromise their values and culture by using technology in ways that enhance or complement them.

The development of digital cultures in institutions is influenced by technology. Technology can be used to enhance the academic experience by providing communication tools, virtual classrooms, and other resources. Technology also makes it possible to analyse large-scale data on a large scale. This data can be used to improve teaching and learning. Universities may now have access to a wider audience through online programs and open-access efforts (Khan et al., 2022).

Many emerging technologies could be integrated into higher education's digital culture, such as the ones listed below (Miño-Puigcercós, Domingo-Coscollola, & Sancho-Gil,

2019). It is important to remember that integrating new technologies into education will depend on many factors, such as the institution's budget and availability of resources. Also, lecturers, staff, and students must be prepared to learn about the technology (Galvis & Carvajal, 2022).

- Machine learning (ML), and artificial intelligence (AI) can be used to tailor learning, increase collaboration, share class participation, and improve learning outcomes (Sakulkueakulsuk et al., 2018).
- Virtual Reality technology may allow for interactive, hands-on learning and the creation of immersive educational experiences (Cukurova & Luckin, 2018).
- Adaptive learning technologies can tailor the educational experience of each student to their individual needs for data and analytics (Kougias et al., 2019).
- Adaptive Learning: This technology makes use of data and analytics to personalize each student's learning experience. Adaptive learning technologies use data and analytics to tailor every student's educational experience to meet their specific needs. Adaptive Learning: This technology uses data and analytics to tailor each student's learning experience to their specific needs.
- Blockchain – This innovation may allow for safe, decentralized networks to exchange student records and credentials (Cukurova & Luckin, 2018).
- Gamification refers to a method that incorporates elements of game design into educational content in order to make learning more engaging (Bennani, Maalel, & Ben Ghezala, 2022).

6.7 Practical Implications.

Since it may affect both the content and delivery of education, technological change is a constant source of worry for educators. More so in recent years, the influence of technology on academic culture has gained prominence. Our expectations of how we should connect with educational institutions are evolving as our lives grow more and more dependent on digital technology, both in our personal and professional lives (Cohen et

al., 2002). Teachers are always worried about technological development because it can affect both the content and delivery of education. However, the influence of technology on academic culture has recently gained attention. As we grow increasingly reliant on digital technology in both our personal and professional lives, our expectations for how we should engage with educational institutions are shifting.

Despite the benefits of more contemporary types of education that involve more student-centred and collaborative learning approaches, these conventional methods of education are still common in many schools and universities throughout the world (Jameson, 2013). The length of a single course is another issue that both lecturers and students frequently lament. In order to meet their degree requirements, many students must take many classes each semester. This can consume a significant amount of their free time and frequently leaves them feeling overwhelmed and worn out at the end of the semester (Galvis & Carvajal, 2022). One of the main causes of this is that teachers who teach these courses spend more time lecturing than interacting with their students.

S/N	Skills of Blended Learning	Students		Lecturers	
		Yes	No	Yes	No
1	Need training skills	48.1%	51.9%	52.0%	48.0%
2	Can do enrollment/self-enrollment	86.2%	13.8%	84.0%	16.0%
3	Can access and upload course materials	80.4%	19.6%	92.0%	8.0%
4	Can submit/set assignment, tests, and quizzes	81.5%	18.5%	88.0%	12.0%
5	Can participate in online discussions	67.7%	32.3%	88.0%	12.0%
6	Can send a course feedback message	66.1%	33.9%	72.0%	28.0%

Figure 6-2 Skills of Blended Learning

These are the results of a survey taken around the concept of blended learning at the university of Uganda (Muni University) one of the public universities where students and lecturers are direct actors in implementing blended learning in their daily educational practice (Guma, Buruga, & Habibu, 2019).

No	Factors	VL	L	A	H	VH	Mean	Std Dev
1	Accessibility within and outside the university	12.7	6.3	20.1	21.7	39.2	3.68	1.378
2	Positive attitude towards using blended learning	5.3	9.0	26.5	31.2	28.0	3.68	1.133
3	Knowledge and skills	2.1	9.5	31.7	32.8	23.8	3.67	1.011
4	Favorable learning environment	1.6	12.2	31.7	34.9	19.6	3.59	0.989
5	Perceived usefulness	5.8	12.7	24.3	39.2	18.0	3.51	1.014
6	Perceived quality content	2.6	11.1	34.9	35.4	15.9	3.51	0.976
7	Awareness and adaptation	6.3	7.9	37.0	26.5	22.2	3.50	1.114
8	Good user interface	9.5	15.9	27.5	23.8	23.3	3.35	1.262
9	Perceived ease of usage	7.9	15.9	32.3	25.4	18.5	3.31	1.176
10	Perceived resources	7.9	15.9	29.6	31.2	15.3	3.30	1.148
11	Self-management of learning	5.3	18.5	34.9	25.4	15.9	3.28	1.102
12	Previous experience	14.8	14.8	29.1	24.3	16.9	3.14	1.285

Where VL—Very Low, L—Low, A—Average, H—High, and VH—Very High.

Figure 6-3 Factors for Blended Learning

In a recent study at the university of Uganda in 2019, the above table demonstrates the skills of blended learning by students and by lecturers. These are fundamental because as much as blended learning is successful there is still a skill needed so that people can access and utilize online systems (Guma et al., 2019).

This creates a less-than-ideal learning environment for students who prefer a more interactive educational experience and also denies them the chance to build meaningful relationships with their lecturers and gain self-awareness through group projects that require collaboration and other activities that foster critical thinking and communication. The rising issue of tuition inflation, which affects many college and university students

today, is another significant concern. Many universities now charge several thousand rands per year for undergraduate programs that were formerly thought to be reasonable due to the steady rise in tuition prices over the past few years. Due to this, an escalation in educational debt nationwide, and many graduates cannot secure employment that would allow them to repay their debt and start living independently.

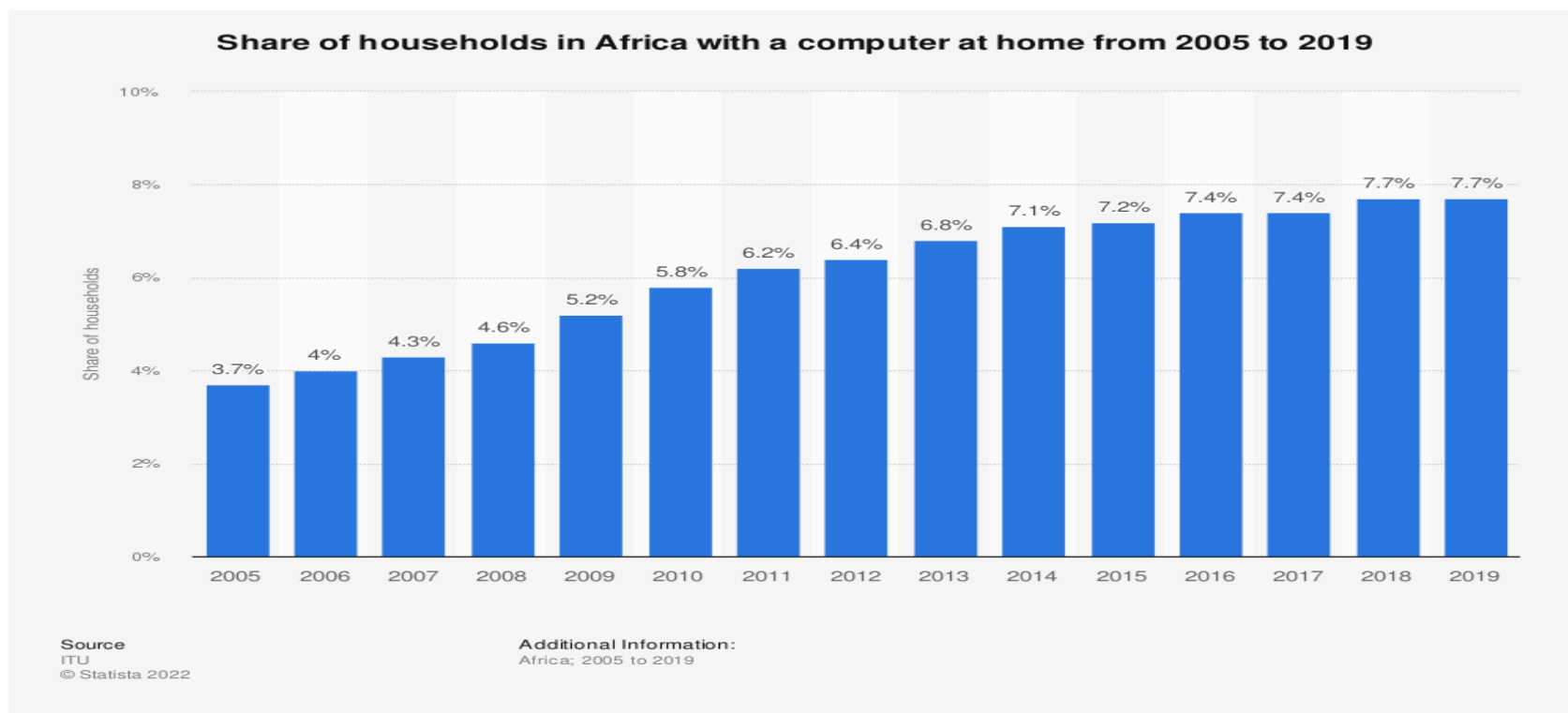


Figure 6-4 Household computer statistics

Operational and strategic difficulties have significantly restricted the effective integration of ICT in education. According to a Statista study, just 7.7% of African homes possessed computers in 2019.

During the 2020 Covid-19 lockout in South Africa, the accessibility gap in the present educational system for digital platforms became apparent. The crisis made evident the numerous disparities in our educational system, from the machines needed for online learning to the atmosphere that is conducive to learning.

Technology may also have some negative impacts on digital culture in higher education, such as creating a digital divide, privacy and security concerns, and a potential negative impact on students' mental health.

6.8 Future Studies

It is obvious that technology can alter culture by creating new opportunities for expression, knowledge, and activities, as well as by altering how we interact with one another and our environment. However, it is crucial to remember that integrating these technologies into education depends on a number of variables, including the institution's budget, the availability of resources, and the lecturers, staff, and student's level of readiness to adopt the new technology.

While the influence of technological change on the institutional culture at the university has been largely positive, it also poses certain challenges. The university of the Witwatersrand must invest in infrastructure, training, and support systems to ensure equitable access to technology for all students and faculty members. Additionally, concerns regarding the reliability and security of digital platforms and the potential for increased isolation in online learning environments need to be addressed.

Looking ahead, the university of the Witwatersrand must continue to evolve its institutional culture to embrace emerging technologies. The integration of artificial intelligence, virtual reality, and augmented reality into teaching and research practices holds great potential for further enhancing the learning experience. By continually adapting to technological change, the university of the Witwatersrand can create an inclusive and forward-thinking environment that prepares students for the challenges and opportunities of the digital age. The digital divide might be a challenge that is addressed and rectified or can continue to

be a contributing factor in trying to make processes with technology impacting and influencing the culture at Wits. There are a few components that contribute to South Africa's digital divide. These could be the affordability of internet connection, availability of hardware, and knowledge of digital communication methods (Mihelj, Leguina, & Downey, 2019). Two of the country's finest options for growth and equality — access to education and employment opportunities — are being negatively impacted by these circumstances.

6.9 Summary

Technological change has undoubtedly had a profound impact on the institutional culture at the University of the Witwatersrand. It has transformed teaching methodologies, revolutionised research practices, and enhanced the overall student experience. As university of the Witwatersrand continues to adapt to these changes, the institution must remain vigilant in addressing challenges and ensuring equitable access to technology. By doing so, the institution can create a dynamic and inclusive environment that prepares students for a future driven by technology.

By integrating technology and digital resources into their curricula and supporting online learning and collaboration Wits may embrace its digital culture. By providing lecturers and students access to technology and digital resources and encouraging an innovative experimental culture. The university of the Witwatersrand may also build a campus atmosphere that is receptive to digital technology. Wits can also collaborate with technology organisations and other institutions to remain up to date with the most recent advances in the digital world.

Present university campuses are more technologically savvy than ever. Students may access information whenever they want and wherever they are with the use of

smartphones and computers (Galvis & Carvajal, 2022). Students have access to tools and services on the internet that improve their educational experiences. In conclusion, technology has a significant impact on digital culture at universities and may be quite beneficial, but it is vital to consider both these impacts. In order to avoid compromising their purpose, values, and culture, universities should try to use technology in ways that complement and improve them. In conclusion, technology is improving the way things are done in society and enhancing how things are being done. The research paper investigated and proved that technology has influenced digital culture and especially in higher education and the university of the Witwatersrand is a great case study to demonstrate this.

REFERENCES

- Abad-Segura, E., González-Zamar, M.-D., Infante-Moro, J. C., & Ruipérez García, G. (2020). Sustainable management of digital transformation in higher education: Global research trends. *Sustainability*, *12*(5), 2107.
- Aldhmadi, B., Itumalla, R., Kumar, R., & Perera, B. (2021). Feelings, Behavioral Actions and Depressive Symptoms Related to COVID-19 among Undergraduates in Hail, Saudi Arabia. *Healthcare*, *9*, 1280. doi:10.3390/healthcare9101280
- Allen, I. E., & Seaman, J. (2017). Distance education enrollment report 2017. *Digital learning compass*.
- Amaral, A., Jones, G. A., & Karseth, B. (2002). *Governing higher education: National perspectives on institutional governance* (Vol. 1): Springer Science & Business Media.
- Angela Andal-Ancion, & Yip, P. A. C. a. G. S. (2013). The Digital Transformation of Traditional Business. *MIT Sloan Management Review*.
- Armstrong, B., & Lee, G. (2021). *Digital Business*. South Africa: Silk Route Press.
- Bates, A. T., & Sangra, A. (2011). *Managing technology in higher education: Strategies for transforming teaching and learning*: John Wiley & Sons.
- Bates, A. W. (2015). *Teaching in a digital age: Guidelines for designing teaching and learning*: BCcampus.
- Belenkova, L. Y., Skudnyakova, E. V., & Sazonova, S. A. (2022). Digitalization and Digital Culture in the Context of Inclusive Higher Education. *International Journal of Early Childhood Special Education*, *14*(1).
- Benavides, L. M. C., Tamayo Arias, J. A., Arango Serna, M. D., Branch Bedoya, J. W., & Burgos, D. (2020). Digital transformation in higher education institutions: A systematic literature review. *Sensors*, *20*(11), 3291.
- Bennani, S., Maalel, A., & Ben Ghezala, H. (2022). Adaptive gamification in E-learning: A literature review and future challenges. *Computer Applications in Engineering Education*, *30*(2), 628-642.
- Bilyalova, A., Salimova, D., & Zelenina, T. (2020). *Digital transformation in education*. Paper presented at the Integrated Science in Digital Age: ICIS 2019.
- Blikstad-Balas, M., & Klette, K. (2020). Still a long way to go Narrow and transmissive use of technology in the classroom. *Nordic journal of digital literacy*. doi:10.18261/issn.1891-943x-2020-01-05
- Branch, J. W., Burgos, D., Serna, M. D. A., & Ortega, G. P. (2020). Digital Transformation in Higher Education Institutions: Between Myth and Reality. In *Digital Transformation in Higher Education Institutions: Between Myth and Reality*.
- Brooks, D. C., & McCormack, M. (2020). Driving Digital Transformation in Higher Education. *EDUCAUSE*.
- Brown-Jeffy, S., & Cooper, J. E. (2011). Toward a conceptual framework of culturally relevant pedagogy: An overview of the conceptual and theoretical literature. *Teacher education quarterly*, *38*(1), 65-84.
- Bygstad, B., Øvrelid, E., Ludvigsen, S., & Dæhlen, M. (2022). From dual digitalization to digital learning space: Exploring the digital transformation of higher education. *Computers & Education*, *182*, 104463.

- Cabelkova, I., Strielkowski, W., Rybakova, A., & Molchanovsmall a, C. A. (2020). Does Playing Video Games Increase Emotional Creativity? *Int J Environ Res Public Health*, 17(7). doi:10.3390/ijerph17072177
- Cameron, R. (2011). Mixed Methods Research: The Five Ps Framework. *Electronic Journal of Business Research Methods*, 9.
- Casillas Alvarado, M. Á., & Ramírez Martinell, A. (2019). Digital culture and institutional change in universities. *Revista de la educación superior*, 48(191), 97-111.
- Castro Benavides, L. M., Tamayo Arias, J. A., Arango Serna, M. D., Branch Bedoya, J. W., & Burgos, D. (2020). Digital Transformation in Higher Education Institutions: A Systematic Literature Review. *Sensors (Basel)*, 20(11). doi:10.3390/s20113291
- Chijindu, E. B. (2018). MANAGING CHANGE IN EDUCATIONAL ORGANIZATION: A CONCEPTUAL OVER-VIEW. *The Creative Artist: A Journal of theatre and Media Studies*, 11(2).
- Cilliers, J. (2021). *The Future of Africa* (1 ed. Vol. 1): Palgrave Macmillan Cham.
- Clarke, V., Braun, V., & Hayfield, N. (2015). Thematic analysis. *Qualitative psychology: A practical guide to research methods*, 3, 222-248.
- Cohen, L., Manion, L., & Morrison, K. (2002). *Research methods in education*: routledge.
- Collins, I. (2015). Using international accreditation in higher education to effect changes in organisational culture: A case study from a Turkish university. *Journal of Research in International Education*, 14(2), 141-154.
- Cooper, D. R., Schindler, P. S., & Sun, J. (2006). *Business research methods* (Vol. 9): Mcgraw-hill New York.
- Creswell, J. W. (2007). An introduction to mixed methods research. *Lincoln, Nebraska, USA: University of Nebraska*.
- Creswell, J. W. (2014). Qualitative, quantitative and mixed methods approaches. In: Sage.
- Cukurova, M., & Luckin, R. (2018). Measuring the impact of emerging technologies in education: A pragmatic approach.
- de Souza Lopes, L. A., & da Silva Vieira, M. M. (2020). Digital culture and learning in higher education after covid19: a collaborative approach in a virtual environment. *European Journal of Education*, 3(2), 17-33.
- Ebner, M., Schön, S., Braun, C., Ebner, M., Grigoriadis, Y., Haas, M., . . . Taraghi, B. (2020). COVID-19 epidemic as E-learning boost? Chronological development and effects at an Austrian university against the background of the concept of "E-Learning Readiness". *Future Internet*, 12(6), 94.
- Ehlers, U.-D., & Schneckenberg, D. (2010). *Changing cultures in higher education: Moving ahead to future learning*: Springer.
- Favoretto, C., Mendes, G. H. d. S., Filho, M. G., Gouvea de Oliveira, M., & Ganga, G. M. D. (2021). Digital transformation of business model in manufacturing companies: challenges and research agenda. *Journal of Business & Industrial Marketing*.
- Galvis, A. H., & Carvajal, D. (2022). Learning from success stories when using eLearning and bLearning modalities in higher education: a meta-analysis and lessons towards digital educational transformation. *Int J Educ Technol High Educ*, 19(1), 23. doi:10.1186/s41239-022-00325-x
- Garcez, A., Silva, R., & Franco, M. (2022). Digital transformation shaping structural pillars for academic entrepreneurship: A framework proposal and research

- agenda. *Educ Inf Technol (Dordr)*, 27(1), 1159-1182. doi:10.1007/s10639-021-10638-5
- Green, H. E. (2014). Use of theoretical and conceptual frameworks in qualitative research. *Nurse researcher*, 21(6).
- Guma, A. L. I., Buruga, B., & Habibu, T. (2019). SWOT Analysis of Blended Learning in Public Universities of Uganda: A Case Study of Muni University. *J*, 2, 410-429. doi:10.3390/j2040027
- Hair, E., Pitzer, L., Bennett, M., Halenar, M., Rath, J., Cantrell, J., . . . Vallone, D. (2017). Harnessing Youth and Young Adult Culture: Improving the Reach and Engagement of the truth(R) Campaign. *J Health Commun*, 22(7), 568-575. doi:10.1080/10810730.2017.1325420
- Hakan, K. Ö. (2020). Digital transformation in higher education: a case study on strategic plans. *Высшее образование в России*(3), 9-23.
- Hanelt, A., Bohnsack, R., Marz, D., & Antunes Marante, C. (2021). A systematic review of the literature on digital transformation: Insights and implications for strategy and organizational change. *Journal of Management Studies*, 58(5), 1159-1197.
- Hayman, R., & Smith, E. E. (2015). Sustainable decision making for emerging educational technologies in libraries. *Reference Services Review*, 43(1), 7-18.
- Huang, C. K., Wilson, K., Neylon, C., Ozaygen, A., Montgomery, L., & Hosking, R. (2021). Mapping open knowledge institutions: an exploratory analysis of Australian universities. *PeerJ*, 9, e11391. doi:10.7717/peerj.11391
- Imenda, S. (2014). Is there a conceptual difference between theoretical and conceptual frameworks? *Journal of social sciences*, 38(2), 185-195.
- Ishtiaq, M. (2019). Book Review Creswell, J. W. (2014). *Research Design: Qualitative, Quantitative and Mixed Methods Approaches* (4th ed.). Thousand Oaks, CA: Sage. *English Language Teaching*, 12, 40. doi:10.5539/elt.v12n5p40
- Istemic, A. (2021). Shifting to digital during COVID-19: are teachers empowered to give voice to students? *Educ Technol Res Dev*, 69(1), 43-46. doi:10.1007/s11423-021-09956-9
- Jameson, J. (2013). e-L eadership in higher education: T he fifth “age” of educational technology research. *British Journal of Educational Technology*, 44(6), 889-915.
- Kane, G. (2019). The technology fallacy: people are the real key to digital transformation. *Research-Technology Management*, 62(6), 44-49.
- Khan, S., Kambris, M. E. K., & Alfalahi, H. (2022). Perspectives of University Students and Faculty on remote education experiences during COVID-19- a qualitative study. *Educ Inf Technol (Dordr)*, 27(3), 4141-4169. doi:10.1007/s10639-021-10784-w
- Kivunja, C. (2018). Distinguishing between theory, theoretical framework, and conceptual framework: A systematic review of lessons from the field. *International journal of higher education*, 7(6), 44-53.
- Kleijnen, J., Dolmans, D., Muijtjens, A., Willems, J., & Van Hout, H. (2009). Organisational values in higher education: Perceptions and preferences of staff. *Quality in Higher Education*, 15(3), 233-249.
- Knox, J. (2014). Digital culture clash: “massive” education in the E-learning and Digital Cultures MOOC. *Distance Education*, 35(2), 164-177.

- Kopp, M., Gröbinger, O., & Adams, S. (2019). *Five common assumptions that prevent digital transformation at higher education institutions*. Paper presented at the Inted2019 Proceedings.
- Kougias, I., Aggidis, G., Avellan, F., Deniz, S., Lundin, U., Moro, A., . . . Quaranta, E. (2019). Analysis of emerging technologies in the hydropower sector. *Renewable and Sustainable Energy Reviews, 113*, 109257.
- Lai, K.-W. (2011). Digital technology and the culture of teaching and learning in higher education. *Australasian Journal of Educational Technology, 27*(8).
- Lebedeva, T., Shefer, O., Kraineva, C., Belousova, N., Erentraut, E., & Akhkamova, Y. (2022). Formation of a teacher's digital culture by means of mass open online courses. *Vestnik of Minin University, 10*. doi:10.26795/2307-1281-2022-10-3-6
- Lee, M., Yun, J. J., Pyka, A., Won, D., Kodama, F., Schiuma, G., . . . Zhao, X. (2018). How to Respond to the Fourth Industrial Revolution, or the Second Information Technology Revolution? Dynamic New Combinations between Technology, Market, and Society through Open Innovation. *Journal of Open Innovation: Technology, Market, and Complexity*.
- Mahlow, C., & Hediger, A. (2019). Digital Transformation in Higher Education—Buzzword or Opportunity? *eLearn, 2019*(5), Article 13. doi:10.1145/3329488/3331171
- María, L., Benavides, C., Alexander, J., Arias, T., Darío, M., Arango-Serna, M., . . . Burgos, D. (2020). Digital Transformation in Higher Education Institutions: A Systematic Literature Review. *Sensors, 20*, 3291. doi:10.3390/s20113291
- Maylawati, D. S. a., Priatna, T., Sugilar, H., & Ramdhani, M. A. (2020). Data science for digital culture improvement in higher education using K-means clustering and text analytics. *International Journal of Electrical & Computer Engineering (2088-8708), 10*(5).
- Mezinov, V., Zakharova, M., & Nekhoroshikh, N. (2022). *The digital culture development problem actualization among pedagogical students* (Vol. 2647).
- Mezinov, V. N., Zakharova, M. A., & Nekhoroshikh, N. A. (2022). *The digital culture development problem actualization among pedagogical students*. Paper presented at the AIP Conference Proceedings.
- Mhlanga, D., Denhere, V., & Moloi, T. (2022). COVID-19 and the Key Digital Transformation Lessons for Higher Education Institutions in South Africa. *Education Sciences, 12*(7), 464.
- Mihelj, S., Leguina, A., & Downey, J. (2019). Culture is digital: Cultural participation, diversity and the digital divide. *New Media & Society, 21*(7), 1465-1485.
- Miño-Puigcercós, R., Domingo-Coscollola, M., & Sancho-Gil, J. M. (2019). Transforming the teaching and learning culture in higher education from a DIY perspective. *Educación XX1, 22*(1), 139-160.
- Mohamed Hashim, M. A., Tlemsani, I., & Matthews, R. (2022). Higher education strategy in digital transformation. *Educ Inf Technol (Dordr), 27*(3), 3171-3195. doi:10.1007/s10639-021-10739-1
- Mohebi, L. (2019). *Educational Leadership and Digital Culture*.
- Ohlman, H. (1971). Communication media and educational technology: an overview and assessment with reference to communication satellites.
- Olofsson, A. D., & Lindberg, J. O. (2012). *Informed design of educational technologies in higher education: Enhanced learning and teaching*: Information Science Reference Hershey^ ePA PA.

- Otterborn, A., Schönborn, K., & Hultén, M. (2019). Surveying preschool teachers' use of digital tablets: general and technology education related findings. *International Journal of Technology and Design Education*, 29(4), 717-737. doi:10.1007/s10798-018-9469-9
- Pham, H., Tran, Q. N., La, G. L., Doan, H. M., & Vu, T. D. (2021). Readiness for digital transformation of higher education in the Covid-19 context: The dataset of Vietnam's students. *Data Brief*, 39, 107482. doi:10.1016/j.dib.2021.107482
- Prinsloo, T., & Van Deventer, J. P. (2017). *Using the Gartner Hype Cycle to evaluate the adoption of emerging technology trends in higher education—2013 to 2016*. Paper presented at the Emerging Technologies for Education: Second International Symposium, SETE 2017, Held in Conjunction with ICWL 2017, Cape Town, South Africa, September 20–22, 2017, Revised Selected Papers 2.
- Rapanta, C., Botturi, L., Goodyear, P., Guàrdia, L., & Koole, M. (2021). Balancing technology, pedagogy and the new normal: Post-pandemic challenges for higher education. *Postdigital Science and Education*, 3(3), 715-742.
- Ravitch, S. M., & Riggan, M. (2016). *Reason & rigor: How conceptual frameworks guide research*: Sage Publications.
- Rocco, T. S., & Plakhotnik, M. S. (2009). Literature Reviews, Conceptual Frameworks, and Theoretical Frameworks: Terms, Functions, and Distinctions. *Human Resource Development Review*, 8(1), 120-130. doi:10.1177/1534484309332617
- Rowley, J. (2014). Designing and using research questionnaires. *Management Research Review*, 37(3), 308-330. doi:10.1108/MRR-02-2013-0027
- Sakulkueakulsuk, B., Wittoon, S., Ngarmkajornwiwat, P., Pataranutaporn, P., Surareungchai, W., Pataranutaporn, P., & Subsoontorn, P. (2018). *Kids making AI: Integrating machine learning, gamification, and social context in STEM education*. Paper presented at the 2018 IEEE international conference on teaching, assessment, and learning for engineering (TALE).
- Santos, H., Batista, J., & Marques, R. P. (2019). Digital transformation in higher education: the use of communication technologies by students. *Procedia Computer Science*, 164, 123-130.
- Schallmo, D., Williams, C. A., & Boardman, L. (2019). Digital Transformation of Business Models — Best Practice, Enablers, and Roadmap. *Digital Disruptive Innovation*.
- Schein, E. H. (2010). *Organizational culture and leadership* (Vol. 2): John Wiley & Sons.
- Seres, L., Pavlicevic, V., & Tumbas, P. (2018). *Digital transformation of higher education: Competing on analytics*. Paper presented at the INTED2018 Proceedings.
- Silver, H. (2003). Does a university have a culture? *Studies in Higher Education*, 28(2), 157-169.
- Sinclair, M. (2007). A guide to understanding theoretical and conceptual frameworks. *Evidence-Based Midwifery*, 5(2), 39-40.
- Tashakkori, A., & Creswell, J. W. (2007). The new era of mixed methods. In (Vol. 1, pp. 3-7): Sage Publications.
- Testov, V. (2019). On some methodological problems of digital transformation of education. *Informatics and education*, 31-36. doi:10.32517/0234-0453-2019-34-10-31-36

- Theurer, C. P., Tumasjan, A., & Welppe, I. M. (2018). Contextual work design and employee innovative work behavior: When does autonomy matter? *PLoS One*, 13(10), e0204089. doi:10.1371/journal.pone.0204089
- Tierney, W. G., & Lanford, M. (2018). Institutional culture in higher education. *Encyclopedia of international higher education systems and institutions*, 1-7.
- Tømte, C. E., Fosslund, T., Aamodt, P. O., & Degn, L. (2019). Digitalisation in higher education: mapping institutional approaches for teaching and learning. *Quality in Higher Education*, 25(1), 98-114. doi:10.1080/13538322.2019.1603611
- Van Veldhoven, Z., & Vanthienen, J. (2022). Digital transformation as an interaction-driven perspective between business, society, and technology. *Electronic Markets*, 32(2), 629-644. doi:10.1007/s12525-021-00464-5
- Varpio, L., Paradis, E., Uijtdehaage, S., & Young, M. (2020). The distinctions between theory, theoretical framework, and conceptual framework. *Academic Medicine*, 95(7), 989-994.
- Vieira, M., & Lopes, A. (2020). Digital Culture and Learning in Higher Education After COVID19: A Collaborative Approach in a Virtual Environment. *European Journal of Education*, 3, 103. doi:10.26417/324jeu14u
- Walliman, N. (2010). *Research methods: The basics*: Routledge.
- Wilms, K. L., Meske, C., Stieglitz, S., Decker, H., Fröhlich, L., Jendrosch, N., . . . Rudolph, D. (2017). Digital transformation in Higher Education—new cohorts, new requirements?
- Zaki, M. (2019). Digital transformation: harnessing digital technologies for the next generation of services. *Journal of Services Marketing*, 33(4), 429-435.
- Zhu, C. (2015). Organisational culture and technology-enhanced innovation in higher education. *Technology, Pedagogy and Education*, 24(1), 65-79.

APPENDIX A

Consent Form

Thank you for partaking in this research project, your participation is very important.

This research project is being conducted by Dawn Habanyana. The research project is about the Technological change and the influence on culture at Wits University.

All information gathered will be used only for my research and will be kept confidential. Once the study is completed, I would be happy to share the results with you, if you desire.

I _____ (Participant name) agree to participate in this research project. The research project has been explained to me and I understand what my role as a participant will involve.

(Kindly tick the relevant options below)

1. I agree that my participation will remain anonymous
2. I agree that my participation is voluntary
3. I agree that the information I provide may be used for this research.

Name of Participant:

Date:

Signature:

APPENDIX B

Participation Information Sheet

My name is Dawn Habanyana and I am a Masters of Management student in the field of Digital Business at Wits Business School in Johannesburg. As a requirement for my academic studies, I need to take on a research project. My research project is about Technological change and the influence on culture at Wits University.

Therefore, you are invited to take part in the above-mentioned research project by answering a semi-structured questionnaire. Your participation in this study is purely voluntary. All the information gathered from this questionnaire will be used purely for this research project.

There will be no need to identify individuals who complete this questionnaire. Participation in this study is anonymous and all data collected will be handled confidentially and will be used for research purpose only. Therefore, by participating in this research you are required to consent. The participation consent form will be kept strictly confidential and will be destroyed on completion of the research project. There is no cost or incentives given to participants. This evaluation is subjective so there is no wrong or right answer.

Your participation involves no risk, no disadvantages, or penalties and if you decide to withdraw from the study at any stage or chose to answer and questions that make you feel uncomfortable, you may do so at any time.

If you have any further questions or concerns, you are welcome to contact me or my supervisor.

Interview questions for your perusal are in the page below:

Thank you for your time.

Yours sincerely

Researcher: Dawn Habanyana

Dawn.Habanyana@students.wits.ac.za

Supervisor: Dr Jenika Gobind

Jenika.Gobind@wits.ac.za

APPENDIX C

Research Instrument

1. In your opinion or your view, can technology influence digital culture in higher education?
 - 1.1. Why would you say technology can change or influence instructional culture?
 - 1.2. Can you share your experience where such has happened?
 - 1.3. How would you like to see technology influence digital culture in higher education?
2. Do you think technology is a major force behind the digital culture in higher education?
 - 2.1. Can you present an example if this is the case? If it is not the case, can you elaborate?
 - 2.2. How can technology boost institutional culture in higher education?
 - 2.3. Can technology promote digital culture in higher education.
3. What role does technology have on institutional culture within higher education?
 - 3.1. How does technology influence you in higher education?
 - 3.2. What technology is mostly used by digital culture in higher education?
 - 3.3. What emerging technology should get incorporated into the digital culture in higher education?
 - 3.4. What impact would this technology have on digital culture in higher education.

APPENDIX D

Ethics Clearance Certificate

Graduate School of Business Administration
University of the Witwatersrand, Johannesburg



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

Ethics Clearance Certificate

Ethics protocol number: WBS/DB295949/175

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	Technological change and its influence on institutional culture at the University of the Witwatersrand, Johannesburg.
Investigator / Researcher	Ms Dawn Habanyana
Nature of Project	MM (Digital Business)
Decision of the Committee	Approved, provided stakeholders and participants are guaranteed confidentiality.
Issue Date of Certificate	2023-01-24
Expiry date	Date of submission of the project / research report
Chairperson	Dr Pius Oba ☎ +27 11 717 3976 📠 +27 82 733 6587 ✉ pius.oba@wits.ac.za

Declaration by Researcher

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

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

Signature

01 February 2023

Date:

APPENDIX E

Permission letter



OFFICE OF THE DEPUTY REGISTRAR

09 February 2023

Dawn Habanyana
Student Number (295949)
Master of Management
Wits Business School

TO WHOM IT MAY CONCERN

“Technological change and its influence on institutional culture at the University of the Witwatersrand, Johannesburg.”

This letter serves to confirm that the above project has received permission to be conducted on University premises, and/or involving staff and/or students of the University as research participants. In undertaking this research, you agree to abide by all University regulations for conducting research on campus and to respect participants’ rights to withdraw from participation at any time.

If you are conducting research on certain student cohorts, year groups or courses within specific Schools and within the teaching term, permission must be sought from Heads of School or individual academics.

Ethical clearance has been obtained. (Protocol number: WBS/DB295949/175)

Research Expiration: (Research submission date)

A handwritten signature in black ink that reads 'Nicoleen Potgieter'.

Nicoleen Potgieter
University Deputy Registrar

APPENDIX E

Data theme and codes

<i>Research questions</i>	<i>Questions Interview schedule</i>	P1	P2	P3	P4	P5	P6	P7	Making sense of what participants are saying as a group.
<i>RQ1</i>	1	yes	yes	yes	yes	yes	yes	yes	Yes
<i>RQ1</i>	2	COVID	4IR	COVID Regulations	Digitalisation	COVID	4IR	5 th industrial revolution	Since the pandemic, most things have been digitalized
<i>RQ1</i>	3	Social media	Social Media	Communication platforms– WhatsApp	Everything on phone	Ability to access anywhere	Can work anywhere	Make things easier	Freedom of expression, ease of things, and social media
<i>RQ1</i>	4	Social media	Communication platforms– WhatsApp	Communication platforms– WhatsApp	Online learning	In every way	Blended learning	Remote work	Hybrid, online, blended learning, and remote work
<i>RQ2</i>	5	Online Learning	Teaching and learning	Remote work	Shared document	Online teaching and learning	Remote work	Remote work	Online accessibility allowed one to learn and work from anywhere
<i>RQ2</i>	6	Yes	Yes	Yes	Yes	Yes	Yes	Yes	The majority are in agreement
<i>RQ2</i>	7	Making everything online like the kudu card	Allowing people to have virtual characters	Integration of systems	Making all processes digital	Digital registers and online meetups	All customer matters are addressed remotely	24/7 assistance	Integrating systems to make more processes agile and automated
<i>RQ2</i>	8	Yes	Yes	Yes	yes	Kind-of	Yes	Yes	Majority agree
<i>RQ3</i>	9	Makes things a bit easier	Easy access	Less complicated	Makes all things work better	Accessibility for all	The lack of training and the digital divide	Forces people to be innovative	Ease of things, positive challenges, digital divide
<i>RQ3</i>	10	WhatsApp?	Teams and VPN	Teams	Teams	YouTube	Teams	WhatsApp?	MS Teams and WhatsApp
<i>RQ3</i>	11	AI	ML and AI	Gamification	AI	VAR	AI	AI	

RQ3	12	Better	Improve comms	Connect everyone more easily	Better work	Cost of the university more money	Have's and not haves	Make things better	The majority of outcomes are an improvement, costs mentioned and mentioned inequality
RQ3	13	Always online	Quick access and constant assistance	Fun learning	Less face-to-face sessions	Ease of information	Quick to answer	Easy access	Agility, innovation, and customer service

Research questions	Questions Interview schedule	P8	P9	P10	P11	P12	P13	P14	P15	Making sense of what participants are saying as a group.
RQ1	1	yes	yes	no	yes	yes	no	yes	yes	More participants liked it... some hated it
RQ1	2	COVID	Pandemic	COVID regulation	Covid	Lockdown regulations	COVID	Societal changes	Pandemic	Pandemic and its regulations causing societal change
RQ1	3	Social media	Communication platforms– WhatsApp	Communication platforms	Social media like TikTok	Hybrid and blended learning	Social media platforms	Online communication places	Social media	Accessibility simplifies social media
RQ1	4	Social media	Communication platforms– WhatsApp	Communication platforms– WhatsApp	Online learning	In every way	Blended learning	Remote work	everything	Social media
RQ2	5	Cloud storage	Online learning	Access to multi-digital resources	Storage and file sharing	Webinars	Virtual polls	Online meetings - TEAMS	Teams' sessions	Content and resource storage, online meetings
RQ2	6	Yes	Yes	Maybe	Yes	Yes	Yes	Yes	Yes	Everyone said yes
RQ2	7	Online places for issues like anxiety	Virtual payments, payment for tap functionality	Recorded lecture content– load-shedding is an issue	Access to more digital tools	Transferable systems or all university info synced accordingly	Access to more resource content	Digital training is also important	Integrating academic and Admin applications	More access, integration, and digital literacy
RQ2	8	Yes	Yes	Maybe	Yes	Definitely	Maybe	Yes	Yes	The majority agree
RQ3	9	Prepares for future work for future graduates	Resource accessibility	Online interactions	Make people more distant	Improve things	Makes things a bit easy but also hard - load shedding	Online resource availability	Brings everyone of common together	Accessibility, people integration, improvement
RQ3	10	Ulwazi	Teams	Teams	WhatsApp?	MS Office suite	WhatsApp?	Teams	Teams	Teams and WhatsApp?
RQ3	11	VAR–FB Meta	AI	Blockchain	Social Media	Blockchain	Social Media	AI	Chatbot	Social platforms and AI
RQ3	12	Improve things	Make things better	Digital divide	Make people more distant	Improve things	Makes things a bit easy but also hard - load shedding	Easy access	Save costs	Improvement, agility, and display of inequality
RQ3	13	Metaverse	Agility	Recordkeeping	Accessibility Everywhere	Audit trail	Easy communication and updates	Faster things	24/7 assistance	Agility and continuous service

