AN ENVIRONMENTAL SCAN INTO THE DIGITAL LANDSCAPE OF SOUTH AFRICAN HIGHER EDUCATION INSTITUTIONS

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DECLARATION:

In accordance with Rule G5.6.3, I hereby declare that the above-mentioned treatise/dissertation/thesis is my own work and that I have not previously been submitted to another University or for another qualification

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SIGNATURE

26 August 2021

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ABSTRACT

The modern-day procedures conducted within society has adopted the interchangeable use of technology with its operations from business to education which has changed the landscape in which these industries operate. This research study will look to analyse the change in the digital landscape of South African Higher Education Institutions by conducting an environmental scan. The research objectives once achieved will answer questions regarding the current state of the digital landscape, the prevalent digital components used and the comparisons among institutions. The research will provide a body of knowledge regarding the topic that can be used as future framework for institutions.

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CHAPTER ONE

INTRODUTION AND BACKGROUND TO THE STUDY

1.1 INTRODUCTION

In a world with rising urbanisation and influence from globalisation has led to an increase in the number of scholars to attend tertiary or higher education, with the application rate growing. As a result of the growing application rate, it has steered the movement to combat the excess demand with more supply of higher education, the first way this was combatted was by the creation of more tertiary institutions, but this was a far more costly and timely way of fighting the crisis (Little & Green, 2009:166-171). But with the development of the crisis technology also progressed and has made a lot of leaps in terms of communication and accessibility to internet, this has enabled many education institutions and everyday businesses to incorporate technology with their work as a way to be innovative and be more efficient at their work. With the continued use and advancement made to the use of technology with education has created many higher education institutions dedicated to only making use of online learning through technology and e-learning programs that forms part of digital learning and the digital landscape (Koksal, 2021).

The creation of these institutions has proved as a solution to many demand issues in relation to scholars in need of tertiary education. The trend of digital landscape and use of it at tertiary level sky rocketed due to the regulation put into place caused by the COVID-19 pandemic that required education at all levels to make use of digital learning consequently, South African Higher education institutions that had a more traditional approach of learning with physical classes and tests that needed to be written at the grounds of these institutions had to scrap their original approach to teaching and switch to digital learning by way of digital landscape.

As a result of this sudden change to the system of these Higher education institutions it has guided them to make their own approach to the digital landscape, this has created many different routes to digital learning of all fields that has many strengths and weaknesses. Hence, it is important to investigate the impact of these various approaches and attitudes made toward the use of digital landscape to determine which approach is acceptable and to establish grounds where further research can be conducted.

This study will conduct an environmental scan into the digital landscape of South African Higher Education institutions in order to provide a framework that can be used to determine the future direction of Higher Education Institutions. This chapter will cover topics such as the problem statement, research objectives, significance of the research, scope and demarcation of the study, and finally, structure of the study.

1.2 PROBLEM STATEMENT

An infectious disease titled COVID-19 broke out in Wuhan, China, late 2019 and has spread across the whole world affecting every country and region, after the rapid rise in contaminates of the COVID-19 disease the World Health Organisation (WHO) declared this as a pandemic causing a worldwide shutdown of businesses and other operations.

This COVID-19 pandemic pushed for a whole new way of doing work and from where the work has to be done, as also new ways of communicating globally with the use of digital communication applications such as Zoom and Microsoft Teams. The lockdown measures implemented to contain the virus resulted in the suspension of various in person activities, including the halt of all education within South Africa which impacted tertiary education massively (de Jesus & de Araújo Andrade, 2020:1912-1930).

After a few months the South African Government put out a framework to combat the pandemic and this framework enabled education to start with no-contact classes that required online learning making use of digital learning that forms part of the digital landscape. This obliged tertiary education institutions to prepare and acquire the various digital landscape software needed to conduct classes under the guidelines of the government framework. This was a very challenging stage as no one was expecting a pandemic to happen in the modern society, this left most education institutions unprepared for operating under the new way of life (Mhlanga, 2020:180). Nelson Mandela University made use of various digital teaching and learning tools such as Moodle, Microsoft Teams and Microsoft Outlook to communicated and complete assessments. The implementation of digital learning changed the way education was done on a tertiary level, changes in way of how test were written and how assessments were handed in, as also how group work was conducted without physical interactions and meetings.

The digital landscape and its components, in particular, digital learning is a relatively new concept within the South African Higher Education Industry as the need for digital learning only grew over recent years with the prevalent use of technology and scholars having greater

access to online platforms, this has created a market for digital learning and various education institutions dedicated to only making use of the digital landscape as a way of educating students. Therefore, there hasn't been a large number of studies done on the concept of the digital landscape, compared to other concepts, but due to the pandemic all education institutions had to make the switch to digital learning triggering a spike in the trend and interest in the topic of digital landscape encouraging researchers to investigate a deeper knowledge on the idea of digital landscape and impact thereof. With the use of digital landscape being a new approach to learning it has led to various themes of research into digital learning of business in South Africa, with universities developing their own theme towards digital learning of business, but these different themes have different positives and negatives depending on digital learning approach.

1.3 RESEARCH OBJECTIVES

1.3.1 PRIMARY RESEARCH OBJECTIVE

The primary objective of this study is to conduct an environmental scan into the digital landscape of South African Higher education institutions.

1.3.2 SECONDARY STUDY OBJECTIVES

To achieve the primary objective the following secondary objectives have been formulated:

SO_1: To clarify key concepts in related to the digital landscape.

SO_2: To identify and discuss research themes related to the digital landscape.

SO_3: To identify the areas of the digital landscape that still needs to be investigated.

1.3.3 METHODOLOGICAL OBJECTIVES

The methodological research objectives of this study are:

MO_1: To conduct a literature review on the digital landscape.

MO_2: To select an appropriate research methodology and research methods for the study

MO_3: To collect and analyse primary data.

MO_4: To provide pertinent conclusions and recommendations to researchers based on the findings to assist them to identify areas that need to be researched.

1.3.4 RESEARCH QUESTIONS

- What is the current state of digital landscape within South African Higher Education Institutions?
- What digital components are being used by these institutions?
- Are there any comparisons to be made among institutions?

1.4 SIGNIFICANCE OF THE RESEARCH

It is envisioned that the findings and recommendations found within this study will provide future researchers with guidelines to conduct further research into the topic of the digital landscape in South African Higher Education Institutions. The significance of this study sits in the environmental scan that conveys the results of the IFE; EFE; SWOT and PEST analysis indicating the variety of themes and concepts linked with digital landscape.

1.5 STRUCTURE OF THE STUDY

The study will be broken down into five chapters, each of the chapters are discussed.

Chapter One: Introduction and background to the study

This chapter will consist out of an introduction and background of the research study followed by the problem statement that expresses the reason for research, research objectives that include the primary, secondary and methodological objectives of the study. Chapter 1 will also provide the significance of the study.

Chapter Two: Literature review

Chapter Two will seek to define the Digital Landscape and its related concepts that include digital learning, knowledge management, data driven learning instructions and the emergence of technology. This chapter will also analyse and compare previous research on Digital Landscape by categorising trends, approaches, themes and findings of the researchers. The theoretical framework of this study will be examined by looking at digital learning platforms, digital learning strategies and techniques as also investigating what learning in a digital environment requires. The last section of chapter two will look to provide an overview of the selected scanning method of environmental scanning.

Chapter Three: Research design and Methodology

Chapter Three will introduce and outline the research methodology and design the study will implement. The research design will consist out of five sections. The first section is research population and sampling that will look at the sampling method and size used for this study. Section two will provide information on data collection by explaining disparities between research approaches followed by primary and secondary data collection methods. Section three will describe the measuring instrument of the study to be used. Section four will provide information on how data will be analysed by looking at SWOT and PEST analysis as also to shine light upon comparisons, reliability and validity of information. Section five will provide information regarding ethical considerations.

Chapter Four: Empirical results

Chapter four will display the results obtained through the SWOT and PEST Analysis combined with interpretations made of the IFE, EFE and CPM findings will be discussed.

Chapter Five: Summary, conclusions and recommendations

Chapter five will look to present a summary of the study as also to provide conclusions about aspects regarding digital landscape and recommendations to Higher education institutions within South Africa concerning the utilisation of digital landscape.

1.6 SUMMARY

In this chapter the introduction and background were covered by also providing the problem statement of the study as also the primary, secondary and methodological research objectives. The significance of the study was discussed along with the structure and time frame of the study to give a clear indication of proceedings.

In Chapter Two the author will conduct a literature review on the digital landscape regarding education institutions that will give academic support to the study by identifying concepts related to the digital landscape as also to analyse previous research.

CHAPTER TWO

LITERATURE OVERVIEW

2.1 INTRODUCTION

Chapter One provided a comprehensive background to the study, the research objectives formulated for the study were also discussed. The primary objective of this study alongside the secondary objectives that will assist in the achievement of the primary objective that is to conduct an environmental scan into the digital landscape of South African Higher Education Institutions.

Chapter Two will look to concentrate on providing a theoretical base for the study to be conducted by conceptualising subjects regarding the topic of digital landscape. Books, journals and reports will be referred to in gathering information that is vital in carrying out the literature review. The literature review will look to provide an in-depth explanation of the digital landscape, the concepts related to the digital landscape, the nature and environment of the digital landscape followed by an analysis of previous research outputs. The related concepts include digital learning, online education, knowledge management, data driven learning instructions and lastly the emergence of new technologies. The nature and environment of the digital landscape will assess the various platforms, techniques and strategies of digital learning followed by the impact of learning in a digital environment. The last aspect to be reviewed is previous research of digital learning by looking at themes, trends and approaches followed by previous investigators.

2.2 DEFINING THE DIGITAL LANDSCAPE

The term landscape is referred to by Challenger (1969:41) as the appearance of the whole, and the interrelationships of all things it contains. The word digital in digital landscape refers to digital technologies that can be seen as systems and electronic tools that has the function of generating, loading and processing data, consequently the utilisation of digital technologies achieve transformation in any discipline (Fitzgerald, Krushwitz, Bonnet & Welch, 2014:5). After assessing the definition of digital and landscape one can conclude that digital landscape encapsulates all things related to digital systems and tools used to transform the field of any profession.

Webster, Svalastog and Allgaier (2020:1100) has stated that the term digital landscape forces people to concentrate on the complicated and intersecting lines of on- and off-line data flows together with exchanges and other communication aspects, Webster *et al.,* (2020) further stated that the digital systems do not only enhance existing social relationships but creates new forms of them. The term digital landscape is a new concept compared to other traditional systems of operation, but with the continuous innovation of technologies it has emerged in many fields of work including business, education and humanities. The tools in digital landscape used vary according to the level of technology required and the operation that must be conducted within the respective fields.

2.3 CONCEPTS RELATED TO THE DIGITAL LANDSCAPE

It is established from the previous section that the digital landscape encompasses many factors and concepts, therefore it is essential to identify and examine the concepts related to the digital landscape with specific concentration on its involvement within higher education institutions. The concepts to be examined include digital learning, knowledge management, data driven learning and the emergence of technologies.

2.3.1 DIGITAL LEARNING

Digital learning is a new concept that was born due to the rapid evolution of digital technologies and according to Yoon, Kwon and Shim (2012:129). Jay Cross was one of the first researchers to coin this concept as digital learning or E-learning. Keane (2012:44-46) describes digital learning as a complex concept that can't be fully explained in one definition as it consists out of four components. The four components are digital teaching materials, digital tools, digital delivery and autonomous learning.

(a) Digital Learning Materials

The first component Keane (2012:44-46) states is digital teaching material that takes the form of e-textbooks, e-workbooks or even e-test, this basically shows an alternative way for students to obtain knowledge through digital material.

(b) Digital tools

The second component Keane emphasises is the use of digital tools in the process of digital learning, these tools are used by students as a way of connecting to the information being educated, digital tools include desktops, laptops and mobile phones.

(c) Digital delivery

The third part of Keane's definition is digital delivery that involves the medium through how data is being transferred and received and most of the time the preferred digital delivery option comes in the form of internet.

(d) Autonomous learning

The last component in Keane's definition is autonomous learning that is focused on the input of the student that use digital learning to complete their educational activities.

After examining Keane's broader explanation of digital learning, it is prevalent that digital learning is much more than only another way of learning, it looks to transform the practise of education and enhance the experience for both learner and teacher through the use of technology improved educational systems and approaches.

A dissimilar definition of digital learning by Sousa and Rocha (2019:328) defines digital learning as an unplanned and indirect process with unpredictable results that involves using various types of digital devices in order to learn. Sousa and Rocha (2017:932) also state that digital learning is a procedure that occurs spontaneously and unconsciously without any planned purposes, but still has the potential of fostering critical thinking, working collaboratively and to communicate efficiently. Clarity was also provided in regard to when digital learning and its processes was planned, this happens when an organisation or institution create courses that is focused on establishing learning outcomes that are planned and defined (Sousa & Rocha, 2019:328).

An aspect stated by Aboobaker and Zakkariya (2020:25) that is of high importance for any student making use of digital learning is to be digital learning orientated that is defined by Bullen, Morgan and Qayyum (2011) as an individual's commitment to obtaining competence in digital learning areas that include digital literacy, connectedness and multi-tasking. The importance and application of digital learning at Higher education institutions is stated by Василишина (2020:65) as having many benefits namely an enhanced experience for the student, help save time for teacher, enables teacher to track performance of student and to better help with complex topics and last benefit is digital learning provides more transparency of processes and systems used to educate students.

Hiremath, Mohapatra and Paila (2021:37-38) formulated emerging principles related to digital learning and micro learning to help assess the effectiveness of the learning operation. The principles examined was selected as most relevant. The first principle is to ensure the digital

content is simple, provocative, unique and relevant, this means to make learning attractive and logical for the student.

The second principle is to make learning conversational to enhance the ability to apply the work in real life, by following this principle will lead to the student participating to become more confident in his/her ability. The third principle is to use story-telling techniques to increase attention levels and learnability, by using the advantages of technology that is able to make use of animation and pictures it is possible to make teaching more interactive for students. The last principle is to avoid using irrelevant jargon, it is important that the individual that sets up the digital education not to overuse some functions of digital learning tools as it will draw the attention away from the work trying to be teached.

2.3.2 KNOWLEDGE MANAGEMENT AND DATA DRIVEN LEARNING INSTRUCTIONS

Knowledge management and data driven learning instructions is a key part in the success of digital learning and an essential component in the way the digital landscape is utilised. Knowledge management is defined by Grey (1996) as the strategic collective approach of creating, obtaining, accessing and utilisation of an organisation's intellectual assets. According to Dalkir (2007:3-5) knowledge has very distinctive characteristics that include the use of knowledge doesn't destroy it, knowledge can be transferred, the ability to use knowledge is limited and lastly most knowledge obtained by individuals is not always memorised that is why the ability to manage knowledge is an increasingly essential skill to have.

Dalkir (2007:3-5) developed a cycle of three process to better explain what is meant with knowledge management, first phase is knowledge creation and capture, second phase is knowledge sharing and dissemination and last phase is knowledge acquisition and application. The use of this cycle can prove as a tool when trying to manage knowledge in the digital landscape of digital learning processes. The correct planning and performance of knowledge management plays a vital role in the application of digital learning as digital learning is comprised of information that is obtained and send to students.

Digital learning being focused on the storage and delivery of information indicates that they are required to have knowledge management systems that are dedicated to keeping information safe and making the right knowledge accessible for those that has authority in procurement. According to Maier and Hadrich (2011:779) knowledge management systems are enabling technologies for any organisation trying to achieve effective knowledge management.

Moving on to data driven learning instructions that is defined by Johns (1991:1-2) as the utilisation of computer-generated concordances to encourage students to explore patterns in activities and the development of practises based on concordance output, in brief terms data driven learning instructions are aimed at gathering, storing and using the data obtained to enhance the quality of learning of students. According to Luo (2015:238-239) data driven learning has many benefits that include encouragement of autonomy, enhancing language and noticing skills as a result of students being frequently exposed to researching linguistic features. Data driven learning instruction is a huge cause to why digital learning has many advantages as data driven learning instructions was specially developed to enhance the quality of experience students have alongside being a perfect fit for digital learning as both operations run through the similar systems and procedures.

2.3.3 EMERGENCE OF NEW TECHNOLOGIES

The emergence and advancement of technologies made it possible for the creation of digital landscape. The big jump in technological advancement that led to digital technology is coined as Industry 4.0, it was given this name by the members of the German association after they speculated that a fourth industrial revolution occurred based on the digitisation of business process (Ardito, Petruzzelli, Panniello & Garavelli, 2019:326-327). The leading notion put forth by the German association was to transform the way businesses was run by adopting digital technologies and integrating these technologies with the rest of the business activities in order to create a system of connections between different parts of the business including the full linkage between all stages of the supply chain that could provide data and reports regarding operations (Ardito, Petruzzelli, Panniello & Garavelli, 2019:326-327).

This was the first initiative aimed at using digital technologies as an enabler of functions and it set a model as to how to incorporate technology, this led to organisations worldwide starting to adopt this strategy as it was showing the benefits and competencies achieved through enabling technologies. As enhanced technology kept on being developed many researchers started to think about the possible impact digital technologies will have when used correctly in Higher education institutions. The element that led to the research and adoption of digital learning is stated by Kaushik and Agrawal (2021:485) as the increasing demand for higher education within developing countries. Higher education institutions across the world including institutions from South Africa have accepted the approach of digital learning and have made an effort in being able to teach with full capacity with the use of digital learning tools like information and communication technology (Birch & Irvine, 2009:235-236).

Technological advancement has a direct impact on the quality of digital learning and the tools that are available to improve the digital learning experience.

The motives for the sudden research and development of digital learning stems from various avenues specifically Higher education institutions identifying opportunity, the societal problem of demand and supply of higher education and lastly strikes of institutions that required higher education institutions to have a standby plan. The rapid innovation of technologies has assisted in the increase of quality and accessibility of digital learning that proved to be crucial in keeping Higher education institutions operating through the COVID-19 Pandemic (Jantjies, 2020:2). According to Jantjies (2020:1) the COVID-19 Pandemic has transformed technology from a luxury to an important component of the education process as it was observed through this period that there is a digital gap within South Africa.

2.4 PREVIOUS RESEARCH ON DIGITAL LANDSCAPE

In this section previous research will be examined by looking at key factors such as research themes, trends, approaches and findings. These key factors will be compared to one another through way of a table to show clear differences. Table 2.1 tabulates previous research studies in terms of the author, approach used, theme and findings of the study.

TABLE 2.1: PREVIOUS RESEARCH RELATED TO THE STUDY

AUTHOR	APPROACH	THEME/TREND	FINDINGS
Jukes *et al.,* 2010	The researchers take a remedial approach as they seek to establish new avenues for digital landscape.	The authors argues that current educational systems are not designed to facilitate the digital landscape.	The authors concludes the only way to incorporate the use of digital landscape within the educational system is by changing current instructional practices and to understand present day students as they differ to traditional students.
Williamson, 2016	Williamson uses the explanatory approach by comparing a variety of concepts from political studies to software studies.	The prevalent theme of this study is what the emergence of digital governance has on public education.	Williamson believes that digital governance components like networks and databases are closely related and by connecting more people will lead to better control and

AUTHOR	APPROACH	THEME/TREND	FINDINGS
			understanding of students and their abilities.
Adekola et al., 2017	The researchers make use of the methodological approach as they attempt finding and testing various routes that will end in successful implementation of digital technologies together with education.	Adekola et al concentrates on the response from higher education institutions (HEI) regarding the impact of the enhanced blended learning on their operation as also looking at the entire digital landscape and its stakeholders.	Adekola et al concluded that the involvement of stakeholder groups around the education system of digital landscape is critical to a successful institutional transition into enhanced blended learning.
Kearney et al., 2020	The researchers make use of the explanatory approach in looking at the impact the use of digital landscape has on the cause-effect relationship on many variables within education.	Kearney et al examines intensively technology-enhanced learning (TEL) and the fit for the use of it within the current digital landscape of education.	Kearney et al found that the adoption and adaptation of digital technologies and technique of TEL has an impact on the role of students and teachers. Kearney et al states that for the effective use of digital technologies and techniques within the education system it is vital that the correct enablers are in place to allow for an enhanced experience.
Garrido-Moreno et al., 2020	They used the historical approach by examining previous research that helped them derive a hypothesis.	Garrido-Moreno et al looks to move in the direction of social media and the impact thereof in examining previous research on social media.	The researchers found that social media doesn't have a direct impact on the performance of the digital landscape components, but the role of social media in the digital landscape is a mediating role.

Source: Authors own compilation

Table 2.1 indicates five different views on Digital landscape and its use within the educational system. Table 2.1 also displays views on the Digital landscape over the period of a decade between 2010 to 2020 that somewhat demonstrates the evolution of the Digital landscape. The researchers take different approaches to digital landscape with some having limited accessibility to information about this new landscape leading to different findings.

Jukes, McCain and Crockett (2010) has found that to incorporate digital landscape with the educational system a change to current instructional practice will be needed as a student part of the digital landscape will differ from the traditional student. Williamson (2016) concluded that connecting more people through digital landscape will lead to more control and understanding of students and their abilities. Adekola, Dale and Gardiner (2017) stated that the involvement of stakeholder groups around the education system is vital to the institutional transition into enhanced blended learning. Kearney, Burden and Schuck (2020) found that the adoption of technology-enhanced learning (TEL) will lead to changing roles of students and teachers as the only way for digital landscape to allow for an enhanced experience is through having the correct enablers in place. Garrido-Moreno, Garcia-Morales, King and Lockett (2020) took an approach by evaluating the impact of social media on the digital landscape and found that social media doesn't have a direct impact on digital landscape but has a mediating role.

2.5 THEORETICAL FRAMEWORK

The nature and environment of the Digital Landscape within Higher education institutions will help in assisting the theoretical framework as it will reveal critical components of the research problem and ideas to support the study. This section aims at examining digital learning platforms, strategies and techniques as also investigating learning in a digital environment to get a better insight on what one can aspect when participating within the digital landscape of Higher education institutions.

2.5.1 DIGITAL LEARNING PLATFORMS

Boudreau (2008:5) defines a platform as a set of functions used in conjunction across the same product whose functionality can be extended by third parties, therefore it can be concluded that a digital learning platform is a set of software functions intended to assist during the educational process. Faustmann, Kirchner, Lemke and Monett (2019:1) have stated that for a digital learning platform to be effective it must have the perfect combination of education and technology. Faustmann *et al.,* (2019:2) provided four key features in determining if the combination is correct for digital learning platforms. First feature is interaction that asks the how possible it is to interact between two or more people. Second feature is multi-media that looks at the use of different formats and their processing for learning and teaching. The third feature is multi-codality that is focused on the existence of different symbol systems in a medium within the digital learning platform. Fourth and last feature is multi-modality that is

about the parallel use of different sensory channels to transit information, this is a key part of making the platform attractive.

In South African Higher education institutions, there are various digital learning platforms that come in the form of a learning management system, communication platforms and forms of social media. The popular learning management systems used in South African Higher education institutions are Moodle that was developed by Aosis, EduLearn and Google Classroom. These learning management systems is defined by Al-Busaidi and Al-Shini (2010:2) as online software platforms that enables the processing, tracking, reporting and delivery of educational content that is used by the student. The communication platforms most widely used in South African Higher education institutions are Microsoft teams and Zoom followed by forms of social media used include YouTube and WhatsApp.

Most South African Higher Education Institutions upgraded or acquired digital learning platforms for educational use as a result of the COVID-19 Pandemic this led to the widely adoption of digital learning within all educational institutions of South Africa (Mhlanga & Moloi, 2020:1-2). The benefits of using digital learning platforms include creating interactive learning experiences, helps in evaluating student's ability and will keep a progress report of each student.

2.5.2 DIGITAL LEARNING STRATEGIES AND TECHNIQUES

As stated in previous sections of this study, digital learning is much more than just the use of technology, what makes digital learning effective is the utilisation of technology enhanced educational strategies. The strategies mostly used are personalised, blended, flipped and other learning strategies. Blended learning is defined by Anthonysamy, Koo and Hew (2020:4-5) as the combined use of physical face-to-face learning with the use of digital learning to boost the learning experience.

The flipped digital learning strategy is the strategy used by most educational institutions in the COVID-19 Pandemic period and it entails doing the opposite as the traditional view of learning as it requires learning to take place away from a physical location and moved to a digital location with class conducted through use of digital learning platforms (Carbaugh & Doubet, 2015:3). The strategies and techniques used to apply digital learning to the way learning is offered is an effective way of teaching students while still keeping their attention.

2.5.3 LEARNING IN A DIGITAL ENVIRONMENT

The digital environment is defined by Belk (2013:477-478) as an environment that consist only of digital technologies and virtual communication. A lot of students prior to the pandemic was a part of the digital environment, but as a result of the pandemic even more students were exposed to the digital environment of learning. There are a few requirements that is necessary when trying to learn in a digital environment. The requirements consist of an internet connection, a working computer or any device able to run programmes and lastly to have the right software downloaded to the device in use (Linzalone, Schiuma & Ammirato 2020:1528-1532).

Learning in a digital environment has many opportunities and risks for the institution. The opportunity for the institution is a better digital reputation of students and courses of study followed by better prepared students through enhanced uses of technology in the classroom and therefore will improve student's capacity for independent and autonomous learning with technology (Beetham & White, 2013:2-3).

The risks institutions may encounter resulting from failed learning in a digital environment include that it may affect student attainment meaning if the assessment's quality was bad it may influence the employability of the students followed another risk that online experiences are raising the bar of student expectations, this can happen because of the lack of control the education institution has over their students (Beetham & White, 2013:1-2).

2.6 ENVIRONMENTAL SCANNING

Environmental scanning is defined by Salinas and Lozano (2017:3) as a unique way of collecting data through systematic gathering of qualitative information that is used to improve an institution's ability to transform and adapt to its changing external environment. Conducting an environmental scan is the most appropriate scanning method for this study as it analyses the changing digital landscape among Higher education institutions. In this study environmental scanning will take place through content analysis as way of collecting data and the use of SWOT Analysis (IFE & EFE) and PEST analysis will be used to analyse the data gathered that will run through a Competitive Profile Matrix that will indicate differences in strengths, weaknesses, opportunities and threats among the three sample universities chosen. Environmental scanning will allow this study to determine changes in the external environment of the universities, identify their potential opportunities and threats, provide information of the

future use of digital landscape as also indicate emerging trends among the Digital Landscape of Higher education institutions within South Africa.

2.7 SUMMARY

This chapter provided information on digital landscape by defining and identifying key concepts linked to digital landscape that include digital learning, knowledge management, data driven learning instructions and emergence of technologies. Previous research linked to digital landscape was also evaluated by looking at different themes and findings. Theoretical framework was also comprised out of information regarding digital learning platforms, digital learning strategies and learning in a digital environment as also addressing environmental scanning.

The next chapter will look to explain the research design and methodology used within this study by providing information on data collection, data analysis and other essential research tools.

CHAPTER THEE

RESEARCH METHODOLOGY AND DESIGN

3.1 INTRODUCTION

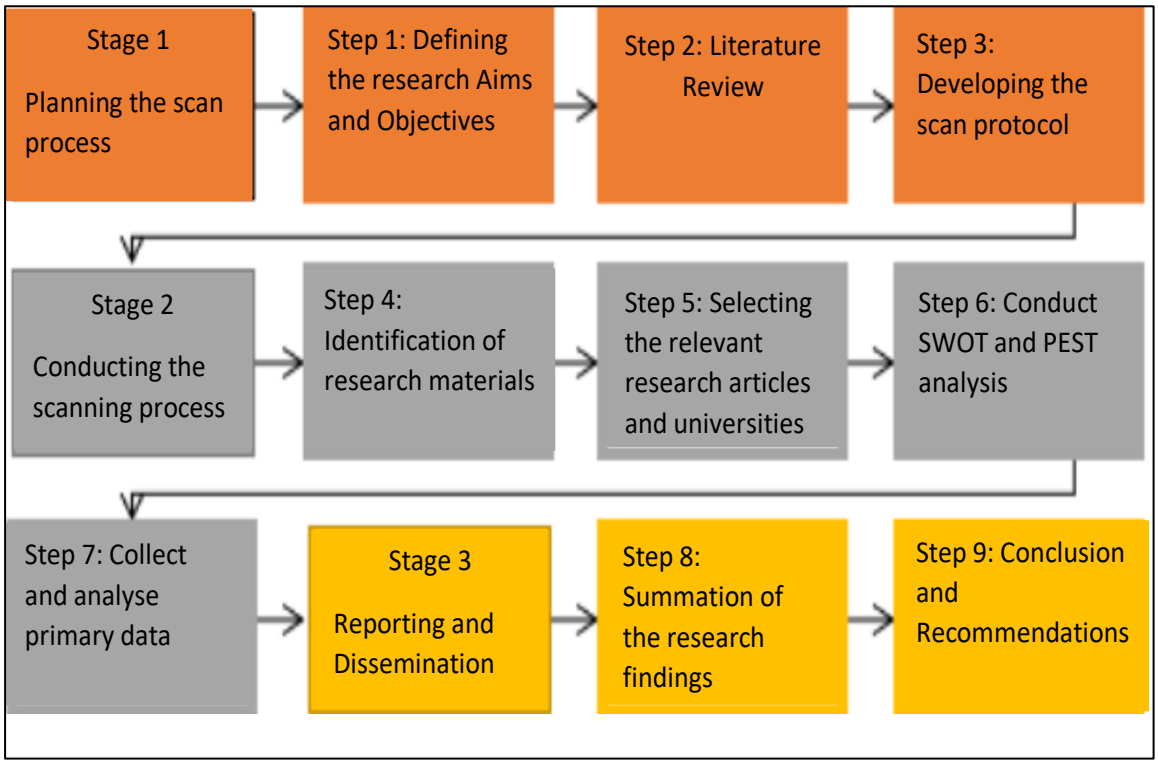
In Chapter Two an overview of the digital environment and the use of it in South African Higher Education Institutions was introduced. To provide a better understanding of the digital landscape it was essential to define the concept with other related concepts including digital learning, knowledge management, data driven learning instructions and the emergence of technologies as all these concepts play a major role in the development and utilisation of digital landscape. Furthermore, it was important to analyse the nature and environment of digital landscape within South African Higher Education institutions by looking at various platforms used, prevalent techniques and strategies as also to identify differences in learning through a digital environment. Lastly previous research on digital environment was analysed to identify key themes, trends and approaches that led to key findings that could be used for further interpretation.

Chapter three will look to offer a thorough overview of the study being conducted by explaining the research design and methodology used within the study. This chapter can be split into five components viz. research population and sampling, data collection, design of measuring instrument, data analysis and lastly ethical considerations. These five components will also look to explain research approaches, research paradigms, content analysis, SWOT analysis and PEST analysis. By providing a detailed explanation of these components and aspects it will help pave the way for chapter four.

3.2 FLOWCHART OF THE RESEARCH METHODOLOGY

This study is broken down into three stages and nine subsequent steps. These stages and steps are illustrated in Figure 3.1. This flowchart attempts to explain the methodology behind the study with different stages and steps assigned to conduct a successful study.

FIGURE 3.1: METHODOLOGY FLOWCHART



Source: Authors own construction

Steps three to seven will be discussed in this chapter as it will look to offer a thorough overview of the study being conducted by explaining the research design and methodology used within the study. This section can be split into five components consisting of research population and sampling, data collection, design of measuring instrument, data analysis and lastly ethical considerations. These five components will also look to explain research approaches, research paradigms, content analysis, SWOT analysis and PEST analysis.

3.3 RESEARCH POPULATION AND SAMPLING

Research population and sampling is a crucial aspect when it comes to conducting a study as this is the process of establishing the entities that is used for more in-depth investigation. Research population is defined by Levy and Lemeshow (2008:11) as all the individuals related to the study that fall in the same group as the sample where a conclusion can be derived from the findings of the sample. Furthermore, sampling regarding research is defined by Acharya, Prakash, Saxena and Nigam (2013:331) as the subset of the population that is selected through various sampling methods to be the representative of the specific population. The population of this research to be represented can be classified as all institutions related to South African

Higher Education and the research sample of this study is the selected institutions to represent the population of all Higher Education institutions within South Africa.

3.3.1 SAMPLING METHODS AND SIZE

According to Acharya, Prakash, Saxena and Nigam (2013:331) there are two main methods of sampling being probability sampling and non-probability sampling. Probability sampling is a method where all individuals have an equal chance at being included in the study appose to non-probability that is a method where not all individuals have an equal chance due to various factors, but the sample will still represent the population (Acharya *et al.,* 2013:331-333). Probability and non-probability sampling both have various techniques that is classified under each method. Probability sampling techniques include simple random, systematic random, stratified random, cluster, multiphase and multistage sampling whereas non-probability sampling techniques include convenience/purposive, quota and snow-ball sampling (Acharya *et al.,* 2013:331-333).

The sampling method used within this study is non-probability sampling. This is due to the COVID-19 pandemic that has closed some routes of probability sampling making the way for non-probability sampling to be utilised. The chief sampling technique used is judgemental sampling that entails the use of one's personal judgement or the judgement of an expert that will assist in guiding the sampling size. For this study it will be beneficial to have the assistance from experts regarding the sampling size and selection. The experts for the judgemental sampling will be Prof Struwig and Mr Watson. Judgemental sampling will also accommodate access available with the impact of the COVID-19 pandemic (Acharya *et al.,* 2013:331-332). The approach to sampling the population that is South African Higher Education Institutions will be sampled through recommendation of experts and selecting institutions based on their geographic region, this could also provide differences regarding digital landscape and if there are any distinctive factors.

The sample size used within the study is also a telling factor as having a surplus or shortage in samples may affect the credibility of the study significantly (Taherdoost, 2017:237). When comparing other studies that make use of a large sample sizes it is apparent that the population to sample size is massive, comparing those studies to this one it is important to look at the population of the entities being represented and with studying the Higher Education Institutions within South Africa it is crucial to stipulated that there is not a large population base compared to other studies. Consequently, the sample size will consist out of three universities based on

geographic location consisting out of Western Cape, Eastern Cape and Gauteng. The reasoning behind the choice of these regions is due to the sample being an accurate representation of South African Higher Education Institutions. The use of three samples in context to this study will enable an in-depth review of digital learning as also providing enough information to form an opinion on digital landscape regarding the research population.

3.4 DATA COLLECTION

This section will focus on defining data collection in relation to primary and secondary data collection combined with differentiating between two research approaches that is critical when conducting research.

3.4.1 DISPARITIES BETWEEN RESEARCH APPROACHES

There are two main approaches on how research data is collected that focuses on different methods of obtaining information. Quantitative research is known for obtaining numerical data and transforming it into valuable information with the goal of observing, measuring and representing numerical data combined with statistical methods (Basias & Pollalis, 2018:92).

Basias and Pollalis (2018:92) states that the quantitative approach has distinctive characteristics that include conducting research on experiments, investigating phenomena, use of statistical tools and questionnaires as quantitative research is more focused on systematic and empirical investigations.

Qualitative research is mainly not focused on statistical and numerical data as qualitative data is more aimed at explaining experiences, attitudes and beliefs around people with their feelings towards any topic or practice (Basias & Pollalis, 2018:94). Basias and Pollalis (2018:94) includes in his definition that qualitative research is more concerned with research methodologies that focuses on phenomena by examining behaviours, relations and understandings that will lay claim to answers of what, how, when and where. Qualitative research approach will be the approach chosen for this study as this study will look to investigate and describe the digital landscape within South African Higher Education Institutions.

3.4.2 SECONDARY DATA COLLECTION

Hox and Boeije (2006:593) defines secondary data as first-hand data that was collected for a specific research purpose/question, but then reused by another researcher for a different research question. The secondary data sources used within this study will come in the form of

online journal articles and books that is used to better describe and support various components/aspects linked to digital landscape.

3.4.3 PRIMARY DATA COLLECTION

Primary data collection is defined by Hox and Boeije (2006:593) as first-hand data that is collected for a certain research question using techniques that answers the research question best. Another distinctive characteristic of primary data collection is that it adds new data and information to the social knowledge that exist (Hox & Boeije, 2006:593). The primary source of data collection will be by making use of content analysis that requires analysing documents, reports and other forms of texts, the data can be obtainable by utilising technology with the use of internet to retrieve these textual data sources (Stemler, 2016:1). Content analysis will help in collecting data about digital landscape of the chosen universities by retrieving documents and reports about digital learning and the digital interface of these universities.

3.5 DESIGN OF THE MEASURING INSTRUMENT

Measuring instruments for quantitative and qualitative data usually came in the form of questionnaires, surveys and other types of forums, but with the COVID-19 pandemic it has disabled the opportunity of making use of these measuring instruments. This led to alternative ways of employing measuring instruments for qualitative research by making use of content analysis to conduct an environmental scan on South African Higher Education Institutions with the goal of explaining the digital landscape of these institutions. The measuring instrument used within this study will be a combination of annual reports of the chosen universities that was retrieved through content analysis that will be further analysed and measured through SWOT analysis in the form of Internal Factor Evaluation (IFE), External Factor Evaluation (EFE) and Competitive Profile Matrix (CPM) as also using PEST analysis, these concepts will be further explained in the next section. The annual reports of these three selected universities will stipulate their view on digital landscape and future development.

3.6 DATA ANALYSIS

When conducting a study, it is necessary for the researcher to do data collection and data analysis and as stated in the previous section data collection entails the collection of raw qualitative/quantitative data that must be further examined through data analysis. Data analysis is defined by Grbich (2012:21-22) as a process of inspecting and tracking raw data to ascertain information that is relevant to the study and research question. There are several methods to

data analysis, but the use of content analysis in data collection with the goal of doing an environmental scan on digital landscape of different institutions, it has surfaced that doing a SWOT and PEST analysis will be key in determining the level of each institution regarding digital landscape. It will be critical to define Internal Factor Evaluation (IFE) and External Factor Evaluation (EFE) as it will be used when conducting the SWOT analysis.

3.6.1 SWOT ANALYSIS

The first form of SWOT analysis was introduced by Kurt Lewin in his Field Theory in Social Science that was focused on identifying driving force to an organisation's results (Leigh, 2010:1091). Leigh (2010:1089) defines SWOT Analysis as a method that is focused on identifying internal strengths and external opportunities that then can be used by management of organisations to help form opinions on strategies and objectives. This analysis will be used by determining the strengths, weaknesses, opportunities and threats of each institution's digital landscape. The utilisation of Internal Factor Evaluation, External Factor Evaluation and Competitive Profile Matrix will be crucial in conducting the SWOT Analysis.

a) Internal Factor Evaluation

Internal Factor Evaluation (IFE) is defined by David (2009:152) as a tool to efficiently evaluate a company/institution's internal environment by indicating the strengths and weaknesses the institution may possess. IFE is conducted by finding strengths and weaknesses based on the institution's resources, core competencies and capabilities. When the strengths and weaknesses is decided upon each will be given a weight and rating that will be multiplied into a weighted score that can be used for further examination. Therefore, in this study the strengths and weaknesses of the three institutions will be identified, weighted and rated that will lead to a weighted scores of each institution that can be used.

b) External Factor Evaluation

External Factor Evaluation (EFE) is also a matrix tool like IFE, but EFE is focused on examining the external environment of a company/institution by indicating potential opportunities and threats of the institution (David, 2009:110).

c) Competitive Profile Matrix

David (2009:113) describes Competitive Profile Matrix (CPM) as a tool used for comparing different entities such as companies with the goal of establishing the differences between initial company's strengths, weaknesses, opportunities and threats with the company's various

competitors. In essence Competitive Profile Matrix will try to compare competitors with key performance measures. For this study the three institutions will be compared by using the method with the help of the results from the IFE and EFE.

3.6.2 PEST ANALYSIS

As the SWOT Analysis will assess both internal and external factors influencing digital landscape, PEST Analysis will be more focused on major external factors that is around the environment of digital landscape as it will include political, economical, societal and technical aspects regarding Higher Education Institutions in South Africa (Sammut-Bonnici & Galea, 2014:1).

3.6.3 COMPARISONS, RELIABILITY AND VALIDITY

When analysing any data, it is important to determine whether the data obtained is valid and from a reliable source in order to keep the study credible. To ensure that the raw data obtained will be reliable and valid the use of content analysis will be used within the collection phase by using credible sources in the form of annual reports that is directly from the universities. A comparison will also be made between the information generated of each institution in an effort to establish mistakes and improvements between each institutions' approach to digital landscape. To further implement validity and reliability all information gathered will be discussed with the research supervisor for inputs and amendments where necessary.

3.7 ETHICAL CONSIDERATIONS

As time has progressed ethics has become an inaugural part of many organisations as it impacts any task being conducted, this is also true for research projects and studies as ethics can be used as a guideline. Ethics is looked at by Markham, Tiidenberg and Herman (2018:3) as being enacted rather than defined and describes the concept of ethics as 'always-already' emergent personal practice that is focused on moral decisions between right and wrong. As for this study there has been an ethics form that will be used as a guideline to provide clarity on certain decisions and has been signed by the parties involved with the research project that include the researcher, study leader and head of department.

As per the code of conduct for researchers at the Nelson Mandela University this research will be carried out in a scientifically responsible manner at all times. The researcher accepts responsibility for the design, methodology and execution of the research; plans the study in

such a way as to optimize the validity of the findings; reports the limitations of the findings, and indicates, where applicable, possible alternative interpretations.

3.8 SUMMARY

This chapter tried to describe the research design and methodology of the study by providing a flowchart linked to the methodology. The research population and sampling were discussed including sampling methods and size. Secondary and primary data collection was addressed together with the design of the measuring instrument. Data analysis was analysed that included the SWOT analysis regarding internal factor evaluation, external factor evaluation and competitive profile matrix. Ethical considerations were also looked at to guarantee a fair and proper study.

The next chapter will look to incorporate the information provided from the first three chapters to conduct the actual analysis of data collected regarding the selected higher education institutions to reach the primary and secondary research objectives of the study.

CHAPTER FOUR

FINDINGS AND INTERPRETATION OF DATA

4.1 INTRODUCTION

Chapter Three that dealt with the research design that tried to explain the tools to be used within the study and the procedures to be followed.

Chapter Four will be the chapter where the actual study will be conducted starting with providing the selected SWOT factors and weights followed by the Internal Factor Evaluation (IFE) and External Factor Evaluation (EFE) being conducted as Nelson Mandela University (NMU), University of Cape Town (UCT) and University of Johannesburg (UJ) are the three selected Higher Education Institutions. After the IFE and EFE a Competitive Profile Matrix (CPM) will be conducted with the purpose of indicating the differences between key success factors relating to the digital environment.

4.2 SELECTED SWOT FACTORS, ALLOCATED WEIGHTS AND RATING

The selected internal and external factors was comprised under the guidance of the study leader to ensure the strengths, weaknesses, opportunities and threats are on par with current trends regarding the digital environment of the three institutions.

The internal and external factors are presented in Table 4.1 and 4.2 respectively as also their codes that can be used to identify each factor, Strengths (S), Weaknesses (W), Opportunities (O) and Threats (T). The weights of both internal and external factors were ranked from highest priority to lowest priority that indicated the proper weights for each factor. The ratings will be determined through an attractiveness score system whereby each internal and external factor will be ranked from 0-4.

The ratings in the internal factor evaluation (1) major weakness (2) minor weakness (3) minor strength (4) major strength – strengths will have a scope of 3 or 4 and weaknesses will have a score of 1 or 2. The IFE will indicate how internally strong and weak the internal capabilities are for each institution. For the EFE ratings include (1) firms response is poor; (2) firms response is average (3) firms response is above average (4) firms response is superior. The EFE will indicate each institution’s response from poor to superior regarding the opportunities and threats they are faced with.

The factors' ratings will be multiplied by each one's weight to provide a weighted score that will be used to compare between institutions and the sum of each factor's weighted score will give an answer to the IFE and EFE matrix of each institution for further analysis. To keep the study consistent the same strengths, weaknesses, opportunities and threats will be used through out all institutions.

TABLE 4.1: INTERNAL FACTORS AND WEIGHTINGS

INTERNAL FACTORS		
Strengths	**Code**	**Weight**
Comprehensive range of programmes and qualifications	S1	10.8%
Humanising pedagogy and human centred relational communication	S2	7.4%
Multiple pathways of learning	S3	11%
Spirit of innovation and dynamism	S4	4%
Excellent student support	S5	16.5%
Weaknesses		
Graduate employability (e.g., experiential learning opportunities)	W1	24.7%
Staff workload too high due to remote teaching and learning	W2	6.5%
Lack of postgraduate supervisory capacity and low research outputs	W3	7.1%
Traditional infrastructure's incapability to combine with modern techniques	W4	3.8%
Untrained lecturers/tutors regarding enhanced blended learning	W5	8.2%
TOTAL		100%

Source: Authors own compilation

TABLE 4.2: EXTERNAL FACTORS AND WEIGHTINGS

EXTERNAL FACTORS		
Opportunities	**Code**	**Weight**
Innovative technology – systems, processes, workflows, policies, service delivery	O1	8.7%
Increased and enhanced student support	O2	15.3%
International partnerships and collaboration	O3	4.4%
Increase in students that require online education	O4	7.6%
Ability to reach a broader audience	O5	5.0%
Threats		
Digital divide and unequal access to mobile devices and connectivity	T1	11.4%
Financial sustainability - rising costs, declining state subsidies and rising student debt	T2	7.2%
Online learning - pace and technology requirements	T3	15.8%
Higher education model and curriculum outdated	T4	7.7%
Poor quality of basic education and schooling	T5	16.9%
TOTAL		**100%**

Source: Authors own compilation

4.3 IFE AND EFE MATRIX OF EACH INSTITUTION

As it has been discussed in Chapter Three the information that is required for the IFE and EFE will be obtained through an environmental scan of each institution. The data collection for most of the ratings will be retrieved by assessing strategies linked to the digital environment of the institutions, represented websites of each institution, visions, comparing data with the strategic plan set out by Department of Higher Education and Training as also analysing other components associated with the digital environment of each institution.

4.3.1 NELSON MANDELA UNIVERSITY (NMU)

Nelson Mandela University represents the Eastern Cape in the investigation as it has six campuses located within Gqeberha and one in George.

4.3.1.1 Internal Factor Evaluation of NMU

After assessing the official website of NMU it can be stated that their range of programmes and qualifications S1 obtained the rating of 4 due to their clear instructions on discovery and application as their applications show various fields of study with different qualifications within each field of study that accommodates both undergraduatess and postgraduatess. As for S2 they obtained a 3 due to their clear communication of application, admission and registration followed by clear prospectus of each qualification that is easily accessible through the website. S3 for NMU would deserve a 3 due to the accommodation of part-time and full-time students, followed by the use of blended learning and other forms of digital learning that was hugely impact by the Covid-19 Pandemic, only fault for NMU is that they are still relatively new towards the embracement of digital learning if compared to European institutions but considering the continent of Africa they are front runners with other South African institutions. When analysing NMU's Vision 2030 Strategy it can be acknowledged that they have an innovative plan for the digital environment of NMU including digital learning and communication, this have caused S4 to be rated a 4 as they recognise the importance of being innovative through technology. When reviewing the student support (S5) of NMU it can be rated as 2 as it is average compared to other top institutions, but with the innovation showed within their development plans it can be said that it is one of their key priorities for the future that can move them up to 4.

Moving to the weaknesses within the internal factors, W1 that is the graduate employability can be viewed having a rating of 2 as within the borders of Africa it is seen as a positive to have been a part of NMU and their digital and non-digital qualifications nonetheless on an

international standard NMU is accredited, but in reality finding employability in a top-class country isn't as easy due to favourability of citizens within every country. Looking at W2 it can rate as 1 due to the beginning of the adaption of digital learning required staff and students to start familiarising themselves with the new style of teaching.

W3 can be rated as 2 due to previous encounters such as #Feesmustfall strike that impacted NMU massively has prepared them with the pandemic and future needs of supervision and capacity to be able to provide an online library and communication channels with supervisors. Traditional infrastructure that used for traditional techniques of teaching was made to be used within blended learning and those traditional infrastructure that was seen as obsolete has been abolished by NMU to make way for modern techniques, even though there are still forms of traditional infrastructure within NMU there is a clear plan to be more innovative with their 2030 Vision Strategy therefore W4 obtains a rating of 2. Untrained lecturers/tutors (W5) in relation with blended learning is part of the weaknesses of NMU just like any established institution, this is due to some lecturers/tutors having their own philosophy of learning that hasn't considered the benefits of enhanced blended learning, this is seen across South Africa's established institutions justifying a major weakness score of 1. The weighted scores obtain from the internal factor evaluation and the total IFE is presented on Table 4.3.

TABLE 4.3: IFE OF NMU

INTERNAL FACTORS	RATING	WEIGHT	SCORE
Strengths			
Comprehensive range of programmes and qualifications	4	0,108	0,432
Humanising pedagogy and human centred relational communication	3	0,074	0,222
Multiple pathways of learning	3	0,11	0,33
Spirit of innovation and dynamism	4	0,04	0,16
Excellent student support	2	0,165	0,33
Weaknesses			
Graduate employability (e.g., experiential learning opportunities)	2	0,247	0,494
Staff workload too high due to remote teaching and learning	1	0,065	0,065
Lack of postgraduate supervisory capacity and low research outputs	2	0,071	0,142
Traditional infrastructure's incapability to combine with modern techniques	2	0,038	0,076
Untrained lecturers/tutors regarding enhanced blended learning	1	0,082	0,082
TOTAL IFE		1	**2,333**

Source: Authors own compilation

When evaluating the strengths of NMU it is clear that they excel at promoting innovation and dynamism as also providing a comprehensive range of programmes and qualifications. One area that they can improve that could be a strength is to be excellent with student support as the institution is seen as average in this with some blemishes.

The major weaknesses NMU has is its added workload on staff due to the pandemic switching to a more digital base of learning and another weakness is untrained staff in relation to enhanced blended learning, this is due to not all staff having the philosophy. The weighted score for the total IFE has resulted in a 2,333 that can be viewed as below average which indicates that the institution needs to reallocate their resources to capitalise on their strengths and work on their weaknesses

4.3.1.2 External Factor Evaluation of NMU

Table 4.2 tabulated the Opportunities and Threats of Nelson Mandela University after an extensive environmental scan was conducted. External factors are crucial to the environment that NMU operates in as the opportunities and threats play a major role. (O1) and (O2) graded 3 due to innovative technology of NMU having redesigned their faculties and support divisions from 2018 to 2019 to ensure that these various departments are aligned with the 2030 strategy, this has led to new innovative systems, processes, policies and an enhanced student support system. NMU's has always been involved with international partnerships and collaboration (O3) but in recent years has focused more on their own ability and capabilities leading to a 2 rating. Considering the necessity for online education throughout the Covid-19 pandemic the need for online education overall has skyrocket with NMU making special provision for it giving O4 a 3. Online education and digital learning being a newly adapted form of teaching for NMU it has enabled them to reach other audiences that formerly couldn't be approached but with competition from other institutions it has resulted in the rating of 2.

Moving towards the threats for NMU digital divide and unequal access to mobile devices and connectivity (T1) was a major threat for them as not all students were equally privilege, but throughout the Covid-19 Pandemic NMU has negotiated with network providers to provide students working from home with data to enable them to use digital learning tools, the only fault is that a small minority of students were unable to acquire devices to work of that results in a 3. When assessing the strategic plan 2020-2025 set out by The Department of Education and Training it is stated that the department has strategies and planned initiatives in place to ensure the digital and general environment needs of every Higher Education Institution to be

assisted, as also after reviewing the financial statements put out by NMU it is clear that the costs (T2) moving to a more digital environment is increasing but with the help of various partnerships, sponsors and subsidies it will be handled accordingly resulting in a rating of 3.

For T3 when assessing the organisational redesign of 2018-2019 it is clear that the online learning (pace and technology requirements) has been accommodated, but when evaluating the education model and curriculum (T4) not all of the curriculums have been updated due to disruptions caused by the Covid-19 Pandemic justifying average (2) for T3-4 as most institutions have encounter similar problems. T5 that is poor quality of basic education and schooling isn't a real threat (4) for NMU as they have strict admission rules. The weighted scores for the external factor evaluation and total EFE are presented in Table 4.4.

TABLE 4.4: EFE OF NMU

EXTERNAL FACTORS	RATING	WEIGHT	SCORE
Opportunities			
Innovative technology – systems, processes, workflows, policies, service delivery	3	0,087	0,261
Increased and enhanced student support	3	0,153	0,459
International partnerships and collaboration	2	0,044	0,088
Increase in students that require online education	3	0,076	0,228
Ability to reach a broader audience	2	0,05	0,1
Threats			
Digital divide and unequal access to mobile devices and connectivity	3	0,114	0,342
Financial sustainability - rising costs, declining state subsidies and rising student debt	3	0,072	0,216
Online learning - pace and technology requirements	2	0,158	0,316
Higher education model and curriculum outdated	2	0,077	0,154
Poor quality of basic education and schooling	4	0,169	0,676
TOTAL EFE		1	**2,84**

Source: Authors own compilation

The total weighted score of 2.84 indicates that Nelson Mandel University is above average indicating that they are responding in a good way to existing opportunities and threats in their sector. When assessing the opportunities within the EFE of NMU there are above average ratings inthe view of O1, O2 and O3, with some average ratings involving international partnerships and ability to reach broader audience as NMU is still preparing for the future.

Looking at the threats facing NMU, they have been prepared with the quality of basic education as they have followed their own 2030 Vision Strategy and the strategic plan of The Department

of Education and Training, two threats to watch out for NMU include the pace and technology requirements for digital learning as it must accommodate their students' ability and the curriculum matching the implementation of digital learning, Examining the total EFE of 2,84 it can be stated that it is above the average as most threats can be controlled or deflected, NMU must just work on their appeal to a broader audience.

4.3.2 UNIVERSITY OF CAPE TOWN (UCT)

The University of Cape Town represents the Western Cape with four campuses within Cape Town.

4.3.2.1 Internal Factor Evaluation of UCT

When evaluating and reviewing the official website of UCT they have acquired a rating of 4 as there is a wide range of qualifications and programmes (S1) for undergrads, postgrads and students looking at short courses with choice of part-time and full-time. When looking at the info UCT have provided on their plans for pedagogy and human centred relational communication (S2) it can be said that it is average (2), and the institutions isn't as focused on it as NMU.

Assessing S3 of UCT it can be compared to S1 where they offer multiple pathways of learning with the only fault of having not updated it to the level of other top European institutions rating just above average (3). As NMU, UCT also released a 2030 Vision Strategy that expresses their desire to be innovative for the future that gives S4 a 4 rating. The student support (S5) of UCT is proper as they look to support in many ways including disability, food programmes, counselling, discrimination as also help with fees, their support system has a great user interface retaining a score of 3.

Moving to the weaknesses, W1 regarding Graduate employability is great as they offer experiential learning opportunities that is above average just like NMU, whilst having international acclaim for the level of higher education being employed in a first world country is difficult due to partiality of its own citizens grading a 2. W2 relating to staff workload is a problem for UCT at first as they had to switch from a traditional way of teaching to online education because of the Covid-19 Pandemic, as time has progressed the lecturers have adapted to the remote way of learning resulting in a 1. UCT has had some previous experiences with online education due to fees must fall and had some techniques for postgraduate supervisory (W3) and to provide postgrads with online resources such as an online library resulting in a 2 with the only flaw being some supervisory techniques are outdated. With the strategic plan

2020-2025 that The Department of Education and Training has set out it has put emphasis on creating and adapting infrastructure (W4) to accommodate modern techniques of learning such as blended learning, UCT has done a great job in the transition from traditional to modern way of learning resulting in a 2. W5 is also a part of W4 where UCT in their 2030 vision strategy has stated the importance of emerging techniques such as blended learning resulting in a 2 as there is still those who are untrained. Table 4.5 indicates the weight scores and total IFE.

TABLE 4.5: IFE OF UCT

INTERNAL FACTORS	RATING	WEIGHT	SCORE
Strengths			
Comprehensive range of programmes and qualifications	4	0,108	0,432
Humanising pedagogy and human centred relational communication	2	0,074	0,148
Multiple pathways of learning	3	0,11	0,33
Spirit of innovation and dynamism	4	0,04	0,16
Excellent student support	3	0,165	0,495
Weaknesses			
Graduate employability (e.g., experiential learning opportunities)	2	0,247	0,494
Staff workload too high due to remote teaching and learning	1	0,065	0,065
Lack of postgraduate supervisory capacity and low research outputs	2	0,071	0,142
Traditional infrastructure's incapability to combine with modern techniques	2	0,038	0,076
Untrained lecturers/tutors regarding enhanced blended learning	2	0,082	0,164
TOTAL IFE		1	**2,506**

Source: Authors own compilation

After assessing the internal factors, the strengths that UCT outdoes the average institution is their options of qualifications and ability to look into the future with their only strength to work on being their pedagogy and relational communication as the methods can be seen as old-fashioned compared to Europe's top institutions.

Looking at the major weaknesses within the IFE the only main one is the high workload due to teaching and learning and this is as a result of the adaption of digital learning and communication channels.. Judging the total IFE weighted score of 2,506 it can be stated that it is above average compared to others as UCT has delt with most of their weaknesses whilst bolstering great strength ratings.

4.3.2.2 External Factor Evaluation of UCT

UCT has made it their goal within their 2030 Vision Strategy to acquire innovative technology (O1) that includes systems and processes aimed at improving their digital environment leading to a rating of 4. When evaluating O2 and O3 it can be noted that UCT has focused on improving their student support due to the upgrade in digital components of learning as also worked on their international partnerships with topics such as student exchanges and offering international academic programmes resulting in a 3 rating for O2 and O3. As for O4 and O5 it is above average as the desire for online education has grown that UCT has acknowledged and therefore has put the proper systems in place to reach a broader audience, this led to a rating of 3 for O4 and O5.

Shifting to the threats with T1, T2 and T3 being average (2) this is due to the impact of the Covid-19 Pandemic exposing the unequal access there are between students regarding connectivity and devices, UCT has identified these problems and have put plans forth to combat these issues. As for T4 and T5 UCT is above average (3) as the education model of UCT is consistently updated and the quality of schooling will therefore be on par with other top institutions. Table 4.6 will provide information on the weighted scores and total EFE.

TABLE 4.6: EFE OF UCT

EXTERNAL FACTORS	RATING	WEIGHT	SCORE
Opportunities			
Innovative technology – systems, processes, workflows, policies, service delivery	4	0,087	0,348
Increased and enhanced student support	3	0,153	0,459
International partnerships and collaboration	3	0,044	0,132
Increase in students that require online education	3	0,076	0,228
Ability to reach a broader audience	3	0,05	0,15
Threats			
Digital divide and unequal access to mobile devices and connectivity	2	0,114	0,228
Financial sustainability - rising costs, declining state subsidies and rising student debt	2	0,072	0,144
Online learning - pace and technology requirements	2	0,158	0,316
Higher education model and curriculum outdated	3	0,077	0,231
Poor quality of basic education and schooling	3	0,169	0,507
TOTAL EFE		1	**2,743**

Source: Authors own compilation

UCT has planned for many of their opportunities such as implementing innovative technology as they understand the benefit of upgrading their digital environment.

Evaluating the threats of UCT there minor weaknesses would be the technological divide between the students, implemented pace of digital learning and their response to financial sustainability during the pandemic. The EFE total weighted score for UCT is 2,743 that is above average, they can increase this total by addressing potential threats.

4.3.3 UNIVERSITY OF JOHANNESBURG (UJ)

University of Johannesburg represents Gauteng and the north side of South Africa as they also have four campuses located within the metropolitan of Johannesburg.

4.3.3.1 Internal Factor Evaluation of UJ

After evaluating the official website of UJ the range of courses (S1) on offer can be deemed as a 3 as they offer many different qualifications linked to various fields of study. UJ's pedagogy and human centred relational communication (2) isn't the first priority of the institution nonetheless it isn't outdated resulting in a 2. UJ has looked to offer different pathways of learning (S3) as they offer many online programmes aimed at using digital learning and other online education techniques.

When evaluating the spirit of innovation and dynamism (S4) it has become apparent that they have the slogan of "The Future. Reimagined", but after further investigation there isn't any vision strategy that compares to the likes of UCT and NMU that are vested in being innovative, justifying the average rating (2). UJ's student support (S5) is excellent (4) as they offer learner and teaching support as also online instruction videos. When assessing W1 it can be seen as the same (2) as UCT and NMU as being a part of any top institution within South Africa will give many opportunities within the borders of Africa as UJ is also internationally accredited, only issue is when applying for a job in a first world country as they require internships and working experience in the field whilst having favour for their citizens.

W2-4 is seen as average as the Covid-19 Pandemic and the shutting down of campuses resulted in a high workload for staff, unprepared supervisory and incapability of traditional infrastructure to mix with modern techniques, UJ combatted these problems out of the lessons learned to offer library services and online communication channels for teaching leading to a major weakness (1). W5 for UJ is average (2) as they have started to address the issue of untrained staff with enhanced blended learning that may in the coming years be on par with other top-class institutions around the world. Table 4.7 will provide weighted scores and total IFE.

TABLE 4.7: IFE OF UJ

INTERNAL FACTORS	RATING	WEIGHT	SCORE
Strengths			
Comprehensive range of programmes and qualifications	3	0,108	0,324
Humanising pedagogy and human centred relational communication	2	0,074	0,148
Multiple pathways of learning	3	0,11	0,33
Spirit of innovation and dynamism	2	0,04	0,08
Excellent student support	4	0,165	0,66
Weaknesses			
Graduate employability (e.g., experiential learning opportunities)	2	0,247	0,494
Staff workload too high due to remote teaching and learning	1	0,065	0,065
Lack of postgraduate supervisory capacity and low research outputs	1	0,071	0,071
Traditional infrastructure's incapability to combine with modern techniques	1	0,038	0,038
Untrained lecturers/tutors regarding enhanced blended learning	2	0,082	0,164
TOTAL IFE		1	**2,374**

Source: Authors own compilation

The internal factors of UJ have shown that they outrival others at providing excellent student support as they have put focus on services and processes to help their students, the two flaws within strengths are that they need to show more innovative spirit with their strategic plans and focus on their humanising pedagogy as they are behind NMU with their development of pedagogy and relations. After examining the internal factors, the major weaknesses facing UJ include the lack of provision for postgraduate supervisory, inability to transform traditional infrastructure to accommodate modern methods and then finally the workload being too high for staff due to the pandemic and remote teaching. When looking at the total IFE weighted score of 2,374 it is clear that UJ should address their weaknesses and enhance their strengths for a higher score as their total weighted score indicates their internal factors being below average and if not corrected moving towards being a major weakness.

4.3.3.2 External Factor Evaluation of UJ

Moving to the external factors of UJ, UJ's approach toward innovative systems and technology (O1) are on par with other institutions within SA resulting in 2 as there isn't any commitment in being a frontrunner of innovative technology. UJ has focused on enhancing their student

support (O2) that has become one of their strong points as also working with international partners (O3) such as World University Rankings and collaborations with exchange students through internationalisation initiative ranking O2 and O3 as above average (3). O4 and O5 can be ranked as average (2) compared to other institutions as UJ's students have shown a need for online education and digital learning tools just like other students within SA, the ability UJ has to connect to the new audience is seen as average as they use methods similar to other universities and need to be different in reaching these audiences. The digital divide (T1) and financial sustainability (T2) is a threat for UJ's staff and students as the unexpected shutdown of campuses due to the Pandemic has showed this issue that needs to be combatted in order to cater the digital environment UJ is trying to build, from the initial shutdown UJ has addressed this issue providing students and staff with connectivity options with the aid of partners and Department of Education and Training (2). UJ that have started offering online programmes have enabled them to have comprised the appropriate pace for online learning (T3) as also offering students device options to complete the programme that is above par (3) compared to other institutions. As for T4 and T5 is average (2) when assessing the education model and quality of education as it isn't outdated yet, the impact of the pandemic has withheld the development of curriculum as satisfying the basic needs of education was important in this critical period. Table 4.8 indicates the weighted scores for the external factors and total EFE.

TABLE 4.8: EFE OF UJ

EXTERNAL FACTORS	RATING	WEIGHT	SCORE
Opportunities			
Innovative technology – systems, processes, workflows, policies, service delivery	2	0,087	0,174
Increased and enhanced student support	3	0,153	0,459
International partnerships and collaboration	3	0,044	0,132
Increase in students that require online education	2	0,076	0,152
Ability to reach a broader audience	2	0,05	0,1
Threats			
Digital divide and unequal access to mobile devices and connectivity	2	0,114	0,228
Financial sustainability - rising costs, declining state subsidies and rising student debt	2	0,072	0,144
Online learning - pace and technology requirements	3	0,158	0,474
Higher education model and curriculum outdated	2	0,077	0,154
Poor quality of basic education and schooling	2	0,169	0,338
TOTAL EFE		1	**2,355**

Source: Authors own compilation

Through investigation of the external factors UJ has looked average in their response of opportunities as they haven't put a movement forth to take O1, O4 and O5 with both hands. UJ also hasn't look to prepare fully for the threats linked to their digital environment as they had many outside influences from the pandemic leading their focus away from their potential threats and opportunities. The total weighted score is 2,355 that is below average being very close to being a weakness of UJ this is due to unsuspecting plans for their vision.

4.4 OVERVIEW OF IFE AND EFE FINDINGS

The findings found within IFE consist out of strengths and weaknesses whereas EFE include opportunities and threats. When analysing the Strengths, it has shown that UCT and UJ have been utilising their strengths accordingly by being above the average whilst NMU fail to reach the average due to not utilising student support. Moving on to the weaknesses, UCT has the best ratings as a result of acknowledging most of their weaknesses, as for NMU and UJ they find themselves under the average due to the inability of addressing their weaknesses. When comparing the Total IFE of the three institutions it has shown that UCT has the best Total IFE weighted score with 2,506, this is a result of UCT having the correct plans in place to combat weaknesses and utilise strengths whereas NMU (2,333) and UJ (2,374) fail to hit the standard. NMU has failed to reach the benchmark of the Total IFE due to the inability of utilising all strengths fully combined with the response to their weaknesses. As for UJ failing to reach the benchmark is due to them being well below the average weighted score of weaknesses.

After analysing the External Factor Evaluation, opportunities have shown to be a focus point for all three institutions as they understand the impact of each opportunity. The question for these three institutions has become if they are able to seize these opportunities with the resources at their disposal. UCT has boasted the highest ratings for opportunities as they have excelled in grabbing these opportunities with both hands. NMU has struggled in coming close to UCT's ability to act on their opportunities as they are just below the average due to the inability to reach a broader audience. When assessing UJ's response to opportunities it is quite woeful as they are well behind UCT and NMU's commitment toward opportunities as they have issues with implementing innovative technology and connecting with a broader audience.

When examining the threats facing the digital development of each institution, it has shown that NMU has prepared remarkably for the risks involved in advancing their agenda with the highest ratings smashing the average rating. Looking at UCT they are just below the average as they must look at addressing the digital divide among students. UJ has the lowest rating as

the Covid-19 Pandemic has influenced them inversely compared to the others. Analysing the Total EFE weighted scores of NMU (2,84) and UCT (2,743) that are above the average, this is due to their consistency and use of their 2030 Vision Strategy enabling them to focus on opportunities and threats facing the digital environment, as for UJ (2,355) they have failed to reach the average because of below par preparations regarding opportunities and threats in their digital environment.

NMU was close to hitting the standard of total IFE weighted score as indicated by the Internal Factor Evaluation but looking at their commitment to their external factors it has shown in the External Factor Evaluation that they have the highest Total EFE weighted score as they are focused on combating their threats and utilising opportunities. UCT has done well in their Internal Factor Evaluation as they achieved the highest total IFE weighted score by using their strengths to their advantage and addressing weaknesses. UCT also accomplished a good result within their External Factor Evaluation as they beat the average weighted score from making excellent moves regarding opportunities. UJ was near in achieving the average weighted score for IFE as they did well in using their strengths to their advantage but failed to address some key weaknesses. UJ struggled in competing with NMU, UCT and the average weighted score for EFE as they have battled to cope with external influences resulting from the Covid-19 Pandemic affecting their commitment to prepare for opportunities and threats regarding the digital environment.

4.5 COMPETITIVE PROFILE MATRIX (CPM)

The Competitive Profile Matrix (CPM) found within Table 4.9 identifies a firm's major competitors and its particular strengths and weaknesses in relation to a sample firm's strategic position. The weights and total weighted scores in both a CPM and an EFE have the same meaning. However, critical success factors in a CPM include both internal and external issues; therefore, the ratings refer to strengths and weaknesses, where 4 = major strength, 3 = minor strength, 2 = minor weakness, and 1 = major weakness. The critical success factors in a CPM are not grouped into opportunities and threats as they are in an EFE. In a CPM, the ratings and total weighted scores for rival firms can be compared to the sample firm. This comparative analysis provides important internal strategic information.

TABLE 4.9: COMPETITIVE PROFILE MATRIX

		NMU		UCT		UJ	
Critical Success factor	Weight	**Rating**	**Score**	**Rating**	**Score**	**Rating**	**Score**
Graduate Employability	0.28	**2**	**0.56**	**2**	**0.56**	**2**	**0.56**
Student Support	0.15	**3**	**0.45**	**3**	**0.45**	**3**	**0.45**
Range of programmes and qualifications	0.23	**4**	**0.92**	**4**	**0.92**	**3**	**0.69**
Post graduate supervision capacity	0.15	**2**	**0.3**	**2**	**0.3**	**1**	**0.15**
Financial Sustainability	0.19	**3**	**0.57**	**2**	**0.38**	**2**	**0.38**
Total	1		**2.8**		**2.61**		**2.23**

Source: Authors own compilation

The Critical Success Factors (CSF) used within the CPM is selected from the IFE and EFE based on the relevance and impact on the digital environment of all three institutions. The CSF selected include graduate employability, student support, range of programmes and qualifications, post graduate supervision capacity and financial sustainability. When evaluating the total weighted scores of the CPM, NMU has achieved the highest weighted score of 2.8 whilst UCT achieved 2.61 placing them second and UJ attaining a total weighted score of 2.23 that positions them at the bottom. NMU and UCT had the exact same ratings for the CSFs from one to four but where NMU edged them is by having a 2030 Vision Strategy that looks at the future of the digital environment and when reviewing the financial statements of NMU it was evident that they are aware of their increase in costs due to the adaption of the digital environment but NMU ensured that they have various partnerships, sponsors and subsidies that will help with financial sustainability this resulted in them achieving a higher rating than UCT for financial sustainability which consequently led to them obtaining the highest weighted score. Both UJ and UCT struggled with obtaining a good rating for financial sustainability as both received a below average rating of 2 this is due to the impact of the Covid-19 Pandemic on increasing costs, increasing student debt and declining state subsidies.

NMU (2.8) and UCT (2.61) achieved a total weighted score higher than the average with NMU achieving the highest weighted score, UJ attained the lowest total weighted score of 2.23 that is below the average. UJ consequently received the lowest score due to their failure to compete

with NMU and UCT's range of programmes, receiving a rating of 1 for post graduate supervision capacity making it a major weakness and struggling to beat NMU's commitment toward ensuring financial sustainability. UJ wasn't fully prepared for the threats and opportunities linked to their digital environment resulting from the Covid-19 Pandemic this led to their below average total.

After evaluating the totals of each NMU, UCT and UJ it is apparent that NMU and UCT is on the right track regarding their digital environment as they have put forth development plans and vision strategies to ensure the growth and expansion of each's digital environment as they can see the benefit of utilising it fully, whereas UJ is still lacking a clear vision and plan to expand on their existing digital environment as their attention is currently on the present and the effects of the threats created by the pandemic.

4.5 SUMMARY

After reviewing the selected SWOT factors and allocated weights based on priorities, the execution of Internal Factor Evaluation and External Factor Evaluation was to follow with the selected three institutions being evaluated then after followed the Competitive Profile Matrix that was used to compare the three institutions as also using critical success factors to obtain information that is used to compare institutions.

Moving on to Chapter Five it will provide summary of chapters, achievement of research objectives, contributions and limitations of the study and self-reflection of the study.

CHAPTER FIVE

CONCLUSIONS AND RECOMMENDATIONS

5.1 INTRODUCTION

After conducting an IFE, EFE and CPM of each institution it has led to the achievement of the current state of the digital landscape of South African Higher Education Institutions.

Chapter Five will look to provide a summary of each chapter to display what has been undertaken and completed. Followed by stating the achievement of research objectives and indicating where and how it was achieved. The contribution and limitation of the study will also be discussed and extended likewise the self-reflection of the researcher.

5.2 SUMMARY OF CHAPTERS

Chapter One of the study looked to give an introduction and a background on the study providing a problem statement regarding the digital landscape of South African Higher Education Institutions. Research objectives was also stated including primary, secondary and methodological research objectives with the primary objective being to conduct an environmental scan into the digital landscape of South African Higher Education Institutions. Chapter one also provided information regarding the significance of the study, the structure of the study and the study time frame.

Chapter Two provided the theoretical base of the study by defining digital landscape along with identifying and describing concepts related to digital landscape that included digital learning, emergence of technologies, knowledge management and data driven learning instructions. Chapter Two also focused on previous research surrounding the digital landscape that included a table that illustrated the approach, theme and findings of each author. A theoretical framework was set out that included information on digital learning platforms, learning in a digital environment, digital learning strategies and techniques. Environmental scanning was also addressed as it is one of the key methods within the study. Chapter Two also achieved all secondary objectives set out at the start of the study.

Chapter Three covered information regarding the research design and methodology starting with a flowchart indicating the steps within the methodology. Followed by the research population and sampling that discussed the various sampling methods and appropriate size.

Data collection was also discussed as secondary and primary sources of data collection was identified and explained. Likewise, the design of the measuring instrument and data analysis was addresses involving the SWOT analysis and its components linking to an internal factor evaluation, external factor evaluation and competitive profile matrix. At the end of the chapter ethical considerations was also tackled to ensure an honourable study was being conducted. Chapter three also helped in achieving the first two methodological objectives.

Chapter Four of the study consisted out of analysing data and turning it into information that could be used for evaluation. The chapter started by supporting the selection of SWOT factors, allocation of weights and ratings. After the selections and weights was established an IFE and EFE was done of each institution including information and ratings on NMU, UCT and UJ's strengths, weaknesses, opportunities and threats regarding the digital landscape of South African Higher Education Institutions. Followed by this was an overview of the IFE and EFE conducted by pointing out some clear differences. The last part of Chapter Four included a CPM that was used to compare critical success factors of each institution in establishing which institutions are on the right path with their plans and strategies regarding the growth of their digital landscape. Chapter Four also assisted in the achievement of the third and fourth methodological objectives as also the primary research objective of the study.

5.3 ACHIEVEMENT OF RESEARCH OBJECTIVES

In Chapter One an introduction and background of the study was provided along with research objectives that was split between the primary objective, secondary and methodological objectives. Secondary and methodological objectives have the goal of assisting the author in achieving the primary objective. The primary objective of this study was to conduct an environmental scan into the digital landscape of South African Higher Education Institutions. The secondary objectives included (1) To clarify key concepts related to the digital landscape; (2) To identify and discuss research themes related to the digital landscape and (3) To identify the areas of the digital landscape that still needs to be investigated.

All three secondary research objectives were achieved within Chapter Two of the study that found and clarified concepts related to the digital landscape, research themes and approaches was identified and discussed by reviewing previous research. The methodological objectives include (1) To conduct a literature review on the digital landscape; (2) To select an appropriate research methodology and research methods for the study; (3) To collect and analyse data and (4) To provide pertinent conclusions and recommendations to researchers based on the findings

to assist them to identify areas that need to be researched. The first two methodological objectives were achieved within Chapter Three of the study with the third methodological objective being achieved within Chapter Four as the fourth methodological objective being achieved within Chapter Four and Five. After all secondary and methodological research objectives was achieved the primary research objective was achieved with the results found within Chapter Four and Five.

5.3.1 RECOMMENDATIONS REGARDING CRITICAL SUCCESS FACTORS (CSF)

TABLE 5.1: RECOMMENDATIONS REGARDING CSF

Critical Success factor (CSF)	Recommendations
Graduate Employability	To improve the average graduate employability of students within Higher Education institutions, each institution must ensure that the student experience within the institution promotes ethical and disciplinary learning combined with exposing students to certain aspects of the work environment regarding communication and specific procedures.
Student Support	Student support is a decisive tool within the digital landscape of education institutions and to expand on student aid will give various benefits, Higher education institutions can excel in their student support by identifying and listening to the needs of the students followed by planning for future threats that will require funding and infrastructure.
Range of programmes and qualifications	Higher Education Institutions should always provide students with a comprehensive range of programmes and qualifications, this is successfully done through eliminating obsolete programmes that's future is in question and doing market research in new types of industries that will require innovative programmes and qualifications, this will excite students and extend the body of knowledge into the new industries.
Post graduate supervision capacity	To ensure the capacity of post graduate supervision is on par with what is needed for an institution, the institution must provide supervision of personnel that has the correct post graduate study experience, great management skills, ability to deal with adaptability and to provide those in command of supervision the right institutional tools and resources to fulfil their capacity.
Financial Sustainability	Financial sustainability is regarded by most institutions as a priority due to being financially sustainable puts the

Critical Success factor (CSF)	Recommendations
	institution in the position to expand on what they offer to staff and students, to improve on financial sustainability the institution must look at ways to better manage funds, analyse current capital needs and forecast future capital needs linked to growth of the institution, implement a reporting system that provides information on expenditure and lastly to plan for other sustainable development projects.

Source: Authors own compilation

5.4 CONTRIBUTIONS AND LIMITATIONS OF THE STUDY

5.4.1 CONTRIBUTIONS

The research study attempted to contribute to the outlook on the digital landscape within South African Higher Education Institutions and to provide relevant data regarding the impact a well utilised digital landscape has on the operations of institutions. The results acquired through the environmental scan regarding the IFE, EFE and CPM will provide a variety of themes and concepts linked towards the different approaches toward digital landscape in the way the institutions deal with their internal and external factors. The study also provides current critical success factors that can be used to assess whether other institutions are at the standard set out by the institutions within this study. The digital landscape of South African Higher Education Institutions being a relatively new concept and trend within education, this study will make an effort to challenge previous research and the traditional landscape once used to indicate the clear progression of teaching and interactions among staff and students along with external partnerships by planning and utilising the digital landscape properly.

5.4.2 LIMITATIONS

Judging the limitations of this research study is also essential as it will give a clear-cut indication when interpreting the findings of this study. The first limitation of this study will be the main limitation and that is that this study was conducted throughout the Covid-19 Pandemic that made it relatively difficult to obtain specific data as other pathways was used to acquire these valuable data. The Covid-19 Pandemic also limited the number of interactions available between the author and people of information that could’ve been used to further the significance of the study. The second limitation is that with digital landscape being a relatively new concept being researched and making use of an environmental scan, the data available was

limited when compared to other studies but the data gathered was still enough to achieve all research objectives and form a well research overall opinion on the South African Higher Education Institutions that could be used for future research and recommendations. The third and last limitation is that the critical success factors used in the current state of the digital landscape within South Africa may evolve and change rapidly as technology has a major influence on the capabilities and entry of digital equipment, strategies and techniques. Despite the limitations identified the results obtained through the study conducted will contribute toward the existing body of knowledge on the digital landscape of South African Higher Education Institutions.

5.5 SELF REFLECTION

This study required of the researcher to realise what was expected from the researcher as the researcher anticipated a big leap in intricacy and difficulty of research compared to previous years of study. As the study started the researcher grasped the impact of the study as the research is dealing with an innovative and growing body of knowledge that can be used for further research.

With the researcher anticipating the increase in difficulty the researcher worked on implementing time management skills and extra reading on postgraduate studies to be prepared for a busy schedule that requires fast paced work whilst holding the quality high. The researcher acquired various knowledge in relation to the topics dealing with digital landscape and analysing strategies and techniques found within strategic management.

The knowledge and skills obtained through this research study will be beneficial in if the researcher decides to take on a more advanced degree including a masters degree. The experience and expertise acquired through this study will be greatly used throughout the researcher’s career as it has demonstrated various approaches, themes and ways of thinking that lead to different opinions this will be important in conducting strategic management.

5.6 SUMMARY

Chapter Five of this study gave a summary of every chapter that showed in brief what was done in each. This followed with an explanation what the various research objectives was, how it was achieved and in which chapters it could be found. The contribution of the study was discussed as also how it can impact further research after this the limitations of the study was

assessed. A self-reflection was also done to show how the researcher's knowledge and skills has evolved.

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APPENDIX 1: TURNITIN REPORT

Baynes, LW-219549400

ORIGINALITY REPORT

9%	8%	2%	5%
SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS

PRIMARY SOURCES

1	hdl.handle.net Internet Source	2%
2	Submitted to Higher Education Commission Pakistan Student Paper	1%
3	core.ac.uk Internet Source	<1%
4	Submitted to Nelson Mandela Metropolitan University Student Paper	<1%
5	ir.dut.ac.za Internet Source	<1%
6	glenglafenhein.homesandland.com Internet Source	<1%
7	www.vut.ac.za Internet Source	<1%
8	www.scribd.com Internet Source	<1%
9	www.genrica.com	

ANNEXURE 1 – LEARNING AGREEMENT

LEARNING AGREEMENT

EBML410 LEARNING AGREEMENT BETWEEN STUDENT(S) AND STUDY LEADER(S)

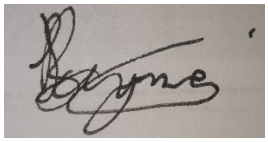
Specific responsibilities of the study leader and co-study leader for research supervision.	**RESPONSIBILITIES OF STUDY LEADER(S)** • To advise the student(s) on the proposed research • To critically scrutinise work and suggest improvements • To suggest and advise student(s) on research in general
Research support required for the successful completion of the study.	• Student(s) would need some research methodology support • Student(s) would need statistical support (see lecture on Statistica presented) • Student(s) would need language editing support • (list of language editors could be supplied if available from service providers)
Research training needs on the part of the student(s) and process to address them.	Student(s) to do EBMR420 Business Research modules will prepare the student(s) to conduct the research and write the treatise
Frequency and nature of consultation sessions.	Student(s) will keep regular contact with study leader(s) via e-mail on progress, etc. Reply to emails is crucial. Student(s) will meet study leader(s) in person at least 1 x per month (and as deems necessary based on progress.
Research schedule/plan to be adhered to by the student(s).	As discussed in meeting, and as communicated per email
Reviews of the students' work (for example, the format in which feedback will be given, the time taken to provide feedback).	Feedback to be received within 14 days. Comments hand-written on document(s) or electronic review comments.
Availability of study leader during period of research and/or ordinary leave.	The study leader(s) will only be available on e-mail during normal leave – student is informed of the dates that the study leader will take leave. Study leader(s) will not work on the treatise during the Christmas period in December 2020 and student(s) should NOT expect assistance during this time. If due dates are not adhered to in 2020, the student(s) should register for EBML410 in 2021 again.

ANNEXURE 1 – LEARNING AGREEMENT

Remedial action if schedule is not adhered to	Student(s) need to provide acceptable reasons for not adhering to a schedule and negotiate a new time frame with the study leader(s). The student(s) need to know that the study leader(s) may not be able to fit in a new time schedule on short notice when the student(s) has failed to stick to the schedule. Study leader(s) will determine what action is needed to continue with studies or will recommend the discontinuation of the study.
Remedial action if feedback agreement is not adhered to	Student(s) need to inform the study leader(s) that he/she is in disagreement/not satisfied about the feedback within 2 weeks after receiving such feedback. A discussion on the disagreements must take place. If student(s) do not implement recommendations, study leader(s) will request a full explanation of the reasons for not doing so.

This Learning Agreement is signed on 5 May 2021 (date) between the Postgraduate student(s) and Study leader(s).

Signed by the study leader



Signed by student

ANNEXURE 2: ETHICAL CLEARANCE

NELSON MANDELA UNIVERSITY

FACULTY OF BUSINESS AND ECONOMIC SCIENCES

ETHICS CLEARANCE FOR TREATISES / DISSERTATIONS / THESES

Instructions:

- Should be completed by study leader and student
- Must be signed off by student, study leader and HoD
- Submit completed form to Ms Lindie van Rensburg
- Please ensure that the research methodology section from the proposal is attached to this form
- ***Please note that by following this Proforma ethics route, the study will NOT be allocated an ethics clearance number***

FACULTY: Faculty of Business and Economics

SCHOOL / DEPARTMENT: Department of Business Management

I, (surname and initials of study leader) S B WATSON

the study leader for (surname and initials of candidate) Baynes, L

Luke Baynes (student number) 219549400

a candidate for the degree of BCOM HONORS (BUSINESS MANAGEMENT)

with a treatise/dissertation/thesis entitled (full title of treatise/dissertation/thesis):

AN ENVIRONMENTAL SCAN ON THE DIGITAL LANDSCAPE OF HIGHER EDUCATION INSTITUTES IN SOUTH AFRICA

considered the following ethics criteria *(please tick the appropriate block):*

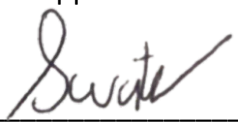
ANNEXURE 2: ETHICAL CLEARANCE

		YES	NO
1.	Is there any risk of harm, embarrassment of offence, however slight or temporary, to the participant, third parties or to the communities at large?		X
2.	Is the study based on a research population defined as 'vulnerable' in terms of age, physical characteristics and/or disease status?		X
2.1	Are subjects/participants/respondents of your study:		
2.1.1	Children under the age of 18?		X
2.1.2	NMMU staff?		X
2.1.3	NMMU students?		X
2.1.4	The elderly/persons over the age of 60?		X
2.1.5	A sample from an institution (e.g. hospital/school)?		X
2.1.6	Handicapped (e.g. mentally or physically)?		X
3.	Does the data that will be collected require consent of an institutional authority for this study? (An institutional authority refers to an organisation that is established by government to protect vulnerable people)		X
3.1	Are you intending to access participant data from an existing, stored repository (e.g. school, institutional or university records)?		X
4.	Will the participant's privacy, anonymity or confidentiality be compromised?		X
4.1	Are you administering a questionnaire/survey that:		
4.1.1	Collects sensitive/identifiable data from participants?		X
4.1.2	Does not guarantee the anonymity of the participant?		X
4.1.3	Does not guarantee the confidentiality of the participant and the data?		X
4.1.4	Will offer an incentive to respondents to participate, i.e. a lucky draw or any other prize?		X
4.1.5	Will create doubt whether sample control measures are in place?		X
4.1.5	Will be distributed electronically via email (and requesting an email response)? Note: • If your questionnaire **DOES NOT** request respondents' identification, is distributed electronically and you request respondents to return it *manually* (print out and deliver/mail); **AND** respondent anonymity can be guaranteed, your answer will be NO. • If your questionnaire **DOES NOT** request respondents' identification, is *distributed via an email link and works through a web response system (e.g. the university survey system);* ***AND*** respondent anonymity can be guaranteed, your answer will be NO.		X
5.	Do you wish to publish an article from this study and submit to an accredited Journal?		X

ANNEXURE 2: ETHICAL CLEARANCE

*Please note that if **ANY** of the questions above have been answered in the affirmative **(YES)** the student will need to complete the full ethics clearance form (REC-H application) and submit it with the relevant documentation to the Faculty RECH (Ethics) representative.*

and hereby certify that the student has given his/her research ethical consideration and full ethics approval is not required.



17 MAY 2021

STUDY LEADER(S) DATE

HEAD OF DEPARTMENT DATE

17 MAY 2021

STUDENT DATE

STUDENT DATE