



**Exploring the role of digital technologies in  
facilitating shared-decision-making processes in  
higher education: A Case study of the Digital  
Learning for Development (DL4D) initiative in  
South Africa**

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## **DECLARATION**

I, Mahlatse Given Sevhake, student no. 32037104, hereby declare that the dissertation titled exploring the role of digital technologies in facilitating shared decision-making processes in higher education: A case study of the Digital Learning for Development (DL4D) initiative in South Africa is my original work submitted in partial fulfilment of the requirements for the master's in Public Management & Governance degree at the North-West University, Vanderbijlpark Campus.

All sources consulted or quoted have been duly indicated and acknowledged by complete references, adhering to the NWU Policy on Plagiarism.

M.G. Sevhake

**Signature**

## **DEDICATION**

I dedicate this dissertation to the following:

My grandmother, who has been sick, who, in the process of completing my research, has shown me love and support, giving me the courage to keep fighting.

My wonderful late sister, Silvia Motlatso Sevhake. I hope and believe the completion of this research honours your spirit and becomes a living testament to your belief and trust in me.

### **Philippians 4:13**

*"I can do all things through Christ who strengthens me."*

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In the spirit of hope, I am reminded of Tupac Shakur's words

*"Through every dark night, there's a bright day after that."*

## ABSTRACT

Digital technologies are transforming the landscape of higher education governance globally, leading to enhanced institutional collaborations, increased openness, and improved efficiency. Despite extensive research on digital transformation in higher education, a gap remains in research examining how emerging digital tools facilitate shared decision-making (SDM) processes in South African higher education institutions, particularly through initiatives such as the Digital Learning for Development (DL4D) initiative. Therefore, this research aimed to close this gap in the literature by exploring the role those digital technologies play in facilitating shared decision-making processes in higher education, using DL4D as a case study. This research employed a qualitative research approach, relying on scholarly publications, documents, records, and related research. Systems theory provided the theoretical foundation for understanding how digital technologies function as input, processing, and output mechanisms within governance ecosystems. The results show that digital technologies, such as Learning Management Systems (LMSs), Microsoft Teams, Zoom, and data analytics tools like Qlik Sense, Power BI, and Blockchain, have contributed significantly to fostering SDM processes and increasing stakeholder, student, and parental engagement in the development of curriculum and policies. However, this research also revealed that, despite the prospects of digital applications, various challenges arise, including the digital divide, cybersecurity threats, ethical concerns, and a lack of digital skills, which impede the digital transformation process. Higher education institutions can overcome these challenges by establishing policies to promote digital inclusion and integration, building the necessary digital infrastructure, and implementing robust measures to combat cybersecurity issues. Despite these challenges, emerging digital tools offer institutions various prospects for the future, including establishing cooperative governance, promoting SDM processes, and enabling inclusivity in South African universities.

**Keywords:** Shared decision-making (SDM); higher education governance, digital transformation; digital learning for development (DL4LD), Systems theory.

## LIST OF ABBREVIATIONS

AI	Artificial Intelligence
SDM	Shared Decision Making
LMS	Learning Management System
COVID	Coronavirus Disease
ICT	Information and Communication Technology
SA	South Africa
DL4D	Digital Learning for Development
SDG	Sustainable Development Goals
IOT	Internet of Things
DCDT	Department of Communications and Digital Technologies
ECTA	Electronic Communications and Transactions Act
POPIA	Protection of Personal Information Act
NDSE	National Digital Strategy for Education
NPM	New Public Management
TPA	Traditional Public Administration
NPG	New Public Governance
NPS	New Public Service
NGOs	Non-Governmental Organisation
DEG	Digital Era of Governance
ECM	Expectation-Confirm Model
TAM	Technology Acceptance Model
DSS	Decision Support System
ML	Machine Learning
VR	Virtual Reality
AR	Augmented Reality

UCT	University of Cape Town
MICT	Information and Communication Technologies
SETA	Sector Education and Training Authority
DHET	Department of Higher Education and Training
UL	University of Limpopo
CHE	Council on Higher Education
NWU	North-West University
SRC	Student Representative Council
HEI	Higher Education Institutional
SPSS	Statistical Package for the Social Sciences
NLP	Natural Language Processing
VUT	Vaal University of Technology
UP	University of Pretoria
UKZN	University of KwaZulu-Natal
DOA	Decentralised Autonomous Organisation
UAE	United Arab Emirates
PEOU	Perceived Ease of Use
PU	Perceived Usefulness
XR	Extended Reality
TIA	Technology Innovation Agency
SARCI	South Africa Chairs Initiative
UCDP	University Capacity Development Program

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# CHAPTER 1 INTRODUCTION AND ORIENTATION

## 1.1 Introduction

The emergence of digital integration in shared decision-making (SDM) policies has profoundly revolutionised the international higher education landscape by institutionalising participatory governance models and data-driven administrative reforms (Howard & Yang, 2015; Haleem, Javaid, Qadri, & Summan, 2022; Adam, 2017). This change is empirically linked to the increasing emphasis on optimisation techniques and stakeholder engagement paradigms, which have reshaped institutional power structures, improved transnational policy alignment, and created new ecosystems of cooperative knowledge production in academic systems worldwide (Haleem *et al.*, 2022; Yeboah, 2022). Rooted within Weber's idea of relational-legal authority, a classical operational method of governance where hierarchy (top-down) shapes how institutions make decisions regarding policy and curriculum design (Pandey, 2024; Albrow, 2014; Weber, 1947). The emergence of technological tools challenges long-standing administrative paradigms and decision-making models through decentralisation and the promotion of SDM processes and institutional openness. As Simons hypothesised in his idea of bound relationality in 1947, a person's decisions are limited by cognitive constraints or access to little information, which are challenges that new emerging digital tools such as Zoom and Microsoft Teams can solve by providing more access to information, thereby promoting SDM processes (Shafran, 2022; Simons, 1947). These transformations align with Waldo's emphasis on values and community participation in public administration (Ansell & Torfing, 2021; Nabatchi & Leighninger, 2015)

The surge of e-governance and information communication technology (ICT) in the early 2000s accelerated the process of digital integration to advance pedagogical outcomes and promote SDM processes (Fountain, 2001; Dunleavy, Margetts, Bastow, & Tinkler, 2006). This transition was influenced by New Public Governance paradigms, which place importance on promoting cooperative governance, transparency, and efficiency within university management (Fountain, Dunleavy *et al.*, 2006).

Internationally, cases from well-established institutions of higher learning have demonstrated the effectiveness of utilising modern technologies to facilitate shared decision-making processes (Adam, 2017; Osborne, 2006). For instance, the University of Michigan implemented the use of digital platforms for policy design, gathering the opinions of students and faculty members to improve strategies related to mental health within the university (Adam, 2017). Similarly, the University of Edinburgh has adopted an “inclusive budgetary” platform that enables students and stakeholders to share their views on institutional resource allocation processes, demonstrating a combination of digital access and democratic governance (Adams, 2017; Haleem *et al.*, 2022). These examples showcase the potential of leveraging emerging digital tools to improve institutional efficiency and responsiveness (Bader, Iversen, & Burner, 2021; Burns, 2021; Jin, Echeverria, Gašević, Martinez, & Maldonado, 2025). Subsequently, the advancement of digital transformation has enormously reconfigured the operational and pedagogical landscapes of universities, providing new affordances that, at least theoretically, would profoundly improve SDM processes (Selowa, Ilorah, & Mokwena, 2022; European Commission, 2021; Adams, 2017). Digital platforms for online engagement, data collection, data analytics dashboards, and virtual communication platforms offer new opportunities that allow institutions of higher learning to communicate beyond geographical limitations, thereby enhancing participation and access to critical information (Adams, 2017).

However, the utopian vision of digitally driven methods of decision-making within universities is not without its issues and difficulties (Jin *et al.*, 2025). The mere availability of current emerging tools does not presumptively lead to SDM making processes or democratic governance (Couldry & Mejias, 2019; Yen, 2023). The challenges of the digital divide, different levels of digital literacy, data security issues, and algorithm bias in institutional governance raise many global concerns within universities (Noble, 2018; Van Dijk, 2020). Moreover, research done shows that in developed countries like Singapore, where a digital “Smart nation” initiative was established to drive digital transformation (Gutierrez, 2020: Hoe, 2016:323-333), and in Estonia, where an “E-schooling system” was introduced, individuals within the institution who are digitally fluent often dominate within the online engagements space, thus perpetuating the already present power asymmetries within the technological space

resulting in major issues (Dijk, 2020; Gutierrez, 2020; Kukemelk, 2015). Similarly, research conducted in Australia and England highlighted that the use of digital tools meant to promote SDM processes, at times can result in vocal imbalances between institutional personal and students that that are digitally sound and those that are not, therefore, reinforcing rather than dealing with university issues or hierarchical decision-making processes in higher education (Macgilchrist, Allert, & Bruch, 2020).

Furthermore, Jin (2025) and Gutierrez (2020) state that the culture of a university, its well-developed governance structures, as well as the desire of those in authority to cede or share power affirmatively, remain essential factors that digital tools alone cannot replace. Concurrently, Martinez-Vargas (2020) argues that it is essential for scholars to analyse not only the role digital tools play in promoting cooperative governance and SDM, but also how they are used and how technical opportunities interact with the socio-political dimensions of the institutional context. Globally, studies by Serna Gómez, Díaz-Piraquive, Muriel-Perea, & Peláez (2021) and Salas-Pilco (2022:53) from Latin American institutions of higher learning showcased that the incorporation of digital technologies within universities without buy-in or faculty training always fails to advance digital transformation in governance outcomes. For example, the University of Buenos Aires in Argentina, with its established e-governance portal for institutional engagements, only saw a 12% participation rate within a couple of months since its establishment (Boda *et al.*, 2020; Jin, 2025). Similarly, Universidad Nacional Autónoma de México, one of the largest institutions of higher learning, has a blockchain-based policy forum that excludes some of the stakeholders from different backgrounds in its digital training programs, thus perpetuating already existing disparities (Veletsiano, 2016; Dave, 2022; Elmer, Voros, & Stadtfeld, 2020; Jin, 2025). These examples align with Martinez-Vargas's (2020) argument that digital solutions at times “digitise dysfunction” in the absence of cooperative governance and high levels of institutional culture.

Nowhere are the tensions of digital transformation more prevalent than in South Africa, where universities are increasingly pressured to innovate and decolonise the educational curriculum (Cloete, Maassen, & Bailey, 2015; Linda, Mhlanga, & Mloi, 2018; Sevate & Hofisi, 2024). Coming from a history of apartheid, South African

universities are now required to follow a transformative strategy that prioritises democratisation, equity, and reparation (Republic of South Africa, 1997). National frameworks such as the White Paper for Post-School Education and Training (Department of Higher Education and Training (DHET), 2014) as well as the University Capacity Development Programme (DHET, 2017) promote the integration of technological tools in higher education to foster inclusivity, cooperative governance, and administrative efficiency (Czerniewicz, 2020; Livari, Sharma, & Venta-Olkkonen, 2020). Against this backdrop, the Digital Learning for Development (DL4D) initiative emerged as a catalyst to drive innovation and digital transformation within South African Universities (Jansen, 2004; Cloete et al., 2015; Luescher-Mamashela & Wangenge-Ouma, 2015). The DL4D emerged because of the growing demand to increase digital access and improve organisational agility, promote SDM making processes, and increase the levels of participation in matters of curriculum design and policy planning (Mhlanga, 2020; Netshirando & Munyoka, 2023; Mwesigwa, Obanyi, Motshe, Wereko, Chepsait, Njenga, & Barasa, 2017; DHET, 2016). Through collaborations among governmental organisations and universities in South Africa, the DL4D managed to get funds to leverage digital tools in advancing institutional governance and enabling efficiency (Mwesigwa *et al.*, 2017). The program highlighted some of the significant challenges of digital applications, drawing inspiration from global policies such as the UNESCO 2030 educational policy, which promotes digital transformation in education (Maye, 2020; UNESCO, 2015).

Despite some studies examining how digital tools promote SDM, only a few focus on the mechanisms by which these tools are leveraged to promote SDM-making processes in South African higher education (Cloete *et al.*, 2015; Linda *et al.*, 2018; Sevate *et al.*, 2024). While other sectors, such as healthcare, have conducted research examining how digital technologies can be utilised to promote SDM, their insights are often driven by high-stakes clinical imperatives (Safi, Thiessen, & Schmailzl, 2018; Bucci, Schwannauer, & Berry, 2019). As such, this demonstrates a gap in the literature that needs further exploration or analysis into the role of digital tools in facilitating SDM processes in higher education. Having a broad understanding of how using tools such as Zoom, Moodle, and Teams aids in promoting stakeholder engagement and SDM processes.

Against this backdrop, this research aims to close this gap in the literature by exploring the role digital technologies play in facilitating the SDM process in South African higher education using the DL4D initiative as a case study. This research explores some of the experiences and documented views that the DL4D encountered, which explicitly support the notion of collaborative governance and digital transformation. Therefore, having detailed research highlighting how digital tools are leveraged, as well as some of the challenges and prospects of using these tools, will aid policymakers within institutions in developing policy frameworks that are tech-driven and promote SDM (Mones, Smith, & Taylor, 2020). According to Chetty *et al.* (2014) and Mones *et al.* (2020), these insights can help move beyond presumptions about the influence of technology and toward evidence-based strategies that utilise digital tools to address historical obstacles and achieve transformational goals related to inclusivity and collaboration within HEIs. Therefore, a better knowledge is needed to create and execute equitable and successful digital governance systems in the setting of South African higher education.

## **1.2 Problem statement**

While digital technologies have been extensively studied as enablers of SDM in clinical and organisational contexts (Elwyn *et al.*, 2017; Stiggelbout *et al.*, 2015; Gravel *et al.*, 2022), their role in facilitating SDM processes within South African higher education remains critically underexplored, despite growing institutional investments in digital transformation (Linda *et al.*, 2018; Cloete *et al.*, 2015; Sevate *et al.*, 2024). In South Africa, policies such as the Higher Education Act of 1997 and the National Development Plan 2023 outline the state's desire to foster inclusive administrative models that enable educators and students to make shared decisions. Yet, despite the objectives outlined by the country in these frameworks, the state faces issues of a vast digital literacy gap, inadequate digital infrastructure, and a traditional bureaucratic system of governance, which slows the process of consensus-building and SDM. Now, regardless of the issues highlighted above, there is a lack of sufficient literature or empirical evidence that explores the role digital technologies play in facilitating SDM processes in public higher education institutions (HEIs). For example, much research has been done analyzing the impact of digital technologies on basic education and the health sector (Tudor Car, Kyaw, Dunleavy, Smart, Semwal, Rotgans, Low-beer, & Campbell, 2019; Sanudo,

Akoglu, Rietjens, Snelders, Stigglebout, & Sierra-Perez, 2024:113-120), while relatively few studies have been conducted to explore the role digital technology plays in facilitating SDM processes in higher education at an academic governance level (Linda *et al.*, 2018; Cloete *et al.*, 2015; Sevate *et al.*, 2024). This research aimed to close the gap in the literature by exploring the role that digital technologies play in facilitating SDM processes in public higher education institutions, focusing on the DL4D initiative.

Additionally, the DL4D initiative stands out as a significant case in South Africa, as it promotes the adoption of digital technologies within institutions. Moreover, this initiative aligns with international education goals, such as UNESCO's 2030 Education Policy, which supports the application of digital technologies in education to advance inclusive, high-quality, and equitable education in the country. Therefore, this research is crucial because it has the potential to enhance student learning outcomes and make decision-making more inclusive for all parties. The establishment of the DL4D initiative demonstrated through literature some of the significant implications that the initiative had on the decision-making process, which will be outlined in this study (Ngambi, Brown, Bozalek, & Wood, 2016; Madon *et al.*, 2009; Mhlanga *et al.*, 2020; Kibuku, Ochieng, & Wausi, 2020). The potential of digital technologies to promote collaborative decision-making in the field of education has not yet been fully realised. To support SDM in higher education, it is necessary to research and comprehend the specific problems and opportunities of harnessing digital technologies (Linda *et al.*, 2018).

### **1.3 Research questions**

This research seeks to address the following research questions:

Main research question

- What role do digital technologies play in facilitating SDM processes in South African higher education?

Secondary research questions

- What challenges does the DL4D initiative encounter in facilitating SDM in South African higher education?

- How does documented evidence reflect stakeholder resistance or support for using digital technologies to promote SDM in South African higher education?
- What strategies can be recommended to enhance the effectiveness of DL4D in improving shared decision-making processes in South African higher education?

#### **1.4 Research objectives**

The objectives of this study are presented below

Main research objective

- Explore the role of digital technologies in promoting shared decision-making in South African higher education.

Secondary research objectives

- Determine the challenges affecting DL4D processes in facilitating shared decision-making processes in South African higher education.
- To analyse how documented evidence reflects stakeholder resistance or support for the adoption and use of digital technologies to promote SDM in South African higher education.
- Recommend strategies to improve DL4D in promoting SDM processes in South African higher education.

#### **1.5 Central Theoretical Statement**

The incorporation of the Digital Learning for Development (DL4D) initiative in public higher education institutions promotes SDM by offering resources, organised processes, and interactive digital platforms that increase stakeholder engagement within the institutions (Brown, 2017). Therefore, to promote inclusive involvement, real-time data exchange, and collaborative resolution of issues, DL4D uses digital technology. As Brown (2017:23) points out, the use of digital technologies in

educational institutions enables a range of stakeholders to make significant contributions to decision-making. Siemens (2018) further emphasises that DL4D enhances interpersonal interaction, transparency, and informed decision-making in higher education institutions by strengthening the connection between social and technological components. DL4D fulfils a vital role in redefining decision-making processes by promoting the smooth flow of information and collaborative governance, guaranteeing that a variety of viewpoints are considered when creating institutional policies and procedures (Siemens, 2018; Sevate *et al.*, 2024).

## **1.6 Contribution of the study**

This study contributes to the body of knowledge within the field of public administration. While some research has been done looking at the impact of the adoption of digital technologies in higher education (Cloete *et al.*, 2015:231; Brown *et al.*, 2014), relatively few studies have been conducted exploring the role digital technologies play in facilitating SDM processes, looking at the DL4D initiative as a case study in South Africa (Linda *et al.*, 2018; Sevate *et al.*, 2024). For instance, Brown *et al.*'s (2014) research primarily focused on analysing how digital platforms can be used to enhance educational governance, mainly in the continents of Europe and North America; however, the research did not address the effectiveness of using digital technologies, including AI, to promote SDM in higher education. Similarly, Siemens's (2018) study evaluated the socio-technological relationship between digital tools and their impact on organisational collaboration. Researchers such as Fataar *et al.* (2020) have highlighted some of the institutions within the technological framework that impact how decisions are made. As a result, institutions now require modern strategies that incorporate SDM in terms of curriculum development and educational outcomes. Despite extensive research being conducted, very little research (Linda *et al.*, 2018; Sevate *et al.*, 2024) has examined the role digital technologies play in promoting SDM processes in South African universities.

Through filling this research gap, this study aimed to provide empirical knowledge that demonstrates the impact of leveraging digital tools to foster SDM in higher educational institutions in South Africa and how this transformation impacts the administrative

efficiency at the academic governance level. Furthermore, although the literature in some studies (Leidner & Sirkka, 1995:265-291; Haleem *et al.*, 2022; Henderson *et al.*, 2017) analyses some of the advantages of digital tools for administration efficiency, few studies look at the difficulties in putting them into practice, such as a lack of digital literacy, opposition to technological change, and infrastructure limitations. Therefore, this study will also examine some of the challenges of digital applications in promoting SDM processes in higher education.

### **1.7 Limitations**

This research is desktop-based; therefore, it is limited by the availability and accessibility of information in reports, policy documents, and articles. Data gaps may arise from relying too heavily on publicly accessible sources, as some institutional reports and decision-making procedures are not always entirely available or documented. The viewpoints presented in government publications may also contain biases, as they may represent institutional or policy-driven perspectives rather than the diverse experiences of stakeholders.

### **1.8 Delimitations**

This research focuses solely on the public higher education sector, exploring the DL4D initiative as a case study. This study did not extend to basic or primary education, and it explored the role that digital tools play in facilitating SDM processes in higher education, focusing on the DL4D initiative in South Africa. This research will utilise articles, reports, and policy documents published over the last decade as a basis for maintaining relevance to current events, supplemented by traditional empirical studies. This research has a disciplinary foundation in public administration and institutional education policy. Using the research conceptual definition, DL4D refers to the application of digital tools to enhance decision-making in universities and colleges by promoting inclusion, openness, and teamwork. This research has not applied global models of digital learning in South African institutions of higher learning for educational management, because the focal point of the study was to explore the role digital tools

play in facilitating shared decision-making in higher education, analysing the DL4D initiative in South Africa.

## **1.9 Chapter layout**

### **Chapter 1: Introduction and Orientation**

This chapter presents the introduction to the study and provides the necessary background. This chapter serves as an introduction to the study, outlining the problem statement. It includes the research questions, research objectives, central theoretical statements, and study limitations.

### **Chapter 2: Literature review and theoretical framework**

This chapter examines literature based on the role digital technologies play in facilitating shared decision-making in the higher education sector.

### **Chapter 3: Research Methodology**

This chapter provides a detailed description of the research methodology employed to explore the research problem. This chapter provides a summary of the techniques employed to select and size the sample, the tools utilised in this research, the steps taken, and the methodology used to analyse the data.

### **Chapter 4: Research findings and discussion**

This chapter presents the study's research findings, utilising relevant data. The findings are discussed in relation to the study's research objectives.

### **Chapter 5: Recommendations and conclusion**

This chapter places focus on providing recommendations for the study as well as providing recommendations for policies, and it also outlines the study's conclusions drawn

## **1.10 Conclusion**

This chapter provides an overview of the study's research orientation and background. Followed by the primary and secondary questions that guide this research. Under this chapter, the research objectives were also outlined to show what the study aims to achieve. This chapter then further highlights the significance of the research, demonstrating the research gap and how the study aims to contribute to the literature by filling this gap. Additionally, this research shows and outlines the research limitations and delimitations. The following chapter presents the study's literature review, highlighting what scholars have researched on the role digital technologies play in promoting shared decision-making processes.

## **CHAPTER 2 LITERATURE REVIEW**

### **2.1 Introduction**

In this chapter, the literature review is presented, highlighting the debates and seminal works of scholars examining the role those digital technologies play in facilitating shared-making processes in higher education. The chapter starts by conceptualising the main concepts that guide this research. Following this, the chapter reviews the literature, exploring how digital tools are incorporated in higher education to foster an environment of shared decision-making. The evolution of how institutions have used different tools to make decisions through various eras of public administration is also demonstrated in this chapter. The chapter demonstrates how digital tools have transformed the landscape of decision-making within public universities, fostering real-time collaboration, engagement, and openness within institutions in South Africa. The various issues and potentials of digital applications in public Higher Education Institutions (HEIs) are also highlighted in this chapter, and it concludes by showcasing David Easton's Systems Theory, which provides the theoretical underpinning for this research.

### **2.2 Defining shared decision-making (SDM)**

SDM is defined as the collaborative process in which multiple stakeholders jointly address issues related to curriculum, governance, and the daily operations of educational institutions (Bomhof-Roordink, Anderson, Fineness', & Floulger, 2019; Kunneman, Montori, Castaneda-Guarderas, & Hess, 2018, p. 60; Kaltoft et al., 2014, p. 110). This approach prioritises the active involvement and participation of diverse stakeholders, aiming to foster a more inclusive and equitable educational system (Bomhof-Roordink *et al.*, 2019; Kunneman *et al.*, 2018:60; Kaltoft *et al.*, 2014:110). Over the years, there have been overarching scholarly debates in research on what constitutes SDM in various disciplines (De Nardo, Gentilotti, Mazzaferri, Cremonini, Hansen, & Tacconelli, 2020:98; Elwyn, Frosch, Thomson, Joseph-Williams, Lloyd, & Kinnersley, 2016:114; Meadows *et al.*, 2017:154; Callon, Beach, Links, Wasserman, &

Boss, 2018:1368). For instance, in the field of public administration, scholars such as Arnstein (1969) and Nabatchi (2015) define SDM as a process in which various participants engage in a collective effort to make informed decisions about a specific matter or subject. This definition of SDM is drawn from Arnstein's (1969) empirical model of the ladder of citizen participation, which was established in the 1960s and became internationally recognised.

Within public administration, the concept of SDM is deeply rooted in the fundamental values individuals carry, thus placing importance on beliefs of collectivism and co-production in university frameworks (Sing, 2014). Classical scholars, such as Weber (1947) and Bernard (1938), within public management viewed shared decision-making as a crucial bureaucratic component that highlights the significance of institutional hierarchy of power and organisational structure. Weber's (1947) theory of bureaucracy emphasises that decision-making must be rational, effective, and guided by institutional frameworks instead of personal relationships. This contradicts the traditional views of political science scholars, such as Rawls (1993) and Habermas (1996), who view shared decision-making (SDM) through the political lens of deliberative democracy and pluralism, emphasising the importance of collectivism and political arbitration. Rawls (1993) and Habermas (1996) further highlight SDM as an essential component of collective and inclusive political debates, with Dahl (1989) confining it to democratic theory and demonstrating its significance of collective engagement in governance. Unlike public administration, in political science, the emphasis is placed on organisational mechanisms and management feasibility (Callon *et al.*, 2018:1368; De Nardo *et al.*, 2018:1368; Kaltoft *et al.*, 2014:110).

In business management, SDM is defined as a leadership approach that fosters collaboration between employers and employees in a democratic environment (Yukl, 2013). Mintzberg (1994), a scholar in business administration, viewed SDM as a component that fosters autonomous and participatory decision-making, while Yukl (2013) asserted that SDM improves employee participation and engagement within the organisation, thus resulting in higher productivity and efficiency. This conceptualisation of SDM in business management contrasts with the view held in public administration by various scholars because it emphasises administrative micro-level decision-making

on multiple organisations through prioritising administrative competitiveness and teamwork over the notion shared in public administration that SDM is important between different actors in the organisation (De Nardo *et al.*, 2018:1368; Kaltoft *et al.*, 2014:110). Nonetheless, scholars across various fields agree that at the heart of shared decision-making is teamwork and collective effort among multiple stakeholders and organisations, despite differences in perspectives (Callon *et al.*, 2018:1368; De Nardo *et al.*, 2018:1368; Kaltoft *et al.*, 2014:110).

### **2.3 The need for digital technologies in higher education**

The rise of digital transformation and technological advancements has significantly shifted the global landscape of education (Javaid, Haleem, Vaishya, Bahl, Suman, & Vaish, 2020, p. 419). Amid this transformation, the need to integrate digital tools to facilitate decision-making processes in higher education has become imperative (Beardsley, Albo, Aragon, & Hernandez-Leo, 2021). Javaid *et al.* (2020:418) assert that the significance of digital technologies was highlighted during the COVID-19 pandemic because of changes in the institutional governance status quo. Therefore, this marked a period of crisis, where institutions of higher learning globally recognized the need to transition from traditional pedagogical approaches to more digital ones to adapt, manage, and effectively make educational decisions (Javaid *et al.*, 2020:418; Timotheou, Milliou, Dimitriadis, Sobrino, Giannoutsou, Cachia, Mones, & Ioannou, 2022). In support, Timotheou *et al.* (2022) highlighted that the period of digital transformation and technological advancements marked a time of evolution and change within various sectors. On the other hand, Siemens (2005) asserts that the integration of digital tools in higher education, viewed through the lens of connectivism, facilitates the establishment of institutional collaboration and connections among stakeholders and students in the decision-making process. Now, despite the challenges many developing nations faced during the COVID-19 pandemic, the successful application of digital tools in numerous countries had a positive impact on education and governance (Timotheou, 2022:563). Additionally, Timotheou *et al.* (2022) emphasise that the application of digital technologies in higher education will enable students to become critical thinkers and utilise their creative minds to innovate and transform the world. Digital technologies are not only changing the landscape of education globally, but they also offer a solution for

uncertainty in a world where technology is indispensable (Javaid *et al.*, 2020:418; Timotheou *et al.*, 2022:563).

Scientific literature and empirical evidence (Penprase, 2018; López-Fernández, 2021) indicate that the incorporation of digital tools in higher education globally has immense potential to improve curriculum design and customisation. For example, Penprase *et al.* (2018) assert that new Learning Management Systems (LMSs), such as Blackboard and Moodle, enable stakeholders, students, and parents to collectively make decisions about educational outcomes, utilising features provided by these tools to participate in the decision-making process. In support, López-Fernández (2021) highlights that AI-driven tools enable institutions to establish discussion forums and digital feedback systems that foster data-informed decision-making processes, thereby facilitating collective input on curriculum design and education. Concurrently, the use of computers, high-tech gadgets, and projectors promotes cooperative decision-making among stakeholders, students, and institutional administrators in the current era, driven by innovation and digital transformation (Penprase, 2018). Technological tools such as the LMS, AI-driven analytics, and collective decision-making tools (e.g., Google Workspace, Microsoft Teams) allow institutional administrators to partake in the decision-making process for curriculum development, educational and evaluation policies, and frameworks (Penprase, 2018). For example, AI-powered analytics helps lecturers and stakeholders identify trends that enable students to perform better academically, allowing them to improve the curriculum that caters to those needs (Penprase, 2018). Digital technologies are essential in higher education, as they offer significant potential to enhance the decision-making process, curriculum design, and teaching and learning (Borthwick, Anderson, Finsness, & Foulger, 2015:85; Kumar, Agrawal, Wankhede, Sharma, & Mulat-Weldemeskel, 2022).

#### **2.4 Legislative framework governing digital transformation in South African higher education**

Over the years, the implementation of several key legal frameworks aimed at regulating the incorporation of digital technology has enhanced the governance of digital transformation in South African higher education. Traditionally, the Electronic

Communications and Transactions Act (ECTA) of 2002 laid the foundation for the technological application of AI-driven tools in higher education by creating a legal framework for digital learning, electronic communication, and transactions (South Africa, 2002). Periodically, as the demand for digitalisation increased more than ever before, the Protection of Personal Information Act (POPIA) of 2013 was established to combat issues of security and data privacy. Recently, the National Digital Strategy for Education (NDSE) (2015) was established to provide a holistic objective for digital application, focusing on infrastructure development, collective decision-making, and the incorporation of digital technologies into curriculum development in higher education (Department of Communications, 2015). These acts and laws highlight the rapid progress from traditional laws to more comprehensive strategies that combat security and digital issues in higher education.

## **2.5 The emergence of shared decision-making within the public administration paradigms**

SDM is a concept that has gone through enormous paradigmatic transformations over the years, influenced by changes in technology, governance models, and societal expectations (Rosca *et al.*, 2023:64). The evolution of SDM is traced through several phases in (P)ublic (A)dministration, which include Traditional Public Administration, New Public Management, New Public Governance, New Public Service, and Digital Era Governance (Dickson, 2014:43; Hood, 1991:3; Osborne, 2010:2; Dunleavy *et al.*, 2006:1; Weber, 1947; Taylor, 1911:40).

### **2.5.1 The Traditional Public Administration**

The 19th to mid-20th century period was characterised by bureaucratic systems and scientific efficiency (Weber, 1947:337; Taylor, 1911:39). Max Weber (1947:337), in his work 'Economy and Society,' outlined how decisions were made from the top down in a rigid system lacking flexibility and inclusivity. For instance, during this epoch, organisations had a clear division of labour and formal operational systems. Additionally, Frederick Taylor (1911) highlighted how organisations focused heavily on efficiency, which resulted in work being separated. Organisational structures being

shaped from the top to the bottom, emphasising how decisions were made from the top of the hierarchy downwards (Taylor, 1911:40). In a nutshell, traditional decision-making in public administration at the time was formal, as senior officials at the top of the organisation made decisions, and the workers below were only instructed to work, having no impact on the decision-making process (Weber, 1947:337; Taylor, 1911:39).

Nevertheless, during this time, despite organisations relying on hierarchical decision-making structures, other practitioners began to critique and highlight the limitations and lack of inclusivity in the existing structure (Follett, 1918; Bernard, 1938:55; Mayo, 1933). For instance, Mayo (1933) argued that organisations need to consider the importance of employees in the workplace by allowing them to be part of the decision-making processes. In support, Bernard (1938) argued that institutions must be able to communicate and work together as a team, which highlights the importance of collective decision-making.

## **2.5.2 New Public Management**

In the late 20th century, New Public Management (NPM) emerged, reshaping public administration as a significant paradigm shift characterised by a focus on market-oriented governance, efficiency, and managerialism (Hood, 1991:4; Barzelay, 1992:2). Important academic scholars such as Hood (1991:4) & Barzelay (1992:2) provided the foundational layers of NPM. Hood (1991:5), in his framework, highlights that decision-making in the public sector should be decentralised from top to bottom management; this decentralisation will enable managers at organisations to be more efficient and productive. Therefore, unlike the traditional public administrations where decisions were taken by the upper echelon, lowering the power of decision-making allows for more collaboration and efficiency (Hoods, 1991:5). Moreover, Barzelay (1992:3) emphasised the importance of incorporating private sector practices into the field of public administration, primarily through restructuring and greater executive autonomy. This shift in decision-making will enable managers to adapt their choices to the unique circumstances, thus allowing creativity and flexibility (Barzelay, 1992:3).

Nonetheless, scholars such as Osborne and Gaebler (1992:25) support the notion of a decentralised SDM approach. In their writings, Osborne and Gaebler (1992:25) highlighted the advantages of a decentralised approach, as it can encourage greater regional stakeholder participation in SDM processes. Additionally, academics such as Pollitt and Bouckaert (2000:85) argue that this viewpoint promotes the personalisation of services and evaluation mechanisms, which in turn cultivates a shared decision-making process where public input influences service delivery. However, some academics, like Alford (2002:51), have criticised this consumer mentality, claiming that it turns citizens into passive consumers instead of engaged actors in government.

### **2.5.3 New Public Governance**

According to Dickson (2008), this period marked a shift towards hierarchy and public administration. After Traditional Public Administration (TPA) and NPM were deemed too limiting, the paradigm of New Public Governance (NPG) gained traction in public administration towards the end of the 20th century and into the 21st century (Osborne, 2010:2). Stephen P. Osborne (2010:2) is often credited with popularizing NPG, particularly through his influential edited volume, "The New Public Governance: Emerging Perspectives on the Theory and Practice of Public Governance," published in 2010. In their seminal work, "Reinventing Government" (1992:24), Osborne and Gaebler highlighted the concept of "entrepreneurial government," advocating for a significant transformation in governmental approaches. They argued that decision-making should prioritise efficiency, innovation, and tangible outcomes over adherence to bureaucratic procedures or centralised planning (Osborne & Gaebler, 1992:24).

**Table 2-1:** The relation between traditional public administration, new public management, and new public governance.

	<b>Conventional Public Management &amp; Administration</b>	<b>New Public Management</b>	<b>New Public Governance</b>
<b>Quality Guidance</b>	System and Process	Effectiveness and efficiency	Efficiency, effectiveness, and democracy
<b>Conceptual Standard</b>	Bureaucracy, administrative, and political dilemma	The concept of economy, the ideology of private sector operations	Contractual-ism, the philosophy of integrity, socialism
<b>Code of conduct</b>	Isolating strategy and implementation, centralization in public administration	Privatization and promotion of public services	People freedom, democratic discourse, and pluralist governance
<b>Community function</b>	Leader	Client	Engagement in the decision-making process

(Nel *et al.* 2015)

Nevertheless, Dickson (2008) notes that the government was at the centre of decision-making during this time. However, as years progressed, many nations wanted to move away from a traditional-based model of decision-making to a more market-oriented approach (Ferlie, Ashburner, Fitzgerald, & Pettigrew, 1996). Multiple organisations and agencies were now offering public services; this outsourcing led to decision-making becoming broad, encompassing several public entities (Dickson, 2008:20). These events caused the state to become fragmented, resulting in a process known as marketisation. Moreover, this period marks a time where competitiveness, collaboration, and shared decision-making emerged as a new pillar for service provision (Osborne, 2006:87). The understanding of governance has transformed from a hierarchical structure to a horizontal, network-oriented model (Dickson, 2008:20; Osborne, 2006:87). Rhodes (1997) suggests that governance is increasingly perceived as self-organizing networks among organizations, which operate with significant autonomy from the state while remaining interconnected. This transition to network governance was motivated by the conviction that networks could address the shortcomings of both market-driven

exchanges without regulation and centrally controlled planning, especially in the context of rapid global changes (Jessop, 2003; Newman, 2004: 71).

#### **2.5.4 New Public Service**

The New Public Service model has emerged in public administration due to the limitations associated with TPA and NPM approaches (Jessop, 2003:101). The concept was initially developed by Denhardt and Denhardt (2003:50), where they indicated and outlined the shift in the public sector globally. In a nutshell, Denhardt and Denhardt (2003:50) demonstrated how the paradigm shift affected shared decision-making processes by moving away from the hierarchical, bureaucratic methods typical of TPA and the efficiency-focused, market-driven practices of NPM. Instead, the New Public Service (NPS) places much focus on SDM that is inclusive, collaborative, and citizen-oriented. Moreover, public managers, as stated by Denhardt and Denhardt (2003:51), should "serve rather than steer," highlighting the significance of citizen participation in governance. This contrasts with TPA, which primarily involves decision-making by high-ranking officials, and the NPM approach, where citizens are seen as customers to be served (Newman, 2004: 71). In NPS, active citizen participation is promoted, positioning the people as vital stakeholders in decision-making processes, which transforms governance into a cooperative effort that incorporates citizen perspectives (Newman, 2004:72).

Ansell and Gash (2008:17) emphasised that intergovernmental relations and collaborations are crucial to the NPS framework, underscoring the importance of shared decision-making involving multiple stakeholders, including state agencies, NGOs, and the public-private sector (Ansell & Gash, 2008:17). In contrast, this collaborative approach differs significantly from the traditional hierarchical decision-making of the TPA and the market-driven approach of the NPM.

#### **2.5.5 Digital Era Governance**

The concept of Digital Era Governance (DEG), introduced by Dunleavy and Marget (2005:12), emerged as a new paradigm in public administration. It marked a shift from the NPM model, which emphasized managerial and market-based approaches, to a

strategy centered on data-driven and technological methods for governance (Dunleavy *et al.*, 2005:12). This change signaled a departure from conventional management techniques and an increase in the use of data analytics and digital technology to improve decision-making and public service delivery (Dunleavy *et al.*, 2005:12). Nevertheless, Bertelli and Lyn (2006:98), in their research, argued that decision-making must be decentralized, thus allowing people within organizations to be part of the decision-making processes, as this will be done via digital platforms that will enable collaborations, data-driven decision-making, and inclusive government approaches. As the DEG emerged as a critique of NPM, its fundamental aspects involve utilising digital tools in the public sector to facilitate collective decision-making and deliver improved services to the relevant market (Dunleavy *et al.*, 2005:13).

**Table 2-2:** Characteristics of the three reform paradigms within the digital era

Reform paradigm	Core claim and focus	Main coordination mechanisms	Type of collaboration
New Public Management	Make government more efficient and 'consumer responsive' by injecting business-like methods  Focus on intra-organisational management	Market-type mechanisms such as performance indicators and competitive contracts	Internal and external  Vertical and horizontal
Neo-Weberian-state	Modernise the state apparatus so that it becomes more professional, efficient and responsive to citizens.  Focus on the specific role and culture of the state	Authority exercised through a disciplined hierarchy of impartial officials	Internal  Vertical
Networked Governance	Make government more effective and legitimate by including a wider range of actors in policymaking and implementation.  Focus on inter-organisational governance	Networks of, and partnership between, stakeholders	External  Horizontal

Source: Authors' elaboration based on Margetts and Dunleavy (2013), Pollitt and Bouckaert (2017), and Osborne (2006).

The table 2-2 highlights the unique tenets, administrative strategies, and application of digital technologies in influencing public sector transformation of the three reform

paradigms in the digital age: New Public Management, the Neo-Weberian State, and Networked Governance.

According to researchers such as Fung and Weil (2010), TPA and NPM are losing their position as leading service providers, as they have failed to demonstrate evidence of their success in servicing. In essence, the DEG has emerged because bureaucratic, hierarchical decision-making models have no positive benefits. The DEG offers a new framework for collectivism and shared decision-making by leveraging digital tools to enhance collaboration and expedite the decision-making process (Fung *et al.*, 2010). As mentioned earlier, the transition from TPA and NPM to DEG represents a shift toward more flexible and inclusive governance approaches that prioritise transparency, collaboration, and the utilisation of digital tools to engage stakeholders in decision-making. In the wake of DEG core production and core creation, transformative ideas of public administration have emerged, thus revolutionising the shared decision-making processes (Gusmano & Jones, 2008; Osborne *et al.*, 2013:31; Porter, 2012:145; Verschuere, Brandsen, & Pestoff, 2012; Voorberg *et al.*, 2015). In essence, co-production and co-creation are related ideas that emphasise how crucial it is for citizens and public service providers to work together to produce services. Through co-production, citizens actively participate in the planning, delivery, and evaluation of public services (Gusmano & Jones, 2008:45; Porter, 2012:145; Verschuere *et al.*, 2012). Moreover, by integrating individuals early in the process, including identifying issues and providing alternatives, co-creation goes one step further (Porter, 2012:145). Both strategies encourage the provision of public services that are more inclusive and efficient and increase citizen engagement (Porter, 2012:147). This highlights the evolution of shared decision-making in public administration.

## **2.6 A review of shared decision-making models**

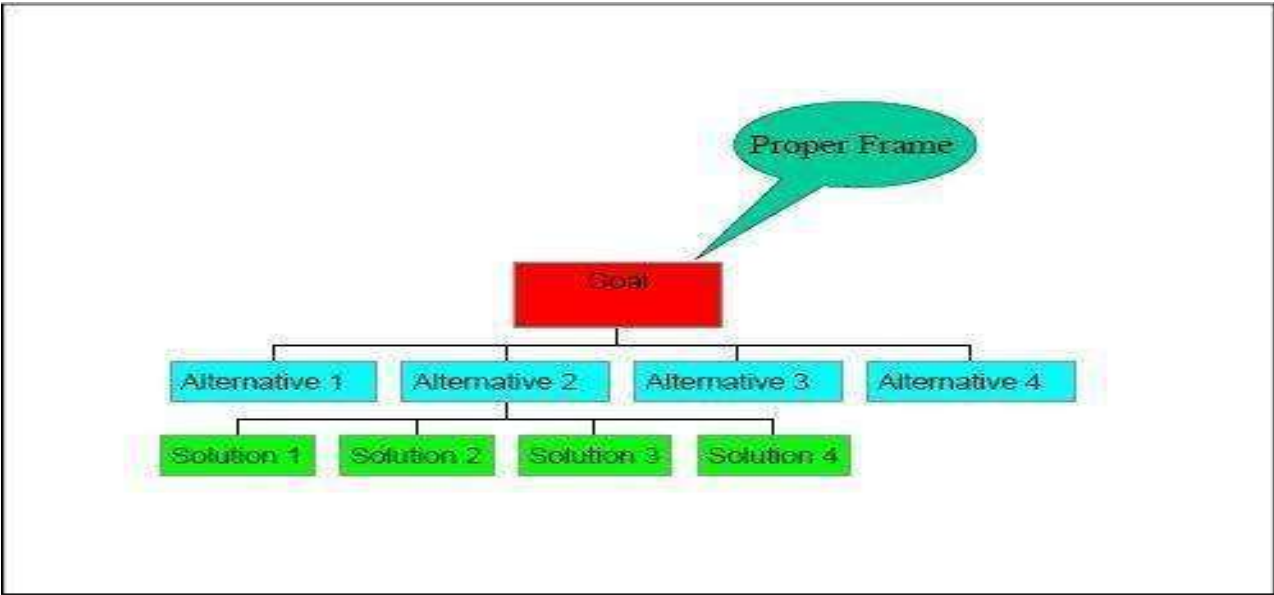
Historically, SDM models have emerged across various disciplines (Elwyn *et al.*, 2012:27). For instance, in political and environmental science, decision-making models such as deliberative democracy and adaptive management have gained prominence within their respective fields (Habermas, 1984:139-169; Dryzek, 2000:1-27; Holling, 1978). Moreover, this trend of emerging SDM models can be traced across various

fields that scholars outlined (Elwyn *et al.*, 2012:27). In the health sector, Stacey *et al.* (2020) developed the Ottawa Decision Support Framework, which has become prominent in the field of medicine. Nonetheless, drawing TPA, NPM, NPG, and NPS, shared decision-making models such as collaborative, consensus, and deliberative have emerged within the confines of the current Digital Era of Governance (DEG) (Ansell *et al.*, 2008; Hartnett, 2011:17-50; Dryzek, 2000:28). These models represent a transformative revolution in the essence of decision-making processes, marking a significant departure from traditional top-down approaches (Elwyn *et al.*, 2012:27). They emphasize collaboration, inclusivity, and transparency, harnessing the potential of digital technologies to engage stakeholders and enhance the legitimacy of public decisions (Hartnett, 2011:17). This shift reflects the evolving nature of governance in response to the challenges and opportunities presented by the digital age.

### **2.6.1 Collaborative governance model**

In a nutshell, drawing from the historical evolution of SDM processes in public administration, the collaborative model of SDM has emerged in this current era of digital governance, emphasising the use of digital tools and technologies to improve the decision-making process and enhance stakeholder engagement (Ansell *et al.*, 2008:544-560). Academic scholars, such as Ansell & Gash (2008), highlight the fundamental role of trust-building and collaboration within organisations in their research. Furthermore, scholars argued that digital tools offer avenues for instantaneous interaction and communication among stakeholders, thus overcoming the conventional limitations (Ansell *et al.*, 2008:544-560).

**Figure 2-1:** Decision-making hierarchy (2000)



(Stone, 2006)

The figure 2-1 showcases the decision-making hierarchy

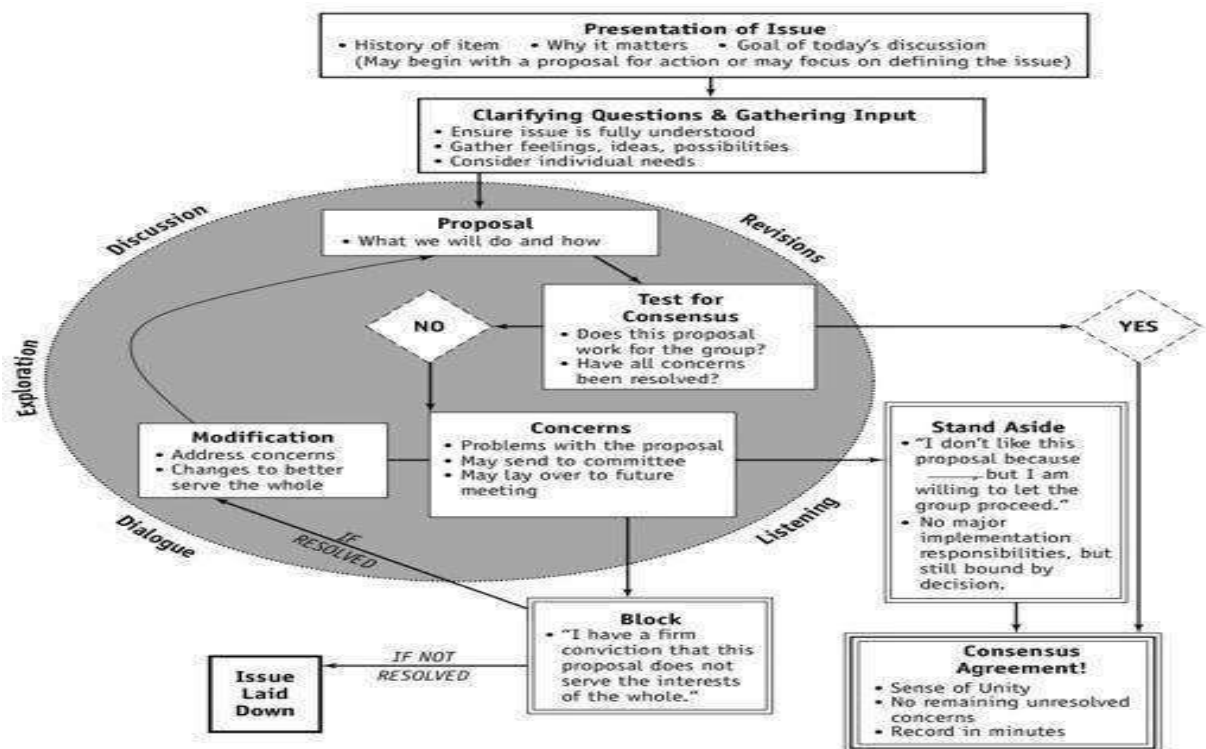
In contrast, Janssen and Estevez (2013:8) observed that e-governance offers significant opportunities for the public sector. This is achieved not only by using digital platforms to enhance transparency and efficiency but also by democratizing decision-making processes, thereby promoting greater inclusivity (Janssen *et al.*, 2013:8). Furthermore, the significance of the collaborative model is highlighted in the transition from traditional TPA to a more decentralized one. Bryson, Crosby, & Stone (2006), in their research, demonstrated the challenges associated with cross-sectional collaborations; nonetheless, these scholars highlighted that the model of collaboration in decision-making enables robust mechanisms through which stakeholders can establish policies collectively, share data, and embark on joint initiatives. Importantly, this model outlines the significance of applying digital tools to government frameworks to aid collective decision-making (Bryson *et al.*, 2013:44).

## **2.6.2 The Consensus model of decision-making**

According to Hartnett (2011), the era of digitization symbolizes a shift from the traditional hierarchical structure of decision-making to a consensus-oriented approach, driven by advancements in technology. Through digitalization, virtual communication and real-time collaborations occur because of the digital platforms, thus allowing distinct opinions to be considered and agreements to be reached (Hartnett, 2011:17-50). However, Dryzek (2000) contends that, although new public management highlighted a shift in decision-making, the consensus model presents unique challenges in that it can silence dissenting voices or compromise innovative solutions that will enable agreements to be reached.

Nonetheless, the emergence of this model in this digital era reflects a revolutionary shift from the traditional top-down approach of the decision-making process to a more inclusive collective decision-making process aided by the technologies present (Dryzek, 2000:45). Norris (2001:269) notes that through consensus decision-making processes, the decisions made will embody collective perspectives and increase efficiency within organizations, thus allowing organizations to perform better and deliver the best services.

**Figure2-2: Consensus**



(Abelson, 2003)

The Figure 2-2 highlights some of the consensus decision-making models

### 2.6.3 The Deliberative Model

In the current epoch dominated by technology, decision-making processes have changed compared to what they were during the period of NPM and TPA (Abelson, 2003:239; Culyer & Lomas, 2006:357). TPA and NPM approaches struggle to adapt to the challenges and opportunities of the digital age. In response, new models such as the deliberative model of shared decision-making have emerged (Habermas, 1984: Dryzek, 2000:27). While TPA and NPM remain valuable in specific situations, the collaborative approach to decision-making offers a more dynamic way to overcome the complexities of the digital era (Dryzek, 2000:27). Dryzek (2000) argues that in the current era dominated by technologies, states can enhance deliberative democracy by infusing digital platforms to foster collaboration and collectivism in decision-making within organizations. Moreover, Dryzek (2000:30) further notes that digital tools offer

more accessibility and are user-friendly, which is the essential advantage of utilizing these tools to improve collective decision-making. The digital instruments present in this digital era facilitate the engagement of a broader citizenry within the public sphere discourse. This, in theory, underpins more democratically inclined and comprehensive decision-making frameworks (Dryzek, 2000:27).

In contrast, Cass Sunstein (2001) and Wisbrant (2016) critiqued the digital public sphere by highlighting the nature of digital platforms and the prevalence of echo chambers. Within these echo chambers, discourse tends to become increasingly polarized and partisan, deviating from the deliberative and consensus-oriented ideal (Sunstein, 2001:1759; Pariser, 2011:23). Nevertheless, while acknowledging the challenges, proponents contend that digital technologies possess the inherent capacity to augment deliberative democracy (Sunstein, 2001:1759; Wisbrant, 2016:24). This hinges on the design and management of these technologies fostering inclusivity, transparency, and substantive dialogue (Dryzek, 2000:28). To fully realize the potential of the deliberative model within the digital landscape, ensuring accessibility, user-friendliness, and an environment conducive to respectful and informed exchanges across the platform is paramount (Abelson *et al.*, 2006:239; Culyer *et al.*, 2006:357; Dryzek, 2000:28).

## **2.7 The role of digital technologies in promoting shared decision-making in South African higher education.**

Globally, the use of digital tools in higher learning institutions has become prevalent, especially in Western states (Fahssis, 2019: 87). Higher learning institutions in the country have witnessed the ever-increasing demand for digital applications in higher education; thus, processes of decision-making have been impacted as these tools provide various avenues to foster collective participation and stakeholder engagement (Colson, 2019). Currently, several studies (Colson, 2019; Akgun & Greenhow, 2021:960) have highlighted the transformative influence or impact of digital tools at an academic governance level. Akgun (2021), for instance, explores the capacity of digital platforms to facilitate real-time communication and collaborative efforts among stakeholders. In their study, Akgun *et al.* (2021) placed much importance on

demonstrating the ability of digital tools to combat matters of the digital divide and empower lecturers and students to partake in the decision-making processes at the institutional academic administrative level. Consequently, digital technologies such as Moodle and Teams perform an important function in promulgating democratic institutional frameworks that foster collectivism and inclusivity within the universities.

Current scholarly discourse looking at the effects of digitalization in institutional governance asserts that the incorporation of digital tools in higher learning institutions shows both prospects and caution regarding digital application (Somya, Patel, & Dlamini, 2021:964; Zeballos-Palacios, Hargraves, Noseworthy, Branda, & Burnett, 2019; Hargraves *et al.*, 2019:1786). Building on this, Somya *et al.* (2021) outline various prospects of digital applications for facilitating SDM, including real-time data analytics for evidence-based planning, enhancing access to resources and data between stakeholders, students, and learning management systems that inform academic strategies. In contrast, Dryzek (2020) highlights that there are negative impacts of digital applications, such as widening digital disparities and contributing to overreliance on AI tools and issues of data privacy. Dryzek (2020) further reiterates that digital tools lack the much-needed balance and may exacerbate imbalances between disadvantaged groups, resulting in a further digital divide among various institutions. Therefore, combating matters of digital literacy may aid in the processes of digital transformation in education through promoting equal collective engagement regarding decisions of curriculum design within institutions.

Conversely, the burgeoning of incorporating digital tools in higher learning at an institutional academic governance level raises issues of security, data privacy, and ethical use of digital tools such as AI to facilitate shared decision-making (Lumadi, 2024). Scientific literature and empirical evidence highlight the importance of forming robust institutional frameworks and comprehensive ethical guidelines that combat matters of ethical use of digital tools to make data-informed decisions (Colson, 2019; Kunneman *et al.*, 2016; Mukred *et al.*, 2021). Yet, despite academic scholars such as Mukred *et al.* (2021) recognising the value of using data analytics to foster collaborative decision-making in institutions, Lumadi (2024) posits that protecting valuable institutional data and the privacy of students and stakeholders is of great importance.

Higher learning institutions in South Africa offer institutional guidelines that demonstrate the use of digital technologies to foster shared decision-making and enhance institutional administrative efficiency (Czerniewicz, Trotter, Haupt, 2019). For example, at the University of Cape Town, the institution has used digital tools, such as surveys, to gather data on the students' perspective of the curriculum design so they can offer alternatives for its transformation. This initiative demonstrates how using digital technologies can foster collaborative shared decision-making and promote transparency and accountability within the institution's governance structures, thereby empowering stakeholders and improving decision-making processes (Czerniewicz *et al.*, 2018:27).

Scholars argue that technological advancements such as crowdfunding and Teams can enhance collaborative decision-making (Taylor, Fudge, Mirriahi, & De Laat, 2021; Oliveira, Teixeira, Torres, & Morias, 2021; Szymaniec-Mlicka *et al.*, 2017). Taylor *et al.* (2021:1-18) support this notion by outlining the way digital technologies can foster inclusive decision-making processes that enable students, parents, and stakeholders to partake in the establishment of pedagogical policies and initiatives. Despite the prospects of digital application in higher education, Mukred *et al.* (2021) further add that the rise of digital transformation and innovation in the last decade has impacted higher learning institutions in ways that transcend management. Nevertheless, regardless of some issues digital tools pose, they prospective the potential to transcend their disadvantages in their abilities to foster shared data-informed decision-making using tools like Microsoft Teams and Slack (Taylor *et al.*, 2018).

## **2.8 Key challenges faced by the DL4D Initiative in implementing digital tools for shared decision-making processes.**

Amid digitalization and technological advancements, universities in South Africa have entered a new phase of innovation offered by the emergence of digital tools (Timokhina, Popova, & Izakova, 2022:50; Osasebor & Oribhabor, 2023:3). Despite these new technologies providing an opportunity for innovation and change within higher learning institutions, these tools are not here without their challenges (Simonson, Smaldino, Albright, & Zvacek, 2014:68). Current literature highlights several challenges the DL4D initiative faces; these include the digital divide, limitations in technological infrastructure,

security and data privacy matters, and resistance to change (Simonson *et al.*, 2014:68; Liu *et al.*, 2017; Englund *et al.*, 2017:7; UNESCO, 2021:17-30; Williamson, Eynon, & Potter, 2020; Aliu, Aliu & Gashi, M. 2022; Slijepčević, 2023:22; Kurtz *et al.*, 2024).

### **2.8.1 Digital Divide**

According to Slijepčević *et al.* (2023:27), the digital divide is one of the challenges facing the DL4D initiative. In the current epoch, some institutions have access to the internet and digital tools, and some do not. Academic scholars highlight that in South Africa, the challenge of the digital divide extends beyond just institutions having access to technologies, because some institutions struggle with internet connections, and some have stakeholders without the knowledge of navigating these new digital tools such as Slack (Aliu *et al.*, 2019:22; Slijepčević, 2023). Amid the initiative being done, the digital divide emerged as a challenge because there was a visible contrast among various institutions regarding access to resources, especially between cities and townships (Aliu *et al.*, 2019; Karim *et al.*, 2024; Kurtz *et al.*, 2024:72). Consequently, in the current epoch, students who are from underprivileged universities do not have the same opportunities as those in urban universities that have access to the internet and state-of-the-art technologies that foster collaboration and shared decision-making (Nascimento, Adulazeem, Vasabthan, Martinez, Zucoloto, Ostengaard, Azzopardi-Muscat, Zapata, & Novillo-Ortiz, 2024; Kurtz *et al.*, 2024:75). These inequalities further deepen the existing disparities of digital access and hinder the process of collaboration and communication among stakeholders, parents, and students when it comes to decision-making (Setiawan, Iskandar, Madjid, & Kusumawardani, 2023; Kurtz *et al.*, 2024:75). Scientific literature further notes that, despite some universities like North-West University or Nelson Mandela University having cutting-edge technologies, some stakeholders and administrators lack the competent skills to use the digital tools, necessitating the requirements for digital skills development and infrastructure deployment at some institutions of higher learning (Setiawan *et al.*, 2023; Kurtz *et al.*, 2024:75).

**Figure 2-3:** Digital divide



(Kurtz *et al.*, 2024)

The figure above 2-3 highlights the growing digital gap by showing differences in Wi-Fi accessibility across different institutions of higher learning.

### **2.8.2 Technological Infrastructure**

Technological infrastructure is one of the prominent challenges of the DL4D program faced in South African higher learning institutions (Englund *et al.*, 2017:32; UNESCO, 2021; Williamson, 2018). During the DL4D initiative, research highlighted that some universities in South Africa do not have high-speed internet, have limited access to computers, and face major issues of load shedding, thus impacting how stakeholders, parents, or lecturers communicate and collaborate (Czerniewicz *et al.*, 2017). The current infrastructural deficit affects the use of new digital tools such as Microsoft Teams, Moodle, and Slack to foster SDM processes in higher education. Williamson (2018) states that the lack of robust and effective state-of-the-art technologies creates a place where stakeholders, lecturers, students, and parents are unable to partake in the university's decision-making processes regarding the establishment of the curriculum and educational outcomes. For example, when stakeholders, parents, and students do

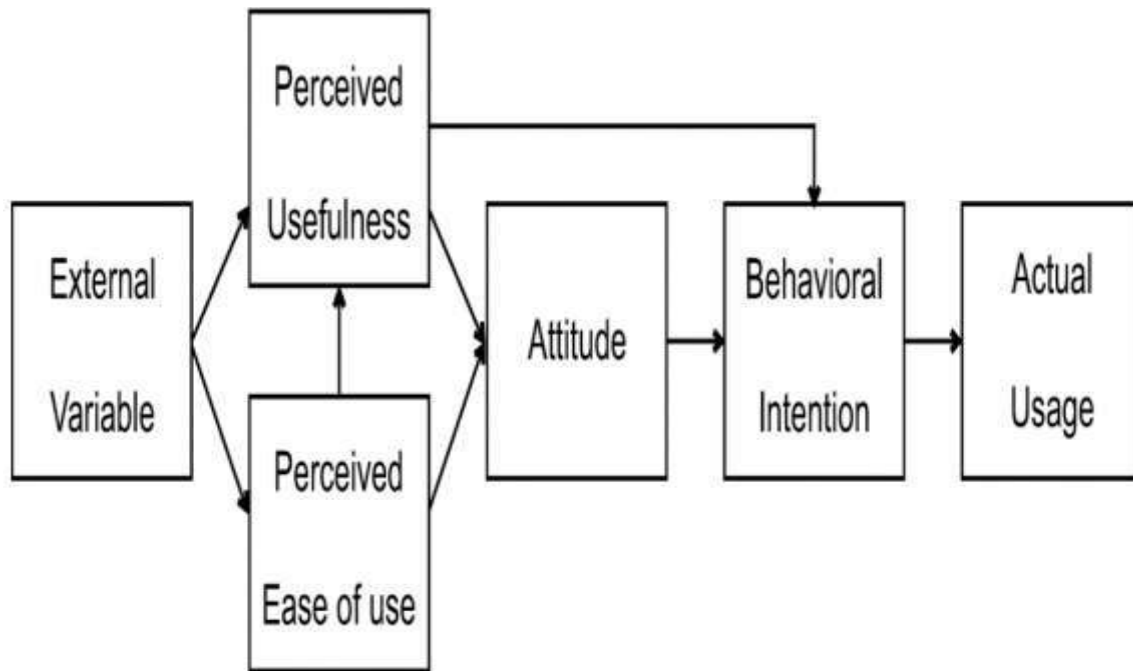
not have the necessary infrastructure to communicate online and work collectively, they desire to establish a curriculum and policies that reflect diverse viewpoints (Czerniewicz *et al.*, 2017; Williamson, 2018). Therefore, the prospect of digital applications in fostering shared decision-making in higher education is undermined by the lack of the necessary infrastructure.

### **2.8.3 Resistance to Change**

According to Czerniewicz *et al.* (2017), resistance to change emerged as one of the challenges the DL4D initiative encountered in higher education. Scholarly debates highlight that traditional administrative and pedagogical systems of governance in universities in South Africa present a challenge to digital enactment in higher education to aid in facilitating shared decision-making processes (Czerniewicz *et al.*, 2017; Alajmi, 2022). For instance, Alajmi (2020) highlight that those stakeholders and lecturers who have worked at the institution of higher learning for a long time often resist the use of new digital technologies because of the view they hold on to these technologies (Google Teams & Slack), including their complexity and ineffectiveness. Oftentimes, the reluctance to engage using new technologies comes because of the lack of digital skills and the preference for communicating using traditional methods (Alajmi, 2022). Most of the stakeholders or administrators do not have much interest in training programs, and they often do not support the implementation of new institutional policies that promote the incorporation of digital tools to facilitate shared decision-making processes at an academic governance level (Attaran *et al.* 2018). As a result, due to such challenges as resistance to change, various institutions across South Africa struggle with fostering shared decision-making processes and curriculum establishment using digital tools that support collaboration and democratic engagement. Furthermore, digital online platforms like cooperative software meant for joint curriculum design are often undermined, while chatrooms meant for collective decision-making are being ignored (Attaran *et al.*, 2018; Czerniewicz *et al.*, 2017). Because of this, decision-making stays centralized, which restricts the variety of viewpoints and shared responsibility that are essential for digital learning projects to be effective (Attaran *et al.*, 2018; Czerniewicz *et al.*, 2017).

## **2.9 Documented learner perceptions of educational technology in South African higher education**

In a seminal work by Davis (1989), the Technology Acceptance Model (TAM) was proposed to illuminate the factors influencing user adoption of information technology. TAM posits that perceived usefulness and perceived ease of use are fundamental determinants in shaping a user's attitude toward a particular technology. David (1989) notes that these perceptions shape a user's attitude toward the technology, ultimately impacting their intention to use it and their actual usage behavior. Nevertheless, Scherer & Teo (2019) argued that scholarly debates on technology acceptance need to place greater focus on the social and cultural implications of technology use. They highlighted that perceived Behavioral control (PBC), and perceived utility of technology-based behaviours are strongly associated, as demonstrated by many meta-analyses (Scherer *et al.*, 2019:14). This association suggests that technology-related self-efficacy is a major factor impacting the desire to embrace certain technologies in higher education (Scherer *et al.*, 2019:13). Additionally, Hussein (2017) showed that attitudes of students regarding using digital tools are crucial in determining their enthusiasm in learning and participation in collaborative decision-making. These viewpoints emphasize the significance of cultivating positive impressions and experiences with digital tools, as they have a substantial impact on how students interact with and accept new technologies (Hussein, 2017: 159-164).



(Davis, 1989).

The figure above demonstrates the usefulness of digital applications in higher education.

Hussein (2017) further claimed that one's attitude about an action reflects one's propensity to engage in that conduct, suggesting that favourable views regarding technology increase its adoption and use in education. Nevertheless, several studies have demonstrated that integrating information and communication technologies (ICT) fosters collaborative learning environments. This, in turn, facilitates knowledge construction, critical thinking skills, participation, and the diversification of ideas and shared decision-making processes (Hussein, 2017: 159-164; Scherer *et al.*, 2019). Nonetheless, several studies show positive sentiments among university faculty and students towards the use of digital tools in higher education (Garcia-Martinez *et al.*, 2020; Rafiq *et al.*, 2020). Recent meta-analyses point to several important difficulties in incorporating AI into educational environments (Crompton *et al.*, 2022). These include clearing up misconceptions and unfavourable views about artificial intelligence, improving technology fluency in teachers and students, negotiating moral dilemmas, and defining responsible AI tool use (Crompton & Burke, 2022:3). Furthermore, studies show that although K–12 teachers recognize artificial intelligence's potential as a useful

teaching tool, they still lack a thorough understanding of the technology and its real-world applications in the classroom (Chounta *et al.*, 2020;725; Crompton *et al.*, 2022: 4).

Additionally, Lee and Seung-Hyun (2014) conducted an extensive study examining the factors influencing e-learning adoption in South Korea, proposing a robust research model that identifies instructor characteristics, teaching materials, learning content design, and playfulness as primary independent variables. These factors significantly influence two critical belief constructs: perceived usefulness and perceived ease of use, which in turn shape the intention to adopt e-learning as the dependent variable (Muthuraman, 2021). Drawing from the seminal work of Lee (2014), digital components such as the Expectation-Confirmation Model (ECM) and TAM, as well as the Theory of Planned Behavior, are at the forefront of innovation and digitalization in institutions of higher learning in SDM processes and technological education outcomes. Lee's (2014) research demonstrates the people's view on the use of digital tools, their perceived usefulness, and how people regard technology as innovative or not.

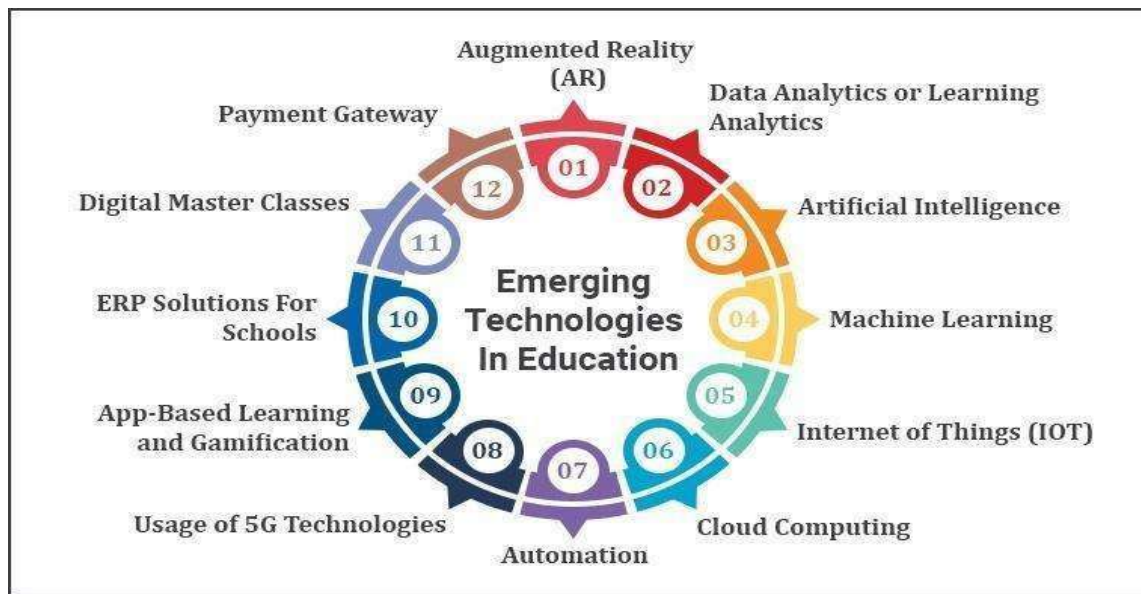
Additionally, scholars like Stevens (2017) highlight the impact of institutions in moving from old methods of decision-making to current digitally driven models that foster stakeholder engagement and collaboration in higher learning institutions. DL4D programs bridge the gap between educators, parents, students, and administrators by utilizing digital tools (Mwesigwa *et al.*, 2017). These innovative approaches, including online platforms, mobile apps, and virtual classrooms, break down geographical and time limitations. As a result, all stakeholders can participate and contribute more easily, creating a more inclusive and collaborative learning environment in higher education (Mwesigwa *et al.*, 2017). Additionally, the efficacy of education will be greatly transformed by the paradigm shift from decision-making traditional models to a more democratic, inclusive approach (Stevens, 2017). Nevertheless, Stevens (2017) further contended that educational institutions should be accelerators of invention and exploration; as such, COVID-19 enabled many institutions to review the processes taken towards education and created room for more literature to be explored regarding higher education.

## **2.10 The impact of emerging digital technologies on decision-making processes in higher education.**

Globally, universities are increasingly utilising advanced analytics and business intelligence tools to harness the capabilities of digital technologies (Raham, 2020). This data-centric approach, as advocated by Bichler *et al.* (2023), enables evidence-based decision-making, resulting in enhanced student outcomes, optimized resource allocation, operational efficiency, and SDM. For example, predictive analytics enables proactive interventions for students at risk by facilitating early identification, thereby strengthening initiatives aimed at student retention and improving decisions (Bichler *et al.*, 2020:220). Current research scholars, such as Raham (2020:76), assert that artificial AI as well as machine learning (ML) offer new avenues for institutions to facilitate shared decision-making processes and establish digital systems like the decision support system (DSS). Rahman (2020) demonstrates the fundamental pillars of AI in higher education, which is done through showing its positive effect on institutional administration and SDM (Muthuraman, 2021:39).

Muthuraman (2021) states that the emergence of digital tools in higher education and AI has impacted the institution's administrative processes, as everything is streamlined now, enabling stakeholders and parents to make decisions collectively and make data-informed decisions. AI-powered adaptive systems allow students to get real-time feedback on their views regarding education and curriculum development within institutions, offering more detailed challenges of an academic nature (Muthuraman, 2021; Raham, 2020:56). Furthermore, research shows that digital tools employed at higher learning institutions use current data sets of students views and perspectives to allow stakeholders and administrators at an academic governance level to establish curriculums and improve educational outcomes (Bichler *et al.*, 2020:200).

**Figure 2-4:** Overview of emerging digital technologies in higher education (2017)



(Fahssis, 2019)

This figure 2-5 showcases new digital tools adopting to foster digital transformation.

Scientific literature and empirical evidence highlight that various higher learning institutions in South Africa are confronted with a new era of blockchain technology that provides new avenues for creating a technological, decentralized, digital, unfractured education that allows each member of the academic governance level to partake in collective efforts of curriculum design and the utilization of online platforms (Abdeldayem & Dulaimi, 2020:7150; Mitchell, 2019; Awaji, Solaiman, & Albshri, 2020:120). This innovation offers important institutional data and diverse digital infrastructure that caters to cooperative governance and institutional efficiency (Awaji *et al.*, 2020). Due to this, blockchain has immense prospects to foster collectivism within institutions and enhance administrative efficiency, allowing the universities in South Africa to establish new resource provision techniques and implement programs that provide digital skills to bridge the gap of the digital divide (Awaji *et al.*, 2020:521).

Akcayir *et al.* (2017) assert that modern technologies such as augmented reality (AR) and virtual reality (VR) offer profound opportunities to higher learning institutions through digital avenues that will allow universities to increase their online engagements,

thus promoting SDM. The emergence of AR and VR in the 21<sup>st</sup> century provides a much-desired chance for institutions to transform the landscape of education by enabling students, lecturers, and parents to solve difficult concepts and establish innovative curricula that advance the objectives of the institutions (Akçayir *et al.*, 2017; Nebeker, Ellis, & Torous, 2020;1004-1015). These digital technologies can transform education through establishing democratic engagement in the establishment of the curricula and help with data that will enable the institutions to have a collective digital space where views of distinct stakeholders are considered. D'Acquisto, Giuseppe, Domingo-Ferrer, Kikiras, Torra, De Montjoye, & Bourka (2015) & Nebeker *et al.* (2020) highlight that VR simulations provide institutions the ability to co-create along with distinct faculties and departments on matters concerning the institution and education outcomes, thus promoting SDM processes and inclusivism. Nonetheless, D'Acquisto *et al.* (2015) argue that the use of AR and VR may have legislative consequences due to the fragile nature of their security measures and the safeguarding of important information. This ramification raises issues on the dangers of using digital platforms, thus contradicting institutional policies that cater to the safety and security of students, staff, and parents. In contrast, Klopfer, Scott, & Ducharme (2019) recognize that AR and VR have immense potential for using data analytics in fostering SDM processes backed by evidence, despite the issues these tools may pose. To combat these issues, research highlights how institutions must establish policies that are robust and offer ethical and protective guidelines for using any digital tools (Klopfer *et al.*, 2019).

According to Brooks (2020), higher learning institutions must use digital tools to create an innovative space that allows various stakeholders and students to partake in the SDM processes. Furthermore, Brooks (2020) asserts that the application of digital tools in higher education will enable the institution to offer real-time collaborations, fostering an environment of innovation and digital transformation. The DL4D initiative provides greater avenues for exploring the role digital technology plays in facilitating SDM processes in higher education. Through the implementation of this initiative, institutions of higher learning get well-informed data and critical tools that allow lecturers and students to be empowered and make choices that are well-informed and scientific (Arnot *et al.*, 2020). Additionally, the DL4D initiative leverages digital applications of modern state-of-the-art technologies that offer various avenues for engagement and

enable various interdisciplinary collaborations, thus fostering SDM processes in higher education (Brooks, 2020). These technologies include digital platforms for video conferencing, such as BlueJeans, GoToMeeting, and Cisco Webex, to name a few (Arnot & Sangra, 2018; Mwesigwa *et al.*, 2017). Using these tools, universities can establish an environment that is open for discourse and collectivism and make data-informed decisions about the institution's policies and curricula (Arnot *et al.*, 2018).

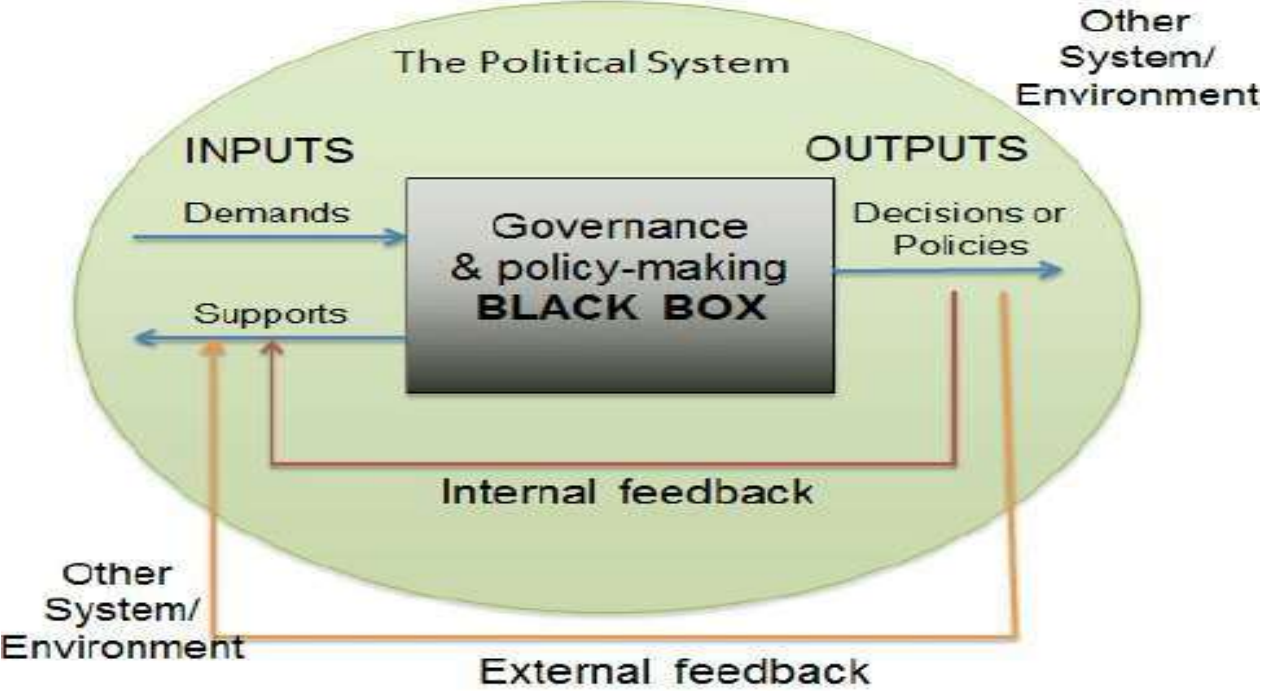
## **2.11 Theoretical undergirding of the study**

The systems theory informs the study. It is discussed in detail in the following section, demonstrating its relevance to the study.

### **2.11.1 Systems Theory**

David Easton's (1953) seminal work in political science introduced a systems theory framework that offers a valuable lens for comprehending the complex decision-making processes within educational systems. This theory indicates that educational institutions, much like political systems, function as interconnected entities where various actors (pupils, teachers, administrators, policymakers, and stakeholders) interact continuously (Easton, 1953: 383-400). Easton's framework emphasizes the critical role of inputs (demands and supports), processes (internal workings that translate demands into outputs), outputs (decisions and policies), and feedback loops (mechanisms for evaluating and adjusting outputs) in comprehensively understanding the intricate nature of educational systems and their decision-making processes (Easton, 1953). As such, by adopting this systems perspective, scholars gain a methodological framework for meticulously examining the complexities of educational decision-making and how various elements influence collaborative practices (Easton, 1953:383-400).

**Figure 2-5:** Systems theory model



(Easton, 1953)

Above figure 2-6 is the systems theory that underpins this research

David Easton's (1953) systems theory emphasizes the critical role of inputs, outputs, and feedback loops in understanding complex systems. This framework can be applied to explore the role of digital technologies in fostering collaboration and inclusivity within educational decision-making processes (Easton, 1953: 383-400). The theory suggests that digital technologies can function as complementary inputs alongside traditional forms of input in the decision-making process (Easton, 1953: 383-400). These technologies can potentially streamline the process for administrators and policymakers. Additionally, digital tools can promote inclusivity and collaboration, potentially leading to decisions that reflect a more holistic understanding of the educational system. Furthermore, Easton's (1953) emphasis on continuous adjustments based on feedback aligns with the potential of digital feedback loops. These loops can provide administrators with immediate and diverse feedback (from teachers, parents), which can inform the development of more responsive and inclusive curricula.

Systems theory, developed by David Easton in 1953, offers a useful framework for examining decision-making procedures in intricate systems like higher education. This approach, when applied to SDM, emphasizes the crucial roles of three essential components: transparent communication, structured procedures, and adaptive capacity. Moreover, structured processes ensure that all relevant inputs, encompassing diverse stakeholder perspectives and data, are systematically considered within the decision-making framework (Easton, 1953). This aligns with Easton's emphasis on well-defined and comprehensive inputs for effective system function. Additionally, transparent communication fosters trust and collaboration among stakeholders, a crucial element for effective service delivery (Gronroos, 2011). Gronroos (2011) states that digital technologies play a significant role in enhancing both structured processes and transparent communication. They offer platforms for data collection, analysis, and communication, facilitating the creation of a well-defined and inclusive decision-making environment (Murphy, 2014).

Nonetheless, by leveraging digital tools to create structured processes, transparent communication, and responsive feedback loops, higher education institutions can foster more efficient, inclusive, and adaptive SDM practices. This aligns with Easton's systems theory by promoting a dynamic and responsive decision-making environment within the educational system (Murphy, 2014).

## **2.12 Conclusion**

In conclusion, this study explored the role digital technologies play in facilitating shared decision-making processes in South African higher education institutions. Under this chapter, the literature was reviewed, looking at the various prospects of digital applications in higher learning and how they foster collective decision-making and improve the institution's administrative efficiency. Through an intense review of the literature, this chapter demonstrated the need for using digital tools as a solution and how the rise of digitalisation and technological tools offers distinct avenues for innovation and fosters collective effort to work collectively and make decisions. The theoretical underpinning of this research was also highlighted; the theory is David Easton's System Theory, which assists in highlighting the importance of digital

technologies in higher education and how they can aid in fostering shared decision-making in higher education.

## **CHAPTER 3 RESEARCH METHODOLOGY**

### **3.1 Introduction**

Having established the literature review in the previous chapter, in this chapter, the study's research methodology is presented. The chapter outlines the chosen research design used in this study and provides an overall view of the various methods used to undertake this research. First, this chapter starts by adopting a qualitative research approach and then outlines the research case study research design that is employed. Following this, the chapter further adopts a purposive sampling method on how various academic literature was consulted for this research. Next, a broad overview is presented regarding the techniques that were employed to collect data, and then content analysis was chosen to offer practical insights into how this research was done and conducted. Finally, to make certain that this research meets the highest academic standard, the chapter concluded by highlighting the research's ethical considerations.

### **3.2 Research approach**

This study is a desktop study that employed a qualitative research approach. The qualitative research approach aids in having an in-depth analysis of how digital technology plays a role in facilitating SDM in higher education (Philipsen, 2017:27). This study used a qualitative research approach that decisively deals with the assemblage of data for the role digital technologies play in facilitating shared decision-making in higher education, as well as gathering data for the DL4D initiative. Philipsen (2017:18) emphasized that qualitative research has an objective to gain knowledge of the social constructs of reality to elucidate the essence of the experienced and built reality.

According to Taherdoost (2022), a qualitative research approach consists of several methods aimed at comprehending techniques that employ naturalistic and interpretative approaches to tackle scientific and practical concerns in society. These techniques make use of factual resources, including case studies, first-hand accounts, and narratives, to examine everyday activities and obstacles while highlighting their

intangible core meanings and motives (Taherdoost, 2022:54). Primary, first-hand textual data gathering is prioritized in this research paradigm, and it is evaluated utilizing interpretive approaches to produce new hypotheses and fresh insights (Taherdoost, 2022:54). Nevertheless, the secondary data approach applies to a greater degree to examine a specific phenomenon. Additionally, due to its investigative nature, the qualitative approach is particularly effective when researching phenomena for which there is little readily available information (Taherdoost, 2022:55; Aspers *et al.*, 2019:139). Qualitative research affords a deep insight into events within specific circumstances and timeframes, without the goal of generalizing findings across contexts or future scenarios.

### **3.3 Research design**

This study used a case study research design. According to Lindquist (2022), a case study research design “involves a deep analysis of the contemporary, real-life phenomenon in its context.” This research design assisted in getting an in-depth analysis of how digital technology plays a vital role in facilitating SDM in higher education. The case study research design aided in unpacking the benefits and challenges that the DL4D initiative had and helped explore the role digital technologies have in facilitating SDM processes in higher education. Boda (2022) adds that a case study research design helps in understanding multiple issues in their real-life environment. A case research design is a form of qualitative research where non-numerical data will be used to answer research questions.

Nevertheless, Mills (2017) indicates that a case study research design has its roots in social sciences and anthropology in the 20th century. According to Mills (2017), this case study design has established itself as a rigorous methodology. As such, it emphasizes an in-depth examination of a phenomenon within its natural environment. The contributions of influential scholars such as Yatsenko (2023) and Yin (2018) have considerably shaped the contemporary understanding of these valuable research methods. While Merriam (2016), through a constructivist lens, views reality as shaped by social interaction, Yatsenko (2023:24) emphasizes the importance of methodological strictness and empirical investigation, especially for exploring “how” and “why”

questions. Case study research, by employing a diverse toolbox of data collection methods like observations, interviews, and document analysis, strives to achieve a rich and nuanced understanding of the phenomenon under investigation (Mills, 2017). This approach inherently values the significance of context and the lived experiences of participants (Mills, 2017). As a result, case study research proves particularly valuable in tackling practical challenges, informing the development of new theories, and delving into contemporary issues (Mills, 2017:34).

### **3.4 Sampling technique**

This study employed a technique called purposive sampling, which is under non-probability sampling methods. Under purposive sampling, the researcher relies on their own judgment or subjective sampling. Purposive sampling, which is sometimes referred to as judgmental, is the assortment of non-probability sampling methods that are chosen for the sample because they meet a specific criterion (Nowell *et al.*, 2017). Purposive sampling is useful in that it enables the researcher to focus on specific data or information that is important to the study relating to digital tools that facilitate SDM processes in higher education (Nowell *et al.*, 2017). Through literature, purposive sampling helped in determining how new technologies and media influence the way people learn and how decisions are made. As a result, documents are chosen "on purpose" in purposive sampling. Data is chosen according to the researcher's judgment in research (Nowell *et al.*, 2017). Moreover, purposive sampling prioritizes in-depth understanding over broad generalizability, contrasting with random sampling (Gelling, 214:30; Miles & Huberman, 1994; Palinkas *et al.*, 2015:29).

### **3.5 Data collection method**

In this research, data were collected via document review. Wilson (2021) describes document review as a data collection process that entails the methodical collection, documentation, assessment, and organization of data. This study collected data via document review, which includes public reports, articles, books, newspapers, school libraries, journals, and government archives. Document review is a process of getting data by reviewing data that already exists (Usthaus *et al.*, 2018), a methodical approach

to scanning, reading, and analyzing documents. Wilson (2021) states that document review is a cornerstone of qualitative research because it involves the systematic analysis or review of documents to provide insights into a certain phenomenon (Usthaus *et al.*, 2018:39).

### **3.6 Data analysis**

Content analysis was used in this research. Vaismoradi (2013:78) defines content analysis as a qualitative research method that is used to highlight or identify various concepts, trends, and themes of the research topic that is under analysis or examination. In this research, content analysis was used to review information from journal articles, books, government archives, and institutional reports. Delve & Limpaecher (2023) and Kibiswa (2019:29) asserted that content analysis is a method that is used to review themes and conceptual frameworks from organizational data. Its contrast with quantitative data accumulation procedures is that it takes the form of contextually relevant that that speaks to the specific phenomenon under investigation or analysis (Delve *et al.*, 2023; Zhang *et al.*, 2009; Kibiswa, 2019:45). Therefore, this research employed content analysis to take important information on the application of digital tools in higher education to promote SDM processes, excluding data that does not speak to the phenomenon under exploration, this was done to ensure the study maintain relevancy, and ensuring the research contributes to the body of knowledge by expanding the interests of digital transformation within the field of public administration (Wildemuth, 2009; Kibiswa, 2019:29).

### **3.7 Ethical consideration**

The ethical guidelines for research in academia were strictly adhered to in this work. The following codes of ethics were followed during this study.

#### **3.7.1 Confidentiality and Anonymity**

Despite this research being a desktop study, confidentiality in this study was upheld to make sure that sensitive, important institutional documents, reports, and data were

handled ethically according to research principles. Calitz *et al.* (2016) stated that confidentiality is a matter that goes beyond human participants, and it must be done with the importance of using secondary data ethically to avoid misrepresentation of important information. Any data or identity of higher educational documents, such as institutional data or names of authors, was protected or anonymized in this research. Governmental publications and policy papers from higher education organizations are among the documents cited in this research.

### **3.7.2 Respect for Intellectual Property**

This study followed the ethical guidelines of the institution and academia by acknowledging and citing all relevant authors' or scholars' work used in this research. Gavril (2019) asserts that “any literature work or thesis done must credit the original scholars who wrote the seminal works or publications to honour the academic integrity of not plagiarizing.” As a result, in this academic thesis, all articles, seminal works, and publications used are credited accordingly, thus following the research standards of ethics and honour and respecting the copyright laws. University reports, journals, and government archives are some of the sources used to explore the prospects of leveraging digital tools to foster institutional efficiency and promote shared decision-making processes.

### **3.7.3 Alignment with Institutional Guidelines**

This research followed the institutional guidelines of North-West University on academic writing, ethics, and academic integrity. Hollands *et al.* (2019) assert that higher learning institutions globally establish policies and ethical guidelines that foster academic honesty, integrity, and ethicality across the board to maintain high research standards. This research followed ethical principles, making certain that sources were used lawfully. As a result, the adherence to ethical standards enabled this research to maintain the highest levels of research conduct.

### **3.7.4 Responsible Use of Findings**

The research findings of this study were disseminated ethically, placing importance on accuracy and positive contributions to the field of public administration and the area of digital transformation in South Africa. Cakir *et al.* (2015) demonstrated that ethical studies must avoid causing harm or misinformation, making certain that the outcomes of the research are ethical and transparent. This research was therefore mindful of issues of potential biases in online information; thus, action was taken in this research to guarantee fair representation of information. Research publications and university digitization strategies were among the pertinent documents that were thoroughly used to uncover the results of digital tool application in higher education and convey the results ethically.

### **3.7.5 Rigorous Data Collection and Analysis**

Regardless of this research being a desktop study, the study used strict, effective data-gathering and analytic methods. Khan (2023) states that in research that is qualitative in nature, data or information that is used to analyse research must employ a systematic technique to ensure that the phenomenon under investigation is researched at a high academic standard. In using the content analysis approach, this research maintained the academic standards of making sure that the study was in line with the institution's legal academic practices. Through employing a rigorous collection of data, this study made sure that the chosen data or information for this research was systematic, and sources such as journals, policy documents, and university reports were used ethically.

## **3.8 Conclusion**

Under this chapter, this study's research methodology was presented. This chapter started by highlighting what research approach used for this research and then followed with a demonstration of the research design that was employed and why it was chosen. Following that, the study's research sample and the data collection method were discussed and outlined in detail, showing how data was chosen through a review of peer-reviewed publications, journal articles, and institutional reports, to name a few.

Additionally, this chapter highlighted the type of research method employed and the approach that was used, such as document review to explore data. The chapter concluded by demonstrating the ethical standards this research followed and how it maintained academic integrity throughout the process by citing and crediting relevant scholars' works used in this research.

## **CHAPTER 4 PRESENTATION AND ANALYSIS OF FINDINGS**

### **4.1 Introduction**

The previous chapter presented the study's research methodology. In this chapter, the study presents the research findings. The primary focus is on understanding the role digital technologies play in facilitating shared decision-making processes in higher education. To achieve this, the research adopted a qualitative approach and employed document analysis to gather reliable and valid data. This approach was instrumental in providing deeper insights into the research problem.

### **4.2 Restatement of the research objectives**

**This study sought to answer the following research objectives:**

- Explore the role of digital technologies in promoting shared decision-making in South African higher education.
- Determine some of the challenges DL4D processes encounter, facilitating shared decision-making processes in South African higher education.
- Analyse how documented evidence reflects stakeholder resistance or support for the use of digital technologies in promoting SDM in South African higher education
- Recommend strategies to improve DL4D in improving SDM processes in South African higher education.

### **4.3 Presentation and discussion of findings**

The findings presented in this section reflect the contents of documents, reports, journals, books, articles, university reports, existing literature, case studies, and policy documents.

### **4.3.1 Exploring the role of digital technologies in promoting shared decision-making in South African higher education.**

The research findings for this objective are presented below.

Digital technologies significantly enhance shared decision-making processes in higher education by improving communication, adopting data-driven decisions, enhancing transparency, and enabling collaborations (Higher Education Policy Institute 172). (HEPI), 2017; Pohekar, 2018:27). The following subsections discuss these roles in detail.

#### **4.3.1.1 Improving communication and collaboration**

The research findings reveal a profound digital transformation shift occurring within the higher educational landscape in South Africa (Wickramasekera *et al.*, 2020; Somaya *et al.*, 2021). For instance, universities in South Africa adopt tools as tactical facilitators of SDM, communication, and collaboration (Wickramasekera *et al.*, 2020). The Media, Information and Communication Technologies Sector Education and Training Authority (MICT SETA) (2023, P.15) report demonstrates how institutions of higher learning, such as the University of the Witwatersrand (Wits) and the university of Cape Town (UCT) started embracing and adopting the use of modern-day technologies such as Zoom, Microsoft Teams, Canvas as well as AI-driven analytics to foster an environment that promotes the processes of SDM and collaborative governance to campuses spread out spatially within South Africa. UCT has set an example in the adoption of an AI tool such as QlikTech to improve institutional productivity and SDM processes using real-time data (Cloete *et al.*, 2015). Similarly, the North-West University integrated annual report (NWU, 2023; 28) revealed that a huge downsizing of 62 % in operational bottlenecks occurred after the institution used digital tools for academic enrolment processes. These findings align with South Africa's national policy objectives, especially objectives outlined in the Department of Higher Education and Training (DHET) (2023:7) that show support for digital use in universities of South Africa to promote institutional effectiveness, transparency, as well as SDM processes.

However, despite digital technologies providing various advantages that institutions can leverage when it comes to the educational landscape, certain issues persist. Somaya *et al.* (2021:112) argue that the digital divide is a major issue that hurts students who are from poor backgrounds, particularly those who come from institutions of higher learning that do not have much-needed digital tools or skills. The Council on Higher Education (CHE) (2016: 23) report uncovered that the University of Limpopo (UL) lacks the much-needed digital infrastructure compared to UCT, thus inequalities that exist become further widened by this gap. Furthermore, Hargraves *et al.* (2019:78) and SETA (2021, p.56) demonstrate the danger of digital fatigue in establishing poor communications between stakeholders and students in South African higher education. This poor communication comes because of a poor integration of digital tools into pedagogical approaches to promote SDM. Combating these issues requires robust strategies that foster effective digital integration to promote SDM and establish cooperative governance. Despite these challenges, South African universities have adopted various tools to promote inclusive cooperative governance and promote SDM. For example, Meissner *et al.* (2021;34) documented that Wits University has started engaging in digital transformation through the adoption of digital tools such as Microsoft Teams for cooperative governance between the student representative council (SRC) and stakeholders, thus enhancing the processes of SDM. The Council on Higher Education (CHE) (2016) report additionally found that modern-day tech platforms such as Twitter, Facebook, and Instagram allow institutions to engage in cross-national communications, thus improving inclusive governance where transparency is key. Supporting this, the NWU research and innovation report (2022/2023:15) uncovered that over 83% of staff within the university demonstrated enhanced interdisciplinary collaborations done through a technological work environment, promoting a governance that works collectively to establish curricula and develop institutional frameworks.

**Table 4-1: Digital tools for data collection in higher education.**

Function			
Component	Sub-component	Survey question(s)	Details
Data collection	Mechanism [of data collection]	Is data collection active or passive?	Passive; Active; Both
	Frequency [of data collection]	How often are data intended to be input / collected, on average?	Real time; daily; weekly; monthly; quarterly; annually
	Type of data	Type of data collected	Child enrollment; attendance; completion rates; performance; instructor performance; tool usage
	Who inputs data	If active, who inputs data? Please select all that apply.	Children; home visitors; instructors; coaches; school (or center) administrators/directors; government administrators; and researchers or M&E professionals
Data analysis and visualization	Automation of visualizations and recommendations	Are there automatic data visualizations?	Automatic; Manual visualizations; recommendations
		Does the tool automatically make specific recommendations based on the data collected?	
	Frequency of data provision	Is data provided to decisionmakers at regular intervals?	Yes; No
		If yes, how often?	Real time; daily; weekly; monthly; annually
	Decisionmakers	Who is using/can use the data that result from tool? Please select all that apply.	Children; instructors; parents; school (or center) administrators/directors; government administrators; and program staff
Whose actions are the data ultimately intended to inform?		Children; instructors; parents; school (or center) administrators/directors; government administrators; and program staff	
Informing action	How does the design of the tool enable users or decisionmakers to take action?		
Learning content delivery	Tool users	Who is actually using/expected to use the tool?	Children; parents; instructors; coaches; school (or center) administrators/ directors; government administrators; and researchers or M&E professionals
	Type of content*		Computer-based adaptive learning; tech-enabled service delivery

(Arman, 2023)

The table 4-1 lists various digital technologies used in higher education for data gathering, emphasizing their features and components, including the types of data collected, the methods utilized, their usability, and their integration potential.

The theoretical foundations of the Systems Theory (1965) provide the necessary lens to contextualise these dynamics. Modern-day digital tools work as necessary components of the university's political system, while output systems (automatic reporting, platform-based communications disseminating choices) communicate policies, input mechanisms (such as AI analytics gathering feedback from a variety of stakeholders or SRC interaction via Teams) influence requests. This technological interaction enables institutions to work collectively. However, the systems theory demonstrates places where issues can arise, if certain universities without digital infrastructure cannot partake in the decision-making processes (the digital divide) or if modern-day

technologies are employed poorly within education, the processes of SDM and institutional effectiveness become poor. University of Pretoria's issues of digital adoption demonstrate some of the challenges of using digital tools in an environment where digital skills are lacking among stakeholders and students. To combat some of the issues of digital incorporation into education, NWU's strategy (2024;12) offers a perfect development plan. This plan necessitates that the institutions develop the much-needed infrastructure and provide personnel with the necessary skills. This shows digital transformation that promotes SDM and increases institutional inclusivity for cooperative governance.

#### **4.3.1.2 Adopting data-driven decision making**

The Higher Education Institutional (HEI) report (2020) showcases those institutions of higher education learning in South Africa, such as UCT and Stellenbosch University, have engaged in the transition from old pedagogical methods to new, digital-driven methods of decision-making. This report uncovers that UCT is using technologies such as Moodle, Teams, and Slack to streamline SDM processes to improve institutional efficiency and promote inclusive cooperative governance (HEI, 2020). The Sector Education and Training Authority (SETA) report (2021) unveils the transformational shift of digital transformation in higher education, revealing those modern-day technologies such as Microsoft Power BI, Tableau, and Statistical Package for the Social Sciences (SPSS) are important in gathering information and facilitating SDM processes in education. Research by Mukred *et al.* (2021), Acevedo *et al.* (2018), and Colson (2019) reveals that new cutting-edge digital tools such as the Learning Management System (LMS) as well as the Student Information System (SIS) are being adopted by universities such as UCT and Nelson Mandela University. These digital tools allow institutions to get information that aids in the establishment of university pedagogical decisions, especially regarding matters such as the design of the curriculum and student assessments. Viewing this through the lens of the Systems Theory, the technologies adopted at institutional levels of governance, such as Microsoft Teams, work as mechanisms to get detailed data and make SDM processes that are data-informed (inputs). Using data-informed decisions or inputs, institutions of higher learning

can now establish effective policies and develop a curriculum that will ensure better pedagogical outputs.

**Figure 4-1:** Key Digital Communication Platforms Facilitating Collaborative Decision-Making in Higher Education



(Lopez-Fernandez, 2021)

The figure shows how digital communication platforms allow for inclusive involvement, real-time engagement, and information sharing among stakeholders, all of which support collaborative decision-making in higher education.

The digital transition towards a better inclusive SDM process is additionally demonstrated by UCTs' use of comprehensive analytical techniques. The South African Higher Education Funding Framework (2020), an institutional policy framework that highlights the objectives of universities when it comes to resource provision and strategic goals, uncovered those emerging technologies, such as predictive algorithms, are the key drivers of innovation and transformation. For example, the Wits strategic research plan (2023) found that these algorithmic tools allow universities to pinpoint students who are struggling, streamline administrative processes, better inform the establishment of the curriculum, and aid in the provision of resources. Prominent analytical methods are used, such as the Fuzzy decision-making model, which helps



The figure 4-2 illustrates the growing role of data analytics in the 21st century.

Despite the various advantages of leveraging digital tools, research shows some of the issues of digital tools being used, such as ethics and data privacy. Studies by Florea *et al.* (2019) and Adeyemo (2023) reveal that new digital tools improve institutional performance and allow for inclusivity through established cybersecurity policies that guide the use of personal information. For example, the University of the Witwatersrand (2024) guidelines for generative AI applications note that ethical issues regarding technologies have become important matters in the university establishing frameworks. The Wits (2024) guideline offers ways the institution mitigates matters of ethics on the use of AI in education. Drawing from the lens of the Systems Theory, as argued by Kunneman *et al.* (2016) and Zeballos-Palacios *et al.* (2019), higher learning institutions must look at the various feedback loops and systemic risks that come with the use of modern technologies. The NWU Research and Innovation Report (2022/2023) supports the notion by advancing various events on digital transformation to ensure that everyone's perspectives are considered with it comes to policy formulation and curriculum design. The findings correlate with the research under chapter two, where scholars such as Babalola and Genga (2024) argue that the use of tools such as Microsoft Teams, Zoom, and Moodle allows for institutional transparency and SDM. Therefore, regardless of the impact of modern technologies, universities such as Wits and UCT are leveraging it to make better informed decisions.

#### **4.3.1.3 Enhancing transparency through digital systems**

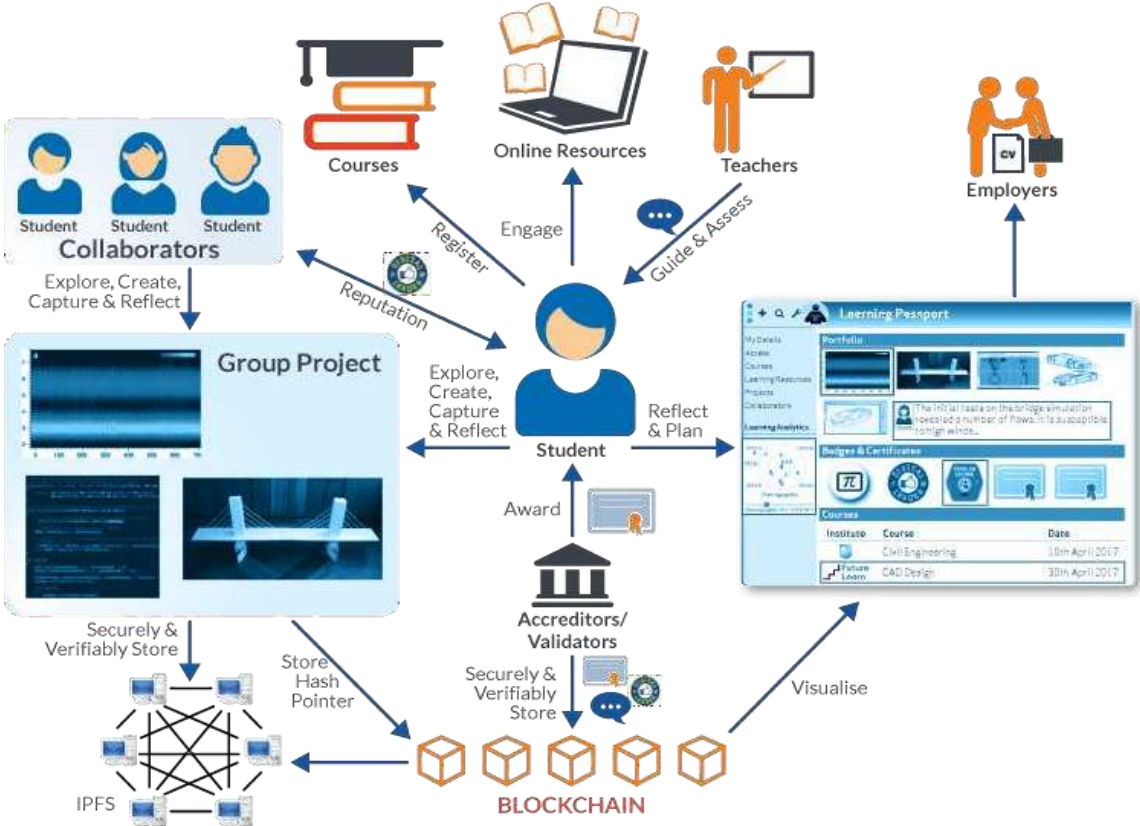
The Services Sector Education and Training Authority annual report (2021), which is about the skills development and digital transformation within the South African universities, found that technological systems are paramount in this age to drive institutional efficiency and promote collaborative governance through transparency. For instance, the report uncovers that using digital tools alongside cloud-based systems enables institutions to promote SDM and enhance the governance of inputs (information flow) as well as outputs (policy advances and curriculum reform). Research by Domingue (2016) also found that the use of new emerging tools, such as the LMS and Google Workspace, allows universities such as UCT and Vaal University of Technology

(VUT) to create a space of collaborative governance and promote SDM through robust oversight done using data that was collected digitally. In South Africa, the University of Pretoria (UP) and KwaZulu-Natal (UKZN) have adopted the use of digital tools such as Zoom to drive institutional effectiveness and promote SDM processes (University of Cape Town Digital Learning Report, 2022; Stellenbosch University Innovation Report, 2023, UP digital transformation report, 2023). The findings align with the literature in chapter two, especially Zawacki-Richter's (2020) assertion that digital tools are the key drivers of innovation and enablers of participatory governance. Nonetheless, the South African Government's Digital Transformation strategy (2020) cautions against the use of digital tools without combating matters of cybersecurity within the educational governance landscape.

The Department of Science and Innovation (DSI) (2021), within its long-term plan for Science, Technology, and Innovation, highlighted the state's objectives to introduce new modern tech, such as blockchain, into the educational system or governance. The DSI (2021) report found that blockchain offers new ways for institutions of higher learning to adopt communication systems that are decentralized and autonomous and use AI to help foster SDM methods. The report further highlights that the use of blockchain can aid institutions to democratise the data sharing processes and protect universities' honour by being transparent and robust. Studies by Vlieghe (2014) and Zawacki-Richter (2021) argued that the emergence of blockchain will assist universities in protecting information and keeping records of traditional data. Stellenbosch University, for example, has implemented the use of a blockchain system that allows the institution to check data and make sure everyone who gets space within the institution does so on merit (Stellenbosch University Digital Report, 2023). Furthermore, institutions such as UP and Wits have adopted the use of modern technologies such as Monkey Learn as well as Lexalytics to get data based on what students prefer to learn and use digital platforms to inform policy outcomes (NWU AI integration Report, 2023). These outcomes support the literature in chapter two that emphasizes the use of new digital tools to foster shared decision making and promote cooperative governance (Bryson, 2018), Yet they also stand in contrast to past research that understated the intricacy of algorithmic biases and energy-use issues that are present in blockchain and other similar technologies.

The DSI (2021) report underlines that without firm policies in place, new digital tools can add to existing issues of inequalities, especially if the tools, such as data analytics, are biased. The findings are in support of the notions highlighted by research done by Bryson (2018) as well as Domingue (2016), who notes that the use of digital tools without protective measures may cause more harm than good. For example, Stellenbosch University's 2023 Policy Review noted that the institution must not only adopt new digital tools, but it must also establish firm frameworks addressing issues of bias and privacy as well as ethics. Similarly, UCT's Digital Ethics Charter (2022) demonstrates that the institution must maintain high academic standards, fairness, openness, and SDM processes. According to systems theory, their efficacy is largely dependent on controlling environmental factors that jeopardize systemic integrity, even though digital platforms improve the input channels and feedback loops required for adaptive outputs.

**Figure 4-3** Blockchain in education: possible applications (2024)



(Simons, 2024)

The figure above shows some potential uses of blockchain in education, such as improved data management, transparent academic records, digital identity verification, and safe credentialing.

#### **4.4 Challenges the DL4D experienced when implementing the use of digital tools to facilitate shared decision-making processes.**

The research findings for this objective are presented below.

Czerniewicz *et al.* (2020) uncovered that the DL4D emerged in response to the growing demand for digital transformation and innovation in the modern age within higher education. The DHET (2023) revealed that AI and cloud-based digital tools such as Zoom improve collaborative and institutional governance of universities in South Africa. However, the rise of digitalism came with systemic issues that align with the Systems Theory, especially through input deficiencies, conversion challenges, and inadequate feedback mechanisms. Czerniewicz *et al.* (2020) research asserted that one prominent challenge the DL4D development faced is infrastructural inadequacy within universities, thus demonstrating how institutions of higher learning encounter issues of slow networks and traditional software systems that hinder the processes of shared decision-making (input) to improve institutional administrative processes using real-time data (output). The Department of Higher Education (2018) and The World Development Report (2015) state that globally, issues of infrastructure gaps affect the university's ability to perform better regarding communication and collaborations among different stakeholders and students to make data-informed decisions on institutional governance and curriculum design. The challenge of the infrastructural gap transcends national boundaries of South Africa, as it is reflected in prominent countries such as Cuba and the global south, upon which states face a challenge of integrating analytical tools such as IBM Watson and Tableau (Simonsons *et al.*, 2014; Liu *et al.*, 2017). The institutional output legitimacy is brought into doubt because of the issues of infrastructure.

Mwapwele *et al.* (2019) further argued that the DL4D initiative faced issues of unequal distribution of digital literacy between different students and administrators within institutions, thus demonstrating a clash within the system theory conversion processes.

Despite current students having the necessary skills to use modern tech tools, the older generation, including lecturers and stakeholders, may face issues using tools such as Slack or Trello (Mwesigwa *et al.*, 2017; World Development Report, 2015). These findings match with the literature in that Rafiq *et al.* (2024) asserted that the lack of digital skills renders many institutional initiatives useless due to the inability to use AI tools such as Power BI and RapidMiner comprehensively. Mwapwele *et al.* (2019) discovered that the DL4D initiative faces issues with data privacy and cybersecurity matters, thus causing a negative feedback loop within the educational system that affects how universities operate within the confines of South Africa's Protection of Personal Information Act (POPIA) (SETA, 2021). In the modern era of governance, issues of cybersecurity are at a high level, showcasing the threat to the university's security systems and databases because of the tech's ability to remove important information, thus needing investments in protection tools such as encryption AI tools (e.g., VeraCrypt).

Some of the issues universities face with digital applications are matters of budget constraints, the statistics showed (Statistics SA, 2015). Important digital tools such as AWS and Azure are expensive to have, as they are proficient analytical and cloud storage tools (D'Acquisto *et al.*, 2015; Reddy *et al.*, 2019). The DL4D illustrated how universities lacking necessary funding are failing to get much-needed digital tools to foster shared decision-making and improve institutional governance through innovative solutions (Reddy *et al.*, 2019). Mwapwele *et al.*'s (2019) research unveiled that resistance to change is another challenge the DL4D initiative faced, due to the old decision-makers who are used to old hierarchical methods of decision-making. This was demonstrated through the rejection of modern tools that will assist, such as DAOs and blockchains. These findings correlate with the literature in chapter two in that they both demonstrate the impact of the digital divide and the constant issues that not only affect South Africa but also other countries such as the United Arab Emirates (UAE) and Cuba (Danezis *et al.*, 2015). Literature review contrasts with findings in that, within chapter two, scholars such as Nebeker *et al.* (2020) highlighted issues of resistance at a global scale without touching on its limitations within the confines of South Africa. Via the systems theory, institutions of higher learning encounter an issue of input shortages

(digital skills) and inadequate conversion (resistance), therefore causing major issues of effective feedback.

#### **4.5 Explore how documented evidence reflects stakeholder resistance or support for the adoption and use of digital technologies in higher education.**

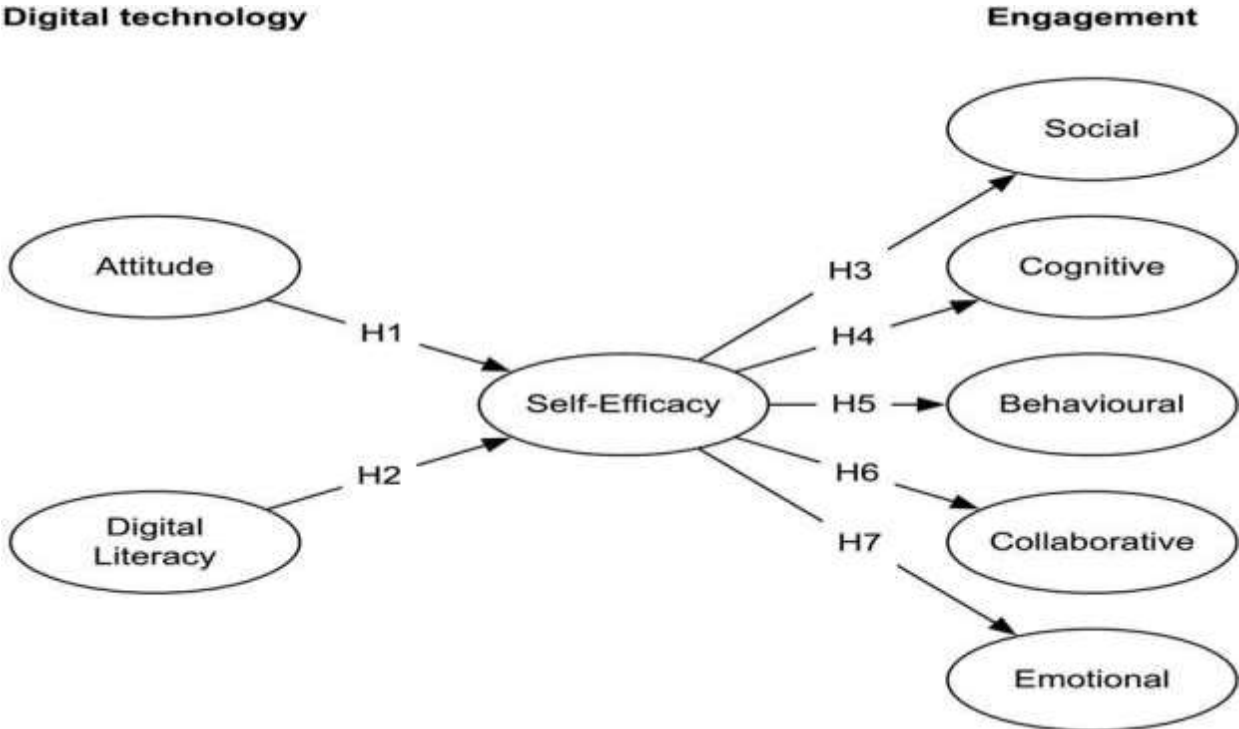
**The research findings for this objective are presented below.**

In a nutshell, research found that individual attitudes and beliefs play a determining factor in how students act towards the use of new digital tools for education provision and decision-making processes (Ahmed *et al.*, 2021; Almaki *et al.*, 2024). The DHET (2023) report revealed that students' perception of technologies affects their reality, influencing the decision-making process (inputs) and educational outcomes (outputs). Therefore, studies have uncovered that those students or stakeholders who have a positive view on the integration of digital platforms such as ChatGPT Edu and Cognii are likely to accept the incorporation of digital technologies in universities to aid in facilitating shared decision-making processes (Almaki *et al.*, 2015; Ahmed *et al.*, 2011). According to the systems theory, the views of students and administrators on digital transformation act as an important input that influences the realities of digital application within higher education. The DL4D initiative revealed that students want the institutions of higher learning to adopt modern-day tech, such as adaptive educational tools, such as Smart Sparrow, which allows universities to engage in a collective effort using Miro tech to make informed decisions (Mwesigwa *et al.*, 2017; SETA, 2021). This correlates with the Technology Acceptance Model (TAM) in the literature review, although it introduces modern tech such as Engage and AltspaceVR, which are digital platforms that promote perceived ease of use (PEOU) and perceived usefulness (PU). Modern-day tech, such as chain-based platforms such as Blockcerts and Credly, allows students to be better at their digital skills, and it aids in making them ease with using any new emerging tools, research showed (Gavril *et al.*, 2019).

Findings showed support for the arguments highlighted in the literature review in chapter two, that students accept TAM because of new emerging technologies such as LMS systems; the DL4D initiative further reiterates this claim by demonstrating the use

of emerging technologies and showing their impact on decision-making. Sormunen *et al.* (2022) and Gavril *et al.* (2019), for instance, uncovered that universities are now using extended reality (XR) simulation tools such as Labtser to foster collective decision-making processes and encourage the establishment of a curriculum that reflects different views. Muraris *et al.* (2022) signified that digital mobile tech such as WhatsApp Business and EduMe have become prominent tools in institutions of higher learning because of their ability to offer national channels of communication and engagement, thus aligning with the core tenets of the constitution, such as Ubuntu; however, this is in contrast with the literature in chapter two. The contrast shown above demonstrates how distinct views modify the system's conversion process using modern-day tech tools such as the decolonized knowledge repositories (open-source content management system CMS) (Ahmed *et al.*, 2011). Despite similarities between findings and literature review, the DL4D revealed that analytical tools such as Power BI can overcome certain cultural sensitivities of the modern-day environment.

**Figure 4-4:** Impact of students' digital literacy and self-efficacy on online learning engagement



(Getenet, 2024).

The figure above shows how students' self-efficacy and digital literacy affect their engagement in online learning and how these qualities affect academic performance, motivation, and participation.

Through the lens of systems theory, digital tools can establish organizational feedback loops that work effectively in changing how students view AI and modern tech. The use of tools such as Lexalytics and Monkey Learn offers universities the much-needed data that is needed and current so they can be able to adapt to rapid changes. The DL4D initiative used current digital technologies such as DAO administrative and operational tools (Snapshots, Aragon) for stakeholders, lecturers, and parents to engage in the decision-making process. Thus, the processes of using these digital tools allowed for the universities to convert negative views on digital technologies to positive outcomes on the establishment of policy and pedagogical outcomes (output). New Behavioral analytics, such as Mixpanel or Hotjar, foster an environment of shared decision-making using these technologies to manage systematic equilibria. The necessity of ongoing

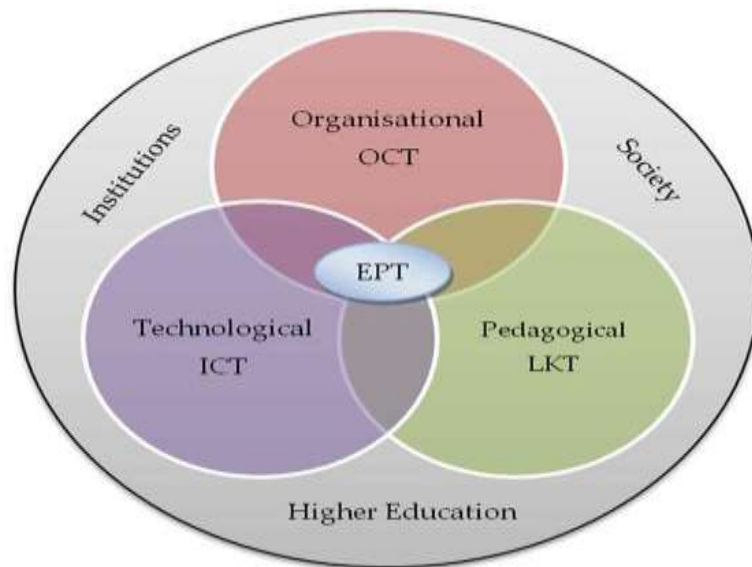
Behavioral assessment using contemporary experience management platforms (Qualtrics, Medallia) is highlighted by the appearance of generative AI tools (Claude for research, ChatGPT for education) as both inputs and outputs in this system.

#### **4.6 Determine how emerging digital technologies impact the way decisions are made in higher education.**

The emergence of new digital tools in higher education in South Africa has changed the way institutions function and make decisions that are data-informed through improved leadership and the use of new channels for communication and cooperation. Sunu (2022:14) found that within universities, when leaders or stakeholders possess strong digital skills can use new emerging tools to govern and promote democratic governance that is evidence-based. For example, the University of Cape Town adopted the use of modern technologies such as data analytics, thus enabling deans and heads of departments to work collectively to ensure an inclusive decision-making process in the development of institutional pedagogical approaches and curriculum. Hamzah *et al* (2021:23) research uncovered that the lack of digital skills between students and leaders in South African universities often determines the decisions that are taken, which is evident in the University of Fort Hare, where the processes of digital integration were stopped due to the lack of skills as the LMS was adopted for institutional planning. Similarly, Karakose *et al.* (2021) found that the use of technologies such as Teams, Zoom, and Moodle allows universities such as UCT to make decisions that reflect diverse perspectives on institutional governance and operations, thus allowing for real collaborations and communications. Alajmi (2022) argued in his research on strategic digital alignment, highlighted that the use of online digital platforms to make decisions is in line with South African university objectives. This is shown in the digital learning strategy of 2021 at the University of Stellenbosch, where information collected through digital tools is applied to establish institutional policy or curriculum design. The Department of Higher Education and Training (DHET) policy framework for digital learning (2020) advocates for the use of new emerging technologies for institutional policy design, curriculum design, and real-time engagements to improve SDM processes. However, the Sector Education Training Authority (SETA) (2024) cautions that the digital divide and infrastructural gaps in South African institutions of higher

learning affect the decision-making processes, and issues must be resolved to foster successful digital integration.

**Figure 4-4:** Dimensions in digital higher education



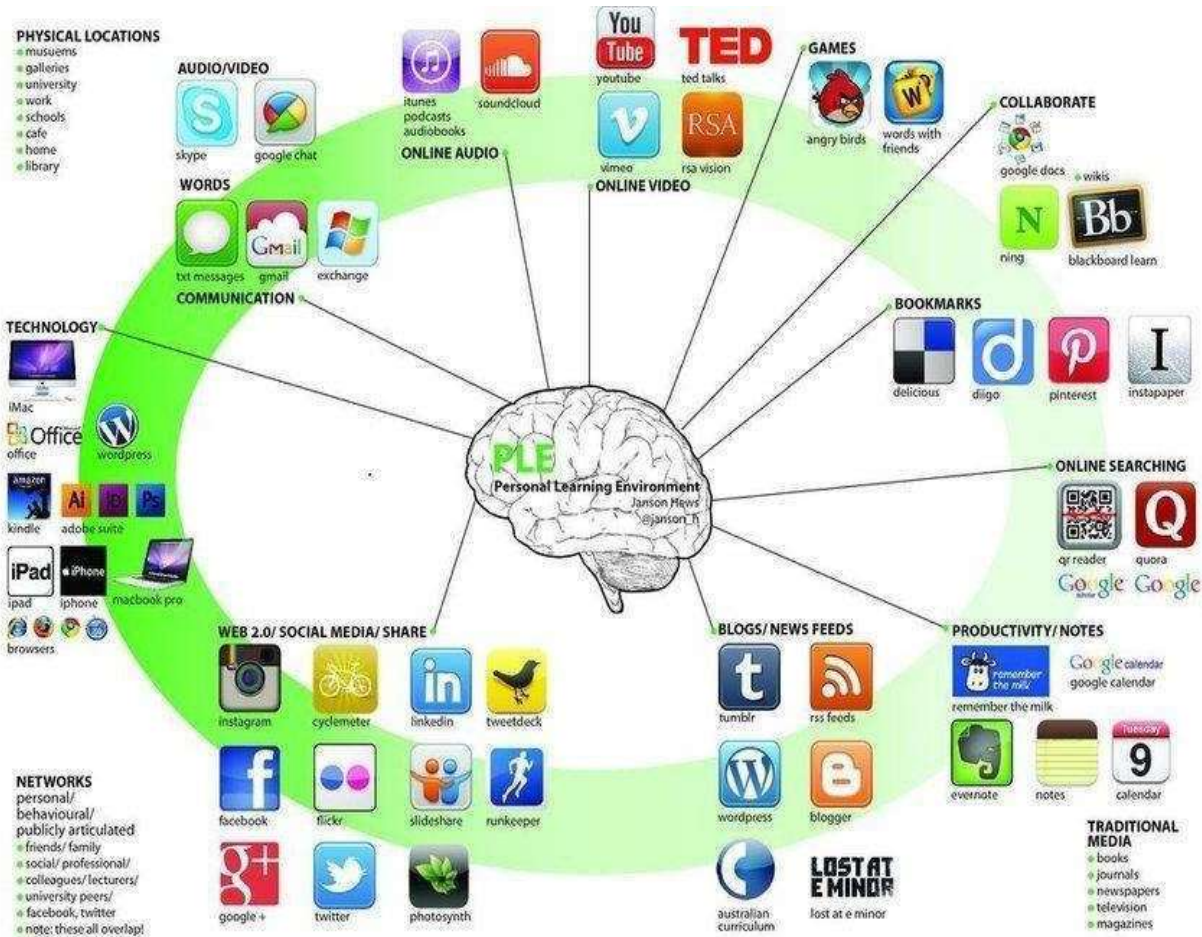
Guthrie *et al.* (2022)

The figure above illustrates key dimensions in the digital educational planning team

Beyond leadership and SDM, the rise of new technologies has shifted the culture of university cognitive development, information, resource management, as well as operations and functions. Research by Khan (2023:25) revealed that institutions of higher learning, such as UL, applying digital tools for cognitive development will allow them to identify prospects of advancing pedagogical methods as well as SDM processes, thus establishing much-needed strategies that will cater to their institutional needs. North-West University (NWU) has adopted the use of a technological platform named “Efundi” as well as analytical tools that play a huge role in educational planning through providing data on student discussions, assessments as well and views, thus promoting SDM within the institution. Similarly, Rahman (2020) argued that new tools like Zoom, and Microsoft Teams allow for constant engagement cross-nationally, and they give the lecturers and administrators real-time data to use for academic planning and promotion of cooperative governance. Additionally, research by Bygstad *et al.*

(2022) and Guthrie *et al.* (2022) highlights those tools such as the LMS are now moving beyond just teaching and assessments, as they are now adopted in universities like UCT as enablers of decision-support systems, thus reshaping how decisions are made in higher education. A perfect example is also UNISA's large-scale integration of cloud-based technological tools, which are used to plan and design the curriculum and run oversight on student performance using real-time data (Guthrie *et al.*, 2022; Bygstad *et al.*, 2022). The DHET annual performance plan 2023/24 advocates for the use of AI and digital tools to get data in real-time for organizational management. This forms part of the state's objective to foster digital transformation and improve institutional efficiency, oversight, operations, and governance.

**Figure 4-5:** Digital technologies in higher education



(Shwan, 2024)

The figure above shows that digital technology adoption in higher education to improve teaching, learning, administration, and stakeholder involvement is depicted in the figure.

Through the lens of David Easton's Systems Theory, as pointed out by classical scholars such as Von Bertalanffy (1968), Katz and Khan (1978), institutions of higher learning must comprehend the difficult adaptive systems where the use of digital tools riggers feedback loops, thus needing frequent recalibration of decisions within education and governance. Research findings revealed in this chapter contrast as well as align in some instances with the literature in the chapter. For instance, research by Zawacki-Richter (2019:19) and Gikandi *et al.* (2011) asserts that digital tools such as Zoom and Microsoft help institutions of higher learning to be effective and promote democratic governance. This aligns with findings uncovered by the DHET (SETA) annual report, which revealed institutions such as Wits adopting digital tools for planning, operations, as well as SDM processes. In contrast, research findings move away from the positive view by indicating that this institutional resistance exists to the use of new technologies. Lovan *et al.* (2017:23) earlier cautioned that old staff or stakeholders might have a negative attitude towards the use of new emerging tools, thus hindering the process of digital integration. A perfect example is UL challenging the processes of digital administration during 2020. Now, regardless of the potential of digital tools, their ability is hindered by institutional culture despite their potential to transform SDM processes. Through the lens of the Systems Theory is not only a linear upgrade but also a systems reconfiguration where students, lecturers, and administrators must work collectively to drive its effectiveness.

#### **4.7 Conclusion**

This chapter presented the study's research findings through analysing various documents, reports, books, and articles. The findings reveal that various institutions of higher learning in South Africa are adopting the use of digital tools to facilitate SDM processes in higher education. Despite the various prospects of digital applications, some research shows that they are various issues that need to be considered to adopt the use of certain tools such as blockchain. The objectives of using digital tools to help promote SDM are in line with the national government strategies that support digital

transformation and innovation in higher education. The findings highlight the various technologies institutions are adopting, demonstrating the various prospects, and highlighting some of the issues of digital integration. The next chapter provides the summary of the findings, recommendations and concludes the research.

## **CHAPTER 5 RECOMMENDATION AND CONCLUSION**

### **5.1 Introduction**

In the previous chapter, the studies' research findings were presented, exploring the role digital technologies play in facilitating shared decision-making processes in higher education. In this current chapter, the research findings are presented under this chapter, and the research conclusions drawn from the study's research objectives are presented. Next, this chapter the research aims to offer recommendations for public makers and academics on AI applications in higher education to facilitate shared decision-making processes.

### **5.2 Summary of the main findings**

The main objective of this research was to explore the role digital technologies play in facilitating shared decision-making processes in higher education, using the Digital Learning for Development Initiative (DL4D) as a case study. Therefore, this chapter provides a summary of the study's research findings, which are presented in the order of the research objectives. The summary is presented below for each objective.

#### **5.2.1 Objective one: Outline the role digital technologies play in facilitating shared decision-making processes in higher education.**

Under this objective, the research discovered that the emergence of digital tools has tremendously impacted the landscape of higher education globally, promoting shared decision-making in universities. This process was done by universities by using digital platforms and tools that foster collaborative engagements, such as a Learning Management System (LMS). As a result of these, universities such as North-West University, the University of Johannesburg, and the University of Cape Town are progressing at an unprecedented scale, using these tools such as Moodle and Zoom to establish an environment of collaboration among stakeholders and lecturers as well and students. Through the application of these platforms, institutions in higher learning can

now be more inclusive, thus including everyone, such as stakeholders and parents, in the decision-making processes. Research further revealed that digital tools such as Zoom and Moodle, to name a few, have vastly transformed the landscape of higher education by enabling institutions in South Africa to bridge the geographical and logistical barriers, thus allowing everyone to make decisions and work collectively in advancing the quality of education. Various scholars uncovered those digital technologies enhance the ability of different groups to make decisions together, thus allowing the institution's culture to be more participatory and robust. Moreover, research revealed that the process of digital transformation has ensured an effective mechanism to gather information, as well as analyse vast data, thus resulting in better-informed decisions that are backed by scientific evidence.

### **5.2.2 Objective two: Determine the key challenges the digital learning for Development Initiative (DL4D) experienced when implementing the use of digital tools to foster shared decision-making.**

Under this objective, the research revealed several key challenges that digital learning for development initiatives experienced. The study found that one of the most prevalent challenges in the application of digital tools is a digital divide, where there is unequal access to technologies across various institutions. Through this unequal access, research revealed that this divide has impacted the efficiency of making decisions collectively because some stakeholders in different universities do not have equal access to the internet, devices, and many other resources. Due to this, many educators or stakeholders experience digital literacy challenges. Nevertheless, in addition to this, the study uncovered that a plethora of stakeholders, parents, and policymakers are resistant to change, which presents itself as a major issue. Some of the faculty employees' administrators proved not to be interested in the literature that unfolded, as they reluctantly refused the use of new digital tools due to a lack of technical skills as well as a fear of a move from traditional approaches to decision-making to more digital ones. This resistance was further compounded when research revealed that some issues of using digital tools are challenges of data privacy and security issues of applying technologies to help facilitate shared decision-making processes in higher education. Research further demonstrated that faculty members often reject digital

platforms because they do not trust digital platforms, as they feel that sometimes decisions could be undermined and pushed in the other direction. Issues of organizational culture as well as the power dynamics within institutions proved to be some of the challenges that cause a negative reaction to the application of digital tools in higher learning institutions.

### **5.2.3 Objective three: To analyse how documented evidence reflects stakeholder resistance or support for the use of digital technologies in promoting shared decision-making in higher education.**

Under this section, research revealed that individual attitudes and beliefs often play a huge role in the acceptance and application of digital tools for facilitating shared decision-making processes in higher education. The study uncovered that administrators' as well as students' views of technology impact their willingness to apply these digital tools to facilitate decision-making. Research uncovered that individuals or stakeholder with positive attitudes towards technologies have a high level of excitement in the use of digital tools such as Google Docs or Slack, for example. Conversely, parents or administrators who do not like technology have a negative attitude toward it; this is seen in their constant use of traditional methods of decision-making (Venkatesh *et al.*, 2003). In addition, some studies found that only individuals who believe technology is for the better apply the use of these digital tools, which presents an opportunity for collaborative shared decision-making processes. These findings were seen to correlate “with the Technology Acceptance Model (TAM) as well as Easton’s theory, where the perceived ease of use and perceived usefulness are critical factors in technology adoption.”

### **5.2.4 Objective four: Determine how emerging digital technologies impact the way decisions are taken in higher education.**

Under this objective, the study revealed that new emerging technologies are profoundly affecting the way decisions are made in South Africa and the world. The research found that the application of digital tools such as artificial intelligence (AI), data analytics, and mobile use is increasingly improving the decision-making processes by enabling

institutions to make informed, data-driven decisions. Through the application of these tools, research found that institutions can now more than ever make decisions using accurate and timely data that is readily at their disposal. For instance, various scholars have uncovered that AI algorithms are currently used to monitor academic performance by providing the necessary data, which enables institutions to use the data for curriculum improvements as well as financial decisions. This allows the institutions to check what is needed and make well-informed decisions that align with the necessary needs (Siemens, 2014:14). This study found that new technologies are revolutionizing decision-making by enhancing stakeholder engagement. Nonetheless, the studies found that new technologies offer a new avenue to improve education quality and curriculum development through the collective effort provided by digital tools, which allow various actors to make decisions collectively. This allows the universities to move from traditional hierarchical structures toward more open, inclusive participation models that enable the education system to function much better.

### **5.3 Study's conclusion**

In conclusion, this research was about exploring the role digital technologies play in facilitating shared decision-making processes in higher education, through the lens of the Digital Learning for Development (DL4D) initiative in South Africa. The study found that digital tools can improve collaboration and transparency in decision-making, but factors like resistance to change, poor infrastructure, and varying digital skills limit their full use. The individual beliefs and attitudes of pupils in higher education, at times, determine how successful the processes of adopting digital tools will be. In a nutshell, the perceived usefulness of digital technologies affects the success of digital transformation; therefore, this notion aligns with the SETA (2019) annual report, which demonstrated that AI and digital technologies such as AR & VR have huge potential to transform the landscape of higher education. This thesis contributes to the body of knowledge by demonstrating the challenges and prospects of digital applications in higher education to facilitate shared decision-making and offer empirical data that will help future policy makers and institutional administrators. This research adds value to research on debates and discussions surrounding digital transformation in the 21<sup>st</sup> century and its impact on education.

## 5.4 Recommendations

Below are recommended strategies to improve DL4D effectiveness in promoting SDM in South African universities at an academic governance level.

### 5.4.1 AI-enhanced decision support systems

Adopting the use of AI in the governance of higher learning institutions aids in the process of SDM. Using digital platforms such as Grammarly shows how leveraging AI tools aids in providing real-time data, while machine learning algorithms have the potential to speed up the process of gathering data from different participants, such as students and stakeholders, to help institutions make better decisions that are data informed. For example, digital tools such as IBM Watson have the potential to aid institutions like UJ and NWU stimulate outcomes, assess new trends, and help identify some risks associated with AI use. Using AI, institutions of higher learning can now establish data-informed decision-making processes, thus promoting the process of SDM and fair outcomes. Importantly, ethical AI designs such as *“Google's AI principles”* must be at the top of institutional priorities when it comes to the matter of mitigating algorithm bias and enhancing institutional effectiveness and transparency.

The use of AI-driven support systems within higher learning institutions in South Africa requires a gradual plan that has numerous phases to ensure that matters of ethics are adhered to, and that digital integration is successful. The first phase must place much focus on pilot universities such as UCT and UP, applying modern digital tools like Microsoft Power BI, infused with Azure Machine Learning, to get data that will inform policy, the curriculum, as well as educational outcomes. This phase needs firm institutional oversight from Senate ethics committees to make sure the university follows the laws outlined in the POPIA Act using digital methods. The second phase is the scaling one, upon which difficult institutional decisions require additional digital platforms such as IBM Watson, with a yearly budget of 2.5 million rand, a lot of funds would be offset by the institution's capacity development initiative. The important aspect of digital integration is the creation of interdisciplinary audit teams, especially within fields of computer science and humanities, to establish regular evaluation of algorithmic outputs, mitigating issues of AI use within higher education.

#### **5.4.2 Blockchain-based transparent governance frameworks**

The use of modern-day tech, such as blockchain technology, provides a firm alternative for improving transparency and institutional accountability in SDM processes. For instance, the University of Nicosia in Cyprus has adopted blockchain tech to establish robust record-keeping systems and provide certificates to students. Using the blockchain decentralized leaders' tool, institutions of higher learning can be able to safekeep university records, aid the establishment of the curriculum, as well as the creation of digital frameworks. The technology of blockchain allows for students, lecturers, and administrators to trace the traditional decisions and assist in making better-informed decisions in the future. A perfect example is seen in tech tools such as *Ethereum*, where the network is decentralized and the is openness. The establishment of the policies can assist in creating an environment of trust when it comes to governance, especially in poor universities without many resources.

The use of blockchain governance frameworks needs technical as well as university administrative readiness. Placing much importance on a credential verification system using a modern hybrid Hyperledger fabric architecture that is composed of cloud systems that serve as backup will aid in saving 40% of the institution's energy usage in comparison to evidence of performance systems. This experiment can be done in 2026 at a top institution like UCT, a university that has techno capabilities to do so. A budget estimate of 800 thousand rand grant from the Council for Higher Education will assist with important initiatives that will advance the progress in establishing the institutional capacity for the adoption of blockchain. For its successful integration into academic governance systems, robust metrics must place importance on highlighting the efficiency gains of blockchain use and align with the South African Qualifications Authority's credentialing roadmap.

#### **5.4.3 Hybrid shared decision-making models**

An establishment of SDM models that encompasses technological discussion tools with classical governance structures that include students, lecturers, administrators, and student leadership can assist in establishing immersive, cooperative governance within universities. Digital tools such as *Mentimeter* or *Slido* for student polling, as well as the

emergence of Zoom, offer institutions of higher learning the ability to establish communication channels, thus improving face-to-face engagements where everyone can participate in the decision-making process regardless of their location or background. This approach has been used at the Massachusetts Institute of Technology upon where digital tools are applied to support classical decision-making models, thus allowing for combined contributions of a wider pool of participants to add views on the establishment of institutional policies.

The use of digital technologies in classical methods of governance needs a profound method of outlining the impact these methods may have. As a result, a three-phase approach is needed, which will outline the roles that each member must undertake. First, the Information computer technology personnel must implement the use of tools such as Mentimeter within a process of three months, then institutional governance is led by student representation councils as well as administrators, and this must be done within at least six months. Lastly, the research unit within universities must run an oversight and assessment looking at the negative and positive impact of digital integration into old methods of governance how they foster SDM. This method is inspired by one used at MIT's digital augmentation of sente processes, while infusing the institutional needs of South African universities.

#### **5.4.4 Digital literacy and leader capacity building**

For SDM technological platforms to work effectively, administrators as well as stakeholders must have the much-needed digital skills or fluency to engage in the process of digital transformation. Every participant in the establishment of institutional policies and curriculum must engage in the necessary training programs for digital use. A perfect example is Harvard University, where they adopted various programs and workshops to educate on digital skills, data visualization, and fostering inclusive cooperative governance. These initiatives aid in providing the necessary skills to leaders to be able to navigate the use of digital tools, thereby promoting inclusive data-informed decision-making processes in higher education.

Therefore, the successful implementation of digital tools to facilitate SDM methods relies on the South African employees' digital skills and leadership qualities within

universities. The two-phase capacity-building approach is needed; this must be done where leaders get the needed training for developing digital skills and host initiatives that train students using a prominent digital tool such as WhatsApp, since about 72% of South Africans use it. Universities need to partner with mLab to ensure that South Africa's information or data is by the five main languages in the country, and an estimated 5 million annually will be needed from the media, information, and communication technologies sector education and development sector. This two-phase approach will help bridge the gap in digital skills and help train stakeholders and students on the use of digital technologies and AI ethically, covering a gap uncovered within the council for higher education audit.

#### **5.4.5 Ubuntu-informed platforms co-design**

To enable effective digital application and relevance, digital platforms must be co-designed with various stakeholders, including students as well as institutional personnel who are firm believers in the principles of Ubuntu. Higher learning institutions such as UCT use mobile apps to foster collaborative engagements. This model allows for collective engagement, which reflects the core tenets of Ubuntu, thus creating a culturally rooted digital platform that includes various participants. Therefore, institutions of higher learning must establish platforms that reflect collective SDM values that foster an environment of collaborative governance and transparency.

The adoption of digital tools within universities in South Africa, such as UJ, UL, UCT, and NWU, needs a methodological rigor to avoid issues of institutional culture appropriation. The proposed co-design needs a collective effort of engagement among disadvantaged universities, like the University of Venda, together with well-resourced and digitally sound institutions like UCT, to work together, ensuring that all institutional values are reflected within the digital decision-making system. Therefore, an estimated budget of 200,000 is needed to experiment using digital tools like Figma, also including students in the process of establishing Ubuntu-informed digital platforms. Through this, institutions of higher learning can further develop at a rapid pace and ensure an environment of SDM.

#### **5.4.6 Low-tech participation pathways**

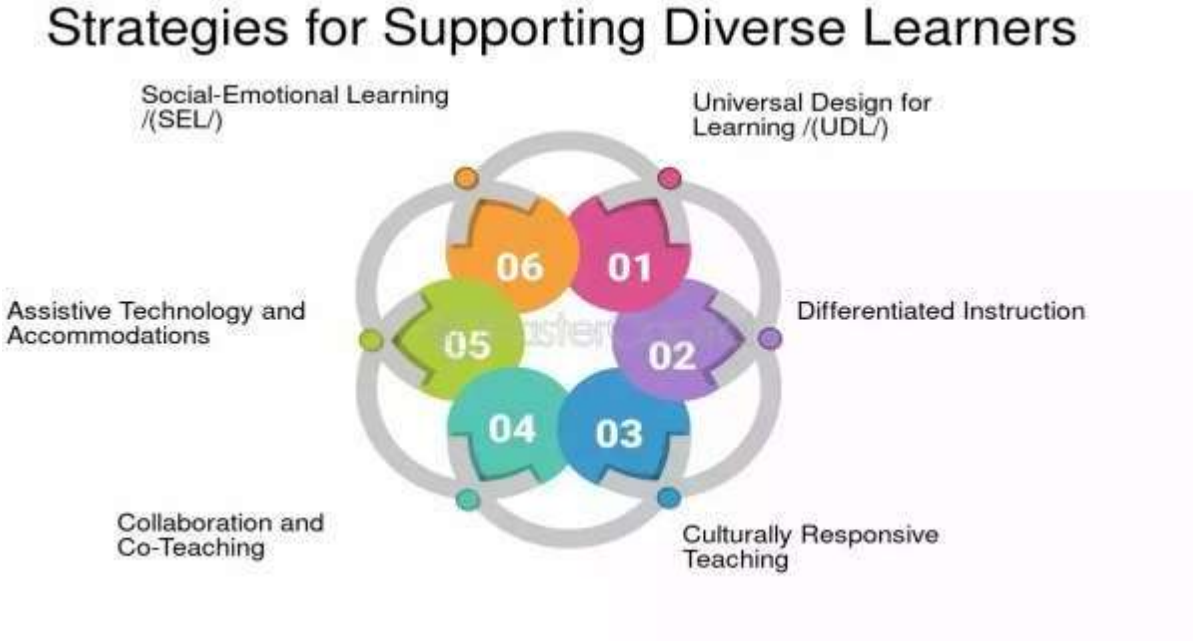
To combat issues of digital inequalities in the country, those from poor backgrounds, as well as low-budget universities, low-tech alternatives must supplement advanced SDM digital platforms. Using modern tech-tools such as SMS, USSD codes, as well as Interactive voice response systems, can offer opportunities for universities to create avenues for constant assessment as well as institutional engagements. For example, South Africa's use of digital systems such as Vodacom has allowed poor institutions or students to be part of the SDM processes by using a text-based system. These methods enable inclusive collective decisions that include diverse views as well as align with institutional policies on digital transformation.

Combating the issue of the digital divide in SDM needs a modern use of technologies to address this issue using the telecommunication digital infrastructure. Prominent telecommunications companies like Vodacom unstructured supplementary service data method provide an affordable, implementable solution of R 0.50 per transaction that is in line with the Department of Higher Education Technology subsidies and supports objectives outlined in the National Development Plan. Through this partnership, many South African students can afford and have robust internet, thus supporting the national objectives of the National Student Financial Aid Scheme in stating that for digital governance to be successful, robust measures must be taken to include poor people's voices in institutional policy establishment and curriculum design.

#### **5.4.7 Policy sandboxes for SDM**

Institutions of higher learning must create policy sandboxes managed environments that enable the experiments of various digital tools to foster SDM processes. A perfect example is the adoption of sandbox policies in the University of Edinburgh, where a piloted AI tool is used to foster campus wide SDM processes within a sandbox environment. Through the sandbox environments, institutions can foster an inclusive collective governmental experiment (e.g., augmented discussion channels, interactive feedback mechanisms, or AI-mediated building consensus instruments) without needing to engage in risky university participation. The outcomes can assist in establishing institutional policies and inform the adoption of a firm curriculum.

**Figure 5-1: Digital strategies for diverse inclusion (2023)**



Navas-Bonilla *et al.* (2025)

The figure above demonstrates how digital tools improve accessibility, flexibility, and engagement in higher education, hence promoting the inclusion of different students.

Institutions of higher learning in South Africa using policy sandboxes will allow them to be effective and robust within the processes of experimentation using new technologies to facilitate SDM processes. This research proposes a level of institutional oversight that is firm and done by high-level leaders such as the vice chancellors, student leadership, and council for higher education observers, with monthly assessment regarding matters of ethics and establishing policies that support digital transformation, such as the North-West University leadership discussion on AI-mediated funds. The use of such an approach will help South African universities, such as Tshwane University of Technology, in advancing digital transition within institutional governance, through using the same approach of policy sandboxes applied in the University of Edinburgh.

#### **5.4.8 Inter-university knowledge networks**

Universities must create a national consortium of communities that work together in the process of digital transformation, thus speeding up innovation and SDM. For example, the European Universities Association fosters the use of digital platforms for data exchange on matters within Europe on AI or technical applications in institutional governance. Universities that take part can share their experiences on digital use and resources via open-access repositories and national summits on digital transformation. Through the creation of such networks, universities can accelerate the process of digital transformation and promote SDM processes in higher education.

#### **5.5 Policy recommendations**

South African higher learning institutions must offer the necessary support to integrate digital tools to help facilitate shared decision-making processes. Policies must be enacted to ensure the institutions have money and funds for digital literacy initiatives and much-needed infrastructure. The state must also encourage collaboration among institutions by offering incentives for cross-collaboration among universities.

*For instance, the Department of Higher Education and Training must expand its funding of initiatives such as the University Capacity Development Program (UCDP) to aid digital transformation.*

Drawing from the international models of developed states like the U.S., South Africa needs to enact national guidelines for digital transformation in the country's institutions. Although the *National Integrated ICT Policy White Paper (2016)* indicates the state's commitment to integrating digital tools in higher education, the scope of the policy must be expanded to precisely incorporate strategies that cater to digital integration on a greater scale. Major global corporations like Google, Microsoft, etc., must be approached to establish partnerships, as they can offer support for digital deployment systems at the institutions in South Africa. This could encompass leveraging programs such as the Technology Innovation Agency (TIA), which provides financial assistance to research and technology development in higher education. The state could also help by offering subsidies to aid in institutional financial constraints in integrating digital tools in

higher education. For example, the South African Research Chairs Initiative (SARCI) could be adapted to fund digital infrastructure and decision-making tools.

## **5.6 Conclusion**

This research explored the role digital technologies play in facilitating SDM processes in higher education in South Africa, with a specific focus on the digital learning for development initiative. Drawing from a comprehensive document review, this study demonstrated the potential of universities leveraging new emerging tools to promote SDM processes through cooperative governance. The research findings recommend that digital technologies, if incorporated properly within institutional governance, can promote inclusivity, transparency as well and enhance institutional effectiveness. The DL4D, as a progressive program, highlights how digitally mediated collaborations can close communication gaps that exist among students, lecturers, as well as stakeholders, therefore fostering SDM processes that are inclusive, democratic as well and data informed. Nevertheless, this research also found that despite the prospect of using digital tools, several important issues arise, hindering the success of the DL4D enactment to promote collective decision-making at an institutional strategic level. Some of the important challenges are the lack of adequate infrastructure, especially in universities known to have fewer resources, the lack of digital skills among stakeholders and students, and issues of resistance to new governance methods that are digitally driven. These results underscore the complex nature of digital transformation, and institutions of higher learning are struggling to move from classical hierarchical methods of decision-making to more digitally driven methods of governance. While the potential of digitalization is evident in the DL4D program, its progression is hindered by systematic, technological, and institutional challenges.

Notwithstanding the issues the DL4D initiative faced, a plethora of higher learning institutions such as UCT, NWU, and Wits have taken progressive strides in incorporating digital technologies into pedagogical methods and institutional governance, to foster inclusive collective decision making. These institutions of higher learning have pioneered the adoption of various tools such as Moodle, Microsoft Teams, and Zoom to conduct virtual meetings and run consultation forums. Through these adoptions, institutional effectiveness along with cooperative governance has been

enhanced, as views of stakeholders, students, and lecturers are considered when it comes to policy planning and curriculum design. Due to this progress, strategic partnerships have begun forming between universities and local innovation hubs to run tests of emerging digital technologies to promote SDM processes. The importance of this research lies in its literature contribution to current scholarly debates on digital transformation in the field of public administration. Through revealing some of the issues and prospects of using digital tools, this research highlighted some of the strategies that can be employed by universities to improve digital integration and promote SDM. Ultimately, while the DL4D cannot replace traditional methods of decision making that work around human-centered approaches, its potential comes with the ability to transform rigid decision-making processes to more agile, transparent, inclusive, and effective processes.

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**ANNEXURE A: CERTIFICATE OF ATTENDANCE**



Faculty of  
Humanities

# CERTIFICATE OF ATTENDANCE

This certificate is awarded to  
**Mahlatsé Sevhake**

In recognition of attending the Faculty of Humanities' Ethics  
Training Session on Friday, 8 March 2024



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Professor Mirna Nel  
Deputy Dean Research and Innovation  
Faculty of Humanities



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Professor Susan Coetzee van Rooy  
Deputy Chairperson: ECLM



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Professor Erhabor Idemudia  
Chairperson: BaSSREC, HSSREC  
and EMELTEN-REC

8 March 2024  
Date

