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Digitalizing South African Universities: Exploring Benefits, Barriers and Risks

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Abstract

University leaders in South Africa have employed various leadership styles which focus on improving employee, departmental, faculty and organizational performance. However, digital leadership style is not popular and applied by leaders in universities in South Africa despite compelling benefits associated with digital leadership in universities which include improvement in communication with the key university stakeholders, enhancing the learning and teaching process, quality research outputs, community engagement, leadership and management. The present study aims to provide an understanding of the digital leadership in relation to other seminal leadership approaches which are pertinent in universities. This study further ascertains the benefits, challenges and risks in digitalizing campuses in the epoch of the Fourth Industrial Revolution. It significantly shapes university policies on digital technology, practices and theories on leadership styles which can bring radical changes in universities. This chapter equips university leaders to harness digital leadership style benefits and capacitate university leaders on risks associated by leading with technology. Application of the digital leadership style will assist university leaders in different employment categories to digitally improve employee and organizational performance, eliminate wastage and provide smooth communication channels and regular feedback.

Keywords: benefits, desktop analyses, digital leadership, risks, stakeholder, universities

1. Introduction

Universities in South Africa are failing to meet the needs of digital learners as academic leaders mostly follow outmoded practices, systems, business processes and educational models which are not client focussed. This situation has been exacerbated by the fact that both academic and nonacademic staff members' technological skills are neither non-existing nor obsolete, while manual and physical interaction is discouraged by the budget cuts. These universities run the further risk of being irrelevant to students, society, industry, donors and government conversely discouraging economic success in the country.

Hill et al. [1] opines that universities are celebrated as a vehicle for economic success through digitalization which has increased student access into these institutions of higher learning. Previously published literature by a plethora of

researchers suggests that the digitalization of universities have created inequality amongst students. For instance, [2] explored a proposal for an off-line e-learning platform that will provide a bridge for digitally unconnected students and educators to join the contemporary information- and communication technology-intensive world. The author observed that individual remote and unconnected learners encounter challenges for engaging with contemporary e-learning offerings and on ICT-intensified learning materials. The latter conundrum has been confirmed by [3] that the digital divide has narrowed with regard to one definition of access to technology by taking into consideration the binary view of the "haves" and "have not". Students in this epoch students are being perceived as "digital natives" referring to those growing up with technology in the 1980s and 1990s by a plethora of researchers [4, 5], "digital immigrants" those who were born into the digital world [4] and with a globally accepted concept as called "digital leaners" [6]. The aforementioned research literature mainly focusses on the e-learning and its challenges in universities which is not associated with the application of digital leadership in universities with an emphasis on its benefits, challenges and risks. This book chapter is therefore closing a void in the research literature by espousing benefits which is associated with digital leadership as an approach in implementing e-learning and other digital strategies in South African universities in this era of the Fourth Industrial Revolution. It further interrogates emerging digital trends, risks and mitigating strategies on universities' digitalization.

The application of the digital leadership approach is desperately needed in South African universities to improve communication amongst the key stakeholders including students: promote team work, accountability, transparency and productivity and eliminate wastage. The digital age has influenced the entire society to be reliant on technology. [7] ponders that university leaders should harness opportunities that are driven by digital technological advancements. Such digital tools have advantages as they are creating digitally driven university cultures, as well as an inspiring, engaging, relevant and transparent environment. Technological advancement reforms challenging ill-informed conceptions associated with technology, outmoded practices, systems, standardization and the status quo are needed. This technology-focussed era ensures that the university systems, business processes and practices are client (student), employee and society focussed.

In this epoch, university students are clients who pay for the service rendered and expect the return on investment and to see the value for money that has been invested. These digital learners have a set of expectations and demands which the university should meet. The digital revolution has brought new challenges and opportunities which have not been harnessed by end users in the value chain. Meanwhile, a plethora of services and core businesses has gone digital in universities including learning and teaching, research and working conditions, and rewards have changed dramatically.

What follows next is the perspective on digital leadership as a concept in relationship to other leadership styles, the Fourth Industrial Revolution and the digitalization of campuses effects, benefits, barriers and risk associated with digital leadership. This chapter concludes by providing pertinent conclusions, recommendations, limitations and advice for future researchers.

2. Conceptualization of digital leadership

Digital leadership encompasses nurturing a knowledge society and the dissemination of research aimed at influencing global policy and practice, whereas digital

leadership is perceived in universities as a chance savvy which is aimed at enhancing leaders' professional practice to change and augment university culture through the utilization of technology. It also combines mind-set, behaviors and skills in order to enhance leadership to transform practices, systems and the business processes through the use of technology. The digital leadership approach which is seminal in this epoch acknowledges change as building universities to be ubiquitous, to increase connectivity, to provide open sources technology and to utilize mobile devices and personalization of data.

Meanwhile, digital leadership borrows some facets of other leadership styles such as transformational. It is centered on enabling leaders to provide direction, influence subordinates and other leaders to perform better, establish internal and external relationships with stakeholders and initiate sustainable change through the access to information. Meanwhile, [8] defines "digital leadership as requiring reflection on online self-awareness and congruence, grappling with the controversy that comes with cyber civility and how to be a digital citizen prepared to inspire positive social change".

Figure 1 depicts the facets of digital leadership in conjunction with the features of leadership and the leadership styles that are prevalent in universities. The digital leadership is in cahoots with themes central to the concept of leadership, as well as other leadership styles, which influence employees to achieve organizational goals. However, digital leadership is unique as it provides direction, initiating sustainable change, as well as establishing relationships amongst key stakeholders. While digital leadership partly influences employees, its locus and focus are on changing the university culture by creating and sustaining a digital culture. Prevalent leadership styles in universities' goals are on behavioral change, performance, freedom of expression, knowledge acquisition and distribution and exchange of rewards, the digital leader ensures that there is a relationship of trust between students and
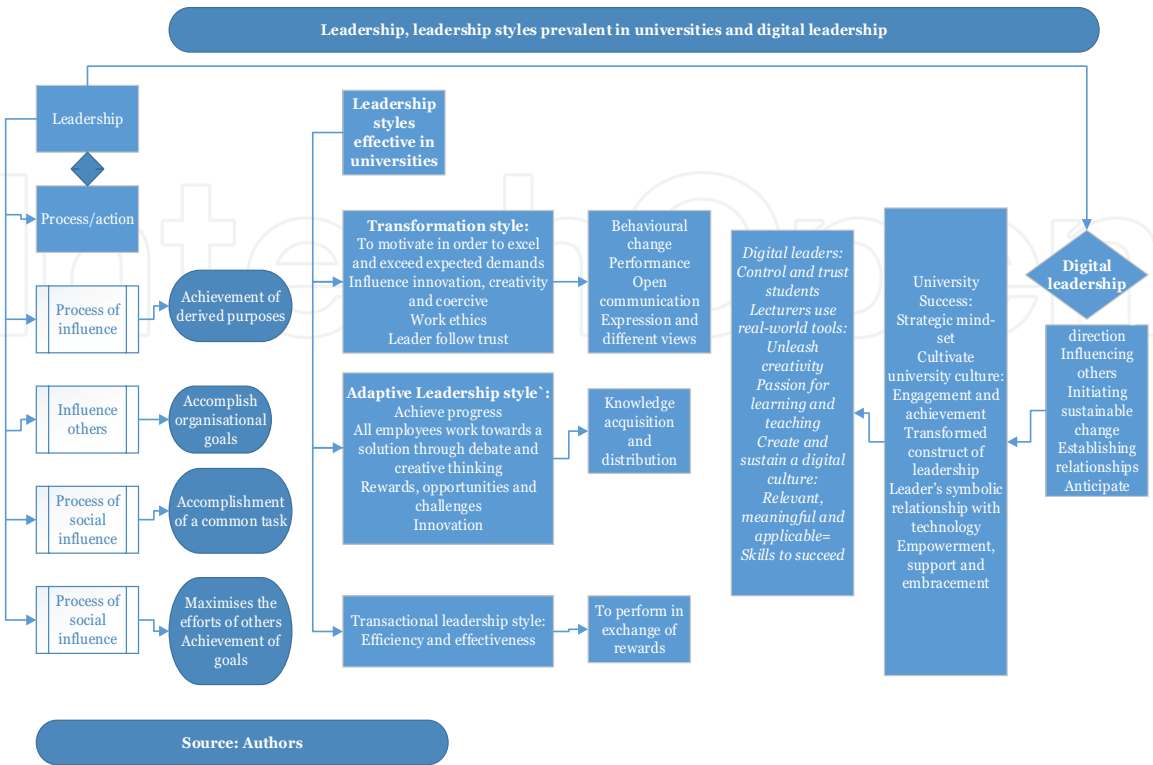
Figure 1.
Leadership, leadership styles prevalent in universities and digital leadership.

academics; learning and teaching are digitally led by creativity, problem-solving and novelty with employees possessing adequate skills for the university to succeed in the epoch of the Fourth Industrial Revolution.

3. The fourth industrial revolution and university digitalization

This digital period in history is triggered by the Fourth Industrial Revolution which necessitates the university system to transform in order to tap into opportunities that are brought about by this era. While the global community is driven by the Fourth Industrial Revolution with first-world countries and some leading emerging economies driving the agenda, South Africa is no exception although it is partly trapped, limited and imbibed to brick and mortar. This has been exemplified by an increase in building new universities and new campuses as well as extending the existing ones while the university funding shrinks. This epoch is characterized by a fusion of technologies which is transforming the political and economic landscape, business and society. The digital revolution has improved information and communication skills which necessitate universities to adapt to technology. A number of jobs nowadays are performed by intelligence systems which mandate academics to interrogate current curriculum, teaching strategies, philosophies and the graduate attributes which will determine the graduate profile that universities aim to produce. This era equips students to be creative with advanced skills in maths and statistics and the capability to preprocess and analyze data. Creativity and innovation are at the center stage of this revolution where graduates can create models, frameworks and designs. Furthermore, this digital revolution converges multidisciplines and makes graduates multi-skilled, entrepreneurial and employable. Students with artificial intelligence are marketable and control the world with their organizations that have the edge over their competitors as data is crucial.

4. Digitalizing campuses: the triggers

Digital technology influences and disrupts both academic and nonacademic staff members' systems, business processes and practices, as well as the pedagogy on how students learn and are taught. In South Africa, meanwhile, there is a dire need for digital technology in learning and teaching, research, community engagement, administration, management and leadership. During and in the aftermath of the broadly publicized student riots which were triggered by a plethora of movements such as the "Fees Must Fall", "Decolonized Curriculum" and "Rhodes must Fall", the need for digitalizing an academic enterprise was aroused. During the latter chaotic and turbulent period in the history of the South African universities, it was difficult for the academics to have contact with students as there were anarchy and riots on the campuses. This situation was perpetuated by the available digital tools which favored students who were economically viable and sustainable, hence, disadvantaging the "poor students" (previously disadvantaged). Universities in South Africa are exploring appropriate and user-friendly technologies (digital) which can accommodate highly diverse students with diverse economic and social backgrounds. Hence, universities are also grappling with implementing and making digital technology to the administrative staff members as they are also diverse as the majority of universities are merged and incorporated between the previously advantaged and disadvantaged institutions with unrealizable lofty goals. Furthermore, the biographical

profile for the staff members is diverse in terms of age groups with younger employees being digital native as compared to their old counterparts.

5. Digital technologies and leadership in universities

Universities across the globe are competing for students, attracting quality staffing and funding with their clear focus to those who leverage new digital capabilities. These competitive universities are mostly internationally ranked and attract quality students, and academics have adopted new emerging business models including digital leadership. These universities have embarked on the development of digital strategies and linked them to the university strategic plans. The digitalization of the university enterprise is driven by the university leadership through their digitally orientated strategic vision (refer to **Figure 2**).

There is a multiplicity of digital technologies which form part of digital leadership including social media. Social media enhances traditional aspects of leadership in the form of management, instruction and commination which directly initiate change, thus transforming institutions. A leading player in the knowledge economy in this epoch has been the convergence of social media, mobile and the web which is called "digital". Mobile technology is necessary in universities as more than half of the world's population own technological devices such as smartphones. Due to the fact that a plethora of university-based applications of digital leadership exists, the latter leadership style cannot be escaped. **Figure 2** depicts various digital leadership applications which include student and employee's recruitment, selection and experiences. The digital leadership is considered to be output-orientated in South African universities as it is focusing on the digitally driven student recruitment and selection, as well as delivery of the learning and teaching, academic enterprise and the student life experience. The chapter draws on the experience of university leaders within student support services who have reinvented the way they engage students in view of the latest technologies. This is coupled with concerted efforts

	Line functions	Activities	Impact
Digital leaders **Strategic vision**	HR	▪ Online recruitment and selection ▪ Digital skill development ▪ Digital literacy skills ▪ New digital learning technologies	**Digitalising universities in South Africa**
	IT	▪ Track new technology trends ▪ Review policies and procedures ▪ Access to information and systems ▪ Leverage cloud technologies	
	Marketing and Communication	▪ Digital branding ▪ Relinquish control on social media	
	Finance	▪ Develop a budget that leverage cloud technologies	
	Estate Facilities	▪ Access to video screens and power ▪ Good wireless connectivity	
	Procurement	▪ Digital contracting models and framework	
	Admissions	▪ Online admissions	
	International office	▪ Digital channel use to help overseas students ▪ Liaise with overseas students through digital channels	
	Faculty and Schools	▪ All modules to promote digital literacy ▪ Support academics development of digital skills ▪ Develop support networks with digital technology	
	Library	▪ Creation of digital literacy support networks for students	

Figure 2.
A digital blueprint in universities. Source: Author.

made by South African faculty leaders to utilize social media and the latest teaching and learning technologies to respond to student needs.

6. Emerging trends in digital leadership

South African universities have explored and implemented a plethora of digital learning platforms which have been invented by the South African EdTech companies. These digital platforms include GetSmarter, Obami and Suits and Sneakers University. Such digital platforms are intended to provide modern course content. Hence, the unavailability of the free internet or hotspots and areas with Wi-Fi and data at exorbitant prices by the mobile networks makes it impossible to utilize such platforms. Students in universities are no longer restricted to campus, school programmes, textbooks and desks as the digital revolution is infinite. The smooth application of digital tools is practical and user-friendly in geographical areas where there are accessible and reliable internet connectivity or hotspots, as well as to financially viable students.

A number of student movements in South Africa such as the "Fees Must Fall", Rhodes Must Fall" and "Decolonizing Curriculum" have influenced university academic leaders to use technology as a form of innovative teaching techniques that are underpinned by digital technologies. Some public universities have embarked on massive online open courses (MOOCs) which have attracted a number of students. Students have taken this opportunity of using such new digital tools including social media and apps. The digitalization of academia has yielded good results such as improved academic performance, employability rates, student retention and throughput and increased employees' productivity. These new and emerging technologies such as Smart mobile, wearable devices and sensors, cloud-based IT and advanced analytics have transformed the university industry. While the universities in South Africa have failed to intertwine digital technologies into their transformation agenda, and the academic enterprise is digitally inclined, universities have not yet considered the digital epoch as a major player in transforming universities during this period of contested space and political-infested institutions.

These new technologies have improved student life on campuses, residences through activities including teaching and learning, research and working on with other virtual universities and partner organizations including donors, research collaborators and investors, for instance, a "Digital Campus" which serves when students, tutors, professors and other university staff are on and off campus. Innovative teaching techniques such as flipped classrooms, distance learning experiences and hybrid teaching models have been enabled by digital technology. In the South African context, universities have invested in learning platforms such as Blackboard, Canvas or Moodle.

Universities are embarking on branding their faculties and departments in order for their clients (students) to embrace, recognize and support which is significant to the success of the digital footprint. For instance, social media has been utilized to stamp for academic departments footprints and create a brand. Students in various settings have engaged in technology-rich aspects which have changed the trajectory for both rural and urban universities. The use of social media by these universities have enhanced and effectively communicated with the community of stakeholders including business with students seeing digital footprint and resources flourishing. Digital leadership transforms a leader's way of thinking and approach on things during this turbulent period in South African universities. It further provides lecturers as leaders to have autonomy in the lecture halls and the lecturers' application

of concepts, seek their methodologies and technological applications and bring stakeholders to a better place.
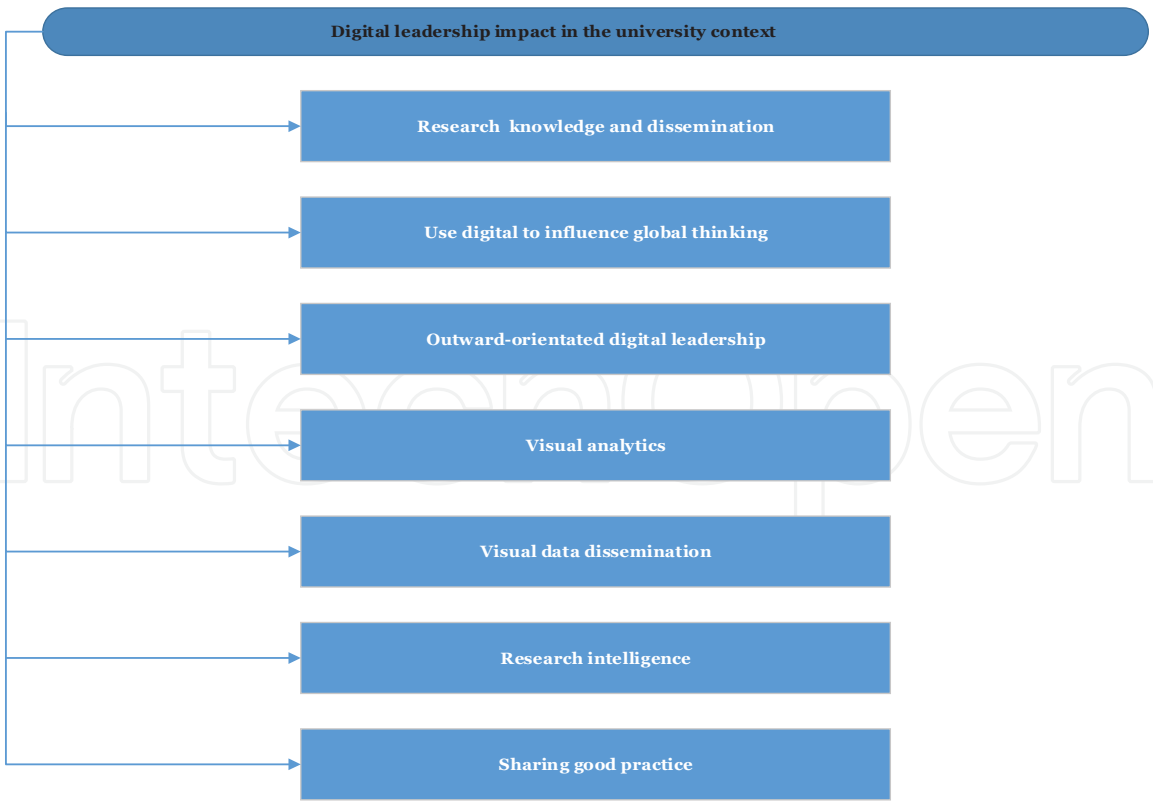
7. Effects of digital leadership in universities

Academics as leaders in their own right should adapt and rethink how to acquire, develop, transform and share knowledge in the digital era. The academic enterprise should prepare students to be digitally orientated which would increase their employability. The World Economic Forum suggests that more than 1.5 million jobs by 2020 will be digitally based. In the era of a digital economy, academics are perceived as very significant in playing leading and productive roles as they are employed to plan and prepare students for the digital economy. Major trends have emerged such as the "virtual university" which is digitalized and requires leaders with very strong information and communication technology (ICT) capabilities. [8] suggests that to have a competitive edge, collaboration, strategic partners, joint ventures and managed networks are pivotal in universities. These authors further argue that the digitalization of universities requires a leadership style that is distinctive and cooperative as opposed to the vertically integrated style seen in universities which are informed by the hierarchical structures. The traditional university is often seen as an institution with library facilities, where teaching takes place in face-to-face settings, where there are residential facilities for students who are mainly based in a particular residential area organized according to faculties. However, there is a rise in virtual organizations that encourage students to learn anywhere and at any time. This is coupled with rapid and easy access to information from different parts of the world. Institutions of higher learning have a responsibility to harness these developments for the benefit of society and the world as a whole and require leaders who are not only aware but who appreciate and value emerging organizational models.

There is an acknowledgement that different eras in history produce or require a different set of leadership styles. As the world transitions from the Third Industrial Revolution to the Fourth Industrial Revolution, there is more emphasis on not just access to technology but also quality use of technology. The question that is being asked is how leaders should respond to the current challenges which include global competitiveness in a digitalized world, new technological literacies, resistance to technological changes by academics, meaningful application of technological advances in education and how to transform education by employing technology. [9] argues that "it seems a great irony that while it espouses to be a society's epi-center of new information and ideas, the education sector continues to represent a condition of stasis that has remained outside a long period of innovation within other sectors". This view underlines one of the main challenges that are faced by leaders in higher education which is to align higher education institution with the rapidly changing technological advances. Whereas the application of the digital leadership style in universities has been overlooked, **Figure 3** depicts its impact in the university context.

Figure 3 suggests that the application of the digital leadership in universities have a multiplicity of effects which includes research knowledge dissemination and intelligence, influencing global thinking, responsiveness and sharing of good practices by using digital platforms.

Social media applications, including Facebook, Twitter and Instagram, are utilized in universities in South Africa by different stakeholders and are main-streamed into daily business operations, challenging roles and responsibilities globally and without boundaries. Hence, there are deficiencies in university leaders

Figure 3.
Digital leadership impact in the university context. Source: Author.

in transforming universities and leading change using social media. This necessitates the university leaders to be capacitated and possess digital competencies to their practices. Social media as a powerful digital instrument has an opportunity and a potential to change, transform and reform a university leader's pathway. The university leaders should have leadership capabilities and must be orientated to digital trends, emerging tools and media platforms in order to achieve their institutional vision and goals.

Furthermore, emerging digital tools and trends and social media platforms should be ingrained in leadership development programmes and practices. Meanwhile, academics have a task to assist students in universities to employ social media as instruments that educate and strengthen commitments and contribute to social change. University leaders can have a digital impact in universities in South Africa by being digitally literate. Digital literacy should be central to the leaders' daily operations in order to attain digital skills. Digital literacies can enable university leaders to master the new semiotic language for communication, to acclimatize to newly invented and emerged technologies. The digital literacy encapsulates an intersection of technical (online interfaces, applications), cognitive (critical thinking) and social–emotional (netiquette, safety) dimensions.

Moreover, digital citizenship enables university leaders to make a digital impact. The university leaders should enrol a curriculum called digital citizenship which is an extension to leadership development evolving around digital technologies. The digital citizenship dimensions include digital etiquette, communication, access, literacy, commerce, law, rights and responsibilities, health and wellness and digital security. The following competencies should be possessed by leaders in universities [10]:

• Emerging/new technological/digital tools and platforms.

• Digital content analysis skills.

- False or misinterpreted information sorted and ensure that data is accurate and with quality.

- Digital profile should reflect a leader's true reflection.

- Develop personal boundaries including wellness, privacy and time management.

- Establishing online branding which is professional, strategic and diplomatic.

- Establishing a personal learning network through collaboration.

- Leadership in the university to be integrated with digital technologies.

- Resolution and mediation on cyber conflict.

- Constructive, authentic and positive digital decision-making.

- Social media utilization for citizenship (social good).

The latest South African Social Media Landscape Report for 2018 has shared the latest local figures for the biggest social media platforms in the country for 2016–2017. The use of Facebook increased to 16.0 million in 2017 from 13.5 million in 2016; Twitter 8.0 million (2017) from 7.7 million (2016); LinkedIn 6.1 million from 5.5 million (2016) and Instagram 3.8 million (2017) from 3.5 million (2016). The South African high-tech student in 2013 conducted a research study amongst 1425 university and college students. The research findings espoused that over 59% of students have confirmed that they were addicted to social media and 16% very addicted. A total of 85% indicated that the use of social media improved their studies and 83% enhanced their social lives.

8. Benefits and risks of digital leadership

8.1 Benefits of digital leadership

The digital leadership is founded on very balanced pillars which are ingrained on management and leadership principles. These pillars include the following:

- Communication: providing key stakeholders with relevant and up-to-date information through devices.

- Public relations: leaders to be storytellers through using free social media tools.

- Branding: a positive brand to be created by social media tools.

- Student engagement or learning: student's crucial skills are enhanced by issuing integrated and effective technology that is cost-effective.

- Problem-solving, critical thinking and analysis, connectedness globally, literacy on media, collaboration and creativity as well as communication.

- Professional growth/development:

    ○ Leaders forming their personal learning networks (PLN)

    ○ Acquisition of resources

    ○ Accessibility to both tacit and explicit knowledge

    ○ Provide and receive continuous feedback

    ○ Establish partnership with subject experts and community of practice

Digital leadership style's application in universities in South Africa has yielded a range of benefits to the learning and teaching, research, community engagement, management and administration. The universities subscribed to the style of leadership saw leaders and managers embrace change, demonstrate transparency, increase engagement, embrace collaboration, knowledge and resource sharing, developed international networks and dialogues and contributed to society. Digital leadership brought a myriad of benefits to universities which include, *inter alia*:

- Harnessing the power of digital technologies

- Providing a strategic mind-set

- Shifts leadership to be grounded on empowerment, support and embracement

- Leaders' preparedness to digital application

- Leadership's mastering of the fear of the unknown, misinformation and misconception of the utilization of technology including the social media and digital devices

- Leadership facets improvement by developing a vision for effective, efficient and appropriate utilization of technology and digital tools

- Increased educational technology

- Enhancing learning and teaching technology

- Community engagement benefiting communities

- Improving communication with students

In addition to the above benefits, digital leadership enable university leaders to have access to the new and emerging digital tools and trends, research and new knowledge in the discipline.

Digital education is essential to university leaders as the country as a whole is clinging to an outmoded and fragmented education system with some unresponsive curricula at the core.

9. Barriers and risks of digital leadership

While there are widely shared benefits and opportunities of the digitalization of the university academic enterprise, there are also equal risks. For instance, by

digitalizing the academic enterprise could lead to fragmentation of the curriculum, as well as increasing disparities amongst students as they come from diverse socio-economic and geographical backgrounds.

The universities in South Africa mostly invest in IT systems that failed to harness the benefits and outcomes that are well-known in other sectors that are business orientated. Such failure is associated with the lack of the digitally orientated strategic vision, university capabilities, commitment and buy-in by different stakeholders to implement new technologies effectively, efficiently and economically. Furthermore, the universities de-marry university strategies and digital strategies which makes the business strategy a misfit for the digital age. To achieve sustainable change in universities is not feasible, as a plethora of key stakeholders including students and employees lack digital literacy perpetuated by absent support networks. Another hindrance is the university leadership's failure to equip themselves to adapt to the digital era.

Universities including in South Africa are failing to understand a new breed of their clients including students, partners, donors and funders. They also fail to scan the environment in order to determine the digital strengths of their competitors. This situation is worsened by the aforementioned key stakeholder's lack of clarity of vision of the effect of the digital era and their failure to respond to the distinct needs of the university. Furthermore, universities are failing to concurrently adapt and evolve from the AS-IS business processes and practices into the new digitally orientated techniques, tools and capabilities. Failure by the universities to adapt is exacerbated by aging leaders, occupying strategic positions in universities, who lack trust in digital services and cloud technologies and fear the unknown, reliability, security, risks and resilience of the new technological inventions. Both academic and nonacademic staff members fear the use of digital tools, with the older members lacking confidence and being uncomfortable and nervous about engaging in digital spaces.

The majority of the academic staff members are digitally illiterate in terms of knowledge, skills and competencies. They also feel disadvantaged by students who are regarded as "digital natives/indigenous" who are informed of digital transformation. The conundrum which is presented above is aggravated by inflexible policies, aging infrastructure and inexperience with working digital technologies. This conundrum further hampers initiatives taking place amongst the academic staff and students who try to use technology. Such inventions are discouraged by unreliable, unethical and ineffective IT departments at universities which are mostly underfunded. Both staff and students are not afforded an opportunity for autonomy and flexibility in applying digital technology. The staff members mostly do not use technologies, including social media, for the benefit of the university and its clients. The university clients who mostly are students are destructive towards the university and its staff members on social media platforms which discourage employees from participating in such platforms. There are also no control measures to track and discipline those who are abusing the digital tools to further their personal vendettas.

10. Conclusions

The digital leadership as a style is found to share similar characteristics with other leadership styles although it is distinct as it is central to sustaining a "digital culture" at universities. Universities with a competitive edge to others leverage new digital capabilities in attracting both quality students and staff members. This

chapter concludes by suggesting that university leaders should have digital competencies and that digital tools should be ingrained into leadership development programmes.

This chapter concludes that South African universities attract digitally native or immigrant students (or later digital learners) who demand digital channels, while leaders are digitally obsolete and illiterate. This negatively impacts on students' academic performance, as well as on their quality of life on campuses as their value for money and return on investments are not realized. This implies that academics as leaders can play a pivotal role in applying digital tools in their learning and teaching strategies with direct impacts to learners' academic performance, marketability and employability. Furthermore, digital leaders sustain a digital culture on campuses through building relationship of trust between students and academics. What is noteworthy in this book chapter are the leaders who are preaching digitalization while practices, systems, business processes and educational models are being outmoded. This implies that digital technologies are not ingrained in the university strategic plans nor centralized by senior management with the minimal chances of being cascaded to lower levels. The latter originates from the fragmented and vertical university structures which paralyzes digital movement which is influenced by the Fourth Industrial Revolution. Conversely, the social media has been observed in this book chapter to have been utilized in universities in South Africa which have transformed the university landscape by increasing students' flexibility as digital tools are infinite as well as the academic performance and retention. Moreover, academic staff members should transform the curriculum and infuse digital technologies into it with clear digitally orientated graduate attributes for all qualifications. Such radical transformation will increase student's creativity, problem-solving skills and novelty which will drastically change the country's political and economic landscape.

Furthermore, university strategic plans should be intertwined with technology and should be digitally led. This book chapter acknowledges risks associated with emerging digital tools at universities. Such risks are aggravated by a reactionary approach by university leaders to capacitate employees in all employment categories (senior, middle and junior) on how to manage risks which are brought by digital technologies on campuses. However, the risks associated with digital technologies do not supersede its benefits to students, employees, internal and external stakeholders which are immense and immeasurable. The university leaders in different employment categories should conduct a digital knowledge, skills and competencies audit to all staff members in order to identify the digital deficiencies. Universities in South Africa should develop an instrument in order to test the digital competencies for all leaders in different employment categories.

A significant limitation of this book chapter is methodological as it is not empirical which necessitates future researchers to conduct empirical studies at universities in South Africa on the student and academic staff members' perceptions and experiences on digitalization of learning, content and assessment. Furthermore, this research study is not informed by any theory which is a further limitation of this study. Future researchers should conduct empirical studies at universities on employees' readiness to apply digital tools in their daily operations.

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