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Navigating Future Roles and Professional Identity Shift of Academics at a South African University: Perceived Attitudes towards Emerging Technologies

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ABSTRACT

Although South African higher education institutions experienced a surge in technology use since apartheid, the COVID-19 pandemic prompted adjustments to technology policies and the adoption of emerging technologies, impacting academics' teaching roles, research initiatives, and community services due to unfamiliarity with online learning technologies and potential shifts in future roles. This study employs a qualitative interpretivist single-case study to explore academics' perceived attitudes toward the influence of emerging technologies on their future roles and professional identities. Using Ajzen's theory of planned behaviour as a lens, semi-structured interviews were conducted with 10 academics purposively selected based on their technology usage. Thematic analysis of the data reveals three inductive themes. The study highlights academic attitudes toward emerging technology, focussing on embracing innovative technologies to improve efficiency and continuous professional development. The study also reveals academics' apprehensions about their potential replacement by artificial intelligence and robots. However, academics recognise the irreplaceable human essence of critical thinking abilities and empathy in education. Despite challenges, academics acknowledge the positive impact of technology tools like Turnitin on research integrity and academic practices. The recommendations made included integrating technology-focused courses into academic programmes, prioritising research funding for projects exploring supportive emerging technologies, establishing mechanisms to evaluate technology integration initiatives, and collecting feedback for informed decision-making by policymakers and higher education stakeholders. This study contributes to scholarship on academics' perspectives on their acceptance of and uncertainties about the impact of ongoing emerging technologies on their future roles and professional identities.

Keywords: *Academics' Professional Identities, Emerging Technologies, Perceived Attitudes, Professional Roles, Artificial Intelligence*

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INTRODUCTION

South African Higher Education Institutions (HEIs) have experienced a surge in access to and use of technology post-apartheid, despite the socioeconomic challenges of these institutions.[1] Although these

[1] Siyabonga Mhlongo et al., "Challenges, Opportunities, and Prospects of Adopting and Using Smart Digital Technologies in Learning Environments: An Iterative Review," *Heliyon* 9, no. 6 (June 2023): e16348, https://doi.org/10.1016/j.heliyon.2023.e16348.

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institutions have prioritised inclusive and innovative education as central to national development goals, adopting emerging technologies in the curriculum has been a focal point.[2] However, official policy documents such as the National Plan on Higher Education have failed to delineate the significance of technology in higher education.[3] As such, when the COVID-19 pandemic impacted global education, South African universities, like those worldwide, had to readjust their policies on technology in education.[4]This adjustment affected academics' teaching roles, research initiatives, and community services,[5] as they encountered unfamiliarity with some online learning technologies and needed to enhance their ability to utilise new technologies in their professional roles. This is because the COVID-19 pandemic prompted the adoption of emerging technologies, potentially changing the future roles of academics.

While the future era is on the horizon, HEIs still resist change due to uncertainties regarding the necessary direction of these changes,[6] especially with emerging technologies. This may have led academics to acknowledge contradictions and uncertainties surrounding their identities, as emerging technologies will not only impact HEIs, but jobs held by individuals with lower levels of education have already been influenced by automation, resulting in a challenging process of upskilling. The increasing utilisation of artificial intelligence (AI)-driven solutions across various sectors may undoubtedly influence the academic profession.[7]

Moreover, it is indeterminable whether there exists a boundary to the progression of increasingly proficient machines in learning, given that the educational dilemma lies in determining the types of knowledge, skills, and competencies that will prove advantageous in the future within a diminishing context of human superiority over machines.[8] Consequently, the explanation would probably be to establish adaptable frameworks that allow ample room for emerging technologies without envisioning future scenarios,[9] which will mean not only ignoring the future roles that academics will adopt with these technologies but also the process that would reshape these roles and intellectual abilities.

Given that emerging technologies have caused a significant shift in academics' roles from teacher-centeredness to student-centeredness,[10] contemporary trends such as artificial intelligence (AI), digitisation, virtual reality, robotisation, cloud computing, automation, Internet of Things (IoT), and machine learning assimilated into the educational system[11] have increased tensions about the future roles of academics globally and South African universities in particular. This confirms the notion that academics and their epistemologies are in flux due to conflicting factors.[12]

As such, academics' future roles might also shift with these technologies, as it is uncertain whether they would incorporate more technologies and fewer traditional approaches or vice versa,

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[2] Dick Ng'ambi et al., "Technology Enhanced Teaching and Learning in South African Higher Education – A Rearview of a 20 Year Journey," *British Journal of Educational Technology* 47, no. 5 (September 18, 2016): 843–58, https://doi.org/10.1111/bjet.12485.
[3] Ng'ambi et al., "Technology Enhanced Teaching and Learning in South African Higher Education – A Rearview of a 20 Year Journey."
[4] Gregory Siy Ching, "Academic Identity and Communities of Practice: Narratives of Social Science Academics Career Decisions in Taiwan," *Education Sciences* 11, no. 8 (July 29, 2021): 388, https://doi.org/10.3390/educsci11080388; Marieta du Plessis et al., "South African Higher Education Institutions at the Beginning of the Covid-19 Pandemic: Sense-Making and Lessons Learnt," *Frontiers in Education* 6 (January 21, 2022), https://doi.org/10.3389/feduc.2021.740016; Johan Coetzee et al., "South African Universities in a Time of Increasing Disruption," *South African Journal of Economic and Management Sciences* 24, no. 1 (April 26, 2021), https://doi.org/10.4102/sajems.v24i1.3739.
[5] Ching, "Academic Identity and Communities of Practice: Narratives of Social Science Academics Career Decisions in Taiwan."
[6] Gábor Király and Zsuzsanna Géring, "Editorial," *Futures* 111 (August 2019): 123–29, https://doi.org/10.1016/j.futures.2019.03.004.
[7] Király and Géring, "Editorial."
[8] Király and Géring, "Editorial."
[9] Király and Géring, "Editorial."
[10] Ahmad Almufarreh and Muhammad Arshad, "Promising Emerging Technologies for Teaching and Learning: Recent Developments and Future Challenges," *Sustainability* 15, no. 8 (April 20, 2023): 6917, https://doi.org/10.3390/su15086917.
[11] Király and Géring, "Editorial."
[12] Michael Henderson and Scott Bradey, "Shaping Online Teaching Practices," *Campus-Wide Information Systems* 25, no. 2 (March 28, 2008): 85–92, https://doi.org/10.1108/10650740810866585.

especially since some academics have requested the replacement of certain teaching roles with robots or AI.[13] It is in the context of this uncertainty that this study intends to contribute to knowledge.

Although studies have highlighted academics' roles, competence, and experience of the effective implementation of technology in higher education.[14] The beliefs and practices of academics' in technology integration, and the challenges of integrating technology, have led to the argument of the need for academics to develop technological and pedagogical skills to adapt their teaching practices to the challenges posed by a rapidly digitalising society.[15] However, there is a lack of studies on the impact of emerging technologies on the future roles of academics and certainly a dearth of literature on academics' perceived attitudes towards emerging technologies and their implications for their future roles and professional identities at a South African university. Therefore, the purpose of this study is to understand academics' perceived attitudes toward emerging technologies and their implications for their future roles and professional identities at a South African university. The research questions that this study is anchored on are as follows:

1. What are the perceived attitudes toward emerging technology?
2. What are academics' perceived attitudes toward the impact of emerging technologies on their professional identities?

LITERATURE REVIEW

Academics' Professional Identities and Emerging Technologies

Henderson and Bradey argue that digital tools and technologies in online teaching environments offer opportunities for academics to align their pedagogical decisions with their multifaceted identities. They added that academics' sense of identity significantly influences their interaction with teaching technologies and educational methods, shaping the teaching approaches and narratives they prioritise in their practice. As academics' identities continually evolve, influenced by past experiences and future aspirations, their engagement with new technologies and teaching methods may lead to adaptations and evolutions in their identities, consequently shaping their pedagogical practices.[16]

Howard posits that emerging technologies have spurred the development of innovative pedagogical strategies within higher education policy.[17] These technologies have equipped both academics and learners with digital competencies essential for navigating technological challenges while also introducing benefits such as interactive educational platforms, multimedia resources, and communication aids, improving the quality of teaching and learning experiences.[18] Also, instructional designs have undergone revitalisation through the systematic incorporation of online and hybrid methodologies, leading to the proliferation of emerging educational paradigms which may be fuelling scholarly discourse not only on the impact of technology on educational transformation within higher education but also on the implication of emerging technologies on academics future roles and professional identities.[19]

Although emerging technologies aim to transform HEIs, studies by Liu et al. contend that this transformation has not been achieved because academics do not necessarily use technologies in ways that transform teaching, thus failing to meet the innovative intent of the institutions.[20] Further, there

[13] Almufarreh and Arshad, "Promising Emerging Technologies for Teaching and Learning: Recent Developments and Future Challenges."
[14] Albert Cubeles and David Riu, "The Effective Integration of ICTs in Universities: The Role of Knowledge and Academic Experience of Professors," *Technology, Pedagogy and Education* 27, no. 3 (May 27, 2018): 339–49, https://doi.org/10.1080/1475939X.2018.1457978.
[15] Pinar Ayyildiz, Adem Yilmaz, and Hasan Serif Baltaci, "Exploring Digital Literacy Levels and Technology Integration Competence of Turkish Academics.," *International Journal of Educational Methodology* 7, no. 1 (2021): 15–31.
[16] Henderson and Bradey, "Shaping Online Teaching Practices."
[17] Natalie-Jane Howard, "Navigating Blended Learning, Negotiating Professional Identities," *Journal of Further and Higher Education* 45, no. 5 (May 28, 2021): 654–71, https://doi.org/10.1080/0309877X.2020.1806214.
[18] Mhlongo et al., "Challenges, Opportunities, and Prospects of Adopting and Using Smart Digital Technologies in Learning Environments: An Iterative Review."
[19] Howard, "Navigating Blended Learning, Negotiating Professional Identities."
[20] Qian Liu, Susan Geertshuis, and Rebecca Grainger, "Understanding Academics' Adoption of Learning Technologies: A Systematic Review," *Computers & Education* 151 (July 2020): 103857, https://doi.org/10.1016/j.compedu.2020.103857.

have been debates on educators' (academics) tendency to use technology primarily for a unidirectional mode of delivering predetermined content, which restricts students' engagement.[21] Mostert and Quinn argue that the transformation of South African HEIs, especially the integration of technology into teaching and learning, presents a significant challenge for academics' educational practices even though it holds promise as a solution.[22] For instance, Rogers posits that individual academics and sometimes entire faculties avoid using computer-based technologies due to a lack of adequate training.[23] According to Matthews and Danaher, academics in Australian universities, are obliged to integrate technology into the curriculum, which has resulted in a cautious and sceptical attitude among academics towards new technologies. This scepticism arises as they navigate the integration of these tools into their professional identities, particularly in light of issues such as "overcrowded curricula, standardised testing, behavioural management concerns, and several other challenges."[24]

A study conducted in Vietnam by Chau found that academics who teach using technology reported that although virtual pedagogies are more effective than traditional face-to-face instruction, their greatest concern is insufficient guidance on how to integrate technology into their lectures effectively.[25] These insights highlight not only the challenges with emerging technologies but also how they prompt a change in the role of academics, raising concerns about the roles they may uphold in the future with yet-to-be-developed technologies.

The integration of emerging technological strategies in pedagogical practices inevitably disrupts traditional educational practices, introducing complexities to practitioners' (academics) attitudes, values, and ideologies within their future professional roles.[26] This process may involve dismantling and reconstructing the identities of the prevailing academics toward those aligned with emerging technological methodologies.

Although many studies have examined teachers' adoption of technology, the impact of technology on traditional teaching roles, and its influence on professional identity among others, there is still a gap in understanding the influence of teachers' (academics) professional needs and beliefs about their professional identity.[27] Although teachers' (academics) attitudes, beliefs, and skills interact to shape their readiness and ability to integrate technology, research has predominantly focused on teachers' perceptions of technological characteristics and their technology efficacies and attitudes.[28] This study aims to address this gap by exploring the perceived attitudes toward emerging technologies on their future roles and professional identities at a South African university.

THEORETICAL FRAMEWORK

Underpinning this study is Icek Ajzen's Theory of Planned Behaviour (TPB), which suggests that behaviour is influenced by the intention to perform the behaviour.[29] According to Ajzen, human behaviour is governed by three main constructs: attitudes towards behaviour, subjective norms, and perceived behavioural control.[30] Ajzen argues that individuals' attitudes and personality traits such as

[21] Ng'ambi et al., "Technology Enhanced Teaching and Learning in South African Higher Education – A Rearview of a 20 Year Journey."
[22] Markus Mostert and Lynn Quinn, "Using ICTs in Teaching and Learning: Reflections on Professional Development of Academic Staff," *International Journal of Education and Development Using ICT* 5, no. 5 (2009): 72–84.
[23] Patricia L. Rogers, "Barriers to Adopting Emerging Technologies in Education," *Journal of Educational Computing Research* 22, no. 4 (June 22, 2000): 455–72, https://doi.org/10.2190/4UJE-B6VW-A30N-MCE5.
[24] K J Matthews and P A Danaher, "Academics Wrestling with the Dynamic Impact of Social Connectivity to Integrate Emerging Technologies into Higher Education Curricula," *Studies in Learning Evaluation Innovation and Development* 8, no.1(2011):1–13.
[25] Duong Diem Chau, "Perspectives of Lecturers' Beliefs on Integrating Information Communication Technology into e-Learning System," *Ho Chi Minh City Open University Journal Of Science-Social Sciences* 9, no. 1 (2019): 11–27.
[26] Howard, "Navigating Blended Learning, Negotiating Professional Identities."
[27] Chun Lai and Tan Jin, "Teacher Professional Identity and the Nature of Technology Integration," *Computers & Education* 175 (December 2021): 104314, https://doi.org/10.1016/j.compedu.2021.104314.
[28] Lai and Jin, "Teacher Professional Identity and the Nature of Technology Integration."
[29] Icek Ajzen, "The Theory of Planned Behavior," *Organizational Behavior and Human Decision Processes*, 1991.
[30] Ajzen, "The Theory of Planned Behavior."

open-mindedness and optimism indirectly impact certain behaviours by influencing factors closely linked to the behaviour in question.[31]

In this study, academics' perceived attitudes may not directly determine how they integrate emerging technologies into teaching. Instead, their broader personalities may indirectly shape technology adoption by influencing other factors related to teaching behaviour. This means that academics' openness and curious personality cannot determine their willingness to adopt new educational technology methodologies in their classroom. Rather, their openness to new ideas might make them willing to explore new teaching methods or be receptive to change, which in turn may lead them to embrace emerging technologies.

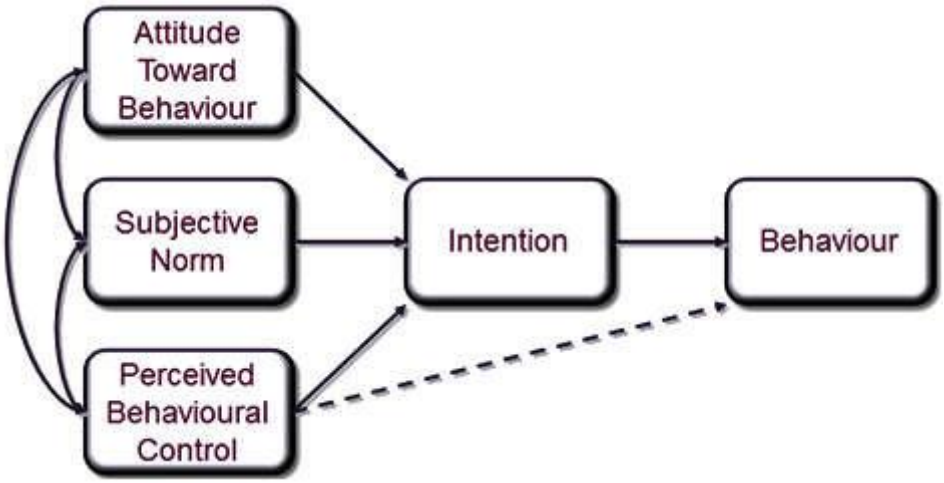

Figure 1: Theory of Planned Behaviour[32]

Figure 1 shows that attitudes towards behaviour, subjective norms and perceived behavioural control directly influence intentions and indirectly influence behaviour through intention. Additionally, perceived behavioural control directly influences behaviour.[33] Liana and Spencer added that the stronger the attitude, subjective norm, and perceived control, the stronger the intention to perform the behaviour. This study uses TPB as a framework to understand the perceived attitudes of academics toward emerging technologies and their implications on their roles and professional identities. In line with TPB, attitudes towards a behaviour, such as the adoption of emerging technologies significantly impact the likelihood of engaging in said behaviour (technology adoption). Subjective norms encompass the perceived societal pressures to either engage in or refrain from behaviour. Within this study, these norms may arise from broader institutional changes such as technology integration. Understanding how subjective norms influence academics' attitudes towards future emerging technologies can illuminate the social context in which technological adoption takes place and shape professional identity. Perceived behavioural control refers to individuals' beliefs in their ability to carry out a behaviour while overcoming obstacles. In the context of technology integration, perceived behavioural control may include factors like technological proficiency, institutional support, availability of resources, and personal effectiveness. Therefore, by examining academics' perceived control over the utilisation of emerging technologies, the study aims to uncover both facilitators and barriers to technology adoption, along with the implications for future roles and professional identities.

This theory holds relevance for the present study not only due to its systematic approach to probing the factors influencing academics' attitudes toward emerging technologies but also because

[31] Icek Ajzen, *Attitudes, Personality and Behaviour* (McGraw-hill education (UK), 2005).
[32] Ajzen, "The Theory of Planned Behavior."
[33] Liana Luzzi and A John Spencer, "Factors Influencing the Use of Public Dental Services: An Application of the Theory of Planned Behaviour," *BMC Health Services Research* 8, no. 1 (December 30, 2008): 93, https://doi.org/10.1186/1472-6963-8-93.

technology has become an essential component of all educational systems, requiring academics and students to possess a baseline level of technological literacy. Consequently, academics must remain abreast of emerging technologies and discern those that are beneficial and efficient in supporting teaching and learning.

METHODOLOGY

The study used qualitative research methods to gather and analyse data on participants' interpretations of their lived experiences. Cohen et al. postulate that qualitative research offers a comprehensive understanding of meanings, behaviours, attitudes, intentions, and conduct by allowing individuals to express their viewpoints and explore underlying issues.[34] Using an interpretivist paradigm, this single case study explored academics' attitudes toward emerging technologies and the implications they have for their future roles. Interpretivism suggests that reality is subjective, and this study aimed to understand participants' perceptions of emerging technology's impact on their future roles and professional identities.[35]

This study used a semi-structured interview with 10 academics purportedly selected based on their use of technology. This method allowed active participation from both participants and researchers, allowing for more comprehensive narratives. A pilot interview was conducted to refine the schedule and identify interview questions. The data was transcribed using Otter AI and cross-checked with audio recordings to address discrepancies. The data was categorised and the themes were analysed thematically.

Ethical considerations were followed throughout the study. Ethical permission was obtained from the university's ethics committee and participants provided informed consent to sign. To maintain confidentiality and anonymity, pseudonyms were used instead of the actual names of the participants. They expressed a preference for being addressed as "Academic," and each participant was assigned a numerical identifier. Consequently, they were interviewed under the designations Academic 1 through Academic 10.

PRESENTATION OF FINDINGS

Academics' Attitudes Toward Embracing Innovative Technologies

Technology continues to evolve, introducing various emerging applications that find utility in education. Embracing innovation has become imperative in all sectors, including education, as it has become an integral part of organisational functioning. By adopting new technologies, academics improve their effectiveness and efficiency, improving their overall experiences, flexibility, and adaptability. The findings of this study underscore the concept of lifelong learning, emphasising that academics can achieve continuous professional development by embracing new technologies within their roles. Elaborating on this, **Academic 1** noted that,

> *"A lecturer, or teacher is a lifelong learner. Today it means more than just the songs we were singing. Today, you have to engage in the latest technology. To me, that's where the most powerful thing is."*

The significance of academics embracing emerging technologies in their professional future roles cannot be overstated. Academics must remain current, actively engage with, and grasp these technologies' functionalities and potential applications. This is particularly fundamental for understanding social networks that are often used by students for educational purposes. According to **Academic 6**,

> *"You were born in the 1970s, and you're looking at TikTok and you are like, TikTok is for kids. That teacher doesn't deserve to be a lecturer. A lecturer has got to have some TikTok on their phone and see how it works."*(**Academic 6**)

[34] Louis Cohen, Lawrence Manion, and Keith Morrison, *Research Methods in Education* (London: Routledge, 2002).
[35] Nguyen Cao Thanh and T T Thanh, "The Interconnection between Interpretivist Paradigm and Qualitative Methods in Education," *American Journal of Educational Science* 1, no. 2 (2015): 24–27.

Academics need to know that blue-chip companies understand generational trends and consumer behaviour. Their strategic approach is tailored towards the younger generation as a key demographic for their products and services. Recognising the influence of young people in the context of technology and digital platforms, these companies develop applications and platforms every day that resonates with how this younger generation thinks and interacts with technology. The participants felt that, as academics, they must embrace these platforms that students interact with by aligning them with their professional roles. Elucidating on this, **Academic 6** added that,

> *"Because of what you see now…with the development happening in the blue chip companies is that they understand that these young ones are the future and that they love these applications. So they are building there on that platform. Everything they are building is built in such a way that it's aligned with how young people think and how young people want things to be done."*

The observation is that although AI is widely prevalent in most aspects of life, the struggle with basic digital infrastructure and access to technology resources is limited in rural areas. One participant observed that,

> *"The whole world is now AI, here in our context we are still struggling with digital and when you go back to the rural areas you will see that sometimes there is nothing at all."* **(Academic 4)**

Despite the challenges highlighted, **Academic 9** believed that emerging technology such as AI would be a supplementary tool that supports academics' professional future roles rather than replace them completely. The participant noted,

> *"I see it from a supplementary perspective that it might assist in catering for the diverse learning styles that my students might have. So in that way, it augments my teaching practice."*

The participants in this study widely affirmed the importance of embracing innovative technologies in education, as it enhances effectiveness and efficiency. They emphasised the need for academics to remain current with emerging technologies, as these tools are essential for their continuous professional development. Specifically, participants not only highlighted the importance of integrating social media platforms into educational practices but also acknowledged the influence of blue-chip companies in shaping technology trends and emphasised the importance for academics to align with these platforms to resonate with digital interactions of students. These views confirm Henderson and Bradey's findings that digital tools and technologies in online teaching environments offer opportunities for academics to align their pedagogical decisions with their multifaceted identities.[36] However, despite the widespread prevalence of AI, challenges persist in rural areas regarding access to basic digital infrastructure and technology resources. While some participants viewed emerging technologies as supplementary tools to support their professional roles, others expressed concerns about potential replacement, albeit recognising their potential in catering to diverse learning styles. This contrast reflects a nuanced perspective among academics regarding the role and impact of emerging technologies on their future roles and professional identities. This aligns with Howard's study that states that the integration of emerging technological strategies in pedagogical practices inevitably disrupts traditional educational practices, introducing complexities to practitioners' (academics) attitudes, values, and ideologies within their future professional roles.[37]

Academics' Attitudes on Uncertainty: Concerns about Relevance

Uncertainty seems to be what some participants expressed. If one has to compare most jobs now that have been replaced with AI, they compare human capabilities with AI, stating that most companies

[36] Henderson and Bradey, "Shaping Online Teaching Practices."
[37] Howard, "Navigating Blended Learning, Negotiating Professional Identities."

now use technology because of its reduced margin of error compared to humans, who may engage in trial and error methods. Elaborating more on this, **Academic 10** stated that,

> *"Whether we like it or not, technology seems to be taking over. And we've seen that with a lot of jobs being lost…. Now people are using artificial intelligence to consult because its accuracy… is over 90%. But you look at human accuracy, and people who did their degrees a long time ago, and they forgot most of the information. So we are looking at a human who's able to function at 50–60%, compared to a tool that can function at 90–98%. So companies prefer to use these technological tools because the margin of error is now reduced instead of having this human who's doing trial and error."*

A participant expressed concerns about the possibility of being replaced by robots or automated systems. He expressed this with a hint of humour (laughter), indicating that it's a somewhat light-hearted concern. He, however, maintained optimism that the replacement of academics by technology would not happen because of the unique nature of humans that cannot be replaced by robots in the educational context.

> *"I just fear that I hope I won't be replaced by robots in the classrooms (laughs). So I still think that it won't happen, that my replacement won't happen because we still want to know and understand that there is a space where my transmission is needed and my human nature is needed."* **(Academic 2)**

A few participants commented on AI's ability to continuously learn, which they claimed exceeds that of humans. In their view, AI will become increasingly human-like as it learns and evolves. This realisation leads them to consider the possibility of being replaced by AI in their academic roles. To avoid being replaced, they are ready to continuously improve skills in the face of technological advancement, which indicates a proactive approach to remaining shaped by AI and other technologies:

> *"When you start reading about artificial intelligence, sometimes people forget the main feature of artificial intelligence: that they continuously learn, and they learn at a faster rate than a human being. And they may become more and more human. And so I might be replaced. I am thinking that, of course, people have written over and over again that, you know what, in today's world, we need to understand that you should keep on improving your skills and stuff."* **(Academic 8)**

Additionally, the participants also expressed the need to stay a step ahead of technology development by constantly seeking skills that cannot be replaced by robots. This is because of the inevitability of robots advancing and catching up with tasks traditionally performed by them. Alluding to this, **Academic 3** pointed out that,

> *"...I'm thinking that as a teacher, I should be looking around to say, what is the next thing that I can do that the next robot won't be able to do? It's not an easy question, but that's how we have to think because once robots catch up, we know they're going to catch up."*

A participant emphasised that *"*the role of a teacher is going to change, and the teacher is going to understand what is happening*..."* Referring to generative AI, **Academic 6** stated that "when ChatGPT was introduced in November 2022, it was different than what it's doing now,*"* and this tool continues to improve over time and is becoming more versatile. Thus, contemplating the role of academics in the face of advancing AI. The participant thought that that academics need to focus on leveraging their human qualities, such as creativity, empathy, and critical thinking, which robots cannot replicate. For **Academic 6**, integrating broader societal goals into curriculum development can create opportunities for them in ways that AI cannot, thus highlighting the importance of human qualities complementing AI capabilities:

> *"It's doing more, it's doing better, and it's learning. And the reality is that once it starts, what is the best thing that I can do? The best that curriculum developers can do as well is infuse*

things like the Millennium Goals, global, sustainability... it will open a space for our human qualities in the field to express things that robots cannot do..." **Academic 6**

Losing the human touch amidst technological advancement underscores the importance of maintaining a sense of humanity and individuality in the future roles and professional identities of academics. Participants divulged that in an increasingly technology-driven world, it is essential for them to recognise that their human presence and contribution to teaching and research efforts are unmatched. However, they expressed a positive outlook on the role technology can play in enhancing their effectiveness in teaching and research if they maintain a balance:

"…technology will always drive me to become better and more effective. But I don't want to lose myself with technology. Because sometimes you need to experience integration and a personal connection. And you shouldn't lose that in terms of your teaching, learning and research. Because at least when people read your research, they must see there's a person behind this and not having a robot."(**Academic 1**)

Despite the scepticism, some participants still believed that their roles were irreplaceable, asserting that technology, including robotics, cannot fully substitute for human educators. They *"even teach the students and motivate them that they mustn't think that they will lose their jobs to robots…*" (**Academic 8**) because technology is there to improve teaching and the teacher will always be needed. They humorously suggested that technological devices, such as robots, are susceptible to technical malfunctions, such as battery depletion or power outages, stressing the inherent limitations of relying solely on technology in education:

Technology cannot replace a teacher. You still need a teacher. Robotic, the battery will be out, the load-shedding (laughs). They tried…with home-schooling" but it didn't work. **(Academic 9)**

Supporting this, another participant added that,

"Maybe the cashier can be replaced but a teacher cannot be replaced. Technology is not everything. I love technology, but I don't believe it's everything." **(Academic 7)**

Participants in this study have articulated a common concern regarding the potential displacement of human academics by artificial intelligence and robotics, stemming from the emergence of new technologies. Their apprehensions are centred around the formidable accuracy rates and continuous learning capacities exhibited by AI, raising the prospect of an evolution towards human-like capabilities and the subsequent replacement of human workers. Despite these concerns, the participants acknowledged the vital role that human academics play in education, underscoring the irreplaceable essence of human attributes and their essential contribution to the field of education. They accentuated the significance of academics' ongoing skill development, which remains unparalleled and crucial, as well as the integration of broader societal objectives into educational frameworks to harness the distinctive qualities of humans. While acknowledging the prevailing concerns, some participants light-heartedly underlined the inherent limitations of technology, including susceptibility to technical malfunctions, thereby suggesting that technological devices cannot completely replace human educators. The participants stressed the importance of maintaining a delicate equilibrium between the integration of advanced technology in educational practices to improve teaching and research, all while preserving the indispensable human elements. This is consistent with the literature that some academics have requested the replacement of certain teaching roles with robots or AI.[38]

[38] Almufarreh and Arshad, "Promising Emerging Technologies for Teaching and Learning: Recent Developments and Future Challenges."

Academics' Attitudes to Challenges and Opportunities

The implication of emerging technology on academics' future roles is looked at from the angles of student participation in technologies, academics' job security in terms of the evolving role of academics, and the positive use of technology to evaluate knowledge outcomes. The challenge of emerging technology in academics' future roles would perhaps be losing touch with students learning. This was the feeling expressed by **Academic 7** and **Academic 10.** They posited that technology, such as mobile phones, is an excellent tool if students use it effectively. **Academic 7 elucidated that**,

> *"I think what is always a challenge is to keep our students active in a positive way because I was actually just observing one of the classes of another creative art…and people were the whole time on their cell phones and then I thought I wish and I hope these students are busy with work and not personal things, if that's the case then it's great but if not we're losing our students in the context of their daily lives and so mobile learning is excellent if you can use it effectively."*

Although **Academic 10** concurred with the above claims, the participant stated that they are now torn between two worlds, the virtual and the physical, with the students at the centre of this complexity, leaving them with no choice but to embrace the challenges and opportunities of this overlap:

> *"While the role of the teacher will remain facilitating teaching and learning, as technology becomes increasingly advanced, the dependence of learners on it will also increase. Our children are more on their screens and are becoming less and less social and might not need to know much about the world when they have the answers at their fingertips (literary). As life becomes more complicated and the virtual world becomes more engulfing, the real and the virtual will begin to overlap. Our role is to find our place as teachers as this overlap happens. Be in the virtual and in the real world."* **(Academic 10)**

Reporting on the opportunities of emerging technologies in their future roles, **Academic 9** explained the positive side of emerging technologies in their future roles in the context of academics' research integrity, stating Turnitin as a tool to detect plagiarism and contrasting traditional methods where academics could only detect instances of copied work from students by comparing scripts, an ineffective method:

> *"There will be different tools, there is Turnitin, which helps me to check whether they copied. During my time you just copy from your friend (laughs) and no one knows. The teachers cannot until they put a script as good and say this is the same but they can't see the paragraph. So technology keeps on improving. We are now in 5IR maybe it will be 6 or 7IR... I think technology will continue."* **(Academic 9)**

Until two decades ago, blended learning did not have the formal terminology to describe it. Hybrid pedagogical approaches have developed over time, and through emerging technologies, new platforms facilitate this process. Participants expressed the positive side of technology, underlining the benefits blended learning brings with large classes and limited resources. A participant noted that,

> *"So I'm hoping that we move towards a blended era, it doesn't necessarily have to mean that, you know, students must come to campus or they must stay at home, but just to find a way to balance all of these things, especially with large classes, and especially now that you know enrolling more and more students, but the facilities are not updated."* **(Academic 5)**

Participants in this study revealed distinctive perspectives on the challenges and opportunities presented by emerging technologies on academics' future roles and professional identities. Concerns about maintaining student engagement and connection amidst pervasive technology use, as expressed by some participants, emphasise the potential risk of losing touch with their students' learning experiences. Participants stressed the need for effective utilisation of technology to ensure positive

student outcomes. This resonates with other studies that found that educators (academics) tend to use technology primarily for a unidirectional mode of delivering predetermined content, which restricts students' engagement.[39] Participants also elaborated on the complexities of navigating the virtual and physical worlds, foregrounding the evolving role of academics in adapting to this overlap. Despite these challenges, participants equally underlined the positive impact of emerging technologies, particularly in enhancing their research integrity through tools like Turnitin. This reflects a recognition of the opportunities presented by technology to improve academics' practices, which, in turn, improves their professional development.

DISCUSSION

The use of technology in higher education has surged with and after the unprecedented COVID-19 outbreak. This has enhanced the emergence of diverse technologies for teaching and learning. Thus, establishing the need for academics to develop skills for the adoption and implementation of these emerging technologies. This study found that academics' perceived attitudes towards emerging technology revolve around embracing innovative technologies, reflecting the significance of technology integration for enhancing effectiveness, efficiency, and continuous professional development. Emerging technologies have spurred the development of innovative pedagogical strategies within higher education policy, which have equipped both academics and learners with digital competencies essential for navigating technological challenges [40] while also introducing benefits such as interactive educational platforms, multimedia resources, and communication aids, enhancing the quality of teaching and learning experiences.[41] This aligns with TPB, which posits that attitudes, subjective norms, and perceived behavioural control influence behaviour through intentions. It thus highlights subjective norms, particularly societal expectations shaped by blue-chip companies, and the perceived behavioural control over integrating new technology despite challenges like limited resources. Underscoring the complex interplay of attitude, norms, and perceived behavioural control in shaping academics' readiness to embrace emerging technologies within future roles and professional identities.

With emerging technologies reshaping pedagogical approaches and the overall academic landscape, the future roles of academics might also change with these technologies, as it is uncertain whether they would incorporate more technologies and fewer traditional approaches or vice versa, especially since some academics have requested the replacement of certain teaching roles with robots or AI.[42] The study also found that participants were uncertain regarding the relevance of their roles in the face of advancing technology, reflecting the interplay of attitudes, subjective norms, and perceived behavioural control outlined in Ajzen's theory. Academics expressed apprehensions about being replaced by AI and robots due to their formidable accuracy rates and continuous learning capacities. However, they also emphasised the irreplaceable essence of human attributes in education and stressed the importance of continuing skill development to remain relevant. This aligns with the notion that subjective norms, such as societal pressures and norms regarding technological advancements, influence attitudes and intentions.

As academics' identities continually evolve, influenced by past experiences and future aspirations, their engagement with new technologies and teaching methods may lead to adaptations and evolutions in their identities, consequently shaping their pedagogical practices. Academics' sense of identity significantly influences their interaction with teaching technologies and educational methods, shaping the teaching approaches and narratives they prioritise in their practice.[43] This study

[39] Ng'ambi et al., "Technology Enhanced Teaching and Learning in South African Higher Education – A Rearview of a 20 Year Journey."
[40] Howard, "Navigating Blended Learning, Negotiating Professional Identities."
[41] Mhlongo et al., "Challenges, Opportunities, and Prospects of Adopting and Using Smart Digital Technologies in Learning Environments: An Iterative Review."
[42] Almufarreh and Arshad, "Promising Emerging Technologies for Teaching and Learning: Recent Developments and Future Challenges."
[43] Henderson and Bradey, "Shaping Online Teaching Practices."

found a notable challenge in maintaining students' engagement amidst pervasive technology use, highlighting the healthy and effective use of technology for positive outcomes. The complexity of navigating virtual and physical teaching and learning environments underscores their evolving roles in adapting to this overlap. This echoes the assertion that the integration of emerging technological strategies in pedagogical practices inevitably disrupts traditional educational practices, introducing complexities to practitioners' (academics) attitudes, values, and ideologies within their future professional roles.[44] Thus, dismantling and reconstructing prevailing academics' identities towards those aligned with emerging technological methodologies. However, participants reported the positive side of technology in their future roles. They stated that technology tools such as Turnitin enhance research integrity and improve their academic practices.

RECOMMENDATIONS

It is recommended that technology-focused courses be integrated into academic programmes to equip academics with the necessary skills and knowledge to keep up with technological advancements.

Research funding should prioritise projects exploring supportive emerging technologies for enhancing teaching and learning outcomes, thereby supporting evidence-based decision-making in educational practices.

Policymakers and higher education stakeholders should establish mechanisms for evaluating the effectiveness of technology integration initiatives and collecting feedback to guide future decisions

Further research could explore longitudinal studies by examining how academics' identities and professional roles evolve in response to emerging technologies, societal expectations, and institutional changes.

Future studies could examine ethical issues that academics confront while using emerging technologies such as data privacy, digital equity, and the responsible use of AI and other automated systems in educational settings.

Comparative studies could explore how academics' attitudes toward emerging technologies vary across cultural and institutional contexts, examining factors like institutional support, cultural norms, and educational policies.

CONCLUSION

This study has revealed that academics' attitudes towards emerging technology centre around embracing innovative technologies, emphasising their importance for enhancing effectiveness, efficiency, and continuous professional development. The integration of emerging technologies has led to the development of innovative pedagogical strategies aligning with the TPB by accentuating attitudes, subjective norms, and perceived behavioural control. Academics expressed uncertainty about their future roles amidst advancing technology, with apprehensions about being replaced by AI and robots balanced by recognition of the irreplaceable human essence in education. The study highlights the challenge of maintaining student engagement amidst pervasive technology use and the evolving role of academics in navigating virtual and physical teaching environments. Despite these challenges, academics acknowledged the positive impact of technology tools like Turnitin on enhancing research integrity and improving academic practices. The study underlines the complex interplay of attitudes, norms, and perceived behavioural control in shaping academics' responses to emerging technologies and their evolving professional identities.

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