International Journal of Scientific Research in Engineering and Management (IJSREM)
Volume: 09 Issue: 01 | Jan - 2025 SJIF Rating: 8.448 ISSN: 2582-3930

Knowledge Generation Through Open Access and Generative Artificial Intelligence

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Abstract - The amount of data generated by scientific knowledge is growing exponentially, much faster than natural intelligence, making it increasingly more challenging for researchers to manage their data. Reputable Generative AI (GenAI) is seen as a crucial instrument to help modern researchers facilitate ethical publications and knowledge production. This study looks at how South African researchers can move the development of ethical knowledge using artificial intelligence by utilizing open access methodologies and practices. GenAI has completely changed the scientific research landscape by providing advanced tools for knowledge generation, data management, and ethical publishing. In South Africa, researchers are using GenAI more and more to handle the complexity of modern research data. The goal of this paper is to demonstrate how functional knowledge can be produced and utilized through AI tools, emphasizing the advantages of open access to scientific data and its moral ramifications. When ethical GenAI and Open Access (OA) are incorporated into South African higher education, the implications for universal access to knowledge are profound. The creation and distribution of scientific knowledge are significantly impacted by OA since it reduces the time needed to share research findings and broadens the pool of potential knowledge recipients (Bernius 2010b).

Key Words: *Open Access, Ethical Knowledge Creation, Artificial intelligence-generated Scientific Content, South Africa, Research Ethics, Open Science, Knowledge Equity*

1. Introduction

Open access (OA), enhanced by generative artificial intelligence (GenAI), can support the regional and international research community in communicating with each other (Bernius 2010b). For the efficient and responsible use of GenAI tools, universities and other higher education (HE) organizations, including academic councils, should establish progressive policies. These recommendations should promote the use of GenAI research methodologies to improve the use, repurposing, sharing and exchange of research results between experts and organizations. According to Raju, Raju, and Claassen (2015), GenAI research can improve the scientific synthesis of research datasets while avoiding unethical research practices, thereby expanding knowledge to address real-world human problems. The socialization, externalization, combination, and internalization (SECI) cycle of knowledge creation states that OA accelerates scientific discovery and dissemination by reducing the time required to create scientific knowledge (Bernius 2010a; Bernius 2010b). The creation and dissemination of scientific knowledge is also strongly influenced by OA, as it shortens the time for exchanging research results and increases the number of possible knowledge recipients (Bernius 2010a). This is particularly important because social education in South Africa (SA) is so diverse.

2. Background

HE institutions in SA are under constant pressure to produce and democratize knowledge, improve educational outcomes and promote social change through the integration of OA and ethical GenAI. To ensure responsible handling, strict regulations must be created and the ethical implications carefully examined. By using these technologies, SA can become a major force in the global knowledge economy and advance much in universal access to knowledge (Bezuidenhout et al. 2017). OA shortens the SECI knowledge-creation cycle and increases the number of potential new knowledge users at epistemological level. In this way, the SECI model complements the body of current scientific knowledge (Bernius 2010). OA can facilitate communication between regional and international research communities (Bernius 2010b).

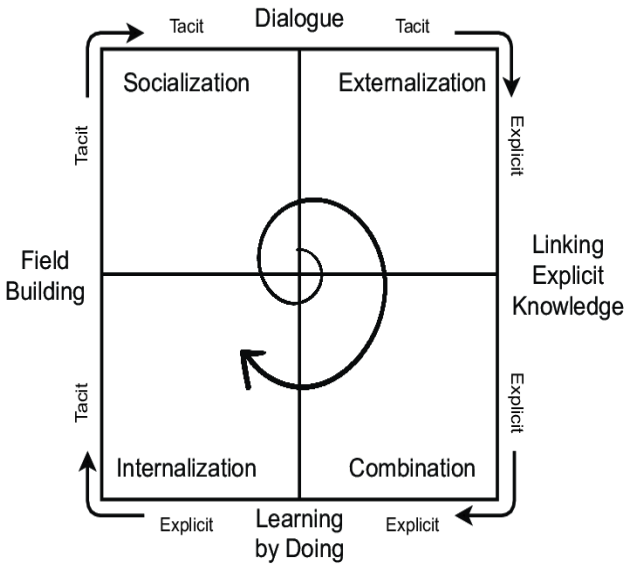

Figure 1: Nonaka and Takeuchi's (1995) SECI model Adapted from Bernius 2010b

Scientific knowledge generation processes include tacit and explicit knowledge generation (Nonaka & Takeuchi 1995) using the SECI model. These authors consider knowledge creation at four levels, as shown in Figure 1: internalization, externalization, combination (all three levels together), and socialization through specific research activities. After analysis, the results are used to illustrate the importance of using OA to generate scientific knowledge (Bezuidenhout et al. 2017). SA, where a significant proportion of the population has limited access to HE and learning opportunities, benefits greatly from rapid knowledge generation for use by new potential users (James 2018). Barnard, Cowan & Müller (2012) opine it is crucial to shorten the time required to exchange scientific research results and expand the pool of potential knowledge recipients in the SA context (Bernius 2010a).

3. Universal access and AI in higher education

The principle of universality emphasizes that the HE system should benefit all people by enriching cultures, improving health and driving innovation. AI tools is important in democratizing access to educational resources, bridging socioeconomic gaps, and promoting collective societal progress. OA ensures that critical scholarly work is freely available, closing the knowledge gap and reducing socioeconomic marginalization (Czerniewicz & Goodier 2014; James 2018). This knowledge democratization is critical to strengthening community agency and revitalizing academic scholarship (Raju et al. 2015) for social change (James 2018). OA can significantly reduce the costs associated with scholarly communication, making it sustainable model for knowledge dissemination (Bernius 2010b). Combining OA and GenAI can significantly improve universal access to knowledge by making high-quality educational resources freely available and providing personalized learning experiences (James 2018; Kruger-Roux & Alberts 2024).

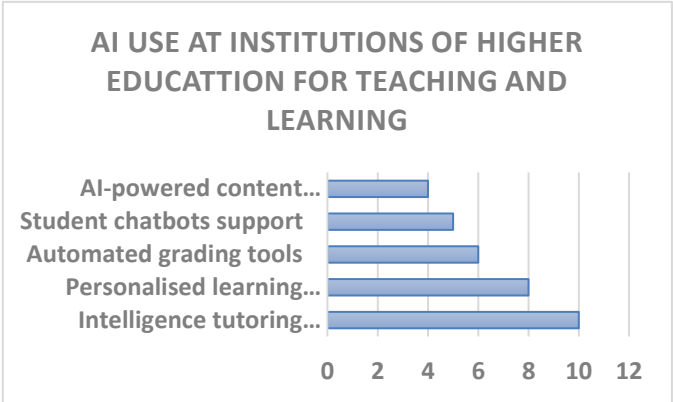

Figure 2: AI usage at institutions of higher education in South Africa

4. Collaboration over competition

Collaboration is essential in equality of knowledge. AI should prioritise inclusive partnerships and enable researchers to address complex global challenges through shared expertise and resources (Bernius 2010b). Programmes like Chance 2 Advance demonstrate the potential of engaged science to bring communities and scientists together and promote mutual knowledge creation and mobilisation for social change (James 2018). OA and GenAI help position SA as a knowledge producer rather than a knowledge consumer and improve the global visibility and impact of African research through a meaningful policy framework for GenAI research in SA (Raju, Adam & Powell 2015). To this end, the SA Department of Science and Innovation introduced regulations that require OA to publish scientific publications and research results in accordance with the FAIR (Wilkinson et al. 2016) principles (Findable, Accessible, Interoperable and Re-usable) (Hey 2022).

These regulations aim to promote a more inclusive and equitable research environment by ensuring research data is usable and accessible (Bezuidenhout et al. 2017). OA practices can be adopted and implemented more effectively when researchers, institutions and policymakers work together. This collaborative strategy (Raju et al. 2015) can address financing, resource and infrastructure issues (Masenya 2021)

5. Inclusivity and equity in AI-driven knowledge creation

Inclusivity ensures equitable access to AI tools, mitigating biases and promoting diverse representation in knowledge creation. AI practices must be designed to benefit all societal groups (Kruger-Roux & Alberts 2024). The Knowledge Equity Declaration advocates for good governance principles and collaborative efforts to achieve the United Nations Sustainable Development Goals (UNSDGs) (Raju et al. 2015; Jain 2021) (SDGs), emphasising open publication and co-designing of research between the Global North and the Global South (Yu, Lu, Long, Chen, Qian & Shah 2024.

6. The role of AI-driven research support tools

AI-driven research support tools challenge and alter approaches to research, and assist in various aspects of scientific knowledge production, but require ethical vigilance from researchers and librarians (Kruger-Roux & Alberts 2024).

Examples of GenAI research tools include Trinka, a sophisticated AI-powered writing assistant aiding with grammar, style and technical writing. Google Scholar is a publicly available web search engine indexing academic literature in a variety of formats and fields, either in full text or with metadata. Elephas makes research easier by condensing lengthy articles, YouTube videos and webpages, and arranging the most important information in one convenient location. ChatGPT is renowned for its adaptability and can provide research questions, summarise articles and enhance writing by examining grammar and style. With pre-made templates and citation management, Typeset Dot Io simplifies academic writing and makes it simpler to comply with journal requirements. QuillBot assists with text paraphrasing and summarising intricate information and guaranteeing lucid, original writing (Barnard et al. 2012).

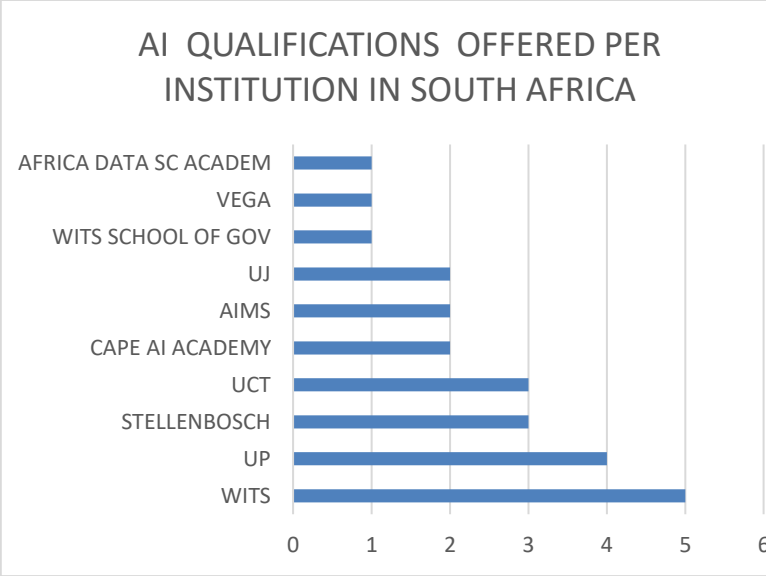

Figure 3: AI qualifications offered at the 12 institutions surveyed

More and more institutions are using AI-driven tools to offer various AI qualifications as indicated in Figure 3. Such AI tools include Consensus AI which is an AI-driven search engine that helps locate the most pertinent studies by classifying research papers according to quality. Scite Dot AI is essential for verifying research work because it offers authentic citations and assesses the reliability of research claims. Scholarcy condenses intricate articles and creates a searchable research library to facilitate information management and retrieval. ProofHub is a research project management tool that facilitates scheduling, task management and collaboration. ResearchRabbit assists with creating a research library, suggests new articles and illustrates the relationships between various studies. Zotero helps create a thorough research project by gathering, organizing, citing and disseminating research materials (Barnard et al. 2012).

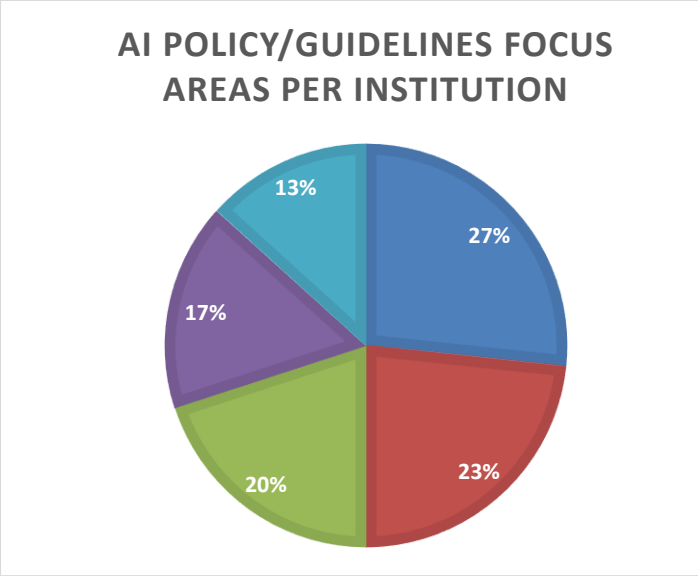

Figure 4: AI policy focus at the selected 12 institutions of HE in SA

The GenAI policies and/or guidelines analysed from the few institutions of higher learning in SA revealed interesting trends, as indicated in Figure 4. The researcher categorised the policy observations into two categories, namely defensive and progressive or advanced approaches. Defensive AI use policies tend to focus on minimising risks, ensuring privacy and maintaining academic integrity. Advanced or progressive AI usage policies concentrate on the potential benefits of AI and promote innovation and integration in research and teaching (Trindade & Oliveira 2024). These GenAI research tools help SA researchers play a critical role in integrating local and global knowledge. GenAI research devices are conduits for new knowledge and facilitate its dissemination within the local research community and beyond (Barnard et al. 2012).

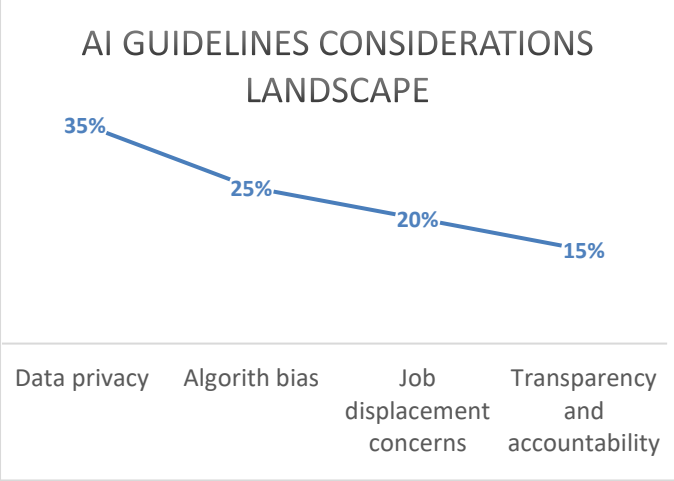

Figure 5: AI guidelines considerations per institution

In terms of specific universities, both the University of Pretoria and the University of Johannesburg have policies that emphasise caution. They focus on minimising the risks associated with AI use, such as data breaches and ethical concerns. These guidelines were adopted in 2024, indicating that there has been a recent focus on addressing these issues.

The University of Cape Town (UCT) and the University of the Witwatersrand (Wits) are taking a more progressive approach and promoting the integration of AI into research and teaching. Their guidelines highlight the potential benefits of AI, such as improving research capacity and improving educational outcomes. UCT's guidelines were approved in 2023, while Wits's were approved in 2024, showing a trend towards the adoption of AI in science. North-West University, University of KwaZulu-Natal, University of the Free State and Rhodes University do not currently have specific guidelines for the use of GenAI tools, which may indicate a gap in addressing the ethical and practical implications of AI in these institutions.

7. Sustainability and ethical considerations of generative AI practices

The scientific knowledge gained using GenAI research must be saved and preserved for future use. Institutional repositories (IRs) play a special role in managing, preserving and disseminating scientific knowledge. These repositories improve the visibility and accessibility of research results and promote collaboration and knowledge sharing among researchers. For this reason, universities and other science institutions should prioritise establishing funding supporting the preservation of scientific knowledge datasets to support and sustain GenAI research (Mthembu & Mbatha 2022; Kodua-Ntim 2023).

The use of GenAI in HE raises ethical issues such as privacy, algorithmic bias and the impact on critical thinking (Yu et al. 2024). Addressing these concerns is critical to responsible and inclusive knowledge sharing. SA universities need comprehensive policies that balance the benefits of GenAI with the risks such as plagiarism and academic misconduct. Effective policies should recognise the potential of AI, include stakeholder participation and be regularly updated to keep pace with technological advances (Kruger-Roux & Alberts 2024).

To ensure the effectiveness of OA implementation within the university, such GenAI policies and the process of

scientific knowledge generation should be consistent with open science policies and frameworks. This involves bringing national GenAI regulations into line with broader international standards (Masenya 2021).

8. Benefits of generative artificial intelligence for open access

GenAI offers opportunities for personalised learning support and innovative research methods, which can expand access to education and improve learning outcomes (Kruger-Roux & Alberts 2024). OA and GenAI contribute to positioning SA as a knowledge producer rather than a consumer, enhancing the global visibility and impact of African research (Raju et al. 2015).

The integration of OA and ethical GenAI in SA HE holds the promise of democratising knowledge, enhancing educational outcomes and fostering social change (Trindade & Oliveira 2024). However, it requires careful consideration of ethical implications and the development of robust policies to ensure responsible use. By leveraging these technologies, SA can make significant strides towards universal access to knowledge and become a leading player in the global knowledge economy.

OA facilitates faster dissemination of research findings, allowing more rapid scientific advancements and broader access to new knowledge (Wouters et al. 2007; Kruger-Roux & Alberts 2024).

By removing access barriers, OA promotes collaboration among researchers from different regions and disciplines, fostering interdisciplinary studies and deeper investigations (Kruger-Roux & Alberts 2024). OA ensures that scientific knowledge is accessible to a wider audience, including researchers, practitioners and the public, thus democratising knowledge and supporting educational and societal development (De Oliveira-Costa & Anna 2019).

9. Algorithms of AI-driven tools

AI-driven tools use algorithms that significantly contribute to the creation of scientific knowledge and the promotion of OA. These tools enhance the efficiency and scope of scientific research in several ways. AI algorithms can process vast amounts of data quickly, generating new hypotheses and theories, which speeds up the scientific discovery process (Haroon et al. 2020). They can also structure large volumes of scientific knowledge, making it easier to identify interesting and testable hypotheses (Trindade & Oliveira 2024).

AI tools can analyse complex datasets (Hey 2022), which is crucial for fields like medical research and psychological science, leading to early detection of conditions and identification of treatments (Bartlett et al. 2023; Park et al. 2024). There is also evidence from literature (Trindade & Oliveira 2024) indicating that GenAI research improves accessibility of published research outcomes. AI technologies, such as those used in the Microsoft Academic project, facilitate the discovery, ranking and distribution of research articles, data and software, making them more accessible to a broader audience (Wang 2019).

Additionally, these AI algorithms also support open science through the promotion of research transparency and enabling the dissemination of research findings to all potential research users at no cost (Haroon et al. 2020). This is achieved through advanced discovery and indexing technologies (Trindade & Oliveira 2024) that make scientific information more discoverable and accessible (Wang 2019; Baykoucheva 2021).

Haroon et al. (2020) and Hey (2022) use GenAI algorithms, which pose several limitations and challenges that can hinder scientific knowledge creation, impeding OA through citation pollution or misinformation. Firstly, GenAI tools can introduce biases in the data they process, which can affect the integrity and reliability of scientific research. This is a significant concern, as biased data can lead to misleading conclusions (James 2018). Secondly, most GenAI models are not fully open, with information technology providers often withholding information about training datasets and fine-tuning processes. This lack of transparency can prevent scientific scrutiny and regulatory oversight, limiting the openness of these tools (Huang et al. 2021). Thirdly, the use of GenAI raises ethical issues, such as the potential for plagiarism, intellectual property disputes and the dissemination of biased information.

These concerns require careful consideration and regulation to ensure the responsible use of AI in scientific research (James 2018; Evenstein Sigalov, Cohen & Nachmias 2024). Finally, research based entirely on proprietary AI platforms (Trindade & Oliveira 2024) may limit the flexibility and adaptability of research tools, potentially leading to obsolescence and limiting the open

dissemination of scientific knowledge (Kodua-Ntim & Fombad 2024). An example of this is information that is only available from licensed databases and may limit the availability of data or information that must be purchased through subscription licences. Despite the limitations mentioned, GenAI algorithms can accelerate hypothesis generation to create scientific knowledge (Bartlett et al. 2023; Park et al. 2024). The GenAI algorithms present potential data bias and reliability issues (James 2018; Kodua-Ntim & Fombad 2024). The paradox is that GenAI is seen as supporting open science by promoting transparency and dissemination of research results (Martinez-Vargas, Walker & Mkwananzi 2020; Kruger-Roux & Alberts 2024). The main risk associated with GenAI is reliance on proprietary platforms to create scientific knowledge, which limits researchers' flexibility (Evenstein Sigalov et al. 2024).

However, ethical concerns and the potential for biased information continue to pose a significant risk in collecting and disseminating research data via the GenAI algorithms (James 2018; Evenstein Sigalov et al. 2024). In addition, the algorithms make scientific knowledge accessible to a wide range of researchers and improve the discovery and dissemination of research results (Martinez-Vargas et al. 2020). GenAI research is affected by transparency problems when training data and model processes (Huang et al. 2021). In essence, AI-driven tools offer significant benefits for scientific knowledge creation and OA. Addressing their limitations and ethical concerns is crucial to fully exploit their potential to advance science. The algorithms also improve data analysis of complex data sets (Hey 2022; Ukeje et al. 2024).

10. Research methodology

10.1 Integrative literature review

This study used an integrative literature review to synthesise both qualitative and quantitative studies and provide a comprehensive understanding of the impact of GenAI and OA on the creation and dissemination of scientific knowledge in SA. This approach allows for integration of diverse perspectives and data sources, creation of a broad theoretical framework and identification of important trends and gaps in the literature (Gooden 2024).

10.2 Research design and data collection

The study design was a comprehensive literature search. The researcher conducted a comprehensive search for relevant studies using Scopus, Web of Science and ProQuest Central databases. The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) was used as a search strategy to ensure a structured and reproducible process for identifying and selecting studies.

10.3 Data analysis

The researcher used the qualitative systematic literature to identify initial data patterns, which were labelled through open coding. Overarching themes were refined, integrated for coherence, defined, reported and contextualized with the research question using the empirical studies from the existing literature. The analysis was robust, according to generally accepted principles of scientific knowledge creation using OA and GenAI research approaches (Lim & Kumar 2024).

11. Findings

11.1 Accelerated knowledge creation and enhanced accessibility

OA bridges the gap between local and international research communities and makes scientific knowledge more accessible to a wider audience.

11.2 Ethical considerations

Integrating GenAI requires solid ethical guidelines to ensure responsible use and avoid bias in knowledge generation.

11.3 Collaboration and inclusivity

Effective OA and GenAI implementation requires cooperation between researchers, institutions and policymakers to advance equity and inclusivity in knowledge creation.

11.4 Role of AI-driven research support tools

AI-driven tools like Trinka, Google Scholar and ChatGPT improve research efficiency, but require ethical vigilance to avoid bias and ensure data privacy.

11.5 Sustainability and ethical considerations

IRs play a critical role in preserving scientific knowledge, and comprehensive policies are needed to deliberate on the benefits and risks of GenAI.

12. Discussion

12.1 Impact on higher education

Integrating OA and GenAI into SA HE has the potential to democratise knowledge, improve educational outcomes and promote social change.

12.2 Policy implications

Developing progressive policies and guidelines is crucial for the responsible use of GenAI tools to ensure they benefit all groups in society and contribute to the UNSDGs.

12.3 Challenges and opportunities

While OA and GenAI offer numerous benefits, challenges such as funding, infrastructure and ethical considerations must be addressed to maximise their potential.

12.4 Algorithms of AI-driven tools

AI algorithms improve scientific research efficiency, but they also present risks like data bias and lack of transparency, which must be controlled by regulatory approval and ethical standards.

13. Recommendations

13.1 Develop robust ethical guidelines

Comprehensive ethical guidelines should be established for the use of GenAI in scientific research to mitigate biases and ensure responsible use.

13.2 Promote collaboration

Collaboration between local and international research communities should be encouraged to enhance knowledge exchange and bridge the knowledge divide.

13.3 Enhance accessibility

Policies that promote OA should be implemented to make scientific knowledge more accessible and reduce socio-economic marginalisation.

13.4 Invest in infrastructure

Resources should be allocated to improve the infrastructure required for effective implementation of OA and GenAI in HE institutions.

13.5 Foster inclusivity

It should be ensured that AI-driven knowledge-creation practices are inclusive and equitable, benefiting all societal groups and promoting diverse representation.

13.6 Address ethical concerns

Regularly update policies to address ethical concerns related to data privacy, algorithmic bias and the impact on critical thinking.

14. Conclusions

Integrating GenAI and OA into SA HE offers a transformative opportunity to democratise knowledge, increase research efficiency and promote social change. By using these technologies, SA can bridge the gap between local and global research communities and make scientific knowledge more accessible and inclusive. However, this integration requires sound ethical guidelines, collaborative efforts and significant infrastructure investments to address the challenges and maximise benefits. These findings highlight the importance of developing comprehensive policies that balance the potential of GenAI with the need for responsible and equitable knowledge-creation practices. Through these efforts, SA can position itself as a leading country in the global knowledge economy, contribute to the UNSDGs and promote universal access to education and research.

References

Barnard, H., Cowan, R. and Müller, M. 2012. Global excellence at the expense of local diffusion, or a bridge between two worlds? Research in science and technology in the developing world. *Research Policy*, 41(4), pp. 756-769.

Bartlett, L.K., Pirrone, A., Javed, N. and Gobet, F. 2023. Computational scientific discovery in psychology. *Perspectives on Psychological Science*, 18(1), pp. 178-189.

Baykoucheva, S. 2021. *Driving science information discovery in the digital age*. Chandos Publishing.

Bernius, S. 2010a. Speeding Up the Spiral: Analysis of the effects of open access on scientific knowledge creation. *ECIS 2010 Proceedings*, 155.
Available: http://aisel.aisnet.org/ecis2010/155 (Accessed 28 November 2024).

Bernius, S. 2010b. The impact of open access on the management of scientific knowledge. *Online Information Review*, 34(4), pp. 583-603.

Bezuidenhout, L., Kelly, A.H., Leonelli, S. and Rappert, B., 2017. '$100 is not much to you': open science and neglected accessibilities for scientific research in Africa. *Critical Public Health*, 27(1), pp. 39-49.

Czerniewicz, L. and Goodier, S. 2014. Open access in South Africa: A case study and reflections. *South African Journal of Science*, 110(9-10), pp. 01-09.

De Oliveira-Costa, M.E. and Anna, J.S. 2019. Open access and distance education: New configurations for the democratization of knowledge. *Ciencia Da Informacao*, 48(3), pp. 536-546.

Evenstein Sigalov, S., Cohen, A. and Nachmias, R. 2024. Transforming higher education: A decade of integrating Wikipedia and Wikidata for literacy enhancement and social impact. *Journal of Computers in Education*, pp. 1-43.

Gooden, A. 2024. A pathway to strengthening open science: comments on the draft South African Ethics in Health Research Guidelines. *Frontiers in Pharmacology*, 15, p. 1304950.

Haroon, S.S., Viswanathan, A., Alyamkin, S. and Shenoy, R. 2020. Acceleration of 4IR driven digital transformation through open source: Methods and parallel industries knowledge reapplication in the field. In *Offshore Technology Conference* (p. D041S055R004). OTC.

Hey, T. 2022. Open science and big data in South Africa. *Frontiers in Research Metrics and Analytics*, 7, p. 982435.

Huang, C.K., Wilson, K., Neylon, C., Ozaygen, A., Montgomery, L. and Hosking, R., 2021. Mapping open knowledge institutions: an exploratory analysis of Australian universities. *PeerJ*, 9, p. e11391. doi: 10.7717/peerj.11391.

Jain, P. 2021. Open access as a platform for sustainable development: Prospects and challenges in Africa. *Open access implications for sustainable social, political, and economic development*, pp. 1-23.

James, G. 2018. Releasing higher education from its elitist captivity: The change agency of Unisa's Chance 2 Advance program. *HTS: Theological Studies*, 74(3), pp. 1-10.

Kodua-Ntim, K. 2023. Narrative review on open access institutional repositories and knowledge sharing in South Africa. *Journal of the Association for Information Science and Technology*, 74(9), pp.1118-1123.

Kodua-Ntim, K. and Fombad, M. 2024. Challenges and strategies for open access in South Africa: A knowledge management approach. *Information Development*, p. 02666669241257188.

Kruger-Roux, H. and Alberts, R., 2024. Generative artificial intelligence policy for academic literacy in South African Higher Education. In *AI Approaches to Literacy in Higher Education* (pp. 1-22). IGI Global.

Lim, W.M. and Kumar, S., 2024. Guidelines for interpreting the results of bibliometric analysis: A sensemaking approach. *Global Business and Organizational Excellence*, *43*(2), pp.17-26.

Martinez-Vargas, C., Walker, M. and Mkwananzi, F. 2020. Access to higher education in South Africa: Expanding capabilities in and through an undergraduate photovoice project. *Educational Action Research*, 28(3), pp. 427-442.

Masenya, T.M., 2021. Adoption of knowledge-sharing strategies and its determinants in higher education institutions in South Africa. In Enhancing academic research and higher education with knowledge management principles (pp. 177-197). IGI Global.

Mthembu, M. and Mbatha, L.S. 2022. Supporting data preservation through institutional repositories of the academic libraries in South Africa: A case study of three academic libraries. In *Innovative technologies for enhancing knowledge access in academic libraries* (pp. 176-195). IGI Global.

Nonaka, I. and Takeuchi, H. 1995. *The knowledge-creating company: How Japanese companies*

create the dynamics of innovation. Oxford University Press: New York.

Park, Y.J., Kaplan, D., Ren, Z., Hsu, C.W., Li, C., Xu, H., Li, S. and Li, J. 2024. Can ChatGPT be used to generate scientific hypotheses? *Journal of Materiomics*, 10(3), pp. 578-584.

Raju, R., Adam, A. and Powell, C. 2015. Promoting open scholarship in Africa: Benefits and best library practices. *Library Trends*, 64(1), pp. 136-160.

Raju, R., Raju, J. and Claassen, J. 2015. Open scholarship practices reshaping South Africa's scholarly publishing roadmap. *Publications*, 3(4), pp. 263-284.

Trindade, A.S.C.E.D. and Oliveira, H.P.C.D. 2024. Generative artificial intelligence (AI) and information literacy: Informational capabilities required for the use of generative AI tools for information requirements of an academic-scientific nature. *Perspectivas em Ciência da Informação*, 29, pp. e-47485.

Ukeje, I.O., Elom, C.O., Ayanwale, M.A., Umoke, C.C. and Nwangbo, S.O. 2024. Exploring an innovative educational governance framework: Leveraging artificial intelligence in a stakeholder-driven 'Open Campus Model' in South East Nigerian Universities. *International Journal of Learning, Teaching and Educational Research*, 23(6), pp. 416-440.

Wang, K. 2019. Opportunities in open science with AI. *Frontiers in Big Data*, *2*, p. 26.

Wilkinson, M.D., Dumontier, M., Aalbersberg, I. et al. 2016. The FAIR Guiding Principles for scientific data management and stewardship. *Scientific Data*, 3(1), pp. 1-9.

Wouters, P., Hine, C., Foot, K.A., Schneider, S.M., Arunachalam, S. and Sharif, R. 2007. Promise and practice of open access to e-science. *Past, present and future of research in the information society*, pp. 159-171.

Yu, P., Lu, S., Long, Z., Chen, Y., Qian, J. and Shah, Z.A. 2024. Exploring ethical considerations in utilizing Generative AI for global knowledge sharing in higher education. In *Facilitating global collaboration and knowledge sharing in higher education with Generative AI* (pp. 1-27). IGI Global.