AI Report on Southern Africa

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Executive Summary

Artificial Intelligence (AI) has rapidly become a constant in most people's lives through its application in commerce, education, health, public service delivery, communications, governance, agriculture, and manufacturing.

While most AI tools originated in the United States, Europe, and China, developing and adopting AI is slow in Southern Africa. Yet, AI tools have the potential to address some of the most pressing issues in Africa by promoting economic growth, enhancing agricultural systems, enabling higher-quality education, and addressing health and climate challenges, thanks to the increasing availability of computational power, improved connectivity, and data.

Applications of AI in Southern Africa are in their early stages. Many pilot projects and technology-driven business models demonstrate the potential for AI to benefit underserved populations, better connect local communities and international technology firms, and improve lives.

However, as with other emerging technologies, from cryptocurrency to 5G, AI presents challenges and new opportunities, especially as it transitions from Western settings to African contexts.

Broadly speaking, these challenges fall into three categories. The first is the deficiencies in AI readiness, i.e., technology capacity and policymaking faced by African countries. The second set of challenges and the focus of this paper are deficiencies inherent to the "architecture" of AI systems and how they are developed.

The third challenge will include the misuse of AI. For the developing world, AI is already contributing in many ways: to target humanitarian relief, address climate impacts, and support the Sustainable Development Goals (SDGs).

Yet in Southern Africa, most countries lack comprehensive policy frameworks to incentivise responsible AI, regulate AI-driven business models, or effectively promote the creation and capture of high-quality African data. This research seeks to provide evidence-based findings on the extent of the uptake of AI in Southern Africa, AI readiness, and the role of AI in aiding information disorders during elections.

Southern Africa is a large region with 15 countries and a diverse cultural, economic, and political environment. As a result, the adoption of AI may differ from country to country. Africa has historically been at the rear end of industrial revolutions, playing catch-up. With the correct mix of policy and drive, the region can leapfrog and catch up with its peers in the West.

Areas of Focus

Southern Africa will be the primary focus area of the study, which will be broken up into three distinct sections.

- Section A: AI Readiness

- Section B: AI use and deployment

- Section C: - AI and Disinformation: A Zimbabwean Elections Perspective

Methodology

1. Literature Review

The first stage of the research was a deep dive into the application, evaluation, and policy landscape of AI, including academic, legislative, corporate, and academic documents from Southern African contexts. The literature review revealed that there is significant potential for the adoption of AI in Africa, particularly in sectors such as agriculture, healthcare, and education.

However, it also highlighted the need for tailored policies and regulations that address the unique challenges and opportunities faced by the region. Additionally, the review emphasised the importance of collaboration between governments, academia, and the private sector to ensure a holistic and inclusive approach to AI implementation in Africa. Overall, the findings from the literature review provide a solid foundation for the subsequent stages of the research, which will involve data collection and analysis to further explore the potential impact of AI in Southern Africa.

2. Stakeholder focus group meetings

The second part of the research will include three focus group meetings in Harare, Bulawayo in Zimbabwe and Johannesburg in South Africa, with AI experts, including lawyers, academics, civic society leaders, activists, and media practitioners. These focus group meetings aim to gather insights and perspectives from a diverse range of stakeholders knowledgeable about AI and its potential impact in Southern Africa. The research intends to capture a comprehensive understanding of the opportunities and challenges associated with AI implementation in the region by engaging with AI experts from different fields, such as law, academia, and media.

The focus group discussions took place in Zimbabwe and South Africa with extensive input from experts representing local universities and those from Namibia and Botswana.

AI: Definitions (according to Stanford University)[1]

Intelligence might be defined as the ability to learn and perform suitable techniques to solve problems and achieve goals appropriate to the context in an uncertain, ever-varying world. A fully pre-programmed factory robot is flexible, accurate, and consistent, but not intelligent.

Artificial Intelligence (AI), a term coined by emeritus Stanford Professor John McCarthy in 1955, was defined by him as "the science and engineering of making intelligent machines". Humans have done much research towards programming machines to behave in a clever way, like playing chess, but today, we emphasise machines that can learn, at least somewhat imitate human intelligence.

Machine Learning (ML) is the part of AI that studies how computer agents can improve their perception, knowledge, thinking, or actions based on experience or data. For this, ML draws from computer science, statistics, psychology, neuroscience, economics, and control theory.

Narrow AI: Narrow AI is an intelligent system for one thing, e.g., speech or facial recognition. Human-level AI, or Artificial General Intelligence (AGI), seeks broadly intelligent, context-aware machines. It is needed for effective social chatbots or human-robot interaction, which is currently the only type of AI that exists in the real world. It can complete only discrete tasks that computer scientists have programmed it to do, such as playing a specified song on Spotify after "hearing" a voice command (requiring the AI-driven device to decode a series of syllables) through a virtual assistant such as Alexa or Siri.

General AI is what many people envision when they think of AI—machines that exhibit real human intelligence and can feel, innovate, or emote, like HAL 9000 from the Space Odyssey series or Samantha from the film Her. Outside such fictional realms, scientists have yet to code human emotions, awareness, and consciousness into machines.

Super AI is a step above general AI and is defined as AI that surpasses human capacity. Again, super AI is a theoretical concept, yet to be achieved.

Deep Learning uses large multi-layer (artificial) neural networks that compute with continuous (real number) representations, a little like the hierarchically organised neurons in human brains. It is currently the most successful ML approach, usable for all types of ML, with better generalisation from small data and better scaling to big data and compute budgets. An algorithm lists the precise steps to take, such as a person writes in a computer program. AI systems contain algorithms, but often just for a few parts, like a learning or reward calculation method. Much of their behavior emerges via learning from data or experience, a sea change in system design that Stanford alumnus Andrej Karpathy dubbed Software 2.0.

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1   AI definitions https://hai.stanford.edu/sites/default/files/2020-09/AI-Definitions-HAI.pdf

Section A: AI readiness in the region:

The study will show that AI readiness remains a formidable challenge in most Southern African countries due to insufficient AI-supporting facilities and infrastructure. The availability of reliable electricity, restricted internet access, and sufficient computational power are essential prerequisites for the uptake of AI.

Several African nations continue to face challenges in these domains, necessitating significant improvements. It is imperative to acknowledge that the preparedness of a nation for AI is not just contingent upon the procurement and implementation of novel technological advancements. The preparatory measures required for the revolutionary impact of AI often encompass various crucial domains.

This entails the acquisition of new skills or the recruitment of individuals possessing key abilities, as well as the refinement of collaboration strategies. Additionally, the development of requisite data and technical infrastructure is crucial for the effective deployment of these advanced technologies. Governments and organisations must establish key pillars of AI preparedness to foster an environment that promotes and facilitates the growth of AI technology.

Fundamental Pillars for AI Readiness

According to the analysis from Oxford Insights [2], Southern African countries, except for South Africa, have a low ranking on the government AI readiness index. The Government AI Readiness Index 2022 evaluates and ranks 181 nations according to three fundamental pillars:

- The Technology Sector Pillar
- The Data and Infrastructure Pillar
- The Governance Pillar:

Overall, Sub-Saharan Africa's AI readiness average score is 29.38, below the global average of 44.61. Despite challenges, many African nations are taking steps to push data protection, which is important for AI proliferation. The African Union's role in collaboration and generating model AI and data protection legislation is also emphasised. Although AI funding has recently decreased significantly in Africa, the technology holds the potential to boost the African economy by $1.5 trillion by 2030.

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2   Government AI Readiness Index https://oxfordinsights.com/ai-readiness/ai-readiness-index/

The Technology Sector Pillar:

Most AI tools and applications run on the internet; one only requires a good Internet connection and browser to access the AI tools. However, the technology sector of a country plays a crucial role in implementing AI strategies, as every country depends on a good supply of AI tools from its technology sector, which needs to be competitive and dynamic in size.

This sector should have high innovation capacity, underpinned by a business environment that supports entrepreneurship and a good flow of research and development (R&D) spending. In addition, the skills and education of the people working in this sector are critical as the level and quality of human capital will determine productivity.

Many Southern African countries lack the digital infrastructure to support AI development. For example, Internet penetration within Africa is low and was estimated at 28% in 2022. In Zimbabwe 98 percent of the internet is accessed using mobile phone technology, this was shown in the recent report from the regulator, the Postal and Telecommunications Regulatory Authority of Zimbabwe (POTRAZ).

Technology	Q4 2022	Q1 2023	Variance (%)
3G/HSDPA/LTE	9,720,328	9,726,839	0.1%
Leased Lines	2,667	2,702	1.3%
DSL	104,888	104,982	0.1%
WiMAX	7,821	7,796	-0.3%
CDMA	5767	4,727	-18.0%
VSAT	5,518	6,064	9.9%
Active Fibre Subscriptions	67,961	67,737	-0.3%
Total	9,914,950	9,920,847	0.1%

Figure 1 Extract of the POTRAZ report.

This sore state of internet penetration across the region is due to infrastructure issues

associated with the lack of access to electricity and low investment in internet infrastructure, such as fibre-optic cables, cell towers, and base stations.

According to the World Bank, approximately 100 million Africans living in remote regions lack access to mobile cellular networks, necessitating an investment of at least $100 billion to provide access to this marginalised group of people. Hence, digital infrastructural limitations in Africa affect the adoption and implementation of AI development within the continent. Many parts of the region have no internet connectivity, and most rural areas are far from the electricity grid.

The issues in the region's technology pillar can be addressed as we advance technology through satellite internet and solar energy. During the Harare, Bulawayo, and Johannesburg meetings, participants observed that most people in southern Africa use their mobile phones for internet access. Most devices have low memory, and some are feature phones with access to only WhatsApp.

Technological advancement necessitates the acquisition of technical skills. Business and IT leaders in Africa agree that to achieve the adoption and use of AI technologies, stakeholders' knowledge bases must be changed or improved (Muzikandaba 2019)[3].

This can be achieved through targeted training programmes and educational initiatives focusing on building the region's technical skills. Additionally, investment in infrastructure development, such as expanding broadband coverage and improving access to affordable smartphones, will also play a crucial role in enabling the widespread adoption of advanced technologies like AI in southern Africa.

One of the key essential competencies in the Fourth Industrial Revolution (4IR) era is programming skills. Moreover, Bianco (2021) stated that a significant obstacle to the acceptance of AI, a cutting-edge technology, is the need for more expertise. Every project necessitates the appropriate skills to achieve success, and artificial intelligence is no exception. Artificial intelligence (AI) abilities are among the most challenging skills to acquire, and there is unquestionably an imbalance between the demand and supply of these skills in the market.

As a new and rapidly developing innovation, AI will enhance current job opportunities while generating new ones, requiring individuals to acquire new skill sets. The participants at the Johannesburg meeting agreed that to bridge this skills gap, it is crucial for educational institutions and organisations to offer comprehensive training programmes and courses on AI. Additionally, governments and businesses should collaborate to create initiatives that promote AI skills development, such as funding research projects and providing incentives for individuals to pursue careers in this field.

By investing in the development of AI expertise, we can ensure a smooth transition into an AI-driven future and maximise the potential benefits it offers. Based on a poll conducted by Gartner Research Circle, 56% of respondents consider acquiring new skills crucial for successfully performing both current and newly created professions.

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3   Artificial Intelligence in Africa: Emerging Challenges https://link.springer.com/chapter/10.1007/978-3-031-08215-3_5

When creating and applying an AI system, it is necessary to integrate expert knowledge. Although IT experts, such as software developers and engineers, are responsible for the design and development of AI applications, they are not the main users of AI. The African market has a significant challenge of a shortage of professionals who are equipped with the necessary skills for AI.

AI development incorporates machine learning and Natural Language Processing (NLP) techniques that use complicated algorithms; therefore programming abilities are required. The question to be asked is: How can AI be programmed to perform accurate operations? As a result, ICT proficiency and programming skills are among the necessary skills for the efficient adoption and usage of AI applications (Komarova et al. 2019).

The Data and Infrastructure Pillar:

A country's infrastructure and data capacity go a long way in determining its AI readiness. A strong and reliable data infrastructure is crucial for AI development as it provides the necessary foundation for collecting, storing, and analysing large amounts of data. Additionally, a country's ability to effectively manage and utilise its data resources is essential for maximising the potential of AI technologies.

Therefore, investing in robust data infrastructure and building data capacity are key factors in ensuring successful AI adoption and usage. To prevent bias and error, AI tools require an abundance of high-quality data that should represent all citizens in each country (data representativeness). As a result, to harness this data's potential, the infrastructure required to fuel AI tools and distribute them to the public must be established.

There is a substantial requirement for increased high-quality data to advance AI development in Southern Africa. The development of regional data ecosystems is still in its nascent phase. Several Southern African nations require more data collection mechanisms and improved data governance frameworks, leading to enhanced data quality. AI systems are constructed using complex algorithms, and data is utilised to train these algorithms. Africa is now facing a scarcity of data, and most of the available data must honestly represent the continent's reality.

Concerns about data scarcity and the potential that many algorithms are not appropriately adapted to the culture, language, and contexts of local inhabitants were voiced by participants at the Johannesburg meeting.

At the Johannesburg meeting, the Google AI assistant was tested to evaluate its effectiveness in understanding and responding to African communities' unique needs and nuances. We asked if the Google AI assistant could speak Shona (one of Zimbabwe's main languages). The Google AI assistant response is shown in the screenshot below.

Yes, I can speak Shona. I can translate between Shona and English, and I can also generate text in Shona, such as poems, code, scripts, musical pieces, emails, and letters.

Here are some examples of Shona phrases:

- Hello: Hesi
- Goodbye: Taurai zvakanaka
- Thank you: Waita zvako
- You're welcome: Hausi kuita
- How are you?: Muri sei?
- I am fine: Ndiri zvakanaka
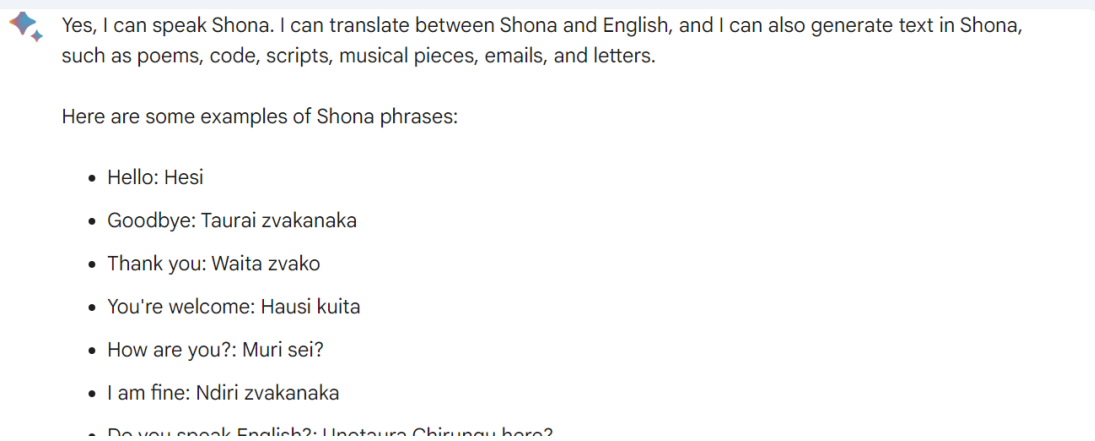- Do you speak English?: Unotaura Chirungu here?

Figure 2 Extract of bard AI interaction

Despite claiming to be able to speak Shona, the Shona speakers in the room were quick to point out that the translation provided by the Google AI assistant needed to be more accurate and accurately capture the nuances and intricacies of the Shona language.

For example, the Shona phrase 'taurai zvakanaka' 'does not mean goodbye; 'house kuita' is not Shona for you are welcome. We did more tests using other popular Southern African languages, and the results were similar - the translations needed to be more consistently accurate and capture the true meanings of the phrases.

Since AI can only function with data, more high-quality data is needed. The efficacy of machine learning techniques is contingent upon the quality of the data they are provided with. AI algorithms may incorporate biases present in the data or the biases of the individual who developed the algorithm, leading to the propagation of societal inequalities.

In Africa, it is particularly crucial to be cautious about adopting machine learning algorithms that have been developed and taught outside of the continent. These algorithms may not accurately represent or have biases against significant portions of the African population (Kathryn Hume 2017). To facilitate the adoption of AI solutions by researchers, developers, and consumers, it is necessary to have a more extensive, comprehensive, and easily available collection of data. In emerging economies, specifically in regions characterised by instability or conflict, the availability and accessibility of accurate data are often limited (Ajadi 2020).

If the training data for an AI system does not accurately represent the demographic factors of the intended population, the AI is likely to fail in several instances. To deliver accurate responses to users, a Chatbot system relies on extensive knowledge of its operations. If the user requests information that is not stored in the system's database, it will be unable to provide a response.

The insufficiency of data in Africa is widely acknowledged within the framework of development, where accurate data serves as crucial benchmarks for measuring progress towards the Sustainable Development Goals (SDGs) and as a fundamental input for advancing contemporary technology.

Journalists at the Bulawayo meeting raised concerns about the threat of algorithmic bias. Having been trained on datasets from Western contexts, which had already demonstrated innate biases, particularly racial prejudices, Bulawayo participants questioned the legitimacy of AI tools in African news situations. How would they deal with the numerous social, economic, and political divisions and other complexities in the African context?

A related concern from lawyers at the Johannesburg meeting was AI systems' accountability and legal culpability. South Africa granted a patent to an AI rather than a human in 2021, prompting ethical concerns about providing AI legal personhood and potentially enabling loopholes for firms and developers to avoid legal and financial liability in cases where AI causes harm.

The Governance Pillar:

According to Oxford Insights, governance is the most crucial pillar because the other pillars become ineffective without a government's interest and ambition to employ AI for revolutionary reasons. The government should have a strategic vision for AI development and management backed by appropriate laws and a focus on ethical issues. Furthermore, it must have a strong internal digital capacity, which includes the skills and practices that allow it to adapt to new technology.

South Africa leads the Southern African region regarding AI readiness and adoption, followed by Botswana and Namibia. South Africa's government has launched a National Artificial Intelligence Strategy to encourage AI innovation and adoption across many sectors. Botswana and Namibia have also made progress in AI adoption, with programmes such as AI for Development and Artificial Intelligence for Sustainable Development Goals, respectively. This entails investing in R&D, establishing enabling rules and regulations, and assuring a competent labour force.

In September 2022, the UNESCO-Southern Africa Sub-Regional Office hosted the SARFAI 2022 Forum on AI in Windhoek, Namibia[4]. Discussions focused on the Ethical Impact and

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4   UNESCO Southern Africa sub-Regional Forum on Artificial Intelligence https://sarfai2022.org/#/home

Readiness Assessment Methodologies in implementing the UNESCO Recommendation.

SARFAI 2022 co-hosts Botswana, Malawi, Mozambique, Namibia, South Africa, Zambia, and Zimbabwe accepted the Windhoek Statement on Artificial Intelligence in Southern Africa, which calls for the development of a Southern African coordination framework for the implementation of the UNESCO recommendations for AI Ethics[5]. These Southern African Development Community (SADC) member states, including Mauritius, agreed to forward the Declaration for discussion and acceptance at the 2023 Joint Meeting of SADC Ministers in Charge of Education and Training and Science, Technology, and Innovation. The most recent UNESCO AI Needs Assessment Survey does not include any reports or statistics about Mauritius.

The table below is a compilation of data extracted from the Oxford Insights AI Government Readiness Index. The table shows the respective regional countries' scoring and rankings out of 181 countries.

	South Africa	Botswana	Namibia	Zambia	Zimbabwe	Lesotho	Mozambique	Malawi
Government	37.82	34.82	32.02	32.32	24.08	25.41	21.90	22.00
Technology	40.22	29.20	28.30	20.33	23.41	20.46	17.82	20.49
Data infrastructure	63.79	52.50	45.80	44.42	44.63	32.75	37.15	32.11
Average rating	47.28	38.84	35.37	32.36	30.71	26.21	25.62	24.87
Ranking	77	110	125	143	151	171	172	174

South Africa

South Africa scored 8/12 on the Center for AI and Digital Policy (CAIDP) 's Artificial Intelligence and Democratic Values index for 2022. There is presently no national artificial intelligence (AI) framework in South Africa. Instead, AI, considered "the bedrock of the Fourth Industrial Revolution (4IR)", is addressed within the framework of an integrated Fourth Industrial Revolution (4IR) strategy that is currently being developed. In 2019, President Cyril Ramaphosa formed the Presidential Commission on the Fourth Industrial Revolution. In January 2020, the 4IR Commission published a diagnostic report that "sets out a vision for charting the way forward for South Africa in the Fourth Industrial Revolution."

The 4IR Commission's role is thus to clearly identify the role of the State, as well as all institutional players and individuals, as equal protagonists in our future story." The 4IR Commission undertook a comparative review of several national policies that address "the nature and implications of the 4IR for their societies." Many of these tactics are focused on artificial intelligence.

On this premise, the 4IR Commission established "8 Dimensions of Strategy": "Preparation

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5   https://sarfai2022.org/assets/documents/Windhoek_Statement_on_Artficial_Intelligence%20in%20Southern%20Africa_English.pdf

Through Experimentation"; "Regulation & Ethics"; "Human Capital Development"; "Global Leadership"; "Technological Clarity & Commitment"; "Private Sector Capabilities"; and "Service Delivery." When it comes to ethics and regulation, the 4IR Commission states that "a focus on Regulation, Ethics, and Cultural aspects of the internet is key, not only to create an enabling policy environment to support private and non-governmental organisations as well as the state but to ensure ethical and transparent use of these new technologies."

Former Department of Communication and Digital Technologies Minister, Khumbudzo Ntshavheni, unveiled the Artificial Intelligence Institute of South Africa on November 30, 2022[6], and AI hubs at the University of Johannesburg and Tshwane University of Technology. In December 2022, the DCDT Minister, along with representatives from these two institutions and the incoming United Nations (UN) Under-Secretary General and Rector of the UN University, explained in an opinion article the AI institute's critical position in the 4IR strategy.

The AI institute is envisioned as "an innovation engine for the public and private sectors in line with the PC4IR." The institute will focus on research and development, as well as implementation capabilities in AI and develop solutions to South African and African challenges. The institute will also address any emergent legal and ethical challenges. Failure to consider and give potential solutions to legal and ethical issues may render gains in AI capabilities and applications useless and ineffective. The AI institution will provide scientific "support for developing, reviewing, and amendment of legislation as envisaged by the PC4IR."

Letlhokwa George Mpedi, Vice-Chancellor and Principal of the University of Johannesburg, has advocated for "legislation that specifically speaks to AI." The 4IR Session Initiation Protocol will relate to existing important strategic development plans, particularly the National Development Plan and the Medium-Term Strategic Framework 2019-2024, which serves as an implementation and monitoring framework for fulfilling the National Development Plan 2030 goals.

One of these aims is to achieve improved information and communication technologies (ICTs) by 2030. Part of the approach is to improve ICTs through a national e-strategy that will put South Africa on the international arena alongside international governance institutions like the International Telecommunications Union (ITU) and the World Trade Organisation (WTO). The goal is to close the digital divide, enhance economic activity, and improve education, health, transportation, and labour sectors while also encouraging the growth of digital technologies as part of the rise of ICTs.

When South Africa took on the role of AU Chairperson in 2020, President Ramaphosa proposed the establishment of an AI Forum inside the African Union to debate how to approach AI "in uniformity."

In 2021, in accordance with the 4IR SIP's objectives, South Africa led the development of Smart Africa's Artificial Intelligence Blueprint for Africa, which is "a precursor for the African continent to become a global player in digital technology state affairs and a huge contribution to positioning Africa within the 4th Industrial Revolution." The goal of the Artificial Intelligence (AI) Blueprint is "to set up the African member states towards developing policies, strategies, and plans that would ensure growth and prosperity within

6   Minister Khumbudzo Ntshavheni launches Artificial Intelligence Institute of South Africa and AI hubs https://www.gov. za/news/media-advisories/government-activities/minister-khumbudzo-ntshavheni-launches-artificial

the digital revolution space."

The AI Blueprint includes a crucial chapter on AI and ethics. It recognises that "there is a need to ensure that ethics are integrated into AI systems to minimise structural discrimination and bias that can arise from biased training data."

Data Privacy and Protection Law

Section 14 of South Africa's 1996 Constitution protects the right to privacy. South Africa's data privacy law, the Privacy of Personal Information Act (POPIA), received Parliament's approval in 2013. However, following the COVID-19 outbreak and the widespread usage of personal data in relation to digital services, POPIA went into effect on July 1, 2020, and became fully enforceable a year later. Also relevant is the Cybercrimes Act, which went into effect on December 1, 2021. Hacking, unlawful interception, interference or acquisition of data, and malicious or destructive communications are all considered criminal offences. The Information Regulator is part of the Global Privacy Assembly (GPA).

A major concern recognised in the 2022 AU Data Policy Framework and highlighted by several notable researchers, such as Emma Ruttkamp-Bloem and Christiaan Viljoen in the South African context, is the lack of representation of a large portion of South African society in data sets. According to a 2022 study, the digital divide is essentially a data barrier that the social divide exacerbates and feeds into, potentially leading to bias and discrimination. Emma Ruttkamp-Bloem and Christiaan Viljoen, expressed concern that at least half of South Africans need a digital imprint in this context. The practice of data-driven AI in a country like South Africa must be distinct from social power dynamics. Policymakers should not underestimate the intrinsic South African challenge to fairness policies.

As mentioned earlier in the report, machine learning is influenced by existing bias in training data and modelling procedures and the socially powered contexts in which predictions are understood, implemented, or acted upon.

Algorithmic Transparency

Additionally, POPIA says that algorithmic transparency is achieved by "appropriate measures must (a) provide an opportunity for a data subject to make representations about a decision" when automated decision-making is the only method used, and "(b) require a responsible party to provide a data subject with sufficient information about the underlying logic of the automated processing of the information relating to him or her in order for him or her to make representations."

South Africa has been a trailblazer in the development of a human-centered approach at regional and worldwide levels. South Africa has played an important role in the development of Smart Africa's Artificial Intelligence Blueprint for Africa, for ensuring that ethics are integrated within AI systems and should reduce systemic discrimination and bias. The 2021 AI Blueprint represents a first step towards implementing a continental AI strategy. Endorsing the 2022 Windhoek Statement on Artificial Intelligence in Southern Africa, South Africa is among the pioneering countries committed to taking tangible actions to implement the UNESCO - Organisation for Economic Co-operation & Development (OECD), South Africa and OECD Recommendations for AI Ethics.

At the national level, South Africa's 4IR Strategy is human-centred and envisions artificial intelligence, but it has yet to be implemented. A dedicated national AI plan would also give a solid foundation for adopting a consistent approach to AI and addressing the ethical and societal issues it brings. South Africa's Data Protection Law addresses automated decision-making and algorithmic transparency among the rights the legislation protects. However, the South African Information Regulator has not yet addressed issues related to the usage of AI systems. Concerns abound about using AI for surveillance and its possible influence on the digital divide. There is also an urgent need to address structural prejudice caused by the lack of a digital footprint and representation for a large portion of South African society.

Zimbabwe

South Africa is the only country in the region on the Center for Artificial Intelligence and Digital Policy (CAIPD) Artificial Intelligence and Democratic Values 2022 report. Zimbabwe will receive a score of 3/12 using the CAIDP's democratic, AI, and democratic values index scoring template. Zimbabwe does not have any laws, regulations, or policies that are specific to AI. However, the government has shown interest in developing AI and has established a National Competitiveness Commission to promote innovation and technological advancement in the country.

Zimbabwe does not have a national AI strategy or policy to guarantee fairness, accountability, and transparency in all AI systems and commits to these principles in developing, procuring, and implementing AI.

Zimbabwe's new ICT policy for the period 2021–2025 in Section 3.9 b states that the Zimbabwe government will provide policy and legal framework for AI in e-learning, e-health, e-business, and all other e-applications across all sectors - political, social, and economic. This suggests that there are plans to establish a policy and legal framework for using artificial intelligence in the country.

The government established the Zimbabwe Centre for High-Performance Computing (ZCHPC) [7] in terms of Section 6 (b) as read with Section 69 of the Manpower Planning and Development Act [Chapter 28:02]. The Statutory Instrument (SI) 168 of 2019 was gazetted, which establishes and governs the ZCHPC operations. The Zimbabwe High-Performance Computing Project was conceived in October 2011 and HPC was identified as one of the key solutions to assisting the nation, region, and beyond in solving challenges associated with climate change, food security, unclean water, poverty, diseases, energy and human capital development. Big Data and Artificial Intelligence, Geospatial, Space, And Earth Sciences are listed as some of the key domains of ZCHPC. Zimbabwe has not publicly endorsed the OECD/ G20 AI principles.

AI Oversight

Currently, there needs to be an independent body or a single responsible entity for AI oversight. The Postal and Telecommunications Regulatory Authority (POTRAZ) is the designated Data Protection Authority.

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7   Zimbabwe Centre for High Performance Computing (ZCHPC) https://zchpc.ac.zw/

Data Privacy & Protection Law

Zimbabwe gazetted its first data protection and cybersecurity legislation, the Cyber and Data Protection Act [Chapter 12:07] (No. 5 of 2021), on the 11th of March 2022. The Act does not specifically mention AI, but it governs data protection, data controllers, and data collection and processing.

The preamble of the Act reads : An Act to provide for data protection with due regard to the Declaration of Rights under the Constitution and the public and national interest; to establish a Cyber Security Centre; a Data Protection Authority and to provide for their functions; to create a technology driven business environment and encourage technological development and the lawful use of technology; to amend sections 162 to 166 of the Criminal Code (Codification and Reform) Act [Chapter 9:23] to provide for investigation and collection of evidence of cybercrime and unauthorised data collection and breaches, and to provide for admissibility of electronic evidence for such offences and to provide for matters connected with or incidental to the foregoing. ENACTED by the Parliament and the President of Zimbabwe.

The Cyber and Data Protection Act in Section 5 designates the Postal and Telecommunications Regulatory Authority (POTRAZ) as the Data Protection Authority.

Human Rights

The Zimbabwean government has signed the Universal Declaration of Human Rights. According to Freedom House, Zimbabwe has a score of 28/100 and is classified as an unfree country. In recent years, there have been reports of human rights abuses such as police brutality, arbitrary arrests and detention, and restrictions on media freedom. The government has also been criticised for its handling of elections and lack of transparency in the electoral process.

The Bill of Rights in the Zimbabwean Constitution enshrines several fundamental rights, such as the rights to peaceful assembly, freedom of expression, and political participation.

However, due to restrictive legislation, rights are not always respected and protected. The Interception of Communications Act (2007) regulates the interception, monitoring, blocking filtering of communications, including telephonic communications, postal telecommunications as well as Internet-based communications.

The Act does not have any oversight mechanisms that prevent over-surveillance and extra-judicial surveillance. Under Section 9 of ICA, ISPs are required to install at their own expense the hardware and software required for the State to carry out surveillance. Using ICA, the State has installed cameras at public places like airports. Later in the report there is a section about face recognition and surveillance in Zimbabwe.

Botswana

Botswana is not yet covered by the CAIDP index; the study used data from the Oxford

Insights AI Readiness Index (AIRI). Botswana is ranked 98th out of 181 countries in the 2022 AIRI survey. The rankings show that Botswana's government AI readiness could be better when compared to other countries in the region. This shows that there is still potential for development in terms of AI adoption and implementation in Botswana's public sector. Botswana can improve its public sector and stay competitive by investing in AI technologies.

An analysis of Botswana's government AIRI by pillar yielded the following average scores: the Government pillar, the Technology sector pillar (26.61), and the Data and Infrastructure pillar (55.05). Notably, the technology sector looks to have the lowest score of the three pillars. The relatively low score suggests that, while there have been some advances in the technology field, there is still opportunity for additional investment and research to fully realise the potential of AI technologies.

Botswana's total government AI readiness might be improved by enhancing technological capabilities, supporting innovation, and encouraging investments in the technology industry. Governance and Ethics Five indications are used to establish whether the appropriate AI rules and ethical frameworks are in place. The first indicator concerns the availability of data protection and privacy regulations. Botswana received a perfect score, which is impressive.

These findings are consistent with statistics released on the United Nations Conference on Trade and Development (UNCTAD) website. Botswana has accelerated the adoption of digitalisation and e-commerce-related regulations, such as the Electronic Communications and Transactions Act (2014), the Electronic Records Act (2014), Customs Act (2018), the Consumer Protection Act (2018), the Cybercrime and Computer Related Crimes Act (2018), Industrial Property Act (2010), the Data Protection Act (2018), and the Competition Act (2018), despite the lack of an AI-specific regulation. Furthermore, the Civil Aviation Authority of Botswana (CAAB) has enacted regulations governing drone operations in the country. Based on these findings, Botswana deserves commendation for establishing basic policies for technology usage and, as a result, responsible AI.

According to the 2022 AIRI results, Botswana sits at position 98 out of 181 countries surveyed globally. The scores indicate that Botswana's government AI readiness could be higher compared to other countries in the region. This suggests that there is room for improvement in terms of adopting and implementing AI technologies in Botswana's public sector. By investing in AI technologies, Botswana can enhance its public sector and keep up with global advancements.

A breakdown of Botswana's government AIRI by pillar revealed that the average scores for each pillar are as follows: the Government pillar, the Technology sector pillar (26.61), and the Data and Infrastructure pillar (55.05). Notably, the technology sector pillar appears to have the lowest score among the three pillars.

The relatively lower score indicates that while there have been some advancements in the technology sector, there remains room for further investment and development to fully harness the potential of AI technologies. Enhancing the technological capabilities, fostering innovation, and encouraging investments in the technology sector could improve Botswana's overall government AI readiness.

Botswana has sped up the adoption of digitalisation and e-commerce laws, including the Customs Act (2018), the Consumer Protection Act (2018), the Cybercrime and Computer Related Crimes Act (2018), the Industrial Property Act (2010), the Data Protection Act (2018), and the Competition Act (2018). This is even though the country does not have a law specifically for AI. Furthermore, the Civil Aviation Authority of Botswana (CAAB) has enacted regulations governing drone operations in the country. Based on these findings, Botswana deserves commendation for establishing basic policies for technology usage and, as a result, responsible AI.

Feedback from the focus group discussions on AI readiness.

- The Johannesburg meeting acknowledged the significant progress made by the South African government in promoting AI policy and establishing legal frameworks.

- The key question is; is Africa ready for the adoption of AI technologies? Should this even be the conversation, seeing as the bulk of the continent is still struggling with internet access, which is key in the use and access to AI technologies? Africa has an opportunity to study and analyse AI before its full adoption to ensure that it is properly and ethically adopted.

- Africa, mainly the SADC region, has diverse cultures and operating contexts; hence, the development or adoption of AI technologies in the region must take these issues into account and ensure that these technologies are relevant, relatable, and contextual.

- Other major concerns raised by the participants were the implications of the adoption of AI on privacy, digital rights, and their potential abuse and use in mass surveillance.

- Information disorders will be on the rise due to the adoption of AI technology in the information space in SADC.

- Another concern raised during the meeting is the biases that AI possesses. Generative AI still contains several biases, particularly negative ones when it refers to Africans.

Looking Ahead: The Way Forward for Southern African Countries

To address the difficulties influencing AI preparedness in Africa, governments in the region must use education to close the skills gap by modifying school curricula to be more technically focused. Integrating AI training models at all levels of school would promote capacity building, talent development, and cross-sector AI projects.

Furthermore, investments in digital infrastructures such as data centres and clouds would contribute to creating a more AI-friendly digital economy. Furthermore, public-private collaborations with tech behemoths and overseas start-ups speed infrastructure development.

Furthermore, collaborating with and investing in local tech startups can help organisations develop the necessary skills and competencies to drive business innovation and AI initiatives. Furthermore, decreasing entrance barriers for IT businesses will ensure that Southern

African countries have strong centres of AI competence.

It is also critical to stress the need for strong data governance in improving public service delivery and output adapted to the demands of Africa's growing population. As a result, developing a strong data collection mechanism to aid in the gathering of trustworthy data, establishing mechanisms to detect and avoid AI bias, and encouraging fairness and transparency will all contribute to changing the existing dynamics in many African countries.

Section B: AI Deployment in the Region

Overall, this study will show that AI use is proliferating in the region, with growing examples of AI applications and innovations, offering significant opportunities for socio-economic development. Significant knowledge and data gaps hinder ethical AI development, regulation, and monitoring. In terms of policy and legislation, many countries have a good legislative basis for ethical AI use. A clear trend exists in producing and adopting reports and laws that cite AI use in the context of the 4th Industrial Revolution.

However, while policy development and the creation of regulatory mechanisms are underway to harness the benefits of AI in service of national development priorities, ethical risks and challenges exist that can exacerbate inequality and social instability if not adequately and timely addressed.

Statista.com data indicates that the AI industry and market size are experiencing growth in Southern Africa. Several factors are contributing to the growth of AI use in the region. The growing accessibility of large datasets is creating greater possibilities for using AI applications, as AI algorithms necessitate significant volumes of data to acquire knowledge and enhance performance.

Furthermore, progress in computational capabilities and cloud computing infrastructure facilitates enhanced and potent processing of artificial intelligence applications.   In addition, the increasing need for automation and optimisation in diverse sectors, including manufacturing, finance, and transportation, is propelling the implementation of AI technologies. The growing utilisation of AI in consumer-oriented applications, such as virtual assistants and chatbots, is broadening the scope of the AI technology market. The increasing investments and collaborations between technology firms, research institutions, and governments are stimulating innovation and propelling growth in the field of AI.
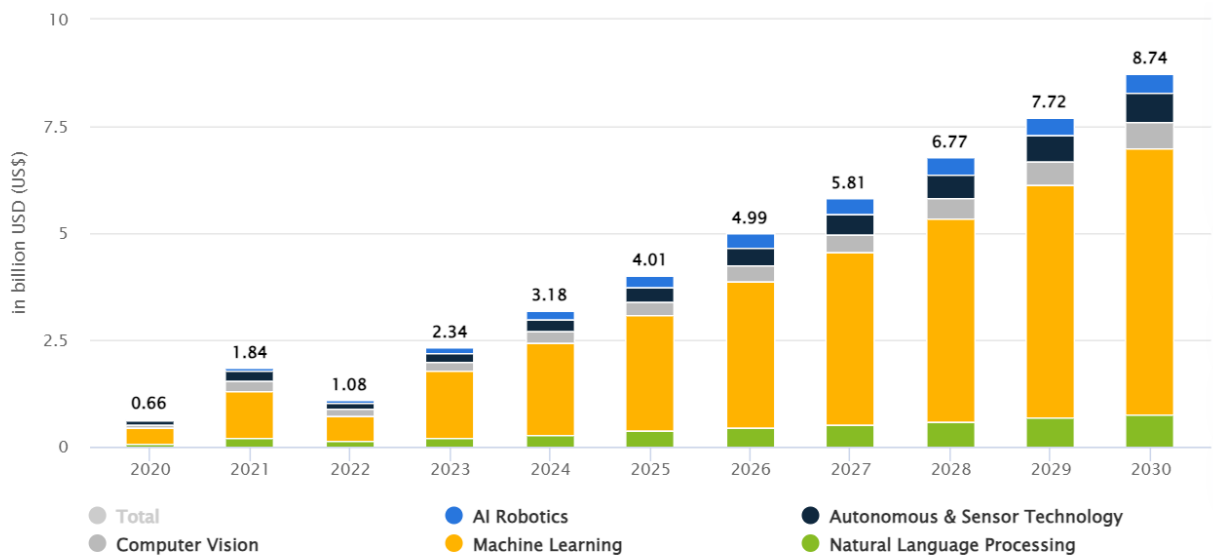
Figure 3 Market size in Southern Africa Source: Statista Market Insights

Statista Market Insight data shown in the graph above is based on data collected from Southern Africa and is structured into six markets based on the technology:

- The Computer Vision market covers applications that enable computers to interpret and understand digital images and video data.

- The Machine Learning market covers the use of algorithms to enable computer systems to learn from data. There is significant growth in data collection and learning in the region.

- The Natural Language Processing market covers applications that enable computers to understand, interpret, and generate human language.

- The Artificial Intelligence Robotics market covers the combination of AI, machine learning, and engineering to create intelligent machines that can perform tasks autonomously.

- The Autonomous & Sensor Technology market covers machines and systems that operate independently by using sensors, AI, and machine learning to respond to changes in their environment.

- The Generative AI market covers artificial intelligence that involves creating models capable of generating new content, such as images, videos, and text, which are indistinguishable from content created by humans. This is the most widely used but not yet a significant market in monetary value.
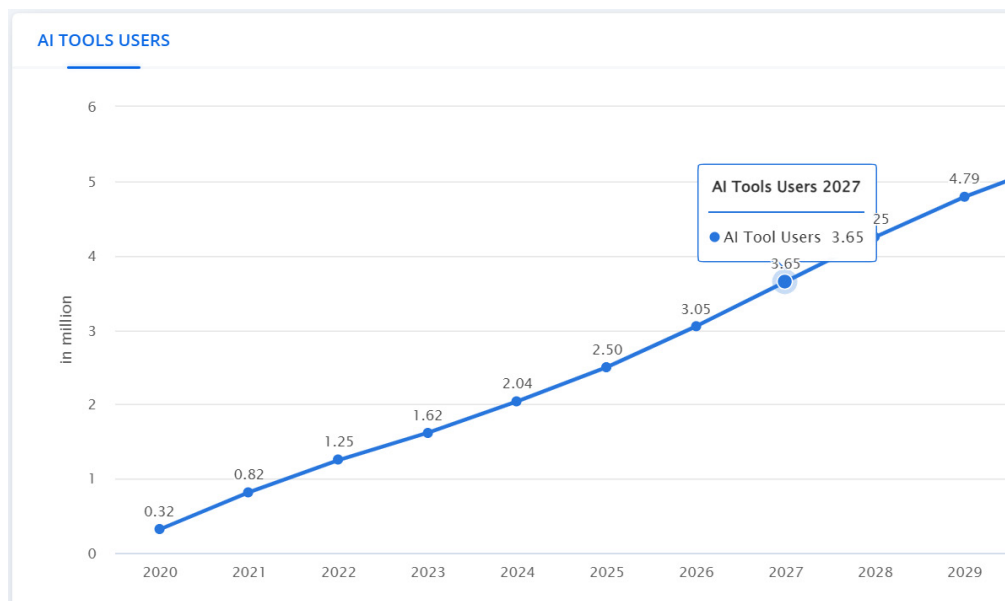
Figure 4 AI users in Southern Africa

Participants at the Harare Bulawayo and Johannesburg workshops shared responses to a poll that was administered through an online platform called Mentimeter. The participants were asked: When you hear the word AI, what do you think?

The responses are represented in the word clouds below.
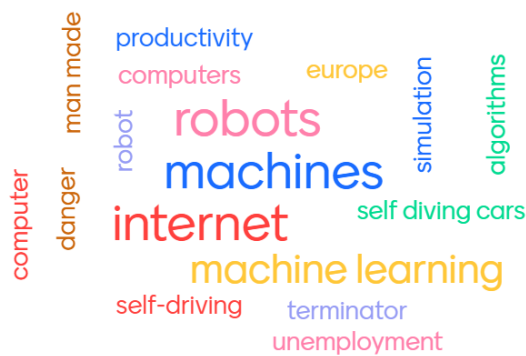

Figure 5 Harare meeting poll results

When you hear the word AI what do you think?
22 responses

Figure 6 Bulawayo meeting poll results

When you hear the word AI what do you think?
22 responses

The results of the poll conducted during the Johannesburg meeting are presented in Figure 7.

Artificial intelligence has the potential to bring advantages to diverse African economies and ecosystems. However, the growth of AI brings possible risks and problems that could worsen the region's existing social and economic inequities while also infringing on human liberties, autonomy, and dignity. These risks and problems must be properly handled to ensure that AI benefits all members of society.

AI use cases in Southern Africa in Media

Internews Network Zambia investigated the title: Artificial Intelligence (AI) Adoption by Journalists in Zambia Survey Report, into the use of AI tools by journalists in Zambia toward the end of 2023[8]. According to the study, 60% of journalists surveyed have implemented generative AI tools in their newsrooms, with the most used AI tools being generative AI, such as chatbots or conversational AI tools. The study also reveals that AI tools have improved the efficiency of newsroom operations, although some respondents found the integration process challenging.

One of the study's recommendations is that media houses should provide adequate training to their staff to ensure a smooth transition to using AI tools and develop AI policy to ensure its ethical use. Media houses should use AI tools thoughtfully and supplement them with human judgement and expertise to ensure that their stories accurately represent the communities they serve.

The report revealed that in Zambia:

- 60% of journalists are using AI tools

- 74% of journalists yet to receive AI training

- 85% of newsrooms do not have AI policies

- 75% do not perceive AI as a threat to their job

In Zimbabwe, The Centre for Innovation and Technology (CITE), located in Bulawayo, was the focal point of discussions during the meeting in Bulawayo, with its AI innovations taking centre stage. CITE is at the forefront of incorporating AI technologies into their newsrooms compared to other media organisations. A CITE representative at the Bulawayo meeting highlighted their utilisation of AI in journalism, highlighting its potential to aid journalists in various tasks, including content creation, fact-checking, tailoring content to specific audiences, categorisation, and data analysis.

CITE started using AI on May 7, 2023, when they introduced an AI newsreader named Alice. This implementation aims to enhance the delivery of news and increase audience engagement. Alice is highly esteemed among Zimbabwean social media audiences. Alice was featured in online broadcasts during the election coverage, hosting the Meet Your Candidate series and delivering the daily The Brief news bulletin. The National University of Science and Technology (NUST) participants at the meeting said it was commendable to see CITE following in the footsteps of countries such as China, regarded as the first country to unveil AI in newsrooms.

From an analysis of AI uses in the region, AI use rapidly expands, with several key trends identified. User cases were analysed in terms of the type of AI technologies they were using or developing, and functional AI was the most common AI type found.

8

Local and international AI research hubs have been established to stimulate the development of Artificial Intelligence industries on the continent. South Africa leads the continent in AI adoption with a robust ecosystem. More than 100 companies in South Africa are either integrating AI solutions into their existing operations or are developing new solutions using AI7. Women in Machine Learning & Data Science (WiMLDS) also have chapters in Algeria, Botswana, Kenya, Morocco, Nigeria, and Uganda, to engage with and promote women's participation in AI.

WiMLDS is critical in amplifying the voice and input of women in advancing AI, given the concerns raised about the lack of diversity and gender bias in AI8. Furthermore, Both Google and IBM labs have engineered AI solutions to improve food production and healthcare across Africa. Most of the academic and industry research hubs focusing on AI are predominantly located in advanced and wealthy locations, such as Silicon Valley in California however a recent shift to Africa is being witnessed.

Some sectors witnessing the most AI applications in Southern Africa are financial services, agriculture, and health care. In financial services, AI is being used to provide credit scoring, fraud detection, customer service, and financial inclusion. In agriculture, AI is being used to optimise crop production, pest control, irrigation, and market access. In healthcare, AI is being used to improve diagnosis, treatment, disease surveillance, and telemedicine.

Interactive AI

Interactive AI involves interactions between typically text-based AI and humans and is used for communication automation, for example, Chatbots and Smart Personal Assistants. Most financial institutions in the region have AI-powered chatbots that are accessible via Facebook Messenger and WhatsApp. The chatbot can handle banking operations such as checking balances, making transfers, and creating new accounts.

The AI revolution has yet to play a significant role in Zimbabwe and its neighbours, but we see artificial intelligence used in interactive chatbots. Many banks, notably Steward Bank, made a big announcement when their chatbot Batsi was launched. Following suit, other financial institutions in Zimbabwe, such as CABS, FBC, introduced their chatbots. Steward Bank's Batsi is a customer service bot that uses artificial intelligence to respond to customer inquiries in real time. This was the first service in the Zimbabwean banking sector, and Batsi is now available on Facebook, Square Mobile App, and the internet banking platform.

During the 2013 Zimbabwe election season, candidates like Fadzayi Mahere saved campaign costs by deploying her own chatbot (Shandu) to distribute her political manifesto and campaign material. It provided people in her constituency with access to information that would otherwise be out of reach. Shandu is another bot that was accessible via WhatsApp.

Charlton Hwende, the MP for Kuwadzana East, is using a Facebook Chatbot to allow constituents to report concerns, generate ideas, and schedule appointments with their MP. This bot is an excellent alternative, especially since it serves a purpose after the election. MPs have a history of emerging once every five years to secure votes and then disappearing after the election, but this bot demonstrates Hwende's determination to stay in contact with his constituency.

Congratulations, Sir, and may other MPs replicate this!

According to a report by Zim tech bloggers, Techzim, most of the chatbots on their list have human names, which may make you question why. Bots are intended to be relatable, and the experience should be as human-like as possible. The bloggers added that to enable this, most individuals who create chatbots begin by naming them.

They named the banking bots Shona because it was more relatable than giving them a strange English moniker that few people would comprehend. Yes, these are machines, but customers still prefer personal interactions.

In November 2018, SMART Harare launched a Facebook chatbot that allows consumers to report non-functioning municipal services. The chatbot SMARTbot is now available at: https://m.me/smartharare, adding various options for reporting and tracking service delivery issues to Harare citizens.

AI has touched on everything from personal communication to public discourse. The new technology is entering a new phase with the advent of Generative Artificial Intelligence (GenAI), which can create synthetic text, images, and other media at an unprecedented speed and scale. Large language models LLM, like Open AI, ChatGPT, and Google Bard, are growing in use in the region.

LLMs are a type of GenAI that produces naturalistic text outputs in response to an input. ChatGPT and recent tools like Claude and Bard have democratised LLM access, reshaping the general public's interaction with these technologies. University lecturers at the Johannesburg meeting were worried that their students had started using the models for writing their assignments. Using these models raises concerns about academic integrity and developing critical thinking skills.

Furthermore, it may undermine the students' ability to independently generate original ideas and arguments. At the time of the Johannesburg meeting most universities in the region had not developed mechanisms to deal with such cases of academic dishonesty. Before November 2023, ChatGPT was unavailable in Zimbabwe; users could only access the service through virtual private networks (VPNs) because open AI applications were inaccessible in the country.

Health & Social Wellbeing

AI apps analysed address a wide range of key health challenges, including non-communicable and communicable diseases, maternity care services, and, most recently, COVID-19 tracking (Owoyemi et al, 2020; CAD4TB, 2022). Key hazards include the processing and security of sensitive health-related personal information and the possibility of bias when using unrepresentative and under-representative data in the creation of AI applications.

Use Case: The Corona AI project in Lesotho tests ways for uncovering anti-cancer qualities in existing medications and food that can be utilised to cure viruses using AI.

Climate Change and Environmental Sustainability

AI applications respond to environmental and climate challenges such as environmental preservation, conservation management and natural disaster responsiveness. Local knowledge is critical for enhancing the sustainable impact of these tools.

Use Case: WildTrack operating in Namibia, South Africa and Zimbabwe deploys visual AI technology to conserve various wildlife species in the region; the application was refined using indigenous knowledge from local rangers.

Education

AI can bridge the educational divides in Southern Africa by providing learners in rural areas access to educational tools. Strict safeguards are needed to protect children's personal data and rights.

Use Case: Applications such as Ambani in South Africa use augmented reality (interactive AI) to develop lessons tailored to the learners' needs and primary language. As poor access to internet services remains a challenge for many learners in Southern Africa, applications such as Foondamate overcome this challenge by delivering curated internet services to students or learners with low data cost.

In Namibia the spotlight is on YYeni[9], an artificial intelligence platform and app that aims to redefine the education landscape in Namibia and beyond. The AI startup was founded by two young individuals, Vitalis Haupindi, the current chief technology officer and chief executive and former cybersecurity student at the National University of Science and Technology (NUST), and Lotto Nanghonda, the chief of sales and former chartered accountant student at the University of Namibia (Unam). The AI platform chatbot aims to bridge the educational gap Namibia is currently experiencing.

YYeni provides students and pupils with personalised instructions and support tailored to their needs and learning styles. The platform utilises advanced machine learning algorithms to analyse individual learning patterns and provide targeted recommendations for improvement. Additionally, YYeni offers a wide range of educational resources, including interactive quizzes and virtual tutoring sessions, to enhance the overall learning experience for students and pupils. YYeni aims to create a personalised and effective learning environment for all.

YYeni is already being used by some private schools in Namibia and is set to run a pilot project with government schools in the next few months. The YYeni team represented Namibia and emerged winners in the Huawei Seeds for the Future Tech4Good 2023 global competition[10].

Labour

AI applications identified show both potential employment loss and creation. Digital infrastructure constraints may limit new entrants' market share and the technological

9   https://yyenichat.com/
10   https://fci.nust.na/team-namibia-wins-huaweis-tech4good-global-competition-2023

knowledge required to sustain or offer quality services in Southern Africa (UNCTAD, 2021; ITU Hub, 2021).

Use Case: FinTech adoption Case: FinTech adoption is increasing across the region, with banking regulators employing various AI technologies to serve their main tasks while also increasing financial inclusion. Namibia, Malawi, South Africa, and Zambia's central banks use the AI chatbot application Proto AICX to provide multilingual customer assistance and better financial intelligence monitoring. As previously stated in the report, chatbots are utilised by numerous banks, insurance firms, and financial service providers.

Use Case: FinTech use is advancing across the region, with financial regulators using various AI technologies to support their core functions and increase financial inclusion. Botswana, Namibia, Malawi, South Africa, and Zambia's central banks use the AI chatbot application Proto AICX to provide multilingual customer assistance and better financial intelligence monitoring.

Use of facial recognition and mass surveillance

According to media and civil society reports, CloudWalk Technology, a Guangzhou-based startup, signed a contract with the government of Zimbabwe to provide a mass facial recognition programme. The agreement between CloudWalk and the government of Zimbabwe will not be limited to CCTV cameras. According to a report in the Chinese state newspaper Science and Technology Daily, the project will include intelligent financial systems, airports, railways, bus station security, and a national facial database.

In a recent report titled: Running in Circles by the Citizen Lab at the University of Toronto, which investigates digital espionage against civil society – Zimbabwe was listed as one of the countries using Pegasus spyware. Zimbabwe has a history of clamping down on dissenting voices. The ruling Zanu PF has been accused of using government resources and intelligence apparatus for surveillance and to clamp down on opposition actors.

The government may have access to artificial intelligence surveillance tools such as the Cloudwalk facial recognition system, which has sparked concerns from political activists. One participant at the Harare meeting shared their concern on the use of technology for surveillance in the country, citing an example where information collected by means of communications surveillance was used by the State to dispute a claim that two active female members of the opposition were kidnapped, tortured, and sexually assaulted by suspected state security agents or members of the ruling party.

The Minister of Home Affairs held a press conference and shared what he claimed was the location data from both women's mobile phones and car movements to show that both

women had not been kidnapped but had rather willfully spent time away from Harare.

Section C: AI and disinformation – A Zimbabwean election perspective.

AI and Disinformation

The Zimbabwe Electoral Commission implemented a biometric voting system to improve the nation's electoral process. To vote in the country, one would need to register as a voter with their biometric data. As a result of the process of providing one's biometric data, many voters were under the impression that the government could use their data to track them. During the elections in 2023, the ruling party boasted that they had used drones to record images and count the number of people who attended rallies held by the opposition, according to media reports[11].

One potential risk of AI is the risk of manipulation of individual voting decisions before an election via targeted disinformation campaigns. Search engines and social networks spread information in ways that differ from the press. Search engines and social networks mostly present third-party material while providing little of their own. This means that even unprofessionally generated, different information can rapidly spread.

Furthermore, algorithms screen and weigh the information to suit the interests of users and the expectations of advertising customers. Users help to evaluate and distribute material by using likes, retweets, sharing, and other similar features. These platforms' economic functionalities are particularly vulnerable to automated manipulation. During times of crisis and in the run-up to elections, the risk of interested parties disseminating false information via the Internet grows. Social bots based on AI processes are frequently used to magnify disinformation operations concurrently in the press and on television. For example, automated social bots spread postings across multiple accounts simultaneously or hide themselves by communicating in a human-like manner.

The rapid advancement of AI has brought new challenges. Recent advances in generative adversarial networks (GANs) and large language models (LLMs) have led to the emergence of increasingly convincing

deep fakes, voice clones, and algorithmic influences. The use of these AI applications has the potential to subvert democratic processes by encouraging the promotion of third-party agendas.

The Cambridge Analytica scandal vividly illustrated the risks of unregulated algorithmic processes. AI was used in the 2023 Nigerian elections to supposedly "prove" that Peter Obi, the presidential candidate for the Labour Party, and David Oyedepo were conspiring to rig the election. These messages, which were voice-cloned, were shared on many platforms online. Ultimately, fact-checkers and AI programmers determined that the recording was a complete hoax. The case of Obi and Oyedepo demonstrates how AI is already influencing the way elections are conducted.

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11   https://www.herald.co.zw/the-writing-is-on-the-wall-zanu-pf-is-indomitable/

The concept of "fake news" has attracted much scholarly interest since Donald Trump's 2016 election as the 45th president of the USA. While the spread of misinformation has long been a part of the news ecosystem, the advent of AI and online platforms has only exacerbated the problem. As far back as records go, the colonial government of Zimbabwe used propaganda, which is a kind of fake news, as a response to political paranoia and insecurity during the country's colonial era.

When asked about sources of information during the Harare, Bulawayo, and Johannesburg meetings, participants answered a poll on mentimeter.com. Their responses are depicted in the word cloud below. More people in the region rely on social media as a source of information than traditional media outlets. The word cloud shows that the majority of participants cited social media platforms such as Twitter and WhatsApp as their primary source of news. This shift towards social media as a primary source of news is common to this region, as it is a global trend. The ease of access and the ability to share information quickly on these platforms have made them popular among users seeking real-time updates and diverse perspectives.

Figure 8 Sources of information poll results

AI to create deep fakes and voice cloning

AI systems can also create deep fakes (images, videos, or audio files manipulated by AI) that blur the lines between reality and fiction. While deepfakes are used predominantly in the pornographic field, where they almost exclusively involve women, they can also show well-known politically active individuals performing actions and making statements that they never made.

These public figures can then be defamed or even blackmailed with the alleged compromising image material. AI-manipulated photos of campaign rallies was circulating during the run-up to the 2023 elections, with both Zanu PF and the leading opposition party, the Citizens' Coalition for Change (CCC), making good use of them, analysts say. The aim can be to influence political life or to cause the people concerned to withdraw from politics. At the same time, deepfakes also offer a "liar's dividend" or a path of evasion for public figures criticised for actions or statements they have made.

They increasingly claim that the image, video, or audio files incriminating them are unreal. For example, the Vice President of Zimbabwe Kembo Mohadi, said he was a victim of AI voice cloning after ZimLive (online newspaper) released three audios in which he allegedly speaks with various lovers about sex-related issues[12]. Tendai Biti, a former Member of Parliament and one of the leaders of the main opposition party CCC, was quick to use the voice-cloning defence when a leaked audio recording revealed his alleged involvement in an ongoing Citizen Coalition for Change (CCC) debacle. Biti used his (Twitter) X handle to claim that his voice and image were manipulated.

Below is the screenshot[13].
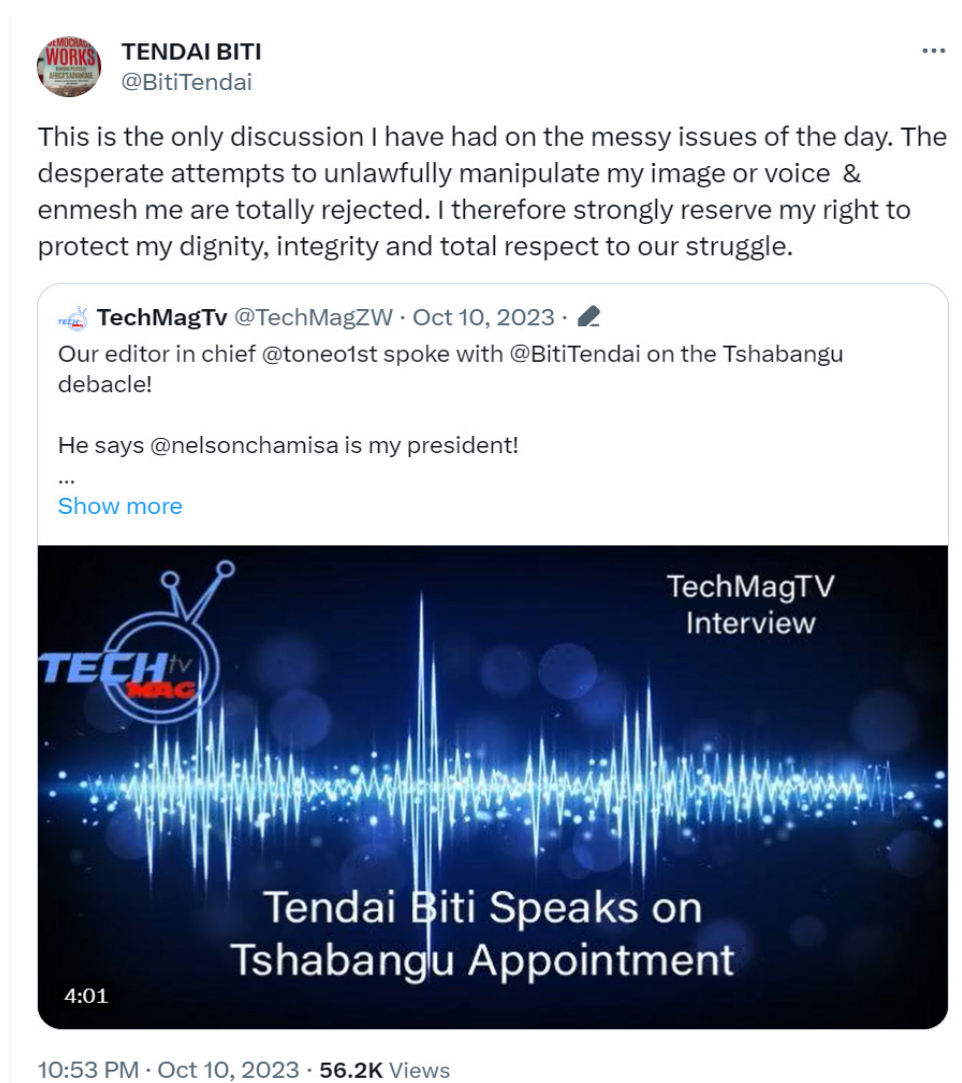
One scholar who attended the Johannesburg meeting, highlighted that two main political parties contest elections in Zimbabwe. The two parties are rivals and often compete fiercely to gain power. The use of AI in political campaigns and online engagement has escalated this rivalry. The ferocity of the fight has forced the two parties to resort to drastic means in their quest for voters' hearts and minds. They arrange teams of spin doctors and "online warriors" (a combination of bots, paid or volunteers) that create and broadcast party propaganda on Twitter, Facebook, and WhatsApp.

Besides fundamental transformations in Zimbabwean politics, the only thing distinguishing

12   ZIMLIVE https://www.zimlive.com/love-rat-mohadi-bristles-claims-phone-hacked-or-cloned-whatever/
13   https://twitter.com/BitiTendai/status/1711847445817085991

the 2023 election from previous ones was the proliferation of mobile internet and social media. Information is generated much more readily. It also spreads considerably faster and further than before. Images uploaded on social media platforms were a key component in disseminating fake news ahead of the elections. Both political parties utilised AI-doctored photographs of previous gatherings or from completely unrelated circumstances to create the misleading impression of widespread support.

Events in Zimbabwe and elsewhere on the continent highlight the need for safeguards against the use of social media and bots to undermine democratic processes. There is also a need for social media literacy to ensure that citizens understand and use the power of the internet appropriately.

In Zambia, a deepfake video surfaced on social media, depicting President Hichilema announcing his decision not to run in the 2026 election. Zambians are set to vote for a new president in 2026. The 55-second video has Hichilema speaking in front of the Zambian flag. The video is slightly fuzzy, and the colours appear to have been filtered. Hichilema's body remains still throughout, with only his mouth moving.

The AI-generated deep-fake video states: "It is with the utmost sincerity and a profound sense of duty to our great nation that I announce my decision not to seek re-election in the upcoming general elections of 2026."

"I believe this decision is in the best interests of our country and its future," Hichilema reportedly said.

AFP Fact Check[14], a fact-checking group, conducted a reverse image search and discovered the original image on Hichilema's official X account. In the shot, he is wearing the same tie and blue blazer, the flags in the backdrop fall in the same pattern, and the folds on his blazer's left arm are identica
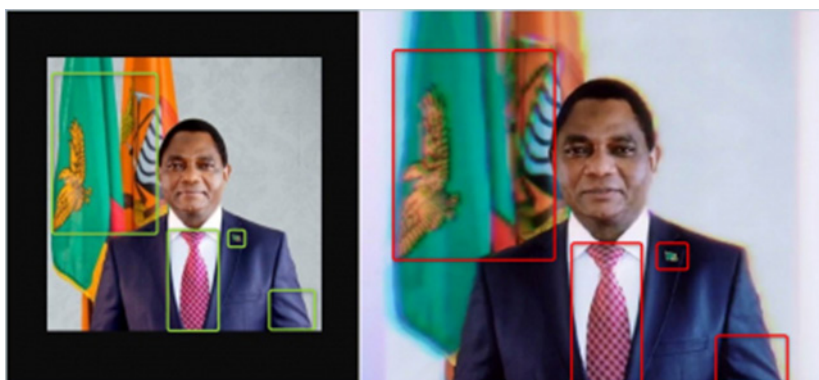
"Hakainde Hichilema Declares his Not running for 2026 elections (sic)," reads the caption.

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14   I-generated video of Zambian president misleads about 2026 election plans https://factcheck.afp.com/doc.afp.com.33Z363J

AI for personalised advertising and microtargeting

Personalised advertising is a legal way to transmit political campaign and voter information, but it may also be used for manipulation through micro-targeting. The development of user profiles is required for individually and directly addressing voters. This construction of personality profiles is mainly employed for personalised advertising and forms part of the dominant digital platforms' core business strategy.

These advertising skills contribute to the possible risk of manipulation in politics and elections using the same tactics as Cambridge Analytica. Targeted and personlised advertising has been actively used in Zimbabwe elections by the two main political rivals Zanu PF and Citizens Coalition for Change (CCC).

In general, a low efficacy rate is enough to make a difference especially in countries like Zimbabwe where the winning margin between rival political parties is small. Thus, even if only a few out of thousands of individuals respond to the advertisement, it is worthwhile. It is worthwhile because even a small shift in voter preferences can significantly impact election outcomes.

The influence of AI systems and electoral content control is frequently only evaluated in retrospect. Our initial observations of the Zimbabwean elections in 2023 indicate that there was a substantial quantity of basic disinformation and fake news peddled through micro target adverts on social media.

As we have seen in Zimbabwe, there are numerous potential negative implications of AI-driven applications on voter information and public opinion formation. Some of them are most likely already influencing public opinion.

AI to Counter Biased Content

Although AI negatively affects public discourse, it can also enhance media content and fact-checking. Artificial intelligence can assist in detecting biased material and provide alternative coverage. Typically, but particularly in elections, there is a proclivity for biased reporting. The phenomenon of media bias stems from the deliberate selection of specific vocabulary and subjects, known as "framing," which presents information from a particular perspective.

Due to the vast volume of news in digital media, it is no longer feasible for humans to manually observe, and fact-check online information. Due to this rationale, platform operators depend on the utilisation of automated systems that provide swift identification and evaluation of media bias. If required, these analyses can also be used as a foundation for counter-information. Browser plug-ins can provide users with tools, such as supplemental links containing balanced information, to enhance their ability to assess biased material while forming political opinions.

AI-powered web services can offer counter-arguments to address skewed representations caused by algorithmic filter bubbles. Social bots can also aid in combating inaccurate and biased journalism. They can automatically distribute authenticated information and, if needed, engage in interactive dialogue to address inquiries within the realm of elections and the broader formation of political opinions.

The incorporation of automated components is feasible. A chatbot that clarifies specific statements with examples or responds to user inquiries could lead users through the programme. Adding these features to the way political information is gathered is one way that AI systems could be used in political education. It is important to make sure that the help systems are open, safe, trustworthy, and fair for everyone. These AI systems can greatly enhance the accessibility and accuracy of political information for users.

The ruling Zanu PF in Zimbabwe has been accused of manipulating electoral results in previous elections. Team Pachedu, a group of data analysts, created an app called Mandla. Which aimed to increase transparency and accountability in the electoral process. Unfortunately, the app did not work as anticipated.

AI Tools for Electoral Content Moderation

AI systems are increasingly utilised in the realm of elections for risk-management purposes, including "electoral content moderation.". Content moderation is the process by which social media users curate content. The goal is to remove deepfakes, disinformation, and hate speech.

Furthermore, social media companies are gradually incorporating AI systems to detect suspicious patterns in content before elections and identify election-related information. Such content is currently subject to platform-specific self-regulatory regulations on all recognised platforms. AI systems can considerably contribute to detecting false news and assist citizens in making educated decisions.

It is envisaged that the systems would develop and make progress, particularly in the detection of incorrect or even tendentious reporting. As a result, it is reasonable to expect that more technologies for detecting false news or deepfakes will become available in the future. These technologies will play a crucial role in empowering individuals to make more informed and critical judgments about the information they consume.

Existing algorithmic content screening approaches have been criticised for being opaque, unaccountable, and difficult to understand. For example, the decision to remove some items but keep others needs to be more transparent and understandable. AI-based upload filters are an essential tool for election material management. Upload filters, for example, which were supposed to detect pornography by default, have received widespread criticism since their beginnings. The reasons for this include the danger of collateral damage from incorrect filtering or erroneous incentives that can lead to censorship.

If the platform operators do not yet meet their transparency obligations, academia, or civil society organisations can act independently and conduct their own experiments with the algorithms' operation modes that reconstruct which criteria content management is subject to (reverse engineering). However, this strategy, which is reserved for experts, is typically too difficult to allow for transparency in a current election campaign, providing only an a posteriori explanation of automated content selection. In this regard, it is critical to note that science- and research-based non-governmental organisations must be granted access to social media platforms (as requested by the current draft of the European Commission's Digital Services Act), to conduct research on the effects and functionalities of AI on digital platforms.

Future Opportunities of AI in Africa

McKinsey & Company's analysis states that by 2030, AI has the potential of adding a substantial amount of USD 15.7 trillion to the global economy, with Africa alone generating almost USD $1.2 trillion. By 2030, Africa's GDP is projected to have a growth of 5.6%.

The AI market in Southern African region is expected to continue to experience significant growth and development until 2030 according to Satista.com, driven by increasing adoption of AI technologies across industries, advancements in AI algorithms and infrastructure, and growing investment in AI research and development. The market is expected to see continued innovation and expansion, with AI becoming an increasingly integral part of business operations and consumer-facing applications.

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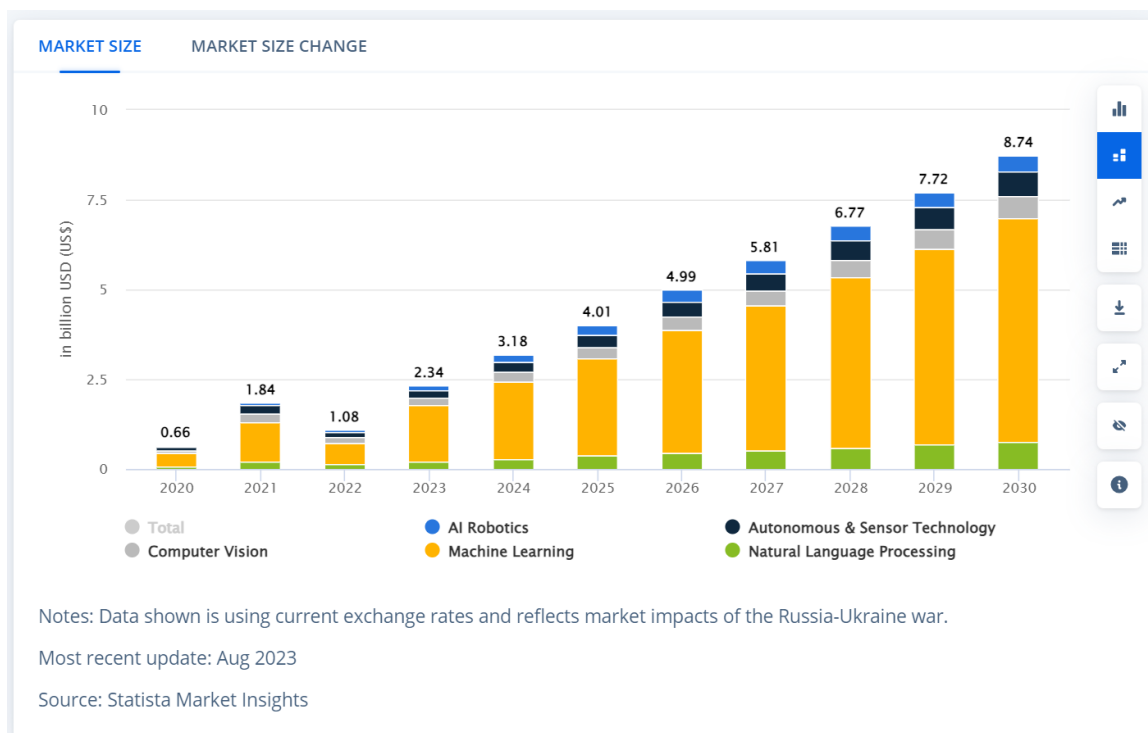

Figure 9

AI has the potential to offer several options for Southern Africa, such as:

- Improving productivity and effectiveness: AI has the potential to automate repetitive work, optimise operations, and enhance human abilities in several industries. This

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15   https://www.statista.com/outlook/tmo/artificial-intelligence/southern-africa#users

has the potential to enhance performance, lower expenses, and boost productivity.

- AI has the potential to tackle the urgent issues that Southern Africa is confronted with, including poverty, hunger, health, education, climate change, and security, thereby contributing to the resolution of social and environmental concerns. This has the potential to enhance one's well-being, quality of life, and resilience.

- Promoting innovation and entrepreneurship: AI has the potential to generate novel markets, products, services, and business models, hence stimulating economic expansion and diversification. This has the potential to result in heightened competitiveness, the establishment of new job opportunities, and the generation of additional cash.

- Advancing inclusivity and empowerment: Artificial intelligence has the potential to equalise access to information, knowledge, opportunities, and services, thereby enhancing the well-being of numerous individuals, particularly those who are marginalised or vulnerable. This has the potential to result in heightened engagement, inclusivity, and empowerment.

- Artificial intelligence (AI) has the capacity to transform farming methods, enhancing their efficiency and sustainability. AI-driven solutions have the potential to assist African farmers in optimising crop production and enhancing food security throughout the continent by utilising predictive weather models and soil analysis.

- Utilise AI-driven telemedicine and diagnostic tools to ensure access to high-quality healthcare. AI-powered telehealth services can offer vital consultations and mitigate healthcare disparities in underserved regions with restricted medical infrastructure.

- The utilisation of artificial intelligence (AI) in credit scoring, fraud detection, and tailored financial services is facilitating the expansion of financial inclusion to a significant number of individuals who were previously unable to access formal banking services.

- The region showcases a multitude of the planet's most varied and imperiled ecosystems. AI is playing a crucial role in the conservation of animals. Unmanned aerial vehicles and artificial intelligence algorithms are employed to observe and counteract unlawful hunting, while artificial intelligence-based data analysis assists in studying wildlife and safeguarding their natural habitats.

- Given the extensive linguistic variation in Southern Africa, the utilisation of artificial intelligence-driven natural language processing and machine learning algorithms can facilitate communication across different languages and enhance educational opportunities for individuals who speak local or regional dialects. This has the potential to enable a greater number of people to engage in educational programmes and enhance overall literacy rates.

- AI can also aid in tackling other urgent societal concerns like crime prevention and urban planning, resulting in safer and more inclusive communities.