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Informed approach to the design and formulation of Artificial Intelligence National Strategy Plans within Sub- Saharan Africa

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Background and Purpose

There is held to be a significant disruption that is anticipated with the advancement of Artificial Intelligence (AI) .[1] This calls for assessment as to how various states will monitor the practicalities of the present and imminent developments in AI. [2] Specifically, assessment will be on how to tackle the inevitable set of "technical, social and public policy conundrums" that arise with AI deployment in modern day. [3] This strategic approach is encapsulated into a national strategy. National strategies are policy documents that coordinate collective action in relation to actualising specific policy objectives.[4] The strategies are held to be defining instruments that aim to "deliver effective outcomes to enhance social change[5]". Looking towards AI, there is an uprise in the number of states that have crafted national strategic AI plans. The plans provide insights as to how the states are streamlining policy to maximise the benefit of utilising AI. In addition, the plans do provide for how coordination would occur, with various stakeholders as well as mitigation measures in place for any potential shortcomings. There is a limited focus on strategic plans, that focus on information technologies.[6] The following study seeks to evaluate the design of these policies and the extent to which they are held to be 'nuanced and contextualised' to match the realities of the states. Specifically, focus will be on Sub-Saharan Africa, where assessment will be on the three existing National AI Strategies in place (Egypt Mauritius and Rwanda). The study would be an opportunity to provide succinct and centralised data on the current 'best African practices', to provide guidance to other African states who are in the nascent stages of formulating and designing their national AI policy plans.

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[1] Samar F, Desouza K, Dawson G & Gregory S, National Strategic Artificial Intelligence Plans : A Multi-Dimensional Analysis [2020] EAP Vol 67.
[2] ibid.
[3] ibid.
[4] Filgueiras F Tunquilho T.A, The Brazilian (Non)perspective on national strategy for artificial intelligence [2023] Discov Artif Intell 3; 7 .
[5] ibid.
[6] Kaifeng Y & Melitski J, Competing and Complementary Values in Information Technology Strategic Planning: Observations from Ten States [2007] PP&MR 30.

Aims and Objectives

1. To supply evidence regarding the need for an informed approach to the design and formulation of African National AI Strategies.
2. To understand and analyse the current practices adopted in the designing National AI strategies within Sub-Saharan Africa.
3. To propose necessary reforms that would assist with providing guidelines as to how African states should design and formulate their National AI Strategies.

Methodology

The main method of research is desk-based research that relies on collection of data from existing secondary sources. Discussion will start off with designing and forming a set framework as to how existing National Artificial Intelligence plans are formulated . The design is rooted within a current framework formulated by the World Economic Forum (WEF), Centre for Fourth Industrial Revolution ; A Framework for Developing a National Artificial Intelligence Strategy. The aim of this section will to be contextualise the framework within the African setting, where analysis will aim to add additional relevant and contextual factors to the existing framework. Thereafter , an analytical approach would be adopted in terms of assessing the three current existing accessible National AI Strategy Plans in place ; Egypt ,Mauritius and Rwanda. Analysis will assess the design of the strategy, how it aligns with the key indicators of the framework and national agendas in place.

Literature Review

Currently there is a global AI race, where various states have been pushed to formulate national AI strategies .[7] AI is held to infiltrate all spheres of life, thus governments are on the spot as "regulators" , where they are bestowed with the role of regulating and governing AI, through initiatives such as the formation and implementation of national strategic AI plans. [8] These plans articulate the potential risks and ethical challenges, that are inevitably derived

[7] Dutton T, "An Overview of National AI Strategies." *Politics + AI* [2018] < https://medium.com/politics-ai/an-overview-of-national-ai-strategies-2a70ec6edfd> last accessed 14th August 2023.

[8] Yarime M & Papyshev G, The state's role in governing artificial intelligence: development, control and promotion through national strategies [2023] PD&P Vol 6.

from the deployment of AI.[9] Assessment of these plans are usually within an economic perspective of " AI competitiveness and AI readiness."[10] This is reductionist in nature, as these plans are not "merely a set of rules." [11] They are held to be "powerful and peculiar hybrid policy" as they employ and envision "national strategic positioning" within the global arena whilst articulating the national narrative of the use and benefit of AI and its integration to society.[12] The State has the ability to structure AI expectations by strategically releasing regulations and assigning resources with its own "narratives and visions". [13] This is evident with various states and their approaches to formulation of the National AI strategic plans. They include; countries from Post -Soviet Bloc and East Asia, centre their plans around the thematic area of development, where focus is on the state's participation in AI innovation.[14] While European countries key focus is on control, this is reflective of the union's tough stance on AI regulation.[15] The United States (US) and United Kingdom, adopts more of a *laissez faire* approach, where there is heavy focus on the private sector to prioritise promotion of AI.[16]

Assessing the geographic distribution of these plans , data evidences that, majority of the plans present, belong to Western powers (Europe and North America) with Asia closely following

behind . [17] A copious amount is from the European union, this is due to the fact that, there is evidence of "a union-level initiative to encourage the development of national AI plans." [18] However, looking towards the African context, there is a limited number, with the continent, as the continent possesses five existing National AI Strategies ; Egypt , Rwanda, Mauritius , Sierra Leone and Tunisia.[19] However, the continent boasts of a wide variety of policy instruments that go beyond the strategic plans, as eighteen out of thirty two countries have ongoing initiatives to govern the use and deployment of AI within the national level. [20]The

[9] Bareis, J & Katzenbach C, Talking AI into Being: The Narratives and Imaginaries of National AI Strategies and Their Performative Politics [2022] ST&HV s, 47(5),855.
[10] Cambrian Futures, "Nation AI Readiness." Cambrian Group [2019] <https://www.cambrian.ai/nair-index.> last accessed 14th August 2023.
[11] Bareis(n9).
[12] ibid.
[13] ibid.
[14] Yarime (n8)17.
[15] ibid.
[16] ibid.
[17] Yarime (n8)4.
[18] ibid.
[19] ALT Advisory, AI Governance in Africa, September 2022 < https://ai.altadvisory.africa/wp-content/uploads/AI-Governance-in-Africa-2022.pdf> last accessed 14th August 2023.
[20] United Nations Education Scientific and Cultural Organization (UNESCO), Artificial Intelligence Needs Assessment Survey in Africa [2021] 22.

development and utilisation of AI is prominent in the majority of the development plans of African states.[21] However, despite these positive advancements , accessibility of these initiatives is limited, specifically National AI policy plans, as they are not accessible within public domain.[22] Currently we only have three accessible National AI policy plans; Egypt and Mauritius. The lack of accessibility and transparency is one of the attributing factors as to why the development and formulation of National AI policy plans are held to be opaque and stagnant. Appreciating that regulation of AI is based on "information asymmetries and power dynamics," [23] there is need for effective and transparent policy design , this can only be achieved by observing contextual best practises . The following study aims to assess the 'opaque gap' by providing analysis on the current three accessible African National AI Policy Strategic Plans (Egypt , and Mauritius). Analysis will assist with creating an informed approach for other African states that are in the nascent stages of AI regulation.

Design of effective National AI Strategies . The necessary checklist ?

Policy design for all purpose and emerging technology is not a candid process, as there is need to understand design as a process of patterned and intentional interactions between various institutions and actors.[24] To maximise on the process, there has to be clarity as to the how the responsibilities of actors are spread across the governance spectrum. [25] Considering the sensitive nature of AI, more is required in terms of broader governance framework that would assist with restructuring basic relations between the public and the private sector. [26] Assessing AI policy design within the African context, there is need for the continent to detangle itself from the narratives from the Global North when defining AI expectations, risks and benefits.[27]Context is key, as there is need to understand "narratives, historical underpinnings ,cultural traditions and political dynamics".[28] Failure to appreciate this , implies a risk of implementing 'policy transplants' of the Global North that would fail to be 'fit for purpose' and thus fail to meet the needs of the continent and its states. 'Africanised

[21] ibid.
[22] ibid.
[23] Taeihagh A, Ramesh M & Howlett M, Assessing the Regulatory Challenges of Emerging Disruptive Technologies [2021] R&G 15 (4).
[24] Radu R, Steering the governance of artificial intelligence: national strategies in perspective [2021] P&S Vol 40:2.
[25] ibid.
[26] ibid; Radu argues that the same was applied when the internet was first being regulated.
[27] Ogoh G & Eke D, Forgotten African AI Narratives and the future of AI in Africa [2022] IRIE Vol 31,4.
[28] ibid.

policy' would assist with the continent self-actualising its AI potential in a manner that advances its interests and values.

Appreciating this, we assess and utilise the WEF's National AI Strategy framework.[29] The starting point for design assesses the state's strategic objectives , strengths and weaknesses. [30] The design of policy should align to the strategic goals of the state and the capacity of the state that is reflective of the demographic needs, strategic priorities, national agendas , national values, resource constraints and geopolitical considerations.[31] Therefore, design is on the basis of SWOT (Strengths, Weaknesses, Opportunities and Threats) analysis model. [32]The model will assist with identifying the focal area of the state's strategy. When implementing the SWOT model , parameters should be established to ensure analysis is succinct.

Key examples when assessing strengths and weaknesses would include ; assessing the workforce, digitalization/infrastructure, industry-academy collaboration, training capacity and regulation.[33] In terms of opportunities and threats, examples would be innovation ecosystems, industry adoption and international collaboration. [34] SWOT analysis aims to curate a set of objectives that would be complimentary to the national agendas of the state. Objectives should be centred around ; capacity , investments , adoption and regulation. [35] We appreciate that, specific recommendations for actualising national objectives will differ with each state , as each state has differing national priorities. However, they are key indicators, that are held to be pre-requisites when formulation the plans, as they are held to be the "backbone of a minimum viable strategy."[36]

Key Indicators in the Design of National AI Policy Plans;

Indicator I: Standardised Data Protection Laws and Ethics[37]

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[29] World Economic Forum (WEF) Centre for Fourth Industrial Revolution, A Framework for Developing a National Artificial Intelligence Strategy , White Paper [2019] ,<https://www3.weforum.org/docs/WEF_National_AI_Strategy.pdf > last accessed 18th August 2023.
[30] ibid..6.
[31] ibid.
[32] ibid.
[33] ibid.
[34] ibid.
[35] ibid..8.
[36] ibid.
[37] ibid.

Standardised Data Protection

Data is held to be "oxygen" for AI, as it necessitates large amounts of data sets to function and develop,[38] therefore, there is need for a unified and stable regulatory environment of "mutual trust between data subjects and organisations", where there is transparency and accountability as to how data can be "collected, stored, processed, shared and potentially deleted." [39] Within the African context, there is no continent-wide consensus of an approach to personal data protection as some states have minimal to no data protection frameworks or constitutional provisions whilst others have an exhaustive protection framework.[40] This showcases a fragmented data protection landscape. The lack of uniformity poses a threat of distorted bargaining power when interacting with the Global North and its multinationals. However, with the implementation of the African Continental Free Trade Agreement, possibility of harmonisation exists, as the continental agreement calls for uniformity of data protection frameworks. The uniformity would be found within the African Union (AU) Data Policy Framework, a generalised framework that is applicable within different African contexts as recommendations are centred around developing a cross border data flows mechanism, establishing a common data categorisation, working with national data protection authorities to assist with establishing coordination mechanisms that oversee the transfer of personal data and compliance. Therefore, utilising the AU Data Policy Framework would be beneficial for African states at whatever stage of development they are in data governance policy. This assists with creating a standardized means of formulating data protection laws. In addition, to data protection laws, data strategies should be formulated, as it would expound on key aspects beyond the law. The strategies would go beyond legal focus to more of 'technological infrastructure requirements' as well as 'institutional frameworks', where focus would be on developing data and digital skills to align with the existing policy frameworks that enable secure data use and sharing.[41]

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[38] Mazurek G & Malagocka K, Perception of privacy and data protection in the context of the development of artificial intelligence [2019] JMA Vol 6 :4.
[39] ibid.
[40] Coleman D, Digital Colonialism : The 21st Century Scramble for Africa through the Extraction and Control of User Data and the Limitations of Data Protection Law [2019] MJRL Vol 24:417, 432.
[41] Mwaya J, Dare to Share Unleashing the Power of Data in Africa [2022] < https://www.institute.global/insights/tech-and-digitalisation/dare-share-unleashing-power-data-africa> last accessed 30th August 2023.

African Ethics

Despite "the claims of universality,"[42] We have to appreciate that there has been a "Global North dominant" perspective around AI ethics, where ethical frameworks, principles and values are centred around the perceptions of the Western world. [43] This is evident with the fact that the bulk of the world's dominant AI companies are housed in the Global North, where the design teams working on AI, hail from predominantly Caucasian and Asian backgrounds.[44] The lack of diversity translates into existing ethical frameworks; this poses a risk to African states as AI ethics inevitably influence how "the public and private realm" designs, develops deploys and regulates AI.[45] Therefore, to contextualise AI ethics to fit into the African context , the development of AI ethics within the continent should be steered by African ethics and moral values. Ignoring this, excludes and denies Africans the applicability of frameworks that are reflective of their realities. We appreciate that Africa is not "homogeneous", thus one would question what sort of African values should be implemented within AI. There is no collective stance in the continent, when comes to the regulation of AI, as each African state with its "own peculiarities" is usually "tasked with its own rule making."[46] Therefore, we assess philosophy as a starting point to pinpoint values. Western philosophy is centred around the notion of utilitarianism, that assumes moral actions are stemmed in rationality.[47] AI discourse is reflective of this as it "excludes and discriminates against those who do not measure up to it."[48] Within the African context there is no "unified philosophical approach", however, the value of Ubuntu has gained recognition as a general value applicable within different African contexts. The value has been utilised to describe African morality and the way of life, as its maxim emphasises that, "whatever happens to the individual happens to the whole group and whatever happens to the whole group happens to the whole individual." [49]The value requites the individual to submit to their communities in order to qualify for personhood.[50] It amplifies a "communitarian social arrangement" that expresses African culture and describes social relations amongst African individuals of

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[42] Gwagwa A, Kazim E& Hillard A, The role of the African value of Ubuntu in global AI inclusion discourse : A normative ethics perspective [2022] Patterns (N.Y) Vol 3:4.
[43] ibid.
[44] Ormond E, Governance of AI Ethics: Perspective from the Global South (Africa) [2023],3.
[45] ibid.
[46] Gwagwa (n42).
[47] ibid.
[48] Mhlambi S, From Rationality to Relationality : Ubuntu as an Ethical & Human Rights Framework for Artificial Intelligence Governance [2020] Carr Centre Discussion Paper Series.
[49] Mbiti S J , African Religions & Philosophy (Heinemann 1970).
[50] Gwagwa(n46).

different African background. This goes against the notion of utilitarianism as it embraces the "communal and collective" approach of shared benefit and risk , where technology merely integrates itself into this existing way of life[51] Inclusion of this to AI Ethics discourse assist with creating frameworks and principles that result in inclusive and equitable AI. [52] This would result in accessible AI that would have "less adverse effects" for the marginalized groups.[53] As application of western frameworks will not address African concerns of "inclusion" rather they will "conceal deep political and normative disagreement" warranting "unwanted" adverse effects of the implementation , development and governance of African AI.[54]

Indicator II: Incorporating a Multi-stakeholder model

Multi-stakeholder model to policy making is an efficient means of developing informed solutions.[55] It provides ground for decision making to consider all diverse viewpoints and expertise and "counteract polarisation of policy discourse."[56] In view of AI policy development , the creation of set standards has great impact on the trajectory to which AI will evolve. Considering the field is "susceptible to strategic and geopolitical considerations" , the utilisation of a multi-stakeholder model will develop standards that can "foster trust" amongst active stakeholders.[57] The model is vital as it allows for collaborative effort of stakeholders from various backgrounds and expertise to formulate "relevant and applicable policy" for the national setting.[58] The model breaks down "traditional multilateralism " as it embraces a "bottom up" approach of policy formulation where there is engagement with the private sector , industry, civil society , academia and the general public.[59] The bottom up approach includes the viewpoints for those who are actually "directly affected by the technology". [60] It allows for interaction at each level , where there is representation of

[51] Okyere-Manu D B, African Values, Ethics and Technology ; Questions, Issues and Approaches ; *Metz T, African Reasons Why AI Should Not Maximize Utility* (Palgrave Macmillan 2021).
[52] Gwagwa(n49).
[53] ibid.
[54]ibid.
[55] Drein V, Gelissen T, Raashi S, Marielza O, Prateek S, Riezebos S & Yang Y.H , Multistakeholder AI Development : 10 building blocks for inclusive policy (2022 UNESCO & Innovation for Policy Foundation) 8.
[56] ibid.
[57] Abdala B M, Ortega A & Pomares J, Managing the transitions to a Multi-Stakeholder Artificial Intelligence Governance, Task Force 5: The Future of Multilateralism and Global Governance [2020] 7.
[58] Drein (n55).
[59] ibid..17.
[60] Ormond (n44)10.

"diverse social actors" in the policy making process. [61] This involves an informed approach right from the start , in terms of regulating the design, development and deployment of AI.

To actualise the model, there are necessary values that should be present. They include ;

i) ***Inclusivity :*** There has to be active participation by all stakeholders. To ensure active participation , there has to be timely, accessible and affordable means of participation offered by the state.[62] Therefore, capacity building initiatives should be targeted towards a diverse group of stakeholders , including stakeholders that tend to be "underfunded and unrepresented."[63]

ii) ***Diversity*** : This involves going beyond the inclusion of traditional stakeholders to more of a distinctive stakeholder groups that represent different perspectives and expertise they possess along with the need for " geographical, gender and linguistic diversity."[64]

iii) ***Collaborative :*** A consensus must be present as to the "common norms" and values that will be utilised by each stakeholder in the consultation process.[65]

iv) ***Transparent:*** There has to be clarity as to the needs and interests of the stakeholders and their affiliations.[66]

v) ***Equal:*** Presence of equitable and equal participation of each stakeholder despite differing roles, responsibilities and level of expertise.[67]

vi) ***Flexible and Relevant:*** Participation needs to be fluid , to accommodate to the dynamic nature of digital technologies.[68] It should be tailored to be applicable to regional and multilateral multi-stakeholder initiatives.[69]

vii) ***Safe and Private:*** The privacy and safety of the stakeholders should be 'reasonably' upheld throughout the process.[70]

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[61] Drein(n55).
[62] ibid.
[63] ibid.
[64] ibid.
[65] ibid.
[66] ibid.
[67] ibid.
[68] ibid.
[69] ibid.
[70] ibid.

viii) ***Accountable and Legitimate :*** Consultation with the stakeholders is an ongoing process that should seek to analyse and evaluate decision making throughout. [71]This would ensure that decision making is "legitimate, relevant and transparent*".*[72]

ix) ***Responsive :*** Transparency is required on the "inclusion of rejection of the contributions" to the decision making as well as "the availability of the appeal or redress opportunities" for those who feel insufficiently heard.[73]

Essentially the values listed are guiding tools to creating an open , participatory and inclusive process , where various stakeholders can share their practises, research and insights into AI policy formulation. [74] Co-creation is a "non-linear process" that entails interaction from various actors.[75] Therefore, the model allows for resources and capabilities of actors to be merged and geared towards a "common goal" that is reflective of shared set of objectives , values and firm evidence.[76]

Indicator III: Human Capital

AI has the potential to transform the economic trajectories of most African states , as the technology boasts of maximised efficiency and effectiveness.[77] The technology allows for opportunities for lesser costs on production units, maximised productivity and earnings as well as the introduction of new products and business lines.[78] This creates room for the new forms of employment that would be accessible and attractive for the emerging workforce.[79] On the other hand, the technologies are double-edged , as there is potential for AI to further exacerbate the current digital divide present in the continent.[80] Thus, affecting the current workforce. The divide is characterised by two clashing factors, they include; limited and costly technological infrastructure ("*limited supply of electricity to limited availability of ICT*

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[71] ibid.
[72] ibid.
[73] ibid.
[74] ibid..34.
[75] ibid.
[76] ibid.
[77] Fox L & Signè L, From Subsistence to disruptive innovation Africa, the Fourth Industrial Revolution and the future jobs [2022] AGI Brookings,4.
[78] ibid.
[79] ibid.
[80] Brookings, Inclusion, Inequality and the Fourth Industrial Revolution (4IR) in Africa [2022] < https://www.brookings.edu/blog/africa-in-focus/2022/09/23/inclusion-inequality-and-the-fourth-industrial-revolution-4ir-in-africa/#:~:text=Adoption%20of%20Fourth%2DIndustrial%2DRevolution,discussed%20in%20our%20recent%20report.> last accessed 5th September 2023.

facilities") and low digital literacy rates equating to a limited digital skilled populace.[81] This develops the need for "countervailing policy" , where a balance is established between the creation of new employment utilising AI technologies and the skilling , reskilling and upskilling of the current and future workforce in a digital ecosystem that is reflective of the continent's capabilities. [82] To actualize this, policy instruments should seek to set out objectives that provide for investments for digital and ICT infrastructure as well as training opportunities. Training is necessary to "overcome challenges of technophobia" and "reluctancy" of engagement with the technologies.[83] In addition, skilling assists with leveraging infrastructure investments, however skilling has to be reflective of the state's digital illiteracy and demand for skilling to ensure that remodifications of educational curricula and development of training programmes are aligned to meet the needs of African labour market consequently with the demands of global digitalization.[84]

Indicator IV: Strategic Investment in Core Industry Sectors

AI is held to be a powerful tool for development, where its impact is evidently in key core sectors such as agriculture, healthcare, public services and financial services.[85] However, to maximize on its potential , a "sectoral or application-based approach" should be utilized , where AI should be "primarily designed" to integrate into Africa AI's eco system and amplify existing "core sectors of excellence".[86] The sectorial approach is more of tailored approach to investment, where states can design their national AI eco systemin accordance with needs and requirements of their core industries . [87] This allows for AI solutions that are specific to key core sectors , as there is knowledge of how AI will assimilate into each sector and how it approaches the unique challenges, requirements and opportunities the sector possess. This is more of a logical route to adopt, as "spreading small amounts of resources" across various sectors yields a minimal return, thus such an approach would not be justified against the financial priorities and capabilities of African states. [88] Therefore, the sectional approach allows for synergy in terms of harnessing the power of AI to tackle sector-specific problems .

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[81] Chetty K, Qiguo L, Gcora H, Joise J, Wenwei L & Fang C, Bridging the digital divide: measuring digital literacy [2018] Economics Vol 12, 2.
[82] ibid.
[83] ibid.
[84] ibid.
[85] Ndubisi E & Ikechukwu A K, Artificial Intelligence and Socio-economic development in Africa [2022] AJIS Vol 3:1 , 13.
[86] WEF (n37) 11.
[87] ibid.
[88] ibid.

Indicator V: Engaging in Regional and International Collaboration

Appreciating the "pace, scope and global reach" of AI technologies , it is a fantasy to imagine that any state could realise its full benefits by working in isolation.[89]Hence, a collaborative interaction is necessary both regionally and globally to ensure there is mobilisation of expertise and capabilities to maximise on the benefits AI poses as well as mitigate the shortcomings of the technologies.[90] Regionally, the continent would benefit from a collective approach to rulemaking around AI akin to the "collective policy response" of the European states, who also share "cultural disparities" similar to African ones.[91] Despite the diverse nature of the continent , states share a "common history" and essentially a "similar cultural value system".[92] Commitment to a regional initiative would promote standardised means of regulation especially in ethical and governance frameworks , where they would be opportunity to incorporate African values in how they are formulated.[93] This would allow for harmonisation and cohesion for African states. Globally, there is acknowledgement that regulation of AI is one that transcends "national boundaries" as its externalities have a global effect .[94] Thus, international collaboration is essential to ensure there is alignment between the transnational nature of AI and the national character of policy that governs AI.[95] National AI efforts should be complimentary to the global stance of promoting normative values that assist with regulation of AI in a manner that benefits all actors within the global sphere.[96]

Assessment of the National AI Strategic Policy Plans

The following section aims to analyze and evaluate the three accessible African National AI strategy's; Egypt Mauritius and Rwanda. The criterion is on the key dimensions highlighted where; the paper will seek to evaluate whether the key indicators are present within the strategies. Analysis will be modeled around utilizing a quantitative means of assessment, as

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[89] WEF (n86)12.
[90] ibid.
[91] Gwagwa A, Kachidza P, Siminyu K & Smith M, Responsible Artificial Intelligence in Sub-Saharan Africa : Landscape and General State of Play [2021] IDRC, 22.
[92] ibid.
[93] ibid.
[94] Erdélyi J O & Goldsmith J, Regulating Artificial Intelligence Proposal for a Global Solution [2018] AIES' 18,96.
[95] ibid.
[96] ibid.

the indicators will be yard sticks of measurements as to how effective the design is of the national strategic AI policy plans. This will involve the use of a strategic policy design criterion that incorporates scores on the basis of percentages. The score will be categorized into ; Very Good (70-100%) Good (50-69 %) Average (40-49 %) Acceptable (39 %- 49%) Unacceptable (0-39%). Justification of the percentages will be present in the analysis of the results given.**Strategic Design AI Policy Plan Criterion**

Very Good (70-100%)

This category involves an in-depth and detailed presence of all four indicators (*Data Protection laws and Ethics, Multi-Stakeholder Model, Workforce readiness for the Digital Economy , Strategic Investment in Core Industry Sectors and International and Regional Collaboration)* within the national strategic AI policy plan. There is strong evidence that the policy plan articulates how each indicator is incorporated and aligned to the national interests and agenda. Each indicator is contextualised to the state's national context in terms of the state's capabilities and limitations. There is strong evidence of an informed decision , in terms of the policy reflecting a SWOT analysis when formulating the National AI Policy Plan that is reflective of 'instrumental calculations' and 'background factors.

Good (50%-69%)

This category involves a good presence of all four indicators (*Data Protection laws and Ethics, Multi-Stakeholder Model, Workforce readiness for the Digital Economy , Strategic Investment in Core Industry Sectors and International and Regional Collaboration)* within the national strategic AI policy plan. There is a good level of evidence that the policy plan articulates how each indicator is incorporated and aligned to the national interests and agenda. There is good discussion as to how the indicators would be implemented as well as discussion around the state's capabilities and limitations when implementing the indicators There is decent evidence of an informed decision , in terms of the policy reflecting a SWOT

analysis when formulating the National AI Policy Plan that is reflective of instrumental calculations and background factors.

Average (40-50 %)

This category involves an adequate presence of all four indicators (*Data Protection laws and Ethics, Multi-Stakeholder Model, Workforce readiness for the Digital Economy , Strategic Investment in Core Industry Sectors and International and Regional Collaboration*) within the national strategic AI policy plan. There is an adequate level of evidence, that the policy plan articulates how each indicator is incorporated and aligned to the national interests and agenda. There is adequate discussion as to how the indicators would be implemented as well as discussion around the state's capabilities and limitations when implementing the indicators There is adequate evidence of an informed decision , in terms of the policy reflecting a SWOT analysis when formulating the National AI Policy Plan that is reflective of instrumental calculations and background factors.

Below Acceptable (40 %- 0%)

This category involves minimal to no presence of all the four indicators (*Data Protection laws and Ethics, Multi-Stakeholder Model, Workforce readiness for the Digital Economy , Strategic Investment in Core Industry Sectors and International Collaboration*) within the national strategic AI policy plan. There is no discussion as to how the indicators would be implemented as well as minimal to no evidence of the plan reflecting the state's capabilities and limitations. A SWOT analysis is absent from the policy plan.

Countries :

Egypt

Summary

The National AI policy plan is an inclusive promotes the developmental agenda of Egypt when discussing AI. The narrative of the plan is centered around a conscious approach. The strategy is reflective of the realities of the state , as the plan is rooted in a SWOT analysis. The overarching goal is to exploit AI technologies to serve Egypt's developmental goals and

to foster regional and international cooperation.[97]The mission is to effectively "create an AI industry in Egypt". [98]This requires people, technology, policy and infrastructure.[99] To actualize the above, there are four pillars and four enablers of the strategy.[100] The pillars are AI for government, AI for development, capacity building and international relations. [101] These pillars are underpinned by four enablers: governance, data, ecosystem and infrastructure.[102]

Analysis

Indicator I – Data Protection Law and African Ethics

The policy plan acknowledges that data plays a significant role in reshaping modern society, as it affects every segment of day to day life. In relation to data protection , the strategy acknowledges data protection as an important aspect of an effective AI and data eco-system, as it mentions Egypt's Personal Data Protection Law 2020, as the main legal basis for advocating for the security of personal data, that is processed and stored online.[103] In addition, it emphasizes that, the act provides for oversight on "data transmission with other countries."[104] The plan advocates for an effective data strategy that seeks to categorize data according to its sensitivity and develop suitable and effective measures.[105]Classification is to assist with maintaining national security and the privacy of the state's citizens. [106]It ranges from top secret to unclassified. The strategy defines the responsibilities and roles of each data actor ; owner , curator and user.[107] This allows for transparency that provides insights as to how the data will be shared and the benefit it yields to each data actor.[108] Furthermore , the plan encourages the set up a local data center that aims to provide, "data locality, scalable storage and computer resources."[109] Looking towards ethics, there is an attempt for the plan to contextualize to its national setting, as it seeks to develop an Egyptian Charter for Responsible AI. [110] With the charter, the National Council of Artificial Intelligence (NCAI) is

[97] Ministry of Communications and Information Technology, Egypt National AI Strategy <https://mcit.gov.eg/en/Artificial_Intelligence > last accessed 1st September 2023.
[98] ibid.
[99] ibid.
[100] ibid.
[101] ibid.
[102] ibid.
[103] The National Council for Artificial Intelligence, Egypt National Artificial Intelligence Strategy < https://mcit.gov.eg/Upcont/Documents/Publications_672021000_Egypt-National-AI-Strategy-English.pdf> last accessed 2nd September 2023.
[104] ibid.
[105] ibid.
[106] ibid.
[107] ibid.
[108] ibid.
[109] ibid.
[110] ibid.

formulating training programs for AI practitioners on the ethics of AI , starting from university education , where ethics in technology should be part of the curriculum.[111]

The appropriate score for this indicator is very good – 80% , as there is strong evidence that the privacy of the citizens is at its core objectives of regulating how data is regulated and utilized. This is evident with the utilization of the Personal Data Protection Law 2020 as the main legal basis for regulating how the data eco system would function in light of AI. In terms of implementation the plan articulates a strategy as to how data governance would be at the core of the industries that incorporate AI .There is contextualization with its ethical principles, where the state aims to curate its own set of ethical practices that are aligned with national values.

Indicator II – Incorporating a Multi-Stakeholder Approach

The mission statement of the strategy promotes the notion of "human -centric AI" where there is prioritization of the populace well-being and presence of a "multi-stakeholder dialogue" in the design and deployment of responsible AI , with the overarching goal of formulating informed based policy.[112] The model is reflected in the creation of committees that are encompassed of business experts, academics, researchers and potential beneficiaries.[113] The role of these committees are to study the potential use cases of AI within different sectors, where their input will be utilized to progress and refine the strategy to increase uptake of AI. .[114] The role of the committees as well is to ensure exchange of knowledge and best practices to guide the development and use of AI for the nation's betterment. [115]

The appropriate score for this indicator is good – 68% , there is substantial evidence as to how a multi stakeholder approach is applied and would be beneficial to the design and deployment of AI, however, to reach a score of very good , more discussion would be needed in terms of ; the process of choosing the stakeholders, diversity of the stakeholders as well as more information as to how the process of stakeholder consultation would occur through the different phases of the plan from implementation to monitoring and evaluation.

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[111] ibid.
[112] ibid.
[113] ibid.
[114] ibid.
[115] ibid.

Indicator III- Human Capital

The plan provides for a comprehensive discussion on the need to prepare the workforce for the digital economy. The plan has a dedicated chapter, that focuses on formal education and training of its citizens to utilize AI effectively. This involves integrating digital skills into curricula from the very early stages of education (preparatory) , where focus is on "exposing students to the basics of AI". [116]This allows for a "base" where potential AI experts can emerge from.[117] The idea is that students should possess a basic understanding of AI , where the teaching of AI should be mandatory.[118] Moving on to the secondary stage, AI becomes an elective unit, as a student would already possess a basic understanding , therefore the elective would be centred around an in-depth discussion of AI.[119] The mode of teaching needs to be interactive , where it takes into account the level of the students' numeracy and technological knowledge and competence. The course would be designed to address AI and its workings plus the societal implications of AI and the importance of Ethics when applying AI. [120] Looking towards higher learning , there is encouragement of STEM programs that integrate AI into the main teaching. [121] The courses should be accessible to students who have "adequate levels" of STEM knowledge. [122]Additionally to promote practicality of these courses , the Egyptian Ministries of Communications and Information Technology (MCIT) and Higher Education and Scientific Research (MHESR) have teamed up to establish a technical university that offers both undergraduate and postgraduate programs in AI, where there is opportunity for students to apply their learning to real life projects.[123] Looking towards Technical and Vocation Training (TVET), the plan establishes key objectives for the institutions to achieve.[124] They include ; introducing AI educators to the students, increasing innovations of technical schools that utilise AI to be used on a larger scale and implement them on a nationwide platform.[125]

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[116] ibid.. 38-40.
[117] ibid..
[118] ibid.
[119] ibid.
[120] ibid.
[121] ibid.
[122] ibid.
[123] ibid.
[124] ibid.
[125] ibid.

The appropriate score for this indicator is very good – 85% , there is commendable evidence as to how the workforce is being prepared for the digital economy. The plan has a dedicated chapter that focuses on digital literacy and the utilisation of AI from the earlier stages of education all the way to university level. In addition, it provides for reformulation of TVET programs to integrate AI with the overarching goal of producing a capable and digital literate workforce that integrates effectively and generates AI innovations that would be beneficial for the state.

Indicator IV – Strategic Investment in Core Industries

There is a call for utilisation of AI in "vital developmental sectors" through partnerships with beneficiaries and local or foreign tech partners, to ensure resource mobilisation is present when addressing Egypt's developmental needs.[126] There is prioritisation of AI in the following sectors ; Agriculture , Water management and environment , Finance and Banking and Manufacturing and Smart Infrastructure management.[127] The plan goes in-depth in each industry , where discussions are reflective of a SWOT analysis in terms of how AI would assimilate in each industry effectively. [128] This involves ; assessing the impact of AI in each industry in terms of its benefits and how they would be actualised within the Egyptian context.[129]

The appropriate score for this indicator is good – 68% , there is substantial evidence as to how AI would be applied to the vital industries, however to reach a higher score, more discussion on the SWOT model should have been expounded on , as discussion is centred on the strengths and opportunities of employing AI . Therefore , discussion should have extended to assess the weaknesses and threats of AI .

Indicator V – International and Regional Collaboration

There is acknowledgement that a collaborative approach to AI is 'essentially beneficial' for the state , as the state believes in the "worldwide transfer of knowledge" which exists through

[126] ibid..29-33.
[127] ibid.
[128] ibid.
[129] ibid.

intentionally creating relevant networks regionally and globally.[130] The state is actively engaged in global discourse , as it aims to articulate the perspective of the global south , to ensure the discussions around AI development addresses the current socio-economic needs of the continent. [131] To ensure international cooperation , the plan calls for active participation of the state in international conferences and relevant consortia. It pushes for mulit-stakeholder effort at national, regional and international levels , where technological consultations should take place amongst international governments. [132] Active collaboration is present as it seeks to promote AI research , ethical considerations , capacity building and socio-economic impact amongst the projects it undertakes with global actors.[133] Regionally , the state is aiming to launch initiatives on a regional level to unify the voices and promote cooperation in how AI is designed, deployed and regulated within the continent.[134]

The appropriate score for this indicator is very good – 75% , there is strong evidence as to how it is important to acknowledge international and regional collaboration in deploying and regulating AI. The plan adopts a progressive approach to active collaboration as it seeks to influence discourse, regionally and globally, of how AI can be utilised and regulated. It provides for actionable steps to actualise this through the objectives laid out. However, to achieve a higher score, more in-depth discussion would have been beneficial in terms of creating an implementation plan of the set objectives.

Conclusion

The plan has an average score of 75 (Very good) , this is justified on the basis that, the plan has all the five key indicators present within the strategy. The plan is very contextualised to the state's realities, this is evident with initiatives such as Arabic Natural Language Processing (NLP), where the state aims to utilise Arabic NLP to create AI applications that would be utilised by its populace.[135] In addition, the national plan is practical, as it provides for an implementation plan ; execute, plan and explore framework. [136]The framework is one that adopts a "funnel approach ", where the national AI strategic goals are categorised based on their stage of "maturity and implementation."[137] To ensure further efficacy, the plan as

[130] ibid..44.
[131] ibid.
[132] ibid.
[133] ibid.
[134] ibid.
[135] ibid.. 34.
[136] ibid.
[137] ibid..54-67.

well creates a monitoring and evaluation mechanism that is based on performance indicators encompassing of both " qualitative and quantitative metrics" that are there to benchmark the progress of the plan through "tangible examination". [138] The examination is based on three factors ; total strategy impact, strategy thought leadership and strategy execution effectiveness.[139] The process of monitoring and evaluation is throughout , as the aim is to ensure continuous reviews and improvements of the plan, as it is treated as "a living document" until the finalisation of the strategy in 2030.[140]

Mauritius

Summary

Mauritius Artificial Strategy Plan 2018 was the first strategy drafted by an African state. The plan is the guiding instrument that establishes the "cornerstone of the next national development model." [141] It assists in actualising the potential of AI to improve the economic growth , productivity and quality of life for the Mauritian state.[142] The main focal areas of the plan are centred around ; matching existing and new AI solutions to specific sectors and areas, establishing a 'Mauritian unique selling point' of AI , an appropriate ecosystem to nurture AI with focus on creating collaborative communities , human capital to sustain the AI eco system and lastly a regulatory framework that acts as a catalyst for AI development and fiscal growth.[143]

Analysis

Indicator I – Data Protection Law and African Ethics

The plan appreciates that AI requires a surplus amount of data to operate at an optimal level as, "the greater the amount of data these AI systems have, the better the decisions become."[144]

[138] ibid.
[139] ibid..67-71.
[140] ibid.
[141] Mauritius Working Group on Artificial Intelligence, Mauritius Artificial Intelligence Strategy [2018] < https://ncb.govmu.org/ncb/strategicplans/MauritiusAIStrategy2018.pdf> 2, last accessed 15th September 2023.
[142] ibid..16.
[143] ibid.
[144] ibid.

Therefore, the plan recognises the use of AI has consequences that touch on privacy , data protection and the rights of the populace. Failing to appreciate this, leads to poor data governance , where there would be an unintentional release of secure and confidential information . [145] To mitigate this, necessary amendments to Data Protection legislations should be in place to ensure the rights of the populace are upheld. Furthermore, policy initiatives such as data centres should be explored , where there is advocation for safe and accessible data.[146] In terms of ethics, the plan advocates for an ethical AI eco system . To establish , it seeks to create a permanent committee on ethics to assist with maintaining ethical dialogue and formulating proposals . [147]

The appropriate score for this indicator is good – 51% , the plan acknowledges the need for effective data governance to regulate how data is utilised as well as protecting the privacy rights of its citizens. Additionally, there is mention of amending Data Protection legislation to ensure the rights of its citizens are upheld and data is protected. The discussion around the creation of data centres is a positive sign, as it combats possible threats of cross data border flows. However, to achieve a higher score , the plan should go more in-depth as to the implementation of what constitutes as effective data governance , specifically how legislation would be fit for purpose in addressing potential data breaches that AI yields as well as what sort of ethical principles would be formulated to guide the use of AI within the state.

Indicator II – Incorporating a Multi-Stakeholder Approach

Under this indicator, the plan provides for recommendations that call for collaborative stakeholder action in terms of defining specific projects with clear responsibilities and implementation timelines to foster AI in Mauritius. [148] Moreover , it allows for a local company ranging from Micro, Small and Medium Enterprises and Large Companies to provide insights for collaborative research and development projects with “commercial potential” in partnership with local academic research and tertiary institutions in relation to AI innovation.

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[145] ibid.
[146] ibid.
[147] ibid.. 67.
[148] ibid..54.

The appropriate score for this section would be adequate- 40%, the presence of stakeholders is evident , however there is limited discussion as to actual engagement with stakeholders in terms of their insights as to how AI should be developed and regulated.

Indicator III- Human Capital

Looking towards skill development, there is appreciation that, a limited supply of AI talent exists within the eco system. Therefore, to enhance research and development of AI in the public and private sphere, Mauritius needs to develop a skilled AI workforce. In terms of expertise skill set, the state seeks to gather global expertise to work concurrently with local computer scientists and mathematicians to cultivate local talent that will sustain the local AI eco system and deploy 'Mauritian AI' solutions in targeted sectors. [149] Assessing education, AI should be an existing elective module at university level, where it should be reviewed, and programming and coding should mandatory for all disciplines.[150] Essentially in the long run , there should be strategic investments in STEM education, national retraining programs and lifelong learning to ensure the populace are equipped with digital skills to integrate effectively into the digital economy. [151] In view of the existing workforce, the reskilling of the workforce needs to be addressed through the formulation of a scheme that enables workers to acquire skills to "improve their occupational mobility."[152] Additionally , innovative initiatives such as "talent watch" allows for the state to capitalise on AI talent to streamline with industry needs , as the watch would be responsible for determining, the industry needs in terms of AI and AI related profiles and skills, with main goal of matching the skillset to future employment.[153]

The appropriate score for this indicator is very good – 70% , there is considerable amount of evidence as to how the workforce is being prepared for the digital economy. The plan has a dedicated chapter that focuses on skill development and the utilisation of AI from various perspectives of the existing workforce ; developer to user of AI. In addition, the plan provides for benchmarking from existing established AI eco systems, as it calls for the use of global expertise as a means of guiding local expertise on the development of AI. To achieve a

[149] ibid-65.
[150] ibid.
[151] ibid.
[152] ibid.
[153] ibid.

higher score , the plan should provide for specific discussions as to the implementation of the initiatives it has listed.

Indicator IV – Strategic Investment in Core Industries

There is exhaustive analysis as to how AI should be implemented in each of the core industries; healthcare, fintech, agriculture , ocean economy and transport. [154] The discussion of these key sectors is in depth , where the application of AI is evaluated through a SWOT lens.[155] Each unique condition of each sector is catered for in discussions, as it highlights the impact of AI in terms of how it would disrupt and benefit the sector.

The appropriate score for this indicator is very goods - 87%, there is substantial evidence as to how strategic investment of AI into the different sectors would play out. Discussion of the sectorial approach forms majority of the policy plan , as it provides for an in-depth analysis of AI impact , benefits and challenges that would exist in each sector.

Indicator V – International and Regional Collaboration

In view of collaboration , there is no elaborative chapter that discusses how the state would aim to collaborate with regional and international actors, however there is presence of international collaboration through the inclusion of international experts within the Mauritius Artificial Intelligence Council.[156] Showcasing evidence of international interaction , in terms of international exchange of knowledge. Regionally , there is mention of Mauritius as a "regional pioneer" in view of establishing adequate framework for other African states in the fintech industries that utilise AI.[157]

The appropriate score for this section would be adequate- 40%, there is limited discussion as to how the state would engage with international and regional actors. To achieve a higher score, there would be need for a detailed section , that expound on what sort of interactions the state would be aiming at regionally and internationally.

<u>Conclusion</u>

[154] ibid.
[155] ibid-59.
[156] ibid.
[157] ibid.

The plan has an average score of 56 (Good). The score is justified on the basis that ,there is a good attempt to incorporate all four indicators into their national plan. Bearing in mind, that the strategy was formulated in 2018, it is understandable as to why certain indicators are not adequately covered, as AI discourse was still at its nascent stages. However, considering the amount of discourse that has emerged , the plan should aim to continuously adapt to today's standards. Specifically, in areas such as multi- stakeholder /collaborative models, as now there is societal and industry awareness of AI and the impact it poses. In view of regional and international collaboration, there is presence of regional initiatives and international initiatives where the state can actively participate and influence discourse. However, we commend the strengths of the plan such as the sectorial approach it adopts in its core industries. The plan is analytical and evaluative when assessing how AI would be implemented within each industry.

Rwanda

Summary

The National Artificial Intelligence Policy is a roadmap to the state harnessing the benefits of AI as well as mitigating the potential risks of AI .[158] The plan is in alignment with the current national plans in place ; vision 2050 and Smart Rwanda Master plan.[159] This allows for a synergistic effect to occur, as the plans concurrently work towards achieving the main goals of the state.[160] Essentially the plan is a catalyst for Rwanda harnessing AI for "sustainable and inclusive growth" as it seeks to mobilise local, regional and international stakeholders , where mobilisation will assist with positioning the state to become a "leading African Innovation Hub and Africa's Centre of Excellence in Artificial Intelligence." [161] The policy fosters inclusive and sustainable socio-economic transformation that is rooted around the national agenda of the state.

Analysis

Indicator I – Data Protection Law and African Ethics

[158] Rwanda Ministry of ICT and Innovation, Rwanda National AI Policy [2022] < https://www.minict.gov.rw/index.php?eID=dumpFile&t=f&f=67550&token=6195a53203e197efa47592f40ff4aaf24579640e> last accessed 18th September 2023.
[159] ibid.
[160] ibid.
[161] ibid.

A robust data strategy is a priority area for the policy plan as it seeks to , " increase the availability and access to quality data for training AI models."[162] This is actualised through implementable activity. The activity is allocated a time period and a responsible leading institution. Key activities that align with this indicator include; the "conduction of a feasibility study for the implementation of data sharing /infrastructure within the state and developing frameworks and protocols for data sharing through a public-private and multi-sectoral taskforce."[163] However, in terms of data protection this falls under a different priority area (*reliable infrastructure and compute capacity*), where there is enforcement of data protection and privacy laws as well as the publication of guidance targeted towards industry and users on the applicability of privacy legislation within cloud computing.[164] In view of ethics, there is a priority area dedicated to its discussion. The output of this area is to promote the "widely diffused and operationalised guidelines on the ethical development and implementation of artificial intelligence." [165] This is implemented through activity such as promoting and advertising "Rwanda's Guidelines on the Ethical Development and Implementation of Artificial Intelligence" , incorporating a multi stakeholder approach to discussing the development of sector-specific AI ethics guidelines as well as updating and releasing new versions of the guidelines to incorporate input from the consultations, government priorities and the latest trends in AI development and deployment.

The appropriate score for this indicator is good – 68% , the plan appreciates the need for quality data for AI to function , to safeguard data it looks towards promoting data protection and privacy legislation. In view of ethics, there is extensive discussion as to the formulation of a national guidelines as well as a multi-stakeholder approach to the design of the guidelines. The guidelines aim to adopt a progressive means of development , as they would be regularly updated to ensure conformity with government priorities and the latest trends in AI development and deployment. To achieve a higher score, analysis should have expounded more on data protection and privacy , listing the key components of legislation and how they would be upheld should be present.

Indicator II – Incorporating a Multi-Stakeholder Approach

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[162] ibid.
[163] ibid.
[164] ibid.
[165] bid.

The multi-stakeholder model is an active feature of the plan, as it is highlighted in key priorities areas. Starting off with priority area 2 ; reliable infrastructure and compute capacity ; we see the model utilised as a means of promoting dialogue in the tertiary education sector to ensure identifiable measures for establishing necessary skills set for cloud computing . [166] Priority area 5 ; widely beneficial AI adoption in the private sector; we see the importance of gathering stakeholder input when analysing the benefits of AI to industry.[167] Assessing AI adoption , the plan calls for collaborative action between industry, researchers and technology companies to innovate solutions that would be reflective of the public and private sector needs.[168] Within the ethical priority area, the plan acknowledges the need for an annual participatory industry and society consultation forum to assist with comprehending how stakeholders are applying the ethical guidelines and the operational challenges that arise with application.[169]

The appropriate score for this indicator is very good – 72% , the model is embraced in key priority areas of the plan. It promotes dialogue in important areas of AI deployment and regulation that are vital for the state to utilise when harnessing the benefits of AI.

Indicator III- Human Capital

Building 21st Century Skills and AI Literacy is an essential objective and priority area of the policy plan. [170] There is acknowledgement that Rwanda's workforce needs to be equipped with pre-requisite skills to flourish within the transition, as well as remain competitive in the regional and global arena. [171] This is achieved through the formulation of the National Skills Building Program that empowers the populace with AI and data skills as well as the opportunity to apply their skills through the Young Professionals/Apprenticeship Program to develop AI talent and career opportunities in the digital economy. [172]Investments in public and private partnerships are held to be key enablers in establishing AI skills programs both in formal and informal education.[173] It appreciates that an economy requires "long term investment" in human capital from the early stages of primary education level all the way to university level, thus it advocates for a change in curricula to ensure adaption to the fourth

[166] ibid.
[167] ibid.
[168] ibid.
[169] ibid.
[170] ibid.
[171] ibid.
[172] ibid.
[173] ibid.

industrial revolution and its technologies. [174]The investment also extends to the teachers, where the state aims to invest and create a Teacher Corps to provide support and training to learners in AI and data- related subjects. [175]

The appropriate score for this indicator is very good – 80% , there is commendable evidence as to how Rwanda is preparing its populace for the digital economy specifically on AI and data skills. The plan categorises it as a key priority, where discussions aim to provide insights as to how the state is actualising this objective. This is evidenced by reformulating curricula, training teachers, creating a national learning program and promoting STEM at all levels of education.

Indicator IV – Strategic Investment in Core Industries

The plan advocates for strategic investment in the private sector, as it promotes for the beneficial adoption of AI in key sectors . [176] The key sectors include ; healthcare ,banking and digital payments , e-commerce and trade, transportation, agriculture, public administration and education, manufacturing and construction.[177] It targets robust investment in these targeted AI industries , where the aim is to generate social and economic impact as well as innovative growth opportunities. [178] To achieve this , there is the conduction of a market study to forecast the economic impact of the implementation of AI within these industries, where the findings assist with developing proof concept plans for national AI projects.[179] In addition to aims to develop sector specific industry AI deployment plans where it provides specific guidance on the AI solutions to adopt.[180]

The appropriate score for this indicator is very good – 80% , there is clear evidence as to how the state aims to invest in the key identified sectors. It provides for informed analysis through market research and consultation with key industry players in terms of formulating concrete investment plans for generating applicable AI solutions

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[174] ibid.
[175] ibid.
[176] ibid.
[177] ibid.
[178] ibid.
[179] ibid.
[180] ibid.

Indicator V – International and Regional Collaboration

International collaboration is considered to be vital in driving the sustainable development of AI.[181] The state aims to create meaningful international partnerships , that would drive the development of AI in Rwanda as well as "spur" local, regional and global investment in AI foundations. It targets international discourse as it desires to actively contribute to the shaping of responsible AI principles and practises globally , with a focus of providing a "Rwandan Perspective" into international and regional discourse on AI.[182]

The appropriate score for this indicator is very good 70% , there is clear evidence as to how the state aims to collaborate internationally and regionally. It pushed for its own voice in terms of influencing regional and international AI discourse.

Conclusion

The average score of the state is 74- very good, as all the indicators are sufficiently present within the plan. The plan adopts a practical stance to assessing the impact of AI within the state. This is evident with the structure of the plan that creates , quantifiable objectives that have a set period for implementation. Its objectives are rooted in informed analysis as the plan is reflective of a diagnostic assessment of Rwanda's AI Ecosystem. Therefore, the plan is centred around evidence-based analysis that is essential to creating objectives and strategies that are capable of being implemented and achieved.

[181] ibid.
[182] ibid.