NATIONAL DIGITAL STRATEGY NAMIBIA 2025 - 2028

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I. Abbreviations

4IR	Fourth Industrial Revolution
AI	Artificial Intelligence
ANOVA	Analysis of Variance
AU-EU D4D	African Union-European Union Digital for Development
BON	Bank of Namibia
COVID-19	Coronavirus Disease 2019
CRAN	Communications Regulatory Authority of Namibia
D4D	Digital for Development
DQLI	Digital Quality of Life Index
DPR	Data Protection Regulations
ECB	Electricity Control Board
ECI	Economic Complexity Index
ECD	Early Childhood Development
ESTDEV	Estonian Centre for International Development
GDP	Gross Domestic Product
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
GRN	Government of the Republic of Namibia
HPP	Harambee Prosperity Plan
HTTPS	High-Tech Transfer Plaza Select
ICT	Information and Communication Technology
ID	Identification Document
ISP	Internet Service Providers
IT	Information Technology
ITAS	Income Tax Automation System
KPIs	Key Performance Indicators
LAN	Local Area Network
MAFWLR	Ministry of Agriculture, Fisheries, Water and Land Reform
MBps	Megabytes per second
M&E	Monitoring and Evaluation
MEFT	Ministry of Environment, Forestry & Tourism
MOF	Ministry of Finance

MICT	Ministry of Information and Communication Technology
MIME	Ministry of Industry, Mines and Energy
MIRT	Ministry of International Relations and Trade
MJLR	Minister of Justice and Labour Relations
MOU	Memorandum of Understanding
MTC	Mobile Telecommunications Company
MVA	Manufacture Value Added
NCRST	National Commission on Research, Science and Technology
NCSIRT	National Cyber Security Incident Response Teams
NIPAM	Namibia Institute of Public Administration and Management
NIPDB	Namibia Investment Promotion and Development Board
NDP	National Digital Plan
NDP5	Fifth National Development Plan
NDS	National Digital Strategy
NDSETT	National Digital Strategy 'Executive Think Tank
NPC	National Planning Commission
NUST	Namibia University of Science and Technology
OICTP	Overarching ICT Policy 2009
OMAs	Offices, Ministries, and Agencies
OPM	Office of the Prime Minister
PPPs	Private-Public Partnerships
RMT	Resource Mobilisation Theory
R&D	Research and Development
SADC	Southern African Development Community
SDGs	Sustainability Development Goals
SME	Small and Medium-sized Enterprises
SPSS	Statistical Package for the Social Sciences
SSA	Sub Saharan Africa
STEAM	Science, Technology, Engineering, Arts, and Mathematics
STEM	Science, Technology, Engineering and Mathematics
SWOT	Strengths, Weaknesses, Opportunities, and Threats
UNCTAD	United Nations Conference on Trade and Development
UNICEF	United Nations International Children's Emergency Fund
USD	United States Dollar
USP	Universal Service Provisions
VASPs	Virtual Asset Service Providers
WEF FoP	World Economic Forum Future of Production
WGA	Whole-of-Government Approach
WSA	Whole-of-Society Approach

II. Glossary

Digitisation: Refers to the conversion of analogue, non-digital data into electronic form.

Digitalisation: Builds on digitisation by using digital technologies to improve processes and performance.

Digital Transformation: Refers to the social, economic, or business transformation enabled by digitalisation. The essence of digital transformation is the changing of processes and forces enabled or forced by digitalisation technologies.

Digital Government: Referred to as "e-government," or as "electronic government," describes how government organisations employ digital technology, information, and communication tools to improve public service delivery, efficiency, accountability, and transparency, as well as to interact with businesses and individuals.

Strategic Pillars: In this context are key areas or fundamental components that guide and underpin the overall vision and objectives of the strategy. These pillars embody the foundational values and priorities that need to be addressed to achieve the strategic goals of the digital transformation efforts in a nation. They serve as the core elements on which the strategy is built and help define the key focus areas for implementing digital initiatives and policies.

Strategic Framework: A structured and organised approach to defining and implementing a strategy within an organisation, government, or any other entity. It serves as a blueprint or roadmap that outlines the key components, priorities, and actions necessary to achieve specific objectives and goals. A strategic framework provides a high-level structure for strategic planning, decision-making, and resource allocation.

Agility: Refers to the ability of a government or a nation to adapt, respond, and thrive in an environment characterised by rapid technological change and evolving digital landscapes. It involves being flexible, dynamic, and responsive to emerging opportunities and challenges in the digital realm.

Cross-cutting themes: Refers to key issues or areas that have a pervasive and interconnected impact across various sectors and domains. These themes are not limited to a single area but affect multiple aspects of governance and society.

Peri-urban: Refers to the transitional areas surrounding cities and urban centres.

E-commerce: Means buying and selling goods or services over the internet.

Fintech: Technology used in financial services, such as mobile banking apps or cryptocurrency.

Internet of Things: The network of physical devices connected to the internet, allowing them to exchange data.

Nascent archetype: An early or emerging example or model of something.

Phishing: A fraudulent attempt to obtain sensitive information, such as usernames, passwords, or credit card details, by pretending to be a trustworthy entity in an electronic communication.

Picture for illustrational purpose only

III. Acknowledgements

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EXECUTIVE DIRECTOR

The Government of the Republic of Namibia expresses its sincere gratitude and appreciation to the Gesellschaft für Internationale Zusammenarbeit (GIZ) for their crucial financial support and contributions to the development of the strategy. Distinct acknowledgment is also extended to Impact Tank Namibia and UNDP Accelerator Lab, the entities contracted to develop and draft the National Digital Strategy. Sincere appreciation is also extended to all public, private and civil sector stakeholders that participated in the Strategy's workshops and consultations. Your valuable contributions are all appreciated.

IV. Foreword by the Minister

Hon. Emma Theofelus, MP
MINISTER

Evidence from regional African counterparts such as Kenya and Nigeria demonstrate that technology offers Namibia an unparalleled opportunity to leapfrog existing industrial deficits and transition into a prosperous knowledge economy. However, this transformation requires a proactive, targeted strategic vision; one that crafts an ambitious digital transformation agenda firmly rooted in the virtues and contextual realities of Namibia. The National Digital Strategy for 2025-2028 embodies this vision and arrives at a critical time, a time when the rapid pace of technological advancement aligns with the growth of Namibia's youthful population. Harnessing these dynamics is crucial for accelerating socio-economic development and achieving the goals outlined in Namibia's Vision 2030.

The strategy presents a compelling vision for a future characterized by both innovation, and economic growth, while not forsaking principles of inclusion that are necessary to drive the country forward. Highlighted by its whole-of-society methodological approach and the mission of "realising a future where the benefits of digitalisation extend across the nation". Achieving this mission requires the alignment of and collective collaboration from of all sectors of society as digital transformation necessitates the input and voices of all Namibians.

The outcomes of implementing this strategy are clear and worth investing in. By empowering Namibians with the necessary skills and tools, the strategy ensures that no one is left behind. Leveraging global advances in technologies like artificial intelligence will position Namibia at the cutting edge of the growing Knowledge Economy. The efficiencies gained through digitalisation will enhance government services, streamline business processes, and improve governance, leading to increased productivity and sustainable development.

Furthermore, the digital strategy lays the groundwork for a more interconnected and collaborative society, one where digital literacy fosters "creators" rather than mere "consumers". By leveraging data, Namibia can make informed policy decisions, enhance public services, and effectively address societal challenges. The strategy also underscores the importance of data protection, ensuring that digitisation's benefits are matched by a strong commitment to privacy, security, and alignment with global best practices.

The Government of Namibia firmly believes in the transformative power of ICT as a development imperative. It is fully committed to digital transformation and will continue to invest in partnerships, initiatives, research, and technology applications to unlock Namibia's many talents, innovations, and opportunities.

The digital strategy for Namibia is not just a plan; it is a proactive and visionary roadmap towards a future where the nation can become a leader in the digital economy and provide for its people.

V. Executive Summary

The National Digital Strategy (NDS) sets forth a comprehensive blueprint for country's holistic digital development for the period of 2025-2028. A directive from the Namibian Cabinet, the NDS was developed to formalise a vision and roadmap for the country to leverage the power of technology to accelerate its national development goals. This strategy is aligned to and aims to accelerate Vision 2030, Harambee Prosperity Plan 2, and the National Development Plan 6. It also complements other key strategic documents that intersect with Information and Communication Technologies (ICT).

The 'Strategic Context' chapter outlines Namibia's digital maturity level, accompanied by benchmarking the country's digital readiness and learning from digital strategy case studies regionally and internationally. This research and analysis helped inform the strategic direction and focus of the document.

The 'Methodology' chapter introduces a multi-layered, multi-modal approach to strategy development, applying international best practices in digital policymaking with deeply relevant contextual insights and application. This consisted of rigorous desktop research, public workshops, expert interviews and a national survey. This research revealed the key opportunities to leverage and gaps to address to elevate Namibia to a digitally empowered nation.

The '**Strategic Framework'** chapter introduces:
Three foundational values underpinning the strategy design, (Whole-of-society approach, Sustainability and Agility).

Three Cross-cutting themes (Cybersecurity, Emerging technology, Women and Youth).

Five main Strategic Pillars which encompass the actions and needs that are most critical for national digital transformation in Namibia's context.

The Strategic Pillars chapter expand on the 5 key pillars, providing an ambitious but realistic digital transformation agenda that has the greatest potential to realise socio-economic and environmental gains through technological advancements:

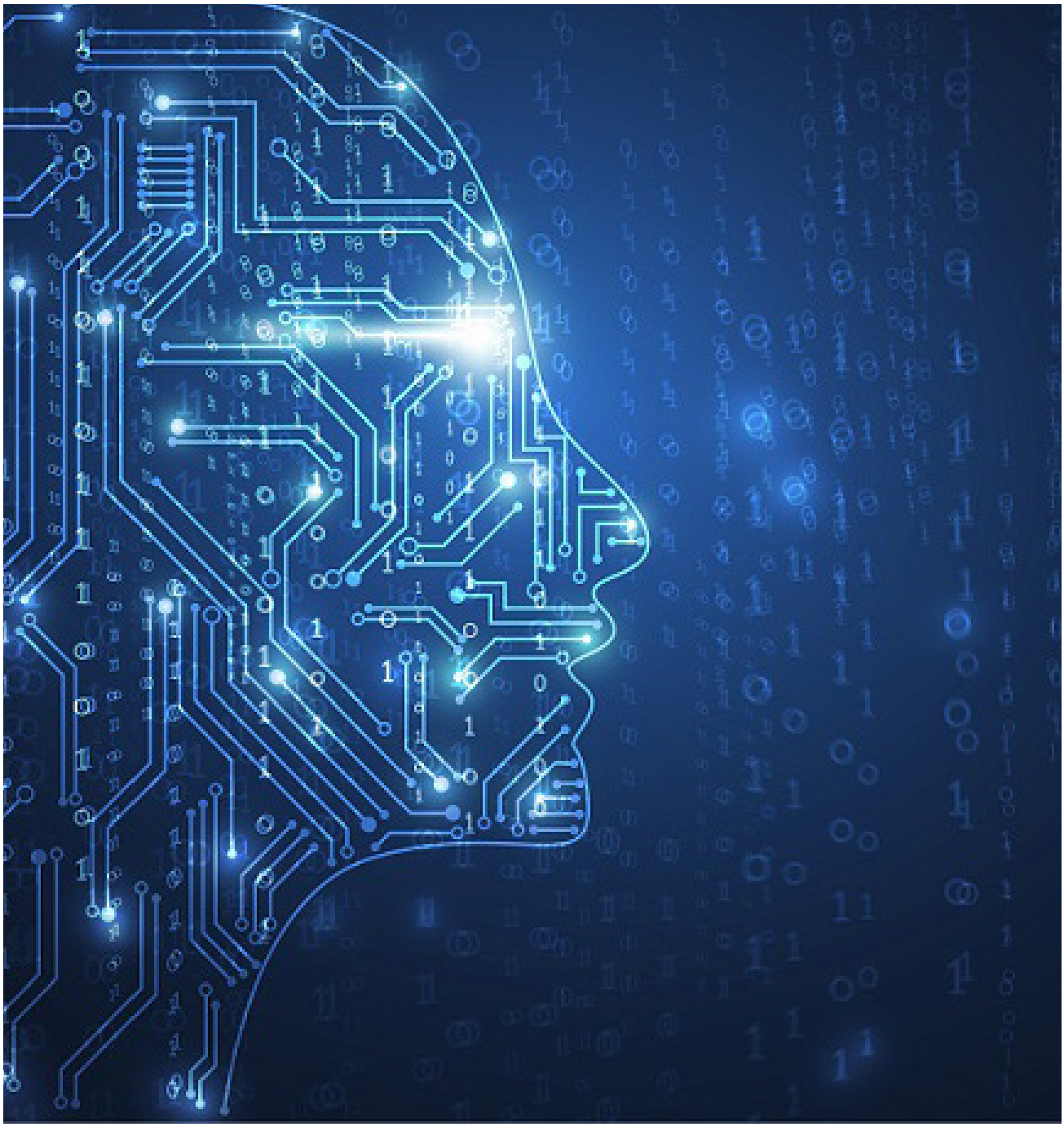
- **Digital infrastructure**: Improve affordable access to and speed of the internet to achieve last mile connectivity;
- **Digital Skills:** Develop a digitally literate population that can take advantage of the opportunities of the digital economy;
- **Digital Government**: Improve government data sharing and deliver secure and accessible digital public services;
- **Industry and innovation**: Policy direction and adoption of digital business services. Improve Namibia's ability to engage in the global technology market; and
- **Policy and regulation**: Ensure a robust and agile ICT legislative environment that creates an enabling policy environment for innovation, entrepreneurship, and public-private partnerships.

- **The Implementation and Monitoring & Evaluation chapter:** outlines the operational and practical approach to help realise the ambitions set out by NDS. This includes a clearly defined and simple institutional governance framework to execute, monitor and evaluate the development of this strategy. It also suggests actions and frameworks for resource mobilisation and public awareness raising.

Multi-level, multi-stakeholder partnerships will be crucial to achieving the goals set out by the strategy and this section outlines key mechanisms and actors that will help facilitation meaningful partnerships.

The Implementation Action Plan, under the Appendix contains the detailed roadmap which elaborates on the specific and measurable initiatives and tasks required to realise the mission and vision of the strategy. The rest of the appendices contains the references, tables, figures that helped inform the research and analysis informing the strategy.

Overall, the National Digital Strategy outlines the strategic architecture of Namibia' digital transformation plan. Inclusive implementation of this strategy will help usher in a new era of digitally enabled citizens and achieve the strategy's mission of bridging the digital divide, promoting digital literacy, providing access to citizen-centric digital public services and creating greater economic opportunities for all Namibians.



1. VISSION AND MISSION SATEMENT

TRANSFORMING THROUGH TECHNOLOGY

The Vision - is to empower Namibians to thrive in a digital era by through sustainable digital ecosystem which strategically leverage digital innovations for national development.

DIGITAL DIVIDENDS FOR ALL

The Mission of the Namibia National Digital Strategy is to create a roadmap to realise a future where the benefits of digitalisation extend across the nation in the next 3 years; bridging the digital divide, promoting digital literacy, providing access to citizen-centric digital public services and creating greater economic opportunities for all Namibians.

2. STRATEGIC CONTEXT

2.1. Namibia's digital readiness

The scope of digital transformation efforts varies depending on a country's economic, political, and social context, as well as factors relating to infrastructure (digital connectivity), skills (technical knowledge, productive capabilities), and regulatory maturity. Realising the opportunities for economies to digitise, governments worldwide are increasingly putting digital transformation at the centre of their policy agendas to drive good governance, social development, economic prosperity, as well as enhance environmental sustainability. Overall, Namibia performs moderately well when looking at financing, governance, and institutional frameworks, however, Namibia performs below average when looking at the country's digital infrastructure, human capital, and innovations for digital trans- formations.[1]

The advancement in digital technologies present unprecedented opportunities for Namibia to drive socio-economic development. However, vast subnational disparities in access to basic infrastructure, education for human capital, as well as innovative employment opportunities pose a major threat to the equitable digital transformation for Namibia.

According to global data, only 56% of the population have access to electricity. Furthermore, in 2019 it was reported that only just over 30% of schools are connected to the Internet[2]. For the Namibian youth to partake in the digital sphere, internet connectivity at the school level is crucial.

Poor performance in subjects such as Science, Technology, Engineering, Arts, and Mathematics (STEAM), is exacerbated by limited opportunities for upskilling and reskilling unemployed youth with ICT vocational training programs. This has resulted in a poor development of technical know- how to advance to digital transformation in Namibia. As a result, the few innovations in digital trans- formation lack qualified people and rarely reach market maturity causing many start-ups to fail in the launch phase.[3][4]Small and micro technology enterprises in the country, therefore, cannot create sufficient employment opportunities to help address Namibia's high unemployment. Therefore, the strategy needs to focus on employment creation in technology, as well as enhancing the human capital among the youth to take up the job opportunities created.

1. United Nations Conference on Trade and Development (UNCTAD). (2021). Technology and Innovation: Country Readi ness Index. Available here
2. Institute for Public Policy Research. 2021. *4IR Faces Fundamental Issues in Namibia.* Available here.
3. Federal Ministry for Economic Cooperation and Development (BMZ). 2023. *Digital Transformation Centre Namibia*. Available here.
4. WSA Global. 2023. *Digital Transformation in Namibia*. Available here.

2.2. Benchmarking[5]

This peer review assessed the country against three (3) global indices and various composite indicators to highlight a countries readiness, ability to adopt and produce, as well as wellbeing in a digital era.

Key Learnings and Takeaways:

While Namibia has a solid foundation for developing a robust digital framework, there are notable gaps and challenges that need to be addressed. Opportunities exist in harnessing digital trends for economic growth, innovation, and societal benefits. However, concerted efforts are required to over- come challenges related to technology talent, infrastructure, and strategy formulation to realises the full potential of digital transformation in Namibia.

Improvements in key areas: Namibia shows progress in areas such as financing, governance, and institutional frameworks within the global digital transformation context.

Below Average in some Domains: The country falls below global and regional averages in digital infrastructure, human capital, and innovation, which are crucial for digital transformations.

Mixed results in global index rankings:

UNCTAD Frontier Technology Country Readiness[6]: Namibia performs poorly with a score of 0.34 reflecting low-middle performance. This is particularly evident in the readiness to adopt new technologies, deployment ability, skills, and research and development.

World Economic Forum Future of Production Assessment[7]: Namibia is classified as a nascent archetype, indicating a small and homogenous production base. Mixed performance across drivers of production, with comparative strengths in institutional framework and demand environment but weaknesses in innovation, technology, human capital, and sustainable resources.

DQLI[8]: Ranked 103 out of 107, indicating poor digital wellbeing, especially in internet quality and electronic security.

Digital Transformation Readiness indicators

A range of composite indicators from various reliable data sets were consolidated into a radar diagram to visualise Namibia's digital readiness level compared to other sub-Saharan African countries[1].

5. See Appendix 2 for a breakdown of all benchmarking matrices.
6. United Nations Conference on Trade and Development (UNCTAD) 2021, Technology and Innovation: Country Readiness Index. Available here
7. Task force on 4IR in Namibia 2022, Assessment of Namibia's Readiness for the Future of Production. Note: The data on Namibia's Readiness for the Future of Production is based on the standard World Economic Forum Future of Production assessment conducted for the first time in 2020-2021, as Namibia was not included in the 2018 assessment.
8. Namibia Economist. (2022). "Namibia Ranked 103 on the Digital Quality of Life Index." Available at: Here
9. Data sets used in the radar diagram are located under appendix 3.

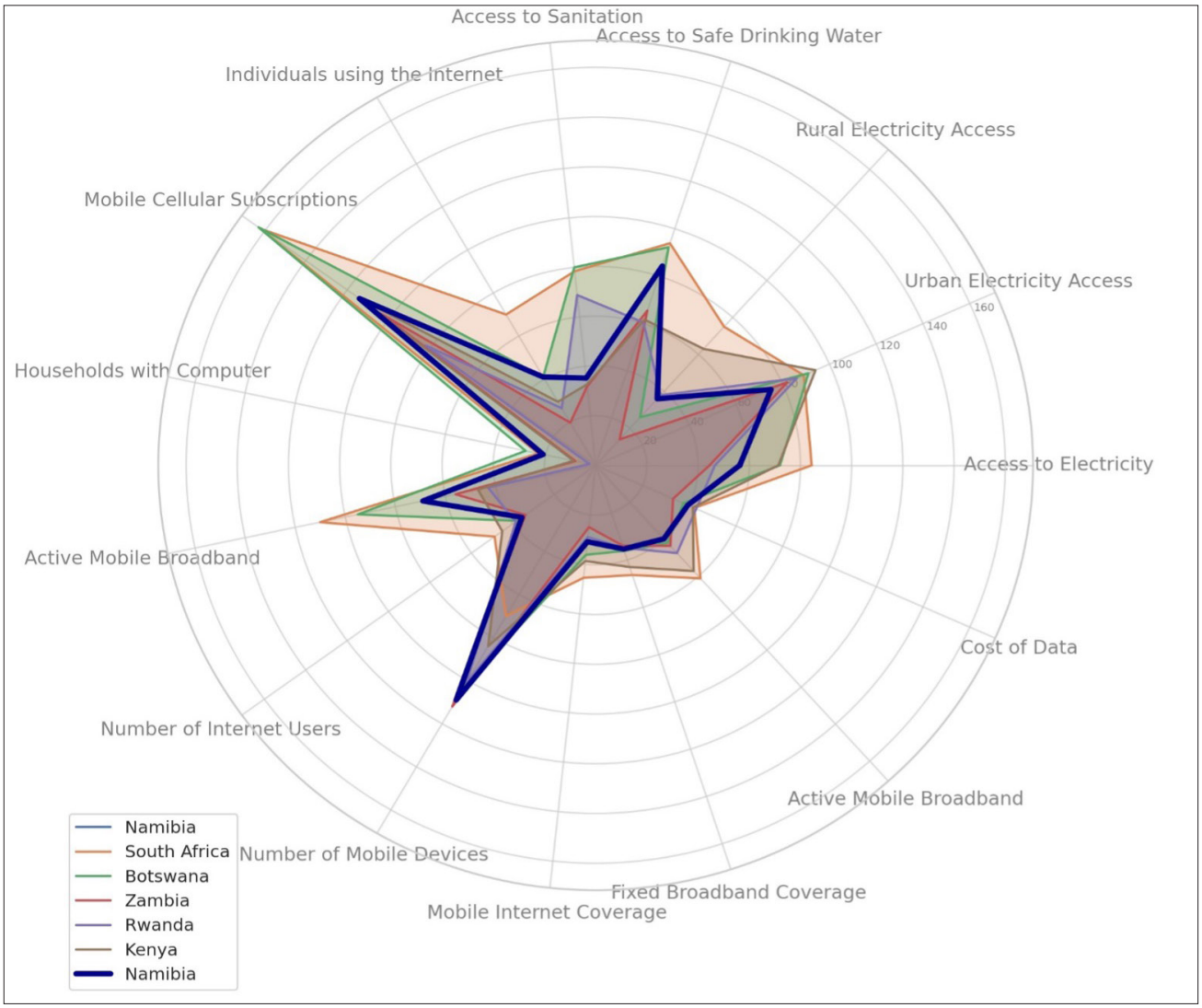


Figure 1: Radar diagram benchmarking Namibia's digital readiness against to select African countries.

2.3 Global context

The global lockdown situation brought about by the COVID-19 pandemic (2019) accelerated digital transformation by pushing much of the world online to ensure the continuity of public, private, and social life across many domains. These include from the individual level (engaging in online learning, working, and shopping) to entire nations (shifting towards digital economies, governance, society), from companies (chasing new business models, new services, new ways to deliver) to entire industries (moving to process automation, exploring benefits of artificial intelligence), as well as from local authorities to national governments (offering more transparent and efficient governance, digital public services). While the global trend to digitise is more apparent than ever (approximately 70% of the new economic value globally is estimated to be created digitally, and the global transformation market is predicted to more than double by 2025),10 not all countries are expected to benefit in the same way. As a region, SSA lags the rest of the world regarding unemployment and digital divides posing a major threat to equitable and sustainable digital transformation.

2.4 Policy alignment[11]

The prerequisite for the successful adoption and implementation of this NDS is alignment with national and international norms, best practices, policies, and initiatives. The digital strategy should also be aligned with the country's broader national development goals, economic strategies, and social priorities. It should complement existing policies and initiatives to ensure coherence and maximise impact.

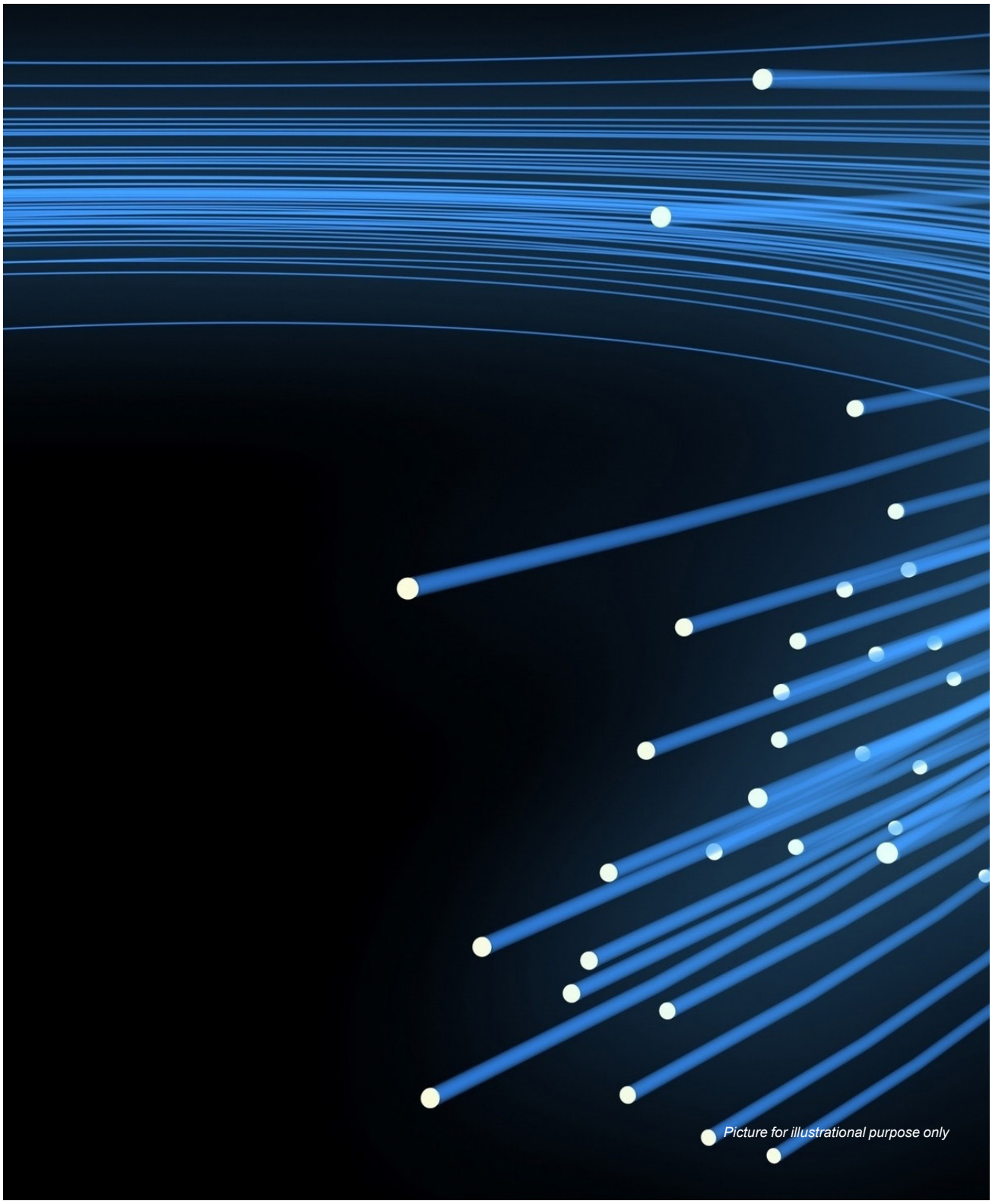
2.4.1 National Landscape

The National Digital Strategy is aligned to complement national commitments and policy direction which are as follows:

Thematic Area	Policy/Regulation/Strategy
National Development Plans	Presidential 4IR Taskforce Report
	Harambee Prosperity Plan II (HPP2)
	Fifth National Development Plan (NDP5)
	Vision 2030 for the Republic of Namibia
Digital Financial Services	National Payment System Vision and Strategy (2021–2025)
	Electronic Transactions Act 4 of 2019
E-Government	E-government Strategic Action Plan 2014–2018
	IT Policy for the Public Service 2008
	E-government Policy for the Public Service 2005
Broadband Development	Namibia Broadband Policy (2018–2022)
	Universal Service and Access Policy (2013)
	Overarching ICT Policy 2009 (OICTP 2009)
Cybersecurity	National Cybersecurity Strategy and Awareness Raising Plan 2022–2027
	Cybersecurity Strategy and Awareness Creation Plan 2022–2027
Access to Information	Access to Information Act, 2022 (Act No. 8 of 2022)
	Access to Information Regulations
Communication	Government Communication Strategy 2022–2027
Legislation	Communications Amendment Act, 2020 (Act No. 6 of 2020)
	Electronic Transactions Act 4 of 2019
Draft Legislation/Strategies	Draft Data Protection Bill of 2022

	Digital Government Strategic Roadmap for Namibia 2024–2026
	Cybercrime Bill

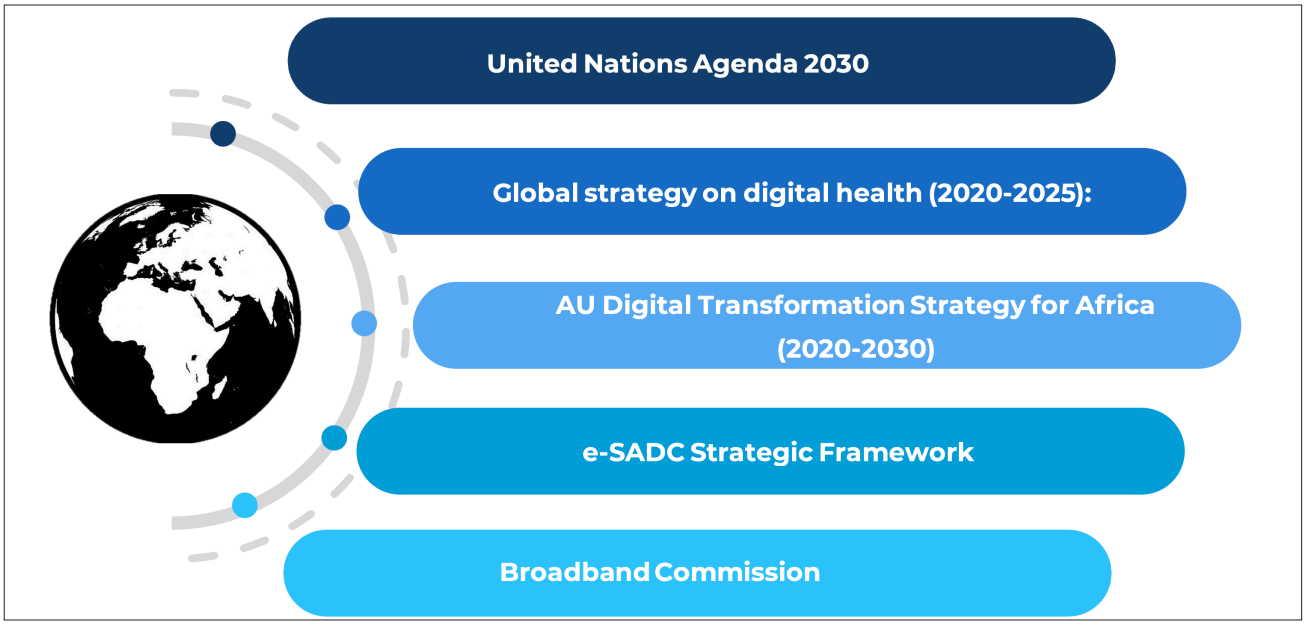
Figure 2: ICT relevant Namibian Policy documents



10. McKinsey and Company, 2020. How COVID-19 has pushed companies over the technology tipping point and transformed business forever- Survey. Available here
11. See appendix 5 for detailed descriptions of relevant local and international policies.

2.4.2 International commitments

The National Digital Strategy is aligned to support international commitments and aspirations:



2.5 Emerging Trends

The digital landscape is constantly evolving, with several key emerging trends shaping the future of business and technology globally and in Africa.[12] These trends, set out below, present significant opportunities, but also come with their fair share of challenges when embarking on a digital trans- formation journey.

2.6 Global Perspective

- **Artificial Intelligence (AI) and Machine Learning**: AI and machine learning technologies are driving automation, predictive analytics, and personalised customer experiences, revolutionising various industries.

- **Internet of Things (IoT)**: The widespread adoption of IoT devices is leading to the generation of vast amounts of data, creating opportunities for innovative products and services.[13]

- **Cybersecurity**:

  The increasing digital interconnectedness has made cybersecurity a critical concern, leading to the development of advanced security solutions and practices to protect digital assets[14].

2.7 African Perspective

- **Mobile Technology:**

  The rapid uptake of mobile technology in Africa presents significant opportunities for mobile-based solutions and services.[15]

- **Fintech Innovation**:

  The rise of fintech solutions is transforming financial services across the continent, increasing financial inclusion and access to banking services.[16]

- **E-commerce Growth:**
  E-commerce is experiencing rapid growth in Africa, driven by an expanding middle class and improved digital.[17]

Three Opportunities for Namibia Presented by Digital Trends

1. Employment creation

- Mobile Technologies and Internet Accessibility opens job opportunities through IT
- and business process outsourcing, mobile app development, digital marketing, e-commerce.
- The interest and development of Namibia's renewable energy technology (solar, wind, hydrogen) can generate jobs in engineering, installation, maintenance, and research.
- Roughly 70% of the Namibian population depends on agricultural for their livelihoods[18]. Agricultural Technologies (AgriTech) such as drone technology for crop monitoring and precision farming, can lead to more efficient farming practices and job creation in both techno- logical and agricultural sectors.

2. Digital adoption

- **Mobile Payment Systems:**
  Drives digital financial inclusion, allowing more people to engage in the economy and access financial services. This growth potential is captured by the fact that Namibia's transaction value of digital commerce hasincreased by 50% since 2021.[19]

- **Educational Technologies (EdTech):**
  Online learning platforms and digital resources improve educational access, which in turn increases the uptake of technology as more people become tech-savvy. For example, internet access and online learning resulted in the Tsumkwe Secondary School in rural Northeast Namibia improving in the matric results ranking from number 59 in 2019 to number 14 in 2020.[20]

3. Public administration

- **E-Government Platforms**: These platforms can streamline government services, making them more accessible and efficient. This includes online tax filing, e-voting, and digital identification systems.

- **Data Analytics and AI:** Utilised for policy-making and public service delivery, these technologies can help in making informed decisions and improving public sector services.

12. UN Economic Commission for Latin America and the Caribbean (ECLAC). 2021. Digital Economy Report of Latin America and the Caribbean 2020-2021.
13. Shiotsu. (2023). Top 10 Digital Transformation Trends for 2023. Upwork.
14. 7 Digital Transformation Challenges to Overcome in 2023." (2023, October 10).
15. Frąckiewicz, M. (2023, May 16). "The Challenges and Opportunities of Digital Transformation and Innovation in Africa."
16. Finsense Africa. (2023, March 15). "Digitizing Africa 2023: The Challenges, Opportunities, and Solutions." Available here
17. UNCTAD, 2023. "Sixth Meeting of the Intergovernmental Group of Experts on E-commerce and the Digital Economy." Available here

Three Risks for Namibia Presented by Digital Trends

1. Job Losses

- **Automation and Robotics:** Automation in manufacturing, mining, and agriculture can dis- place manual and repetitive jobs. For instance, the introduction of automated machinery in mining could reduce the need for human labour.

- **Artificial Intelligence (AI):** AI and machine learning can replace roles that involve data analysis, customer service (through AI chatbots), and even some aspects of decision-making, impacting employment in sectors like banking, telecommunications, and public administration.

2. Cybercrime

- **Increased Internet Connectivity:** As internet penetration grows, so does the risk of cyber- crime. This includes phishing attacks, malware, and other forms of cyberattacks.

- **Online Financial Transactions:** The growth of e-commerce and online banking in Namibia presents opportunities for cybercriminals to exploit security weaknesses.

3. Inequality

- **Digital Divide:** The disparity in access to digital technologies and the internet can widen the gap between urban and rural areas, as well as between different socio-economic groups.

- **E-Education and E-Health Services:** While these technologies offer immense benefits, lack of access in remote or poorer areas can lead to unequal access to education and healthcare.

18. World Food Program, *2022. "WFP launches virtual marketplace to boost smallholder farmers' income in Namibia"* Available here
19. Finance Magnates, 2023. "The Role of Mobile Payments in Driving Financial Inclusion in Developing Countries." Available here
20. Paratus. 2021. "*Eduvision- giving rural schools equal opportunities*." Available here

3. METHODOLOGY

In developing the NDS, a collaborative and participatory methodology was employed. The techniques used are part of an open research enquiry approach to ensure that it is both inclusive and contextually sound.

A summary is provided of the key steps and methods used throughout the research process inclusive of the stakeholder consultation sessions which were used as a basis for collecting emerging in- sights and primary research. The methodology employed four phases: an in depth theoretical deep dive (landscape assessment); in person and virtual stakeholder consultations; a national survey and expert interviews to further validate research.

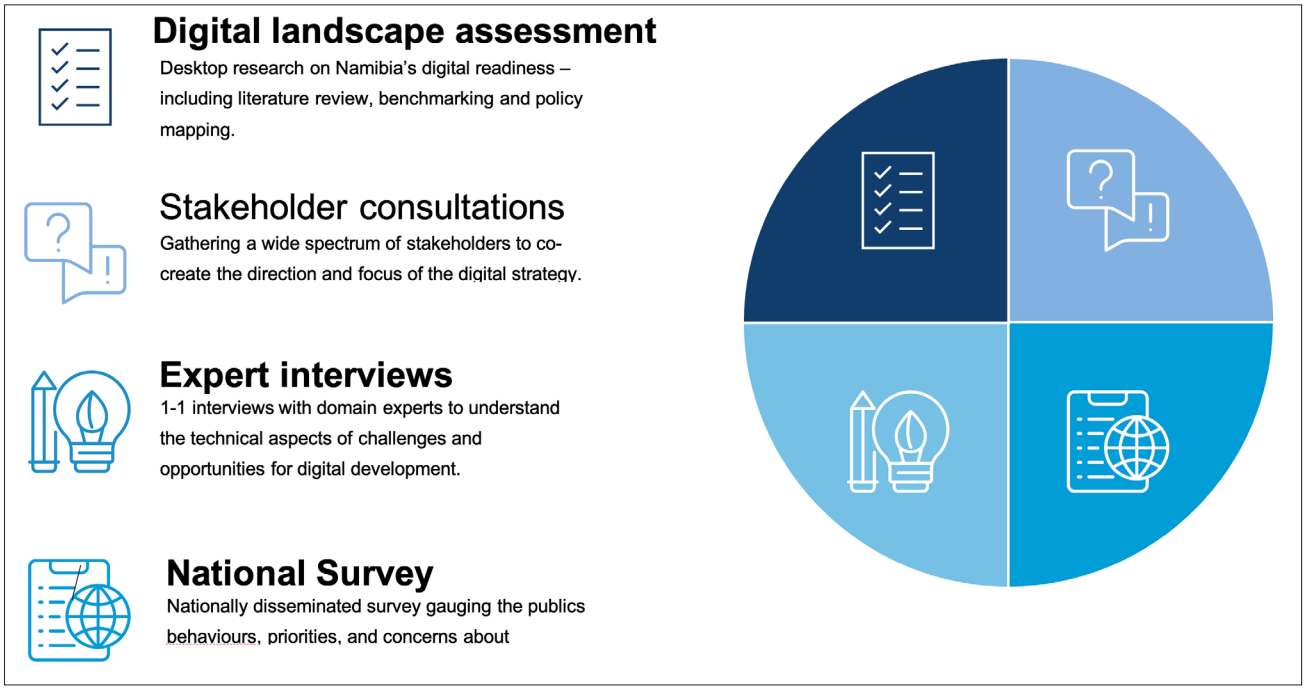


Figure 4: National Digital Strategy Methodology

3.1 Digital Landscape Assessment

A rigorous desktop research component provided the first layer of research that informed the development of the strategy.

Research and analysis: A SWOT, PESTEL and Risk Mitigation Analysis (RMA) was conducted to understand the relevant features, gaps and focus areas of Namibia's digital landscape[21]. Support structure and policy mapping helped put in focus additional elements and details that impact and inform the digital past and future of the country.

Benchmarking: Namibia was benchmarked across a variety of metrics and indices determining the relevant strengths and weaknesses of its readiness for digital transformation. Namibia was also benchmarked against regional and continental players in different digital sectors and aptitudes.

Global trends: Adopting a foresight lens, emerging trends globally and nationally were considered to understand the most prescient steps and strategic directions to take for the country as it concerns socio-economic development and inclusion.

3.2 Stakeholder workshops

The development of a National Digital Strategy is a complex endeavor that requires a careful examination of various issues and stakeholders[22]. In our participatory and collaborative exercise with stakeholders, critical concerns that must be addressed to ensure the strategy's success were identified. These issues span political, economic, environmental, socio-cultural, and legal dimensions.

To ensure the strategy's foundation remains robust, structured discussions and brainstorming work- shops were conducted with stakeholders to soundboard and validate the 5 pillars of digital transformation.

This collaborative and participatory methodology ensured that the national digital strategy was not just a top-down approach but a result of active engagement with stakeholders, fostering ownership and commitment to its successful implementation.

3.3 One-on-one expert interviews

To validate key findings obtained through stakeholder workshops, qualitative data was collected through expert consultation (key informant interviews). Both global and local experts across a wide range of specialisations and geographies were identified and invited for an interview. Interviews were conducted on a rolling basis and subject to participant availability over an 8-week period[23].

Interviews were held online using a semi-structured interview guide. With participants' consent, on- line interviews were recorded to be analysed afterward. The qualitative analysis aimed to validate the rigor, feasibility, scope and sustainability of proposed priorities and solutions.

3.4 National Survey

While key findings extracted from the inception report and stakeholder workshops provided an insightful baseline, primary data was obtained using a mixed method approach[24] to further guide and validate the development of the national digital strategy.

Quantitative data was collected through a multi-page electronic survey which included a variety of short answers, multiple choice, gradient scale, and binary questions. The results of the survey were analysed using the Statistical Package for the Social Sciences (SPSS) software to investigate significant differences among respondents based on age groups, gender, and urban-rural categories[25].

The primary objectives of the quantitative assessment were to explore user behaviors with regards to digital engagement and to elucidate the general public's perceptions with regards to priorities and challenges for digital transformation. To ensure a broad and inclusive sample, an outreach campaign was led through social medial channels, stakeholder networks, as well as public personality amplifications.

21. See Appendix 4 for a breakdown of the SWOT RMA and PESTLE analysis.
22. See Appendix 2 for list of stakeholders consulted.

4. STRATEGIC FRAMEWORK

The strategic framework adopted is structured to create causal links between the desired goals of the strategy for short term, intermediate & long-term outcomes. These causal linkages are then implemented via targeted interventions, where each can have defined deliverables, specific targets and expected results, which can be measured and refined. This ensures that success towards the goals of this digital strategy become measurable.

4.1 Foundational Values

In alignment with the high-level vision of the National Strategy, three foundational values underpinning the design of this framework were identified. These values were derived and co-created with key stakeholders across public, private, and civil society sectors. It provides the guiding values that drive the framework toward its objectives.

Whole of Society

Ensure a **comprehensive** and **inclusive** approach to digital transformation by **engaging all sectors and segments of society** and developing **partnerships** across the national spectrum.

Sustainability

Consider the **environmental** and **commercial sustainability** of proposed initiatives and interventions that can be expanded to **serve a larger audience** or **address more complex challenges.**

Agility

Ensure digital initiatives directly **contribute to national development plans and goals**. Allowing for **iterative adjustments** based on real-world experiences so that **course corrections** can be made

Figure 5: Foundational values of the National Digital Strategy

23. See Appendix 2 for list of stakeholders consulted.
24. Mixed methods refer to the collecting, analysing, and “mixing” both quantitative and qualitative information to geta better insights on the research objective.
25. See Appendix 5 for further details on the public survey design and results.

4.2 Cross-cutting themes

The strategy has identified themes that are common across some or all the pillars and deserve special attention during the planning and execution of each pillar.

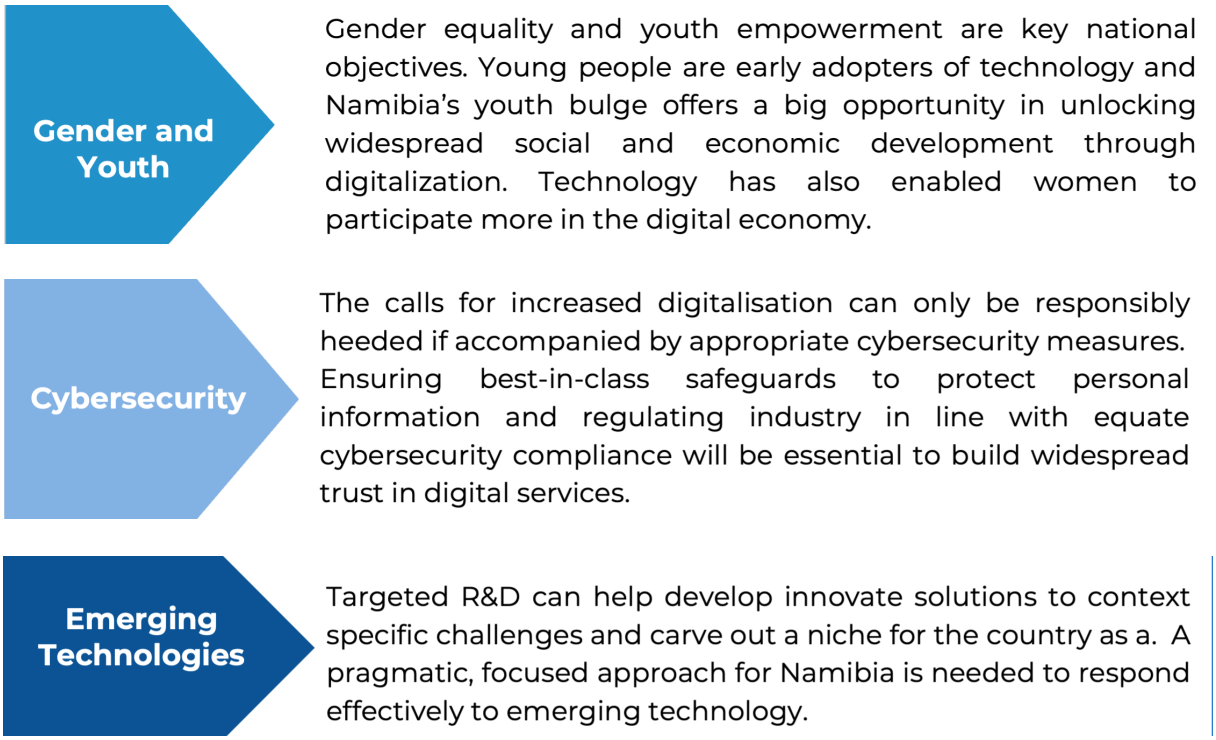


Figure 6: Cross-cutting themes of the National Digital Strategy

4.3 Strategic Pillars

The core of the strategy are five (5) strategic pillars that emerged from stakeholder workshops, expert interviews and rigorous research and benchmarking. The pillars embody the foundational values and hold up the objectives and vision of this strategy.

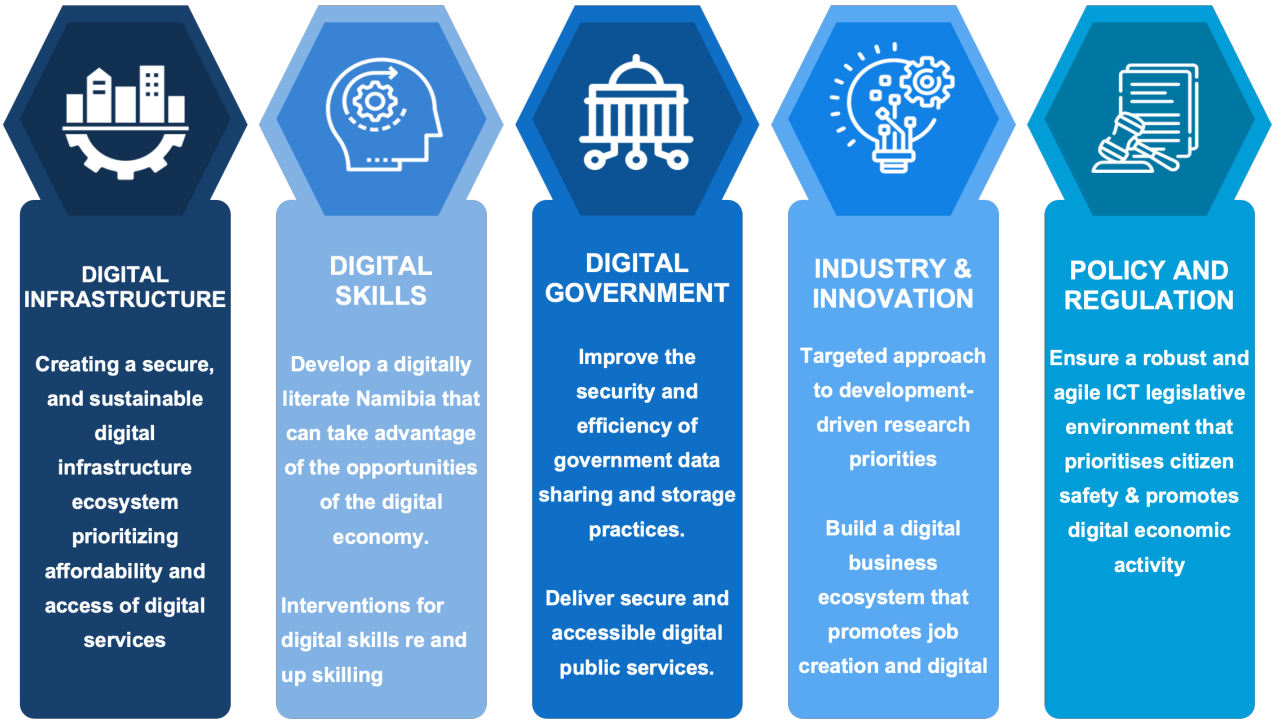


Figure 7: Strategic pillars of the National Digital Strategy

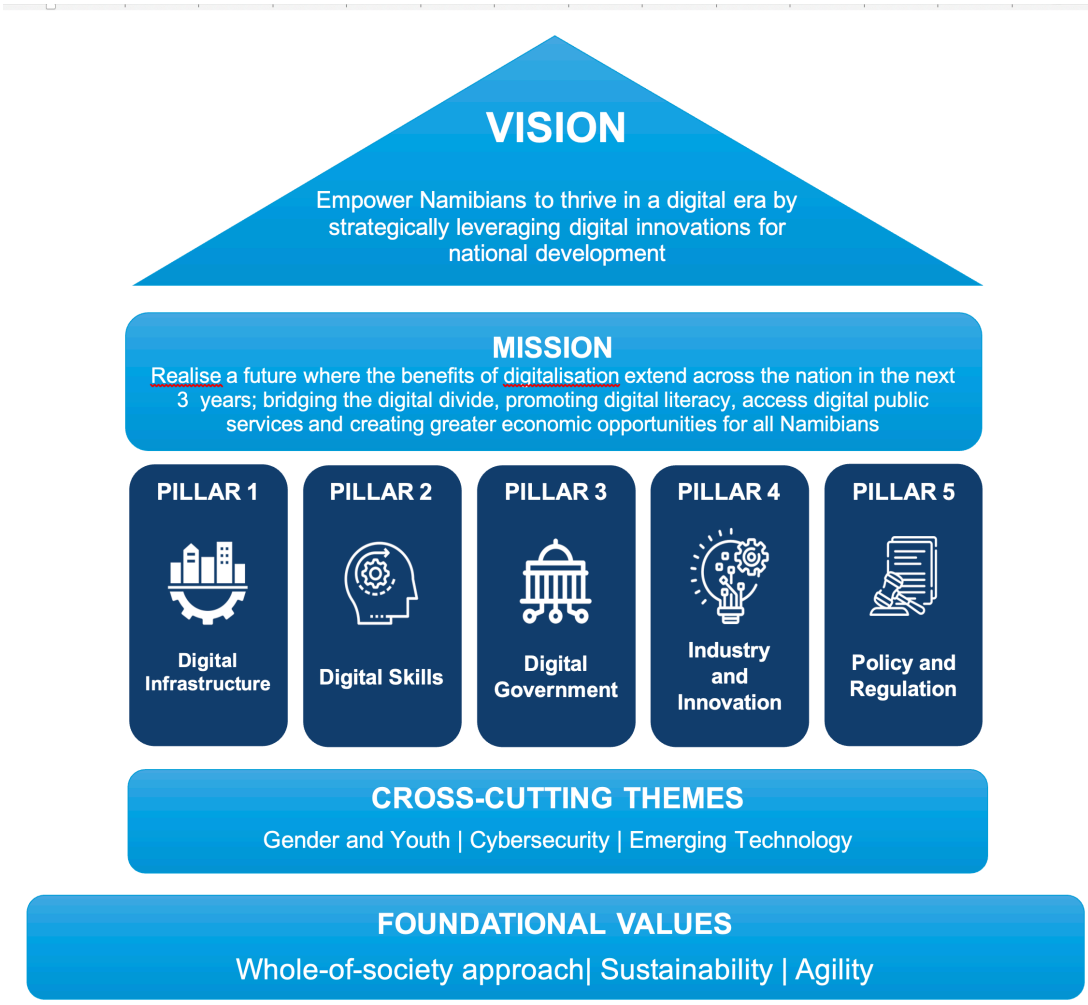


Figure 8: National Digital Strategy framework

The objectives and priorities of the strategy are deeply informed by national context and digital maturity level. The formulation, priorities and modalities have been aligned with national development plans, priorities of the Namibian public and the current state of Namibia's digital maturity.

5. Strategic Pillars

Pillar 1: Digital Infrastructure

Robust, scalable, and secure digital infrastructure is the cornerstone for Namibia's digital transformation, offering universal access to connectivity. This infrastructure fosters a technologically advanced environment, driving national progress and innovation.

Status Quo

While there are existing urban digital infrastructures that encompass fiber optic cables and data centers, ensuring the readiness and efficacy of digital infrastructure across all regions, particularly in rural areas, remains a significant focal point. Namibia now has two direct undersea fibre cable connections; various connections overland and mobile penetration has consistently been amongst the highest on the African continent[1].

In early 2023, there was a total of 2.81 million cellular mobile connections active giving Namibia a mobile penetration percentage of 108.7%. Although mobile penetration might be high, the internet speed remains low. According to Speedtest Global Index, Namibia; ranks 104th out of 140 countries assessed with a median mobile internet speed of 19.29Mbps; and ranks 151 out of 180 countries with a median fixed broadband internet speed of 10.96 Mbps. Furthermore, although access to mobile phones might be high, uptake of internet is still low. Internet penetration in Namibia stands at just over 51% of the population having access to internet, with 45.7% being from rural areas and 54.3% from urban areas. A critical barrier to low internet penetration could be attributed to the high cost of internet connectivity (data affordability). In 2022, Namibia had one of the highest costs for internet in the world, averaging at a cost of USD 10.52 (N$ 190) for 1GB, compared to USD 1.53 in Northern Africa and USD 2.47 in Western Europe.[2]

Strategic Pillar focus

This pillar outlines approaches to achieve universal access to high-speed internet, addressing the disparities in digital access, especially in rural areas, and the challenges of high costs and the need for secure, resilient networks. Bridging the digital divide, ensuring that every citizen and sector in Namibia can participate in the digital economy, thus fostering inclusive economic growth and enhanced social inclusion.

26. See figure 1 and 2 under Appendix 2 for a map of digital infrastructure in Namibia.
27. Datareportal., 2023. "Digital 2023: Namibia." Available at: here

STRATEGIC OBJECTIVE: 1 ACCELERATE DIGITAL INFRASTRUCTURE DEVELOPMENT AND ACCESSIBILITY

Outcome: 1.1 Accessibility and affordable digital services by investing in retail digital infra- structure and implementing policies that lower the costs of digital access.

STRATEGIES

1. **Tariff Re-evaluation for Mobile Devices**
   Re-evaluate import tariffs on mobile consumer electronics. This involves conducting a market study to revise tariffs and establish criteria for such devices, aiming to foster digital adoption. A pilot for tax-exempt smartphone consignments will test the effectiveness of these measures, directly sup- porting the strategic outcome of making digital infrastructure more accessible and affordable.

2. **Spectrum Allocation for Universal Access**
   Allocate 700MHz and 800MHz spectrum bands and impose obligations on operators. This includes providing broadband to schools and institutions in areas currently underserved, thereby enhancing the accessibility of digital services and infrastructure.

3. **Phasing Out Legacy Systems**
   Discontinue spectrum allocations for outdated 2G and 3G technologies and free up valuable spectrum for more advanced digital services, this transition will modernise digital networks to meet cur- rent and future internet access demands.

4. **Reducing Internet Data Prices**

Position Namibia among the top 10 African countries with the most affordable internet data prices. This ambitious task involves strategic interventions to reduce costs, thereby making digital services more accessible and affordable for all Namibians.

Outcome: 1.2 High-quality, reliable, digital infrastructure supporting a wide range of use cases, from basic access to advanced digital applications

- **Implementing Open Access Network Regime**

Promote and enforce active infrastructure sharing by implementing an 'Open Access Network' regime. Thus, enabling more efficient and cost-effective digital service provision and democratising access to digital services.

- **Operationalising the Universal Service Fund**

Operationalise the Universal Service Fund to finance the expansion of last-mile connectivity, crucial for enhancing the accessibility and affordability of digital services. By targeting underserved areas, this fund aims to bridge the digital divide, ensuring that all citizens have access to reliable digital services. This strategic action directly aligns with the national goal of universal digital access.

- **Alternative Financing for Last-Mile Connectivity**

Explore alternative financing modalities for last-mile connectivity. Identifying innovative fund- ing solutions to extend digital infrastructure to the most remote areas, ensuring every Namib- ian can access affordable digital services.

- **Tax incentive regime for infrastructure development**

Design and implement a tax incentive regime to stimulate investment in digital infrastructure development.

Gaps Addressed: *This objective tackles the challenges of limited connectivity in rural areas, the high costs associated with digital access, and the need for infrastructure that supports di- verse digital services.*

STRATEGIC OBJECTIVE: 2 CREATE A SECURE, RESILIENT, AND SUSTAINABLE DIGITAL INFRASTRUCTURE ECOSYSTEM

Outcome: 2.1 Strong cybersecurity measures to protect digital infrastructure against emerging threats and vulnerabilities

STRATEGIES

1. **Namibia Cybersecurity Incident Response Teams**
Constitute and operationalise the Namibia Cybersecurity Incident Response Teams (Nam-CIRTs). This initiative aims to enhance national cybersecurity readiness and response, providing a robust defence against digital threats. The Nam-CIRT is central to safeguarding Namibia's digital infrastructure.

2. **Master Cyber Response Plan**
Develop a master cyber response plan to fortify its digital infrastructure ecosystem against cyber threats. This comprehensive plan outlines the procedures and protocols for responding to cyber incidents, ensuring a coordinated and effective defence.

Outcome: 2.2 Robust network resilience and disaster risk reduction strategies to ensure continuity of digital services in adverse situations

STRATEGIES

1. **National Emergency Telecommunications Plan**

To protect digital infrastructure against natural and man-made disasters, ensuring uninterrupted access to digital services in times of crisis. This strategic initiative underscores the importance of preparedness and resilience in maintaining a robust digital ecosystem.

2. **National Policy on the management of Waste Electrical and Electronic Equipment (WEEE)**
Development and Implementation of WEEE Policy to address the environmental impact of digital infrastructure. This strategy focuses on the sustainable disposal and recycling of electronic waste, minimising its ecological footprint. By implementing sound e-waste management practices, Namibia is taking a crucial step toward a more sustainable digital infrastructure ecosystem, aligning with global environmental sustainability goals.

3. **Green Electricity for Telecommunications**
Explore the use of green electricity for telecommunications. This initiative seeks to reduce the car- bon footprint of digital services by powering telecommunications infrastructure with renewable energy sources.

***Gaps Addressed**: This objective addresses the critical need for a secure and resilient digital net- work that can withstand cyber threats and natural disasters, as well as the imperative to align digital expansion with environmental sustainability goals.*

Pillar conclusion
By focusing on these strategic objectives, Namibia aims to build a robust digital infrastructure that not only overcomes the current limitations in connectivity and digital service access but also lays a strong foundation for future digital initiatives. This approach addresses the urgent need for secure, resilient, and inclusive digital networks, directly contributing to the nation's economic growth, enhancing social inclusion, and ensuring the sustainable development of the digital ecosystem.

Pillar 2: Digital Skills

Comprehensive digital education and training are essential to enhance digital literacy across Namibia, focusing on empowering youth, women, and marginalised groups. This strategic approach not only prepares a future-ready workforce but also embodies the values of inclusivity and equal opportunity, crucial for bridging the digital divide and achieving the broader vision of digital equity.

Status Quo

In the era of the knowledge-based economy, digital skills have emerged as a linchpin in human capital's technical know-how. The role of the education sector is pivotal in propelling digital trans formation, yet Namibia faces a critical challenge in the academic performance of students, particularly in STEM subjects. The trend in examination results from 2017 to 2019 reveals a consistent underperformance in STEM, with a significant number of students scoring between grades E and U. This deficiency has a cascading effect, deterring students from pursuing STEM majors in tertiary education. Consequently, Namibia grapples with a shortage of technical skills essential for driving digital transformation.

To address these challenges, Namibia is actively engaged in initiatives to enhance digital skills and literacy nationwide, with the government setting an ambitious target of achieving 100% digital literacy by 2030. A key focus is on expanding training programs in rural communities and implementing tailored digital skills training for various target groups. [4]

Strategic Pillar focus

This pillar concentrates on cultivating digital competencies across all societal levels in Namibia, spanning from basic digital literacy to advanced information and communications technology (ICT) skills. It aims to close the digital skills gap, ensuring that Namibians are well-prepared to engage with the digital economy and contribute to technological innovation.

STRATEGIC OBJECTIVE: 1 BASIC DIGITAL LITERACY

Outcome 2.1: Basic digital literacy among all age groups, ensuring that every citizen can navigate the digital world with confidence

STRATEGIES

1. **Digital Literacy Baseline Assessments and Community-Based Digital Literacy Programs**

Develop a comprehensive methodology to conduct Digital Literacy Baseline Assessments every three years. Enabling more efficient use of digital technology in daily activities and access to online services. Furthermore, launch a community-based digital literacy and emerging technology literacy training programs to directly enhance the digital competence of its citizens.

2. **Online child safety education and awareness campaigns**

Integrate online safety literacy into digital literacy training programs for kids and deliver public information awareness campaigns. Content should cover topics such as privacy protection, recognising and reporting cyberbullying, understanding digital footprints, and the importance of secure online behaviour. Government should collaborate with educational

28. Jung Han, Todd Kelley, and J. Geoff Knowles, 2024. "Factors Influencing Student STEM Learning: Self- Efficacy and Out come Expectancy, 21st Century Skills, and Career Awareness." Available here

institutions, community organisations, and media outlets to develop educational content and awareness campaigns that highlight the significance of online safety for children and provide resources for parents and educators to support their efforts.

Gaps Addressed: *This objective directly tackles the challenge of digital exclusion by equipping the populace with the necessary skills to participate safely in the digital world, thus fostering digital inclusivity, child protection and reducing the digital divide.*

STRATEGIC OBJECTIVE: 2 DIGITAL PEDAGOGIES AND ICT CURRICULUM REFORM

Outcome: 2.2 Students are equipped with the skills required for innovation and problem-solving in a digital context.

STRATEGIES

3. Core ICT Subjects Integration and Unified TVET Digital Skills Framework

Integrate ICT subjects as core components within school curricula. By 2026, computer programming and data science will be incorporated into the national curriculum, with subsequent reviews every four years to ensure alignment with the latest digital skills needs. Develop a unified Technical and Vocational Education and Training (TVET) framework and curriculum review focuses on prioritising technical and vocational training that is centred around digital skills and competencies.

4. Streamline Pedagogical ICT Integration

Upgrade IT infrastructure across both urban and rural public schools to ensure equitable access to digital education resources. Revising and enhancing curricula and teaching methodologies, to foster a more empowered education system.

5. Develop Online OERs and MOOCs

The development and recognition of online Open Education Resources (OER) and Massive Open Online Courses (MOOCs), including the development and licensing of OER and establishing a certification and equivalence process for MOOCs and micro-credentials, marks a significant stride towards revising and enhancing educational curricula by offering flexible, online learning opportunities.

Gaps Addressed: *This objective aims to modernise education and address the disconnect between traditional education systems and the demands of the digital age, preparing students for future challenges and opportunities.*

STRATEGIC OBJECTIVE: 3 EDUCATIONAL ADMINISTRATION AND STAFF CAPACITY

Outcome: 2.3 Capacitate digitally literate educators and administrators, focusing on the adoption of digital tools and resources in educational settings, thereby enhancing the quality and relevance of education.

STRATEGIES

1. Ensure Comprehensive Digital Literacy for Educators

Implement a comprehensive digital literacy training program for educators. This initiative aims to achieve a significant digital literacy pass rate among educators by 2030, ensuring they possess the necessary skills for integrating technology in teaching, administration, and curriculum development.

2. Build educator's ICT capacity

Build educator capacity in ICT subject matter, with a goal to ensure that 70% of schools have certified IT teachers by 2025. This task focuses on providing specialised training and certification for educators in ICT, equipping them with the knowledge and skills needed to effectively teach digital subjects.

3. Rollout education Information Management Systems

The rollout of Education Information Management Systems (EIMS) in the public school system marks a significant step towards improving digital skills among educators and administrators. By promoting and implementing EIMS across 40 public schools, this initiative aims to streamline administrative processes and enhance the efficiency of educational management.

Gaps Addressed: *By enhancing the digital proficiency of educational staff, this objective ensures that the educational system itself can adapt to and reflect the digital transformation happening glob- ally, thus improving educational outcomes and efficiency.*

STRATEGIC OBJECTIVE: 4 DEMAND-LED SKILLING AND JOB CREATION

Outcome: 2.4 Prepare individuals for the digital economy, emphasising hands-on, practical experience.

STRATEGIES

1. Establish digital Skills Training and Job Programs

Establish Digital Skills Training Internships and entry-level job programs. This strategy includes developing employer incentives through dynamic public-private partnerships, aiming to equip individuals with practical, demand-driven experience. By fostering closer collaboration between educational institutions and the private sector, this initiative ensures that training programs are aligned with the real needs of the digital economy.

2. Addressing Market Demand and Skills Supply Mismatch

Understanding and addressing the mismatch between market demand and skills supply is critical for preparing Namibian citizens for the digital economy. This comprehensive approach includes rein- stating the National Statistics Agency's biennial Labour Force Survey and skills audit, reviewing the 1996 Namibian Standard Classification of Occupations (NASCO) to reflect future occupations, and commissioning studies to understand and recommend steps to address this mismatch.

Gaps Addressed: *This objective addresses the mismatch between the skills provided by the education system and those demanded by the labour market, enhancing employability, and driving economic growth through a skilled workforce.*

Pillar conclusion

The focus on developing digital skills across the board is a strategic investment in Namibia's human capital, crucial for navigating the challenges and seizing the opportunities of the digital age. By empowering individuals with essential digital skills and fostering a culture of continuous learning and innovation, Namibia is laying the groundwork for a knowledge-based economy.

Pillar 3: Digital Government

Integrating digital solutions in public service delivery enhances efficiency, transparency, and citizen engagement. This transformation in government operations supports responsive and accountable governance, aligning with the principles of sustainability and agility. The impact extends to improved citizen satisfaction and trust in public institutions.

Status Quo

Namibia is currently making significant strides in its digital government initiatives. The Ministry of Home Affairs, Immigration, and Safety and Security has implemented an online passport applica- tion system, marking a major step towards providing government services related to home affairs through digital channels.[29] The Ministry of Finance has implemented ITAS, an e-filing platform for rendering and assessing tax returns. These efforts demonstrate a commitment to modernising and enhancing the delivery of government services in the country.

Moreover, Namibia's is actively engaged in knowledge exchange and collaboration on effective digital governance with leaders in E-Government internationally. The Office of the Prime Minister is currently working with Estonian development partners by developing Namibia's data exchange platform as well as the government's digitalisation roadmap. [30]

Strategic Pillar focus

This pillar is aimed at transforming government services through digitisation, aiming to make them more accessible, efficient, and transparent for all Namibians. It addresses the crucial need to bridge the gap between citizens and government services, ensuring that government operations are streamlined and responsive.

STRATEGIC OBJECTIVE: 1 DIGITAL IDENTITY

Outcome: 3.1 Empower Namibians with a unique digital ID which will form the core requirement to access digital public services.

STRATEGY

1. Digital ID Systems

Establish the systems and processes for the widespread use of digital IDs by 2030. This involves implementing chapters 3, 4, and 5 of the Electronic Transactions Act, 2019, to formally accept e-signatures within 12 months, developing a pilot eID program for priority use cases, and issuing Unique Identification Numbers (UINs) with a goal to rollout pre-audit digital ID to 40% of the population by 2029.

***Gaps Addressed**: This objective targets the issue of fragmented identity systems and inefficient service delivery, streamlining access to government services and ensuring a cohesive digital identity framework.*

29 Namibia's Digital Transformation: Embracing Technology to Drive Growth. New Era. Available here.

30 Namibia's Digital Transformation: Embracing Technology to Drive Growth," Namibia Daily. Available here.

STRATEGIC OBJECTIVE: 2 DIGITAL PUBLIC SERVICES

Outcome: 3.2 Increased government data sharing to allow for improved accessibility and efficiency of public services through a single gateway portal for digital public services

STRATEGIES

1. Government Data Exchange Systems

Operationalise government data exchange systems to ensure safe and efficient interoperability be- tween population registers across Offices, Ministries, and Agencies (OMAs). By facilitating seam- less data sharing, this would make it easier for citizens to access the services they need through a unified digital platform.

2. Transformation of Public Services

Transform 10 essential public services to be accessible through a centralised national digital portal. This involves developing a digital service catalogue of all OMAs and creating software platforms to address common functionality issues. These platforms will contribute to the development of the first batch of digital public services, significantly increasing the accessibility and efficiency of public services.

3. Digitisation of Paper Records

Digitise paper records, introducing systems and solutions aimed at eliminating unnecessary paper bureaucracy in public services. This move towards digitisation will streamline processes, reduce delays, and enhance the overall efficiency of public service delivery.

Gaps Addressed: *This strategy aims to overcome the challenges of service fragmentation, long wait times, and the lack of transparency, making government services more user-friendly and accessible to everyone.*

STRATEGIC OBJECTIVE: 3 CHANGE MANAGEMENT AND PUBLIC SECTOR CAPACITY

Outcome: 3.3 Train a digitally literate public service that are champions of digital government with competent public sector IT specialists to maintain the government's IT infrastructure

STRATEGY

1. Change Management and Capacity Building for Digital Transformation

Develop a holistic change management plan and capacity building program, guaranteeing civil servant buy-in to the public sector's digital transformation. It is complemented by the business process redesign for the identified top 10 priority digital services. By empowering civil servants with the skills and knowledge needed to champion digital government initiatives, this approach directly contributes to maintaining and enhancing the government's IT infrastructure, ensuring the delivery of efficient and effective digital public services.

Gaps Addressed: *By focusing on building digital literacy and IT expertise within the public sector, this objective addresses the need for a knowledgeable and skilled workforce capable of driving and sustaining the digital transformation of government services.*

STRATEGIC OBJECTIVE: 4 GOVERNMENT DATA CENTRE AND CLOUD PLAN

Outcome: 3.4 Design proactive government data storage plans to ensure critical public digital infrastructure is secure and resilient

STRATEGIES

1. **National Data Storage Strategy**

Develop a National Data Storage Strategy by carefully assessing and implementing robust data storage solutions, protecting sensitive information from cyber threats, and enhancing the integrity and security of Namibia's digital infrastructure.

2. **Government Cloud Storage Plan**

Secure critical public digital infrastructure by launching and scaling the Government Cloud Storage plan. This plan evaluates secure and reliable options for the virtual hosting of public data, aiming to provide a resilient and efficient infrastructure for government data storage. By leveraging cloud technology, this initiative seeks to ensure that public data is not only secure but also accessible and scalable, meeting the growing demands of digital governance.

***Gaps Addressed**:This objective tackles the challenges related to data security, infrastructure resilience, and the scalability of digital services, ensuring that government digital assets are well-protected and can adapt to future needs.*

Pillar conclusion:

The commitment to digitising government services represents a pivotal step towards more inclusive, efficient, and transparent governance in Namibia. This digital transformation is expected to enhance citizen engagement, streamline service delivery, and build trust in governmental processes, laying a solid foundation for a governance model that is responsive to the needs and expectations of its citizens. Through these concerted efforts, Namibia is positioning itself as a leader in digital governance, paving the way for a more connected and empowered society.

Pillar 4: Industry and Innovation

Fostering a vibrant digital ecosystem for entrepreneurship and innovation is key to driving Namibia's economic growth in the digital age. By promoting startups/ SME's and encouraging research and development, this pillar aligns with the national goal of establishing Namibia as a hub of digital technology and innovation, contributing to job creation and economic diversification.

Status Quo

Namibia is embracing digital transformation as a critical component of economic growth and development. The country has recognised the importance of digital technologies to enhance competitive- ness, spur innovation, and improve the quality of life of its citizens. Namibia is driving its economic growth by implementing legislation and initiatives ICT. Key initiatives include the revised of the National ICT Policy, establishement of the Communications Regulatory Authority of Namibia (CRAN) and the National Broadband Policy.

The growth of mobile and internet penetration has been a key driver of digital transformation in Namibia. The country has also made significant investments in expanding its telecommunications infrastructure, with several companies launching high-speed mobile networks and internet services nationwide. However, challenges such as the high cost of

internet connectivity and the need for more skilled professionals in the ICT sector remain to be addressed. Despite these challenges, Namibia has laid the groundwork for a successful digital transformation and is committed to driving digital innovation and entrepreneurship in the digital space.[31]

Strategic Pillar focus

This pillar emphasises the creation of a conducive environment for digital entrepreneurship and in- novation, aiming to spur economic diversification and open up new avenues in the digital economy for Namibia. This initiative is pivotal in empowering Namibian entrepreneurs and innovators, positioning the nation as a beacon of digital technology and economic growth in the region.

STRATEGIC OBJECTIVE: 1 ENTREPRENEURSHIP ECOSYSTEM DEEPENING
Outcome: 4.1 Establish a fertile ground for innovation and entrepreneurship to drive context relevant and bottom-up economic growth

STRATEGIES

1. ICT Hubs and Innovation Support Ecosystem

Create ICT hubs and the improvement of the innovation support ecosystem to foster an environment that nurtures creativity and supports the development of new technologies and business models. these efforts drive context-relevant and bottom-up economic growth, encouraging entrepreneurs and innovators to thrive.

2. National Registry of Innovators

Create a National Registry of Innovators to track and promote pioneering activities within the country, serve as a platform to highlight and support the achievements of local innovators, facilitating connections with potential investors, partners, and markets. This initiative seeks to foster a culture of innovation and encourage further entrepreneurial endeavours.

3. Support for Commercialisation of Local Research

Establish funding mechanisms and support structures designed to assist innovators in bringing their ideas to market. Provide the necessary resources and guidance for commercialisation, translating local research and innovation into viable products and services.

Gaps Addressed: *This objective targets the challenges faced by digital entrepreneurs, including limited access to resources, support, and a conducive ecosystem for innovation, thereby facilitating the growth of a vibrant digital economy.*

STRATEGIC OBJECTIVE: 2 DIGITAL INDUSTRIALISATION STRATEGY
Outcome: 4.2 Propel Namibia into a leading position in the digital economy, utilising tech in high impact economic and social sectors

STRATEGIES

1. Business Process and IT Outsourcing Strategy

position Namibia as Business Process and IT Outsourcing (BPO/IT) as a key strategy for industrialisation and job creation. By developing a national BPO/IT strategy by 2025 and initiating skills development programs in partnership with the private sector.

31 Namibia Daily News, 2023. “Namibia’s Digital Transformation: Embracing Technology to Drive Economic Growth.” Available here

2. Streamlining Digital Trade
Establish a 'digital payments' regulatory sandbox designed to encourage regulatory innovation, facilitating easier and more secure cross-border transactions. By fostering a more efficient digital trade ecosystem, this initiative significantly contributes to Namibia's ambition to become a leader in the knowledge-based digital economy.

3. Market Studies and Strategies for High-Impact Sectors
Develop market studies and strategies for six sectors identified as 'high impact' in the Namibian 4IR report: Energy, Financial Services, Media and Communications, Health, and Agriculture and particularly, technology hardware manufacturing and assembly. This lays the groundwork for sustainable growth and leadership in the digital economy.

Gaps Addressed: *By focusing on digital industrialisation, this strategy aims to transition Namibia from traditional economic models to a digital economy, addressing the need for economic diversification and the creation of new opportunities in the digital realm.*

STRATEGIC OBJECTIVE: 3 RESEARCH AND INNOVATION AGENDA
Outcome: 4.3 Established mechanisms and partnerships for development-oriented and market driven research and development

STRATEGIES

1. National Artificial Intelligence Institute
Set up a national Artificial Intelligence (AI) Institute tasked with the mandate to focus on local AI-driven research and deployment, as outlined in the Presidential 4IR Task Force report. This initiative aims to enhance Namibia's innovation landscape, ensuring that research and development activities are closely aligned with both national development and market needs.

2. Public-Private Partnerships for R&D
Formalise Public-Private Partnerships (PPPs) to promote market-driven, future-oriented research and development, doubling the size of joint Public-Private R&D investment by 2027. This strategic move aims to leverage the strengths and resources of both the public and private sectors, fostering an ecosystem where collaborative R&D efforts can thrive.

Gaps Addressed: *This objective addresses the need for a coordinated approach to research and innovation, focusing on creating tangible outcomes that support economic growth and digital trans formation, thereby enhancing Namibia's capacity for innovation and technological* advancement.

Pillar conclusion
By prioritising the development of a supportive ecosystem for digital entrepreneurship and innovation, pillar 4 is instrumental in driving Namibia's economic diversification and positioning the nation as a leader in the digital economy. these efforts, Namibia is laying the groundwork for sustainable economic growth, leveraging digital innovation as a key driver for prosperity and regional leadership in technology and entrepreneurship.

Pillar 5: Policy and Regulation

Developing adaptive and forward-thinking digital policies ensures data privacy, cybersecurity, and equitable access to digital resources. This strategic focus not only nurtures a regulatory environment conducive to investment and innovation but also reinforces the themes of trust and security, pivotal for sustainable digital advancement and national resilience in the face of emerging digital challenges.

Status Quo

Since its inception in 2008 the primary governmental body responsible for the country's Information Technology assets is the Ministry of Information and Communication Technology (MICT). Complimentary custodians are the Office of the Prime Minister who manages ICT development in the public sector and the Ministry of Education, Innovation,Youth, Sport, Arts and Culture which facilitates skills development. Additionally, the mobile sector is regulated by the CRAN.

Namibia has made significant strides in digital policy and regulation. The country passed the Virtual Assets Act of 2023, which focuses on safeguarding consumers and mitigating money laundering and terrorism financing risks by establishing a regulatory authority to oversee virtual asset service providers (VASPs). The authority is empowered to license VASPs, appoint inspectors for investigations, and enforce actions against license holders. In addition, Namibia is undergoing a digital transformation journey, as evidenced by the passing of the Access to Information Act and the establishment of an online passport application system. Collaboration with foreign investors and tech companies is also a priority, highlighting Namibia's commitment to digital trans- formation and its readiness to lead by example in the region.[4]

Strategic Pillar focus

This pillar targets the regulatory gaps impeding digital transformation, aiming to establish a legal framework conducive to digital growth and innovation in Namibia. By addressing these aspects, the strategy seeks to create a secure and trustworthy digital environment that encourages investment, innovation, and equitable access to digital technologies.

STRATEGIC OBJECTIVE: 1 EMERGING TECHNOLOGY GOVERNANCE

Outcome 5.1: Ensuring that innovation is nurtured while implementing necessary security measures and ethical safeguards

STRATEGIES

1. Cryptocurrency Regulatory Assessment and CBDC Roadmap

Assess the current state of digital cryptocurrency use within the country and develop regulations that foster innovation while ensuring security and ethical safeguards. Publish a Central Bank Digital Currency (CBDC) Roadmap, including a concept design Exploring the benefits and feasibility of implementing a CBDC in Namibia.

2. VA/VASP Regulatory Sandbox to Formal Legislation

Transition 50% of existing regulatory sandbox projects on Virtual Assets (VAs) and Virtual Asset Service Providers (VASPs) to formally adopted legislation and regulation. This move signifies a commitment to integrating emerging financial technologies into the formal legal framework, promoting innovation while establishing necessary security and ethical guidelines.

32 Paradigm Initiative, 2020. "Londa, Namibia Digital Rights, and Inclusion Report." Available here

3. National AI Strategy

Establishing a strategy and legislative framework for the responsible development and deployment of AI technologies, harnessing AI's benefits while mitigating risks in accordance with global best practices like the UNESCO Artificial Intelligence Readiness Assessment Methodology33. The guiding strategic documents should adopt design principles that prioritise citizen rights, privacy, and safety. These documents should outline the approaches and instruments available to public, private, and civil society entities for addressing the malicious, exploitative, and unsafe development and use of AI systems.

4. Data protection bill harmonisation

This involves establishing a robust data protection regulatory framework that aligns with international standards.

***Gaps Addressed**: This objective aims to bridge the gap between rapid technological advancements and existing regulatory frameworks, ensuring that Namibia remains at the forefront of adopting and governing new technologies in a manner that promotes innovation and protects citizens.*

STRATEGIC OBJECTIVE: 2 ADOPTION OF OUTSTANDING LEGISLATION

Outcome 5.2: Adoption and implementation of this legislation creates an enabling environment for Namibia to leverage digital technologies for economic growth, innovation, and enhanced public service delivery

STRATEGIES

- **Data Protection Bill:** Promote trust and security in digital services and facilitating economic growth.
- **Cybercrime Bill:** Boost confidence in digital transactions and protects critical infrastructure.
- **Passing the amendments to the Communications Act, Act No. 8 of 2009**: Enhance improve service delivery and deployment of digital infrastructure.
- **Civil registrations and National Identity Bill**: Facilitate access to public services, improve security, and support the development of digital economies.
- **Namibia Investment Promotion Bill** to stimulate innovation, attract digital investments, and support the growth of Namibia's digital landscape.
- Revise and update the **Namibia eGovernment Policy of 2005** to modernise the legislative framework that enables efficient and accountable digital public services.
- Develop an updated and **consolidated ICT policy** that accommodates contemporary trends and opportunities in the ICT sector.

***Gaps Addressed**: This strategy tackles the delay and absence of essential digital legislation, removing legal barriers to digital transformation and creating a supportive ecosystem for digital initiatives.*

32 UNESCO (2021) Artificial Intelligence Readiness Assessment Methodology. Available here

STRATEGIC OBJECTIVE: 3 REGULATORY REFORM TO PROMOTE ADOPTION OF DIGITAL FINANCIAL SERVICES

Outcome 5.3: Accelerated regulation of emerging digital services through responsive regulatory innovation

STRATEGIES

1. Regulatory Maturity in Non-Bank Financial Services

Adapt and evolve regulatory frameworks to better accommodate the unique challenges and opportunities presented by digital financial services. Support the growth of innovative financial solutions that can contribute to financial inclusion and economic development.

2. Cross-Sectoral Sandbox Program

Address socio-economic challenges within difficult and emerging regulatory environments, allowing for the testing of new technologies and business models in a controlled setting. This initiative aims to spur innovation across various sectors, driving economic progress and societal well-being.

***Gaps Addressed**: By introducing regulatory sandboxes, this strategy addresses the challenge of slow regulatory responses to technological innovation, facilitating a more agile and responsive regulatory environment that supports digital growth.*

Pillar conclusion

Pillar 5 aims to protect citizens' rights, promote fair competition, and foster investment in digital technologies. This approach ensures that Namibia can navigate the complexities of digital transformation while safeguarding the principles of data protection, privacy, and cybersecurity. This strategic direction not only enhances Namibia's digital ecosystem but also contributes to building a resilient, secure, and dynamic digital future for all Namibians.

6. IMPLEMENTATION

To ensure a smooth transition from strategy planning to implementation, it is beneficial to outline a governance model and introduce an appropriate monitoring and evaluation framework. Having a predefined governance model with explicit explanations and clarifications of responsibilities for coordinating and overseeing the implementation of the NDS are valuable elements for the success of such a strategy.

6.1 Institutional Governance

A strategic governance framework will facilitate a systems approach to intra-governmental and inter-sectoral coordination and collaboration, while also delineating explicit processes, roles and responsibilities for all involved stakeholders. This is imperative for achieving the successful implementation of the NDS.

Figure 8 below depicts an institutional structure to operationalise the NDS. It ensures the continuity and effectiveness of the implementation of projects and initiatives that achieve digital transformation at all stages.

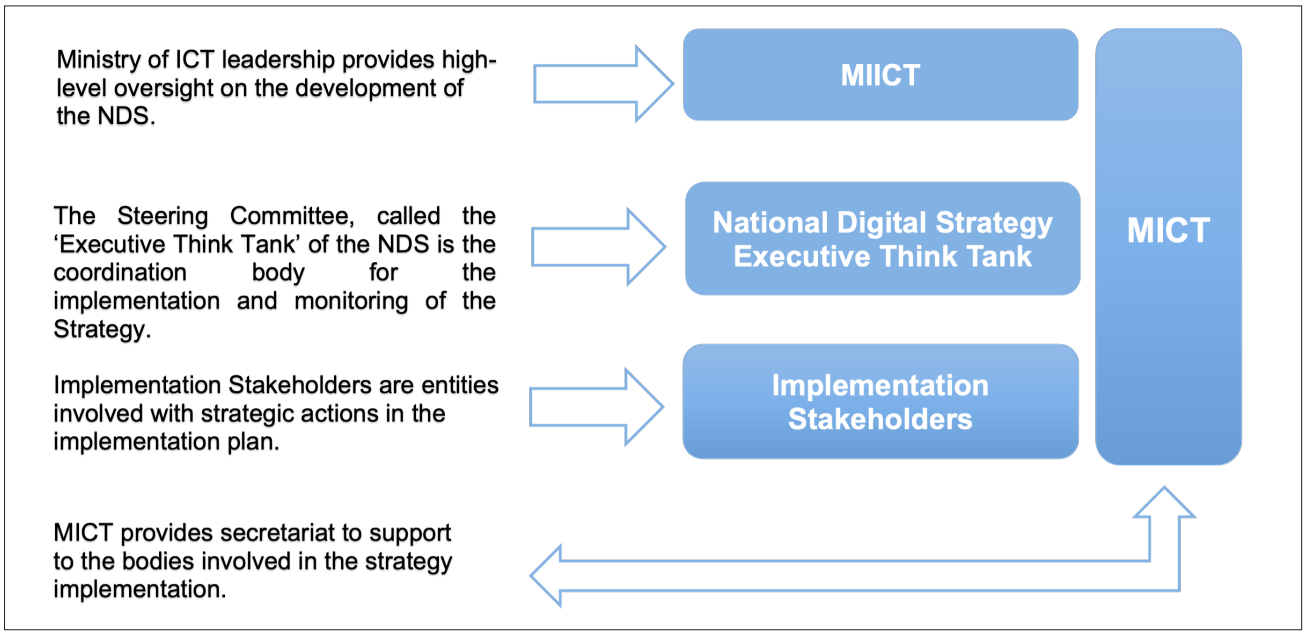


Figure 8: Digital Transformation Governance Model adapted for Namibia (Source; Jordan Digital Transformation Strategy)

As chief patron of the NDS, the leadership of the Ministry of ICT provides executive level oversight of the development of the strategy and is responsible for briefing Cabinet on the status of the implementation of the Strategy.

The multi-stakeholder National Digital Strategy 'Executive Think Tank (NDSETT) is tasked with overseeing and coordinating the implementation of the NDS and its Implementation Action Plan. The NDSETT shall be set up within three months after the approval of this strategy. The NDSETT is to be appointed by the Minister of ICT and shall have representatives of key ICT stakeholders from the public, private and civil society sector.

Once set up, the NDSETT shall determine the mode of operation consistent with the objects of the NDSETT and the Implementation Action Plan in their first meeting. The NDSETT has the discretion to establishing task teams to deal with and report to it on a quarterly basis on each of the broadband Policy pillars.

MICT, as the line ministry responsible for operationalizing the NDS, will act as the secretariat and assist in the administration and logistics of coordinating various activities and partners to success- fully execute the strategy.

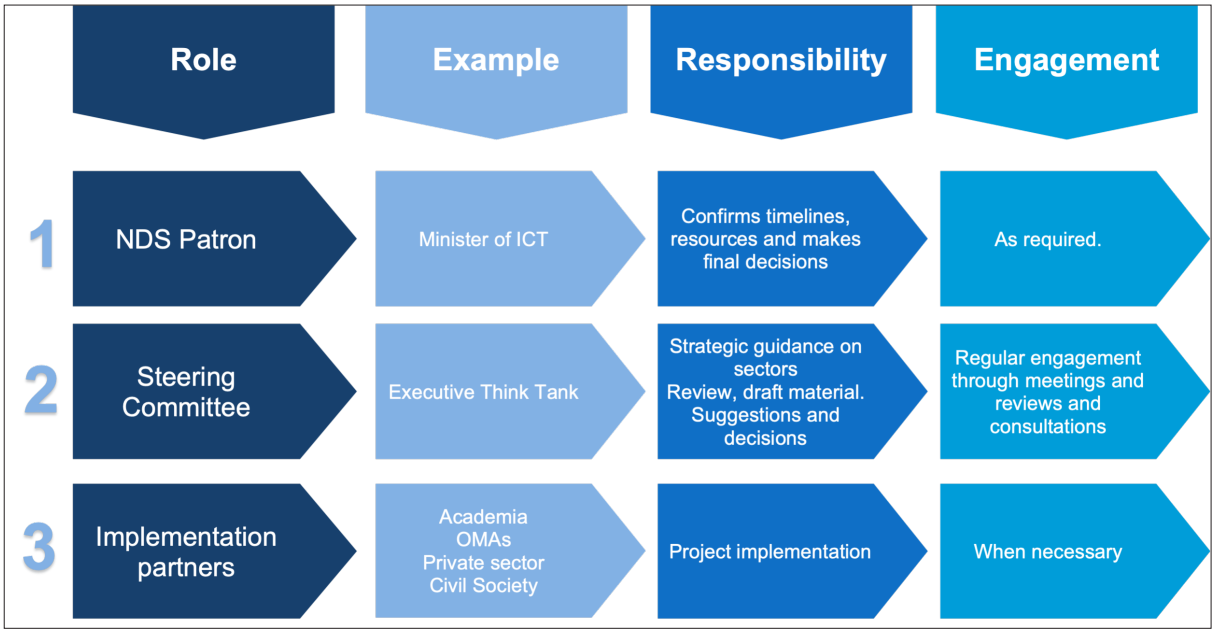


Figure 9: Strategic governance roles and responsibilities

6.2 Partnerships

To firmly anchor the strategy within the national context, it is imperative to convene a diverse group of stakeholders. This collaborative approach to governance aims to provide support, guidance, and advisory input to the leading institution responsible for crafting the strategy. The primary objective of this collaborative governance is to cultivate a shared sense of ownership, promote a collaborative ethos, and build strong partnerships among stakeholders, all geared toward achieving improved outcomes.

The first step in creating the governance structure for the strategy's implementation is to identify the key stakeholders. The aim should be to advocate with governments, the private sector, civil society and other stakeholders to foster inclusive and protective digital environments and approaches. This will lead to extensive collaboration across and between these sectors.

Further to that is the partnering with development partners and the private sector on resource mobilisation, co-creation, shared-value projects and access to expertise.

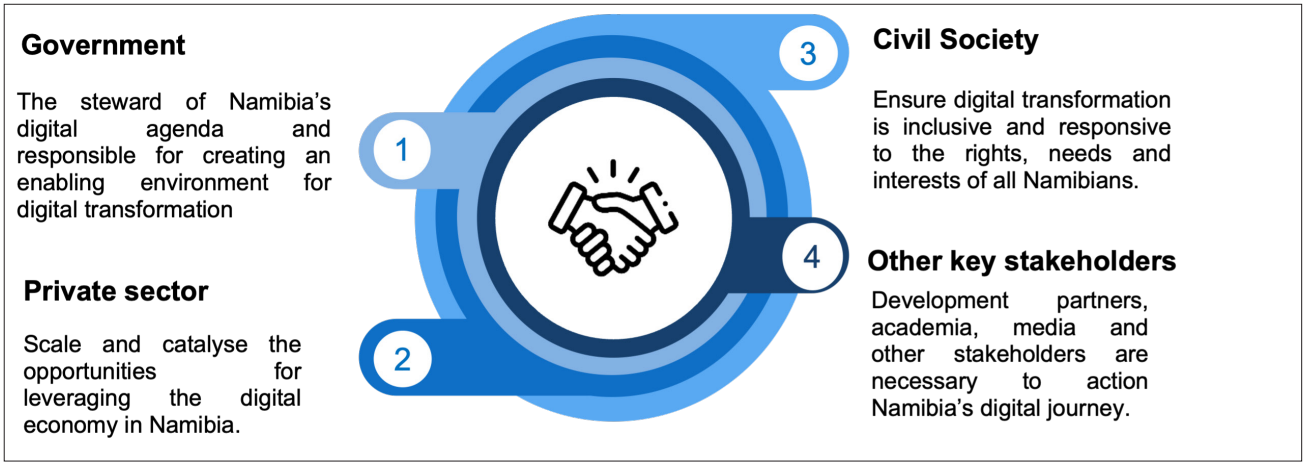


Figure 10: Partnerships map for inclusive digital transformation in Namibia

6.2.1 Government

The government of Namibia's commitment is critical to drive and enable digital transformation in the country. They will be focused on developing regulation, legislation, and shaping collaborations and partnerships to build a digitally transformative environment in Namibia. Further to that, the government should ensure the safety and security of all of our citizens, and will be leading efforts to improve digital literacy, cybersecurity, and shaping a positive and inclusive digital culture in Namibia. Table 1 below provides a view of the above-mentioned.

Stakeholder	Responsibilities	Expectations from stakeholder	Activities
• Presidency • Cabinet • Parliament • Judiciary • OMA's • Public Enterprises • Local Authorities • Regulators	• Provision of conducive environment for programme implementation (legal framework, policies and guidelines) • Implementation of the planned activities • Enforcement of the Act, Policies and Guidelines • Funding of Activities	• Issuance of Executive Orders and Directives • Coordination of all implementing agencies to realise the objectives in the strategy	• Interventions* • Policy formulation • Act enforcement • Provide political • leadership • Legislation and • oversight • Budget and resource allocation

Table 1: Government partners' roles and activities

6.2.2 Private Sector

The private sector is a key catalyst for the national digital transformation of any country. Academia plays a critical role in driving a country's digital transformation efforts. The financing of digital trans- formation efforts cannot rest solely on government, but also on other stakeholders such as the Private Sector.

Stakeholder	Responsibilities	Expectations from stakeholder	Activities
• Private Sector/ Business Community • Financial Sector	• Implement initiatives outlined in the Strategy. • Participate in policy formulation. • Consumption of ICT Services • Provision of ICT services • Financing ICTs development through Public Private Partnership	• Developing and implementing digital payment infrastructure • Providing digital guidance to key parts of our economy and society • Building a digital culture and mindset shift • Interbank network	• ICT services provision • Cost determination • Infrastructure provision • Availability of market for devices, spare parts, repairs, talk time and data services. • Developing digital products and services • Provision of payment platforms, website services, and all connectivity services

Table 2: Private sector partners' roles and activities

6.2.3 Civil Society

Namibia's digital transformation must be a whole-of-society approach (WSA), with no individual or community excluded from the potential that digital can offer. The WSA builds on the whole-of-government approach (WGA) by emphasising the roles of the commercial sector, academia, development partners, civil society, and political decision-makers, which is crucial. Creating a vibrant civil society will be a powerful force in ensuring that all voices are heard during the process of advancing our digital efforts and no one will be left behind.

Stakeholder	Responsibilities	Activities
Civil Society	• Community mobilisation for development • Consumption of ICT services • Participation in policy formulation	• Feedback on user friendliness of the policy • Feedback on cost and sustainability of the policy

Table 3: Civil society partner roles and activities

6.2.4 Other Key Stakeholders

Other key stakeholders of importance within the digital transformation journey are Development Partners, the Media and Implementation Partners.

Stakeholder	Responsibilities	Activities
Development Partners	• Financing ICTs development • Consultancy services • Capacity building	• Innovation and digital service upgrade platforms • Advocacy for open data sources with caution of ethics • Advocacy and innovation for cheaper services • Support Government in control policies for the entire environment
Media	Educate and inform Sensitisation of Citizens	-Accurate and timely reporting - Good coverage geographically - save as platform for consumer and citizen surveys - Influence developmental agendas
Implementing Partners	Assist in implementing proposed projects to realise objectives	• Mobile network providers • LAN providers • Individuals and communities • GRN systems

Table 4: Other stakeholders' roles and activities

6.3 Resource Mobilisation

Digital resource mobilisation refers to the capability to mobilise and drive collective action by the presence of certain social structures and resources. The key to an effective and successful implementation of this Strategy is to identify viable and sustainable resources, especially financial and human resources. The availability of necessary financial resources cannot be overemphasised for the successful and efficient implementation of the strategy.

The NDSETT will explore a range of funding strategies for resource mobilisation, which will be derived from funding sources from the government of Namibia in collaboration with development partners and civil society. It is further suggested that public and private institutions will fund the projects in this Strategy through Private-Public Partnerships (PPPs) and collaborations. The NDSETT will investigate a variety of strategies for resource mobilisation and prudent financial management.

To execute this Strategy effectively, a systematic and well-coordinated approach will be put in place for the solicitation, management and utilisation of resources from domestic sources, bilateral and multilateral partners. In addition, the NDSETT will organise the processes of prioritising, planning, project selection and monitoring for effective and efficient utilisation of available resources. Figure 8 below shows a generic Resource Mobilsation Hierarchy structure, which can easily be customise to suit the needs of the NDSETT.

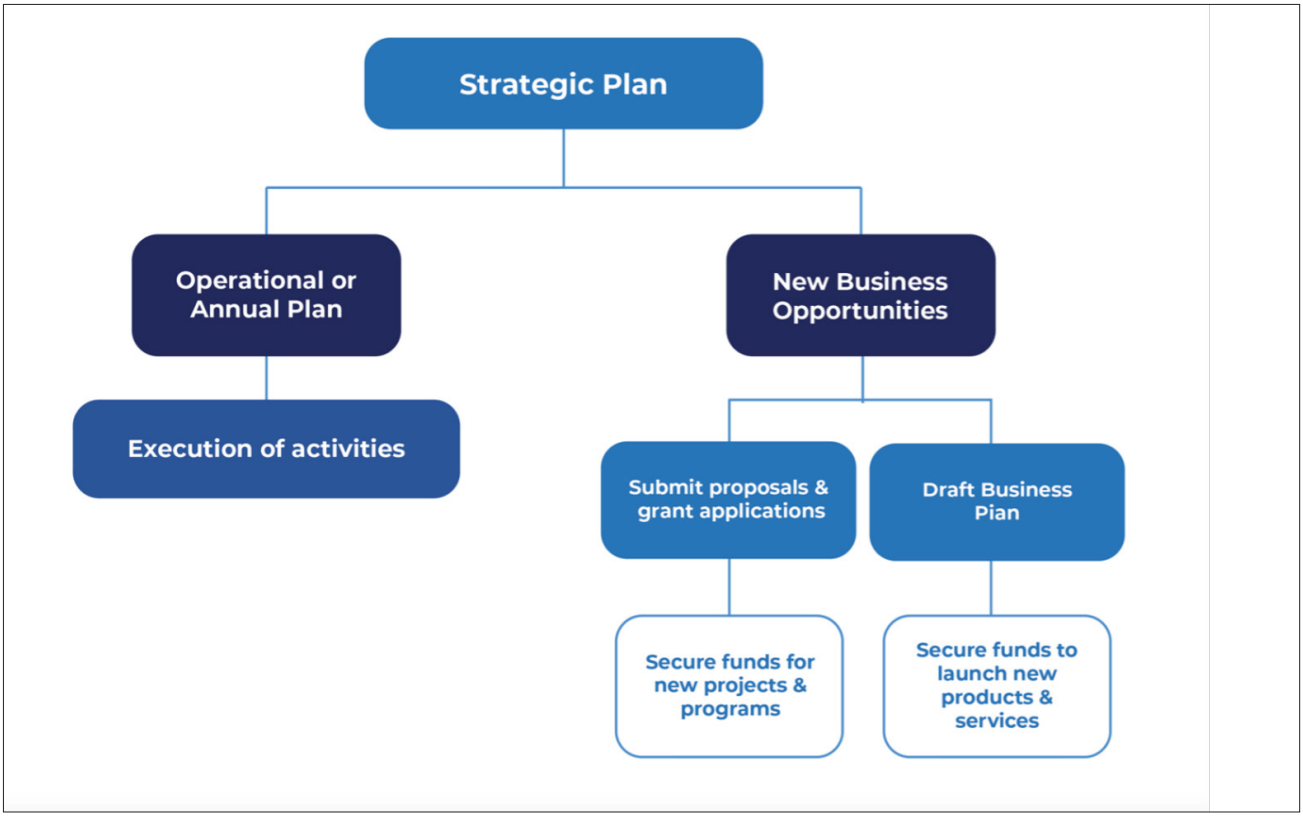


Figure 11: Potential Resource Mobilisation Hierarchy

Potential Sources of Funds	
National Treasury	MICT will actively engage in advocacy and lobbying efforts to secure a dedicated allocation of funding within the National Government's budget
Development Partners	MICT will proactively design and execute strategies to attract both technical and financial support from development partners
Public Private Partnerships	Resource diversification will also encompass the utilisation of Public-Private Partnerships (PPPs). The ministry will operationalise the provisions of the Public-Private Partnership Act of 2017 to support the implementation of the strategy.

Table 5: Potential sources of funding

External resource mobilisation, on the other hand, will include grants and credit facilities such as loans. Public-Private Partnerships will equally be considered and explored for the benefit and facilitation of coordinated financial support, towards attaining total digital transformation.

The successful implementation of this strategy will not only depend on the availability of financial resources, but also on the availability of skilled human resources. The private sector may take a leading role in capacity building. To complement that, already existing expertise

in various Ministries, Offices and Agencies (OMAs) will be key in the implementation process of the strategy.

Other examples for source of government funding for this NDS can be categorised as follows:

- **Grant-based aid:** Official/public foreign aid sources, as well as private philanthropic aid sources (grant or non-return-seeking capital providers).
- **Taxes:** Namibia's own sovereign tax resource base, raised through general or special taxation schemes

- **Government borrowing:** Sovereign or municipal/local borrowing, either from commercial capital markets or concessionary sources like multilateral development banks
- **Private-sector capital:** Private capital sources including corporates, development finance institutions and impact investors that provide concessionary but return-seeking capital and commercial lenders and investors that seek market-rate returns.

Income streams and cost savings: Operating revenues, income streams and attributed cost savings generated by an endowment of funds or by an initiative's operating activities.

6.4 Public Awareness and Engagement

Digital transformation must be founded on the needs, realities, and aspirations of the citizens. It should be people-centered and driven by participation, engagement, and co-design wherever and whenever possible. Everyone should benefit from the potential that digital offers, and therefore digital transformation must be inclusive with no one left behind.

There is growing digital awareness across society, driven by interest in social media and online content. To ensure digital inclusion, the government will be continuing to make concerted effort to increase digital literacy in mandatory education and to upskill local workers through longer-term focused talent development schemes in vocational education.

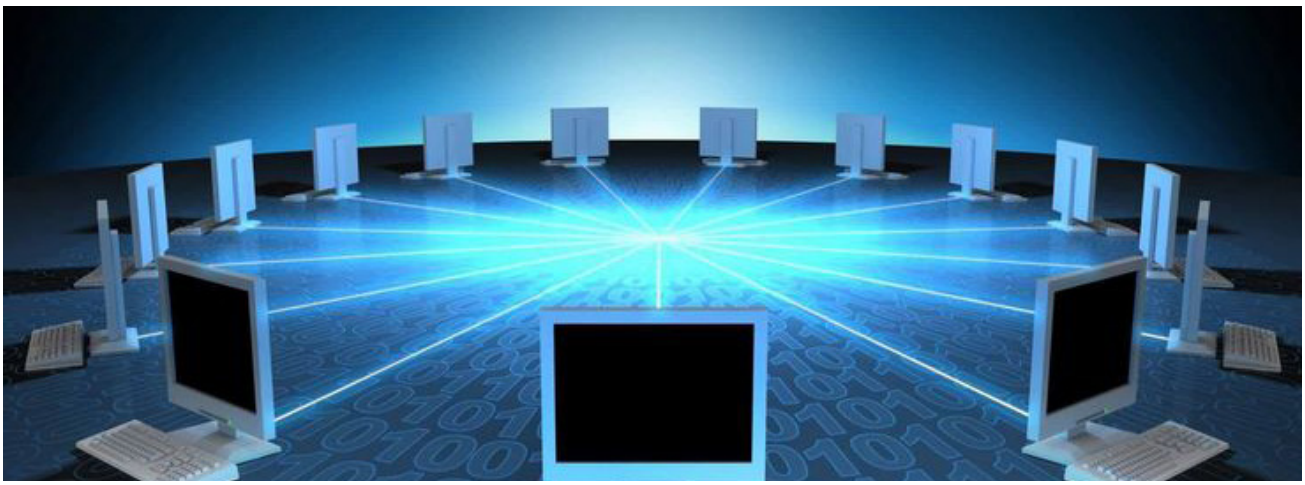
In addition, more will be done to increase awareness of the potential afforded by digital as well as to enhance cyber awareness, through the Industry and Innovation Taskforce. This will require demonstrating the value of digital through useful and accessible digital public services and interactions as well as targeted and broader digital literacy efforts and work to drive the development of a local digital entrepreneurship culture in Namibia.
Increasing citizen awareness and creating a mindset shift need:

Figure 12: Public awareness raising components of national digital transformation.

6.5 Implementation Action Plan

The implementation action plan outlines the objectives, strategies and associated interventions, targets, performance indicators and assigns responsibility for strategy execution for all the five pillars of the Strategy.

MICT, as the national coordinating ministry for implementation of the strategy, shall, on an annual basis, consolidate the gains recorded by all implementing partners in realising targets towards specific interventions. (The implementation action plan can be found under appendix 6).



7. MONITORING AND EVALUATION

The aim of monitoring, evaluation, and reporting is to guarantee that the strategy's execution adheres to the established schedule. In cases of any deviations, prompt and suitable corrective actions will be initiated. Monitoring and evaluation will occur both during and after the implementation of the strategies to gauge the extent of success in accomplishing planned activities and achieving desired results.

The Government of Namibia is in the process to approve and sign-off of the national Monitoring and Evaluation (M&E) policy as one of the key enablers of the successful implementation and measurement of the performance of its development interventions under the leadership of the National Planning Commission (NPC)[34].

The national M&E policy establishes a framework that institutionalises the undertaking of continuous performance monitoring and evaluations. Aligning the NDS with this policy is an integral implementation tool for the realisation of the Strategy's vision

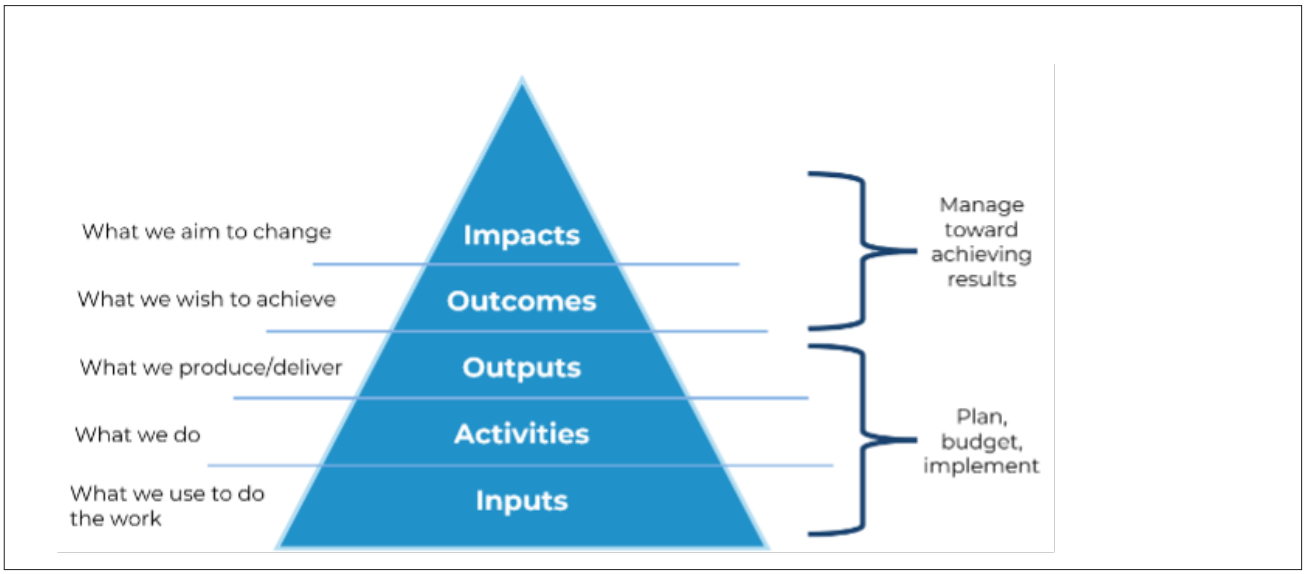


Figure 13: The Log frame Model[35]

The M&E Policy introduces a management tool, Logic Model (also known as a logical framework matrix) that is used to identify strategic elements of a programme or project (such as objectives, expected accomplishments, indicators of achievement, outputs and inputs) and their causal relationships, as well as the assumptions and external factors that may influence success and failure. It facilitates planning, implementation, monitoring and evaluation of a programme or project. The Logic Model introduced by NPC in the National Monitoring and Evaluation Policy, is based on the same Log Frame Model shown under Figure 11. NPC, therefore, is encouraged to play an advisory role in the implementation of the NDS to assist with the monitoring and evaluation framework.

34. Civic264 (2023) Draft Republic of Namibia NME Policy 8 March 2023. [online] Available here

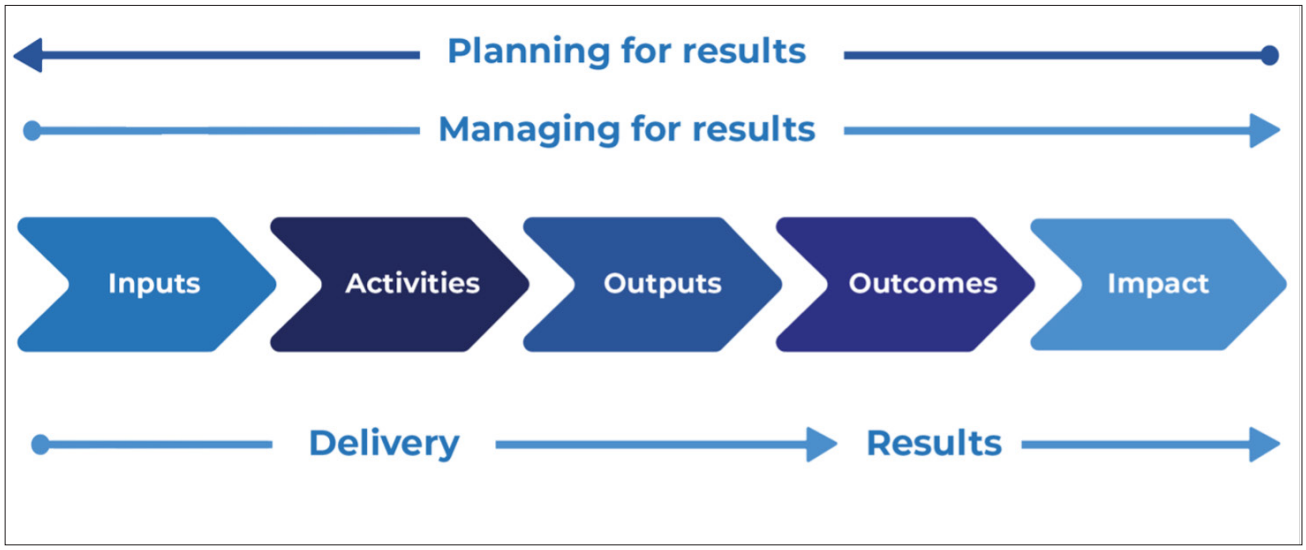


Figure 14: Logic Model: National Monitoring and Evaluation[1]

7.1 Ensure strategic monitoring and evaluation, define operational governance.

As digital transformation is not a one-time exercise, but a continuous process, digital transformation planning is also about continuous monitoring, revision, adjustment and flexibility to adapt. Therefore, introducing an appropriate monitoring and evaluation framework, which sets guidelines on how, when and by whom NDS implementation will be monitored and reviewed is crucial for Namibia.

7.2 Monitoring, Evaluation and Reporting Approach

The NDSETT is required to constitute a monitoring and evaluation Committee. This Committee will be tasked with routine supervision, data collection, evaluation and reporting processes on the progress of the NDS implementation.

The following reports presented below are suggestions of reports to be submitted:

Table 6: M&E reporting structure

Report	Prepared By	Submitted to
Quarterly Progress Report	M&E Sub Committee	NDSETT
Annual Report	NDSETT	Ministry of ICT
Mid Term Evaluation	NDSETT	Ministry of ICT
End term Evaluation	Minister of ICT	Cabinet

35. Public Service Commission (2008) Basic concepts in monitoring and evaluation. Available here
36. Civic264 (2023) Draft Republic of Namibia NME Policy 8 March 2023. [online] Available here

1.3 Dissemination of M&E Reports

MICT and the M&E Committee will ensure that relevant reports are properly disseminated to the ministry. This will help to consolidate support in achieving the overall goal of the institution. Similarly, forums such as meetings, retreats, workshops, seminars, colloquia, will be used to share findings and recommendations of report.

1.3 Operationalise the strategy: Short-term plans

After the strategy is developed, it needs to be translated into a well-worked-out short-term implementation plan. The short-term implementation plan translates strategic actions in the Action Implementation Tables into sub-actions, implementable during this short-term planning period, and links them to departmental and individual goals.

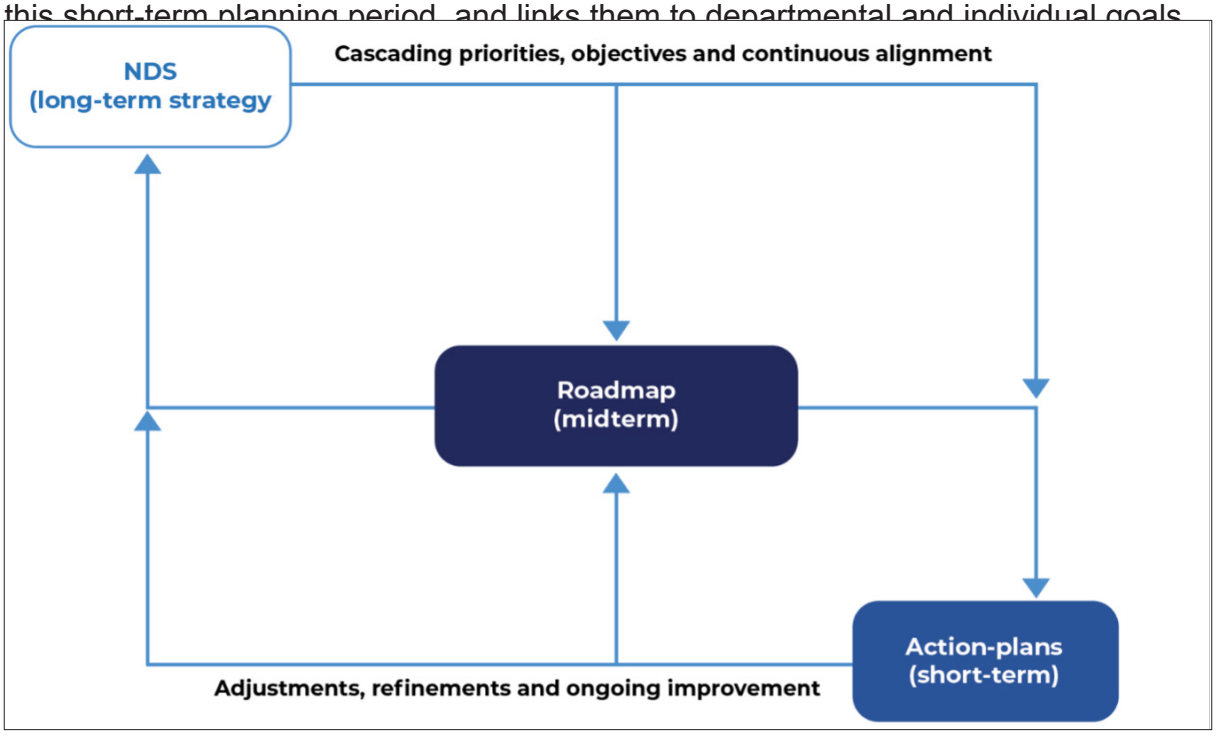


Figure 13: Cascading principle of strategic documents[1]

It is good practice to start preparing the accompanying action plan once the NDS has been approved, as it eliminates time lags between the roll-out of the strategy and developing corresponding actions for its implementation.

37. International Telecommunications Union. (n.d.) Digital Regulation Platform. Available here.

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9. Appendix

Appendix 1: List of stakeholders consulted

Stakeholder category	Stakeholder
Government	Office of the Prime Minister
	Ministry of Information and Communication Technology
	Ministry of Industries, Mines and Energy
	Ministry of Education, Innovation,Youth, Sport, Arts and Culture
	Ministry of International Relations and Trade
	Ministry of Health and Social Services
	Ministry of Home Affairs, Immigration, Security and Safety
	Communications Regulatory Authority of Namibia (CRAN)
	Namibia Financial Institutions Supervisory Authority (NAM-FISA)
	Namibia Investment Promotion and Development Board
	Social Security Commission
	National Planning Commission
	Namibian Correctional Service
	Erongo Regional Council
	Kavango Regional Council
	Hardap Regional Council
	Oshana Regional Council
	Kavango West Regional Council
	Omusati Regional Council
Civil society and research	STEAM Edu
	One Action for Youth
	EU-Namibia Youth Advisory Board
	Institute for Public Policy Research (IPPR)
Financial sector	Bank of Namibia
	Nedbank
	Eos Capital
Start-ups/SMEs	JABU

	Tambula
	Facilit8
	Basecamp
	Vinteck
	TagMeter
Academia/Education	Namibia University of Science and Technology (NUST)
	University of Namibia
	National Commission on Research, Science and Technology (NCRST)
	Namibia Institute of Public Adminstration and Management (NIPAM)
	MindsInAction
	Eduvision
	International University of Management (IUM)
ICT/ Telecommunications	Licensees
Development/Multilateral partners	Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ)
	Konrad-Adenhauer Stifting
	Digital Nation
	Cybernetica
	ESTDEV
	GovStack
	International Telecommunications Union (ITU)
	UN Organisations

Appendix 2: Tables, figures, and benchmarking

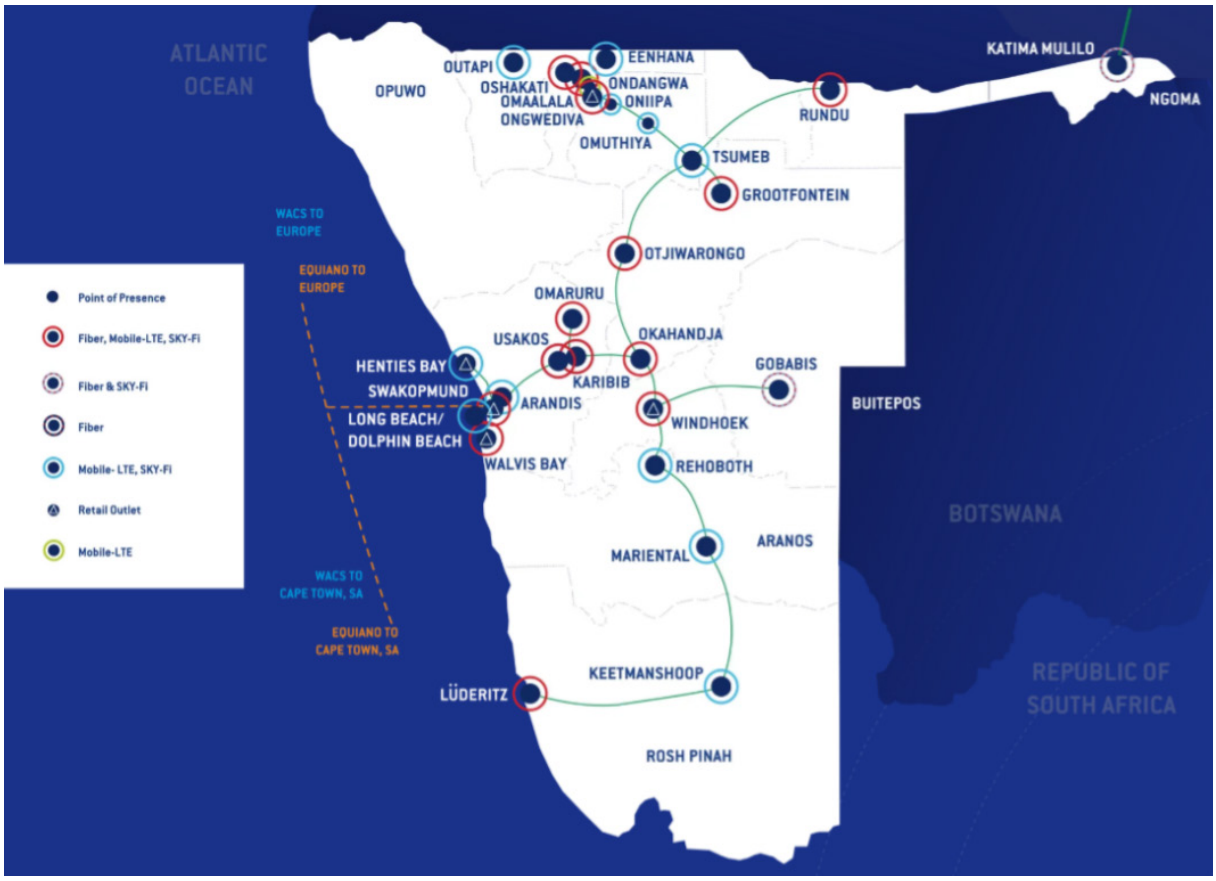


Figure 16: Fibre optic cable map, Paratus Namibia

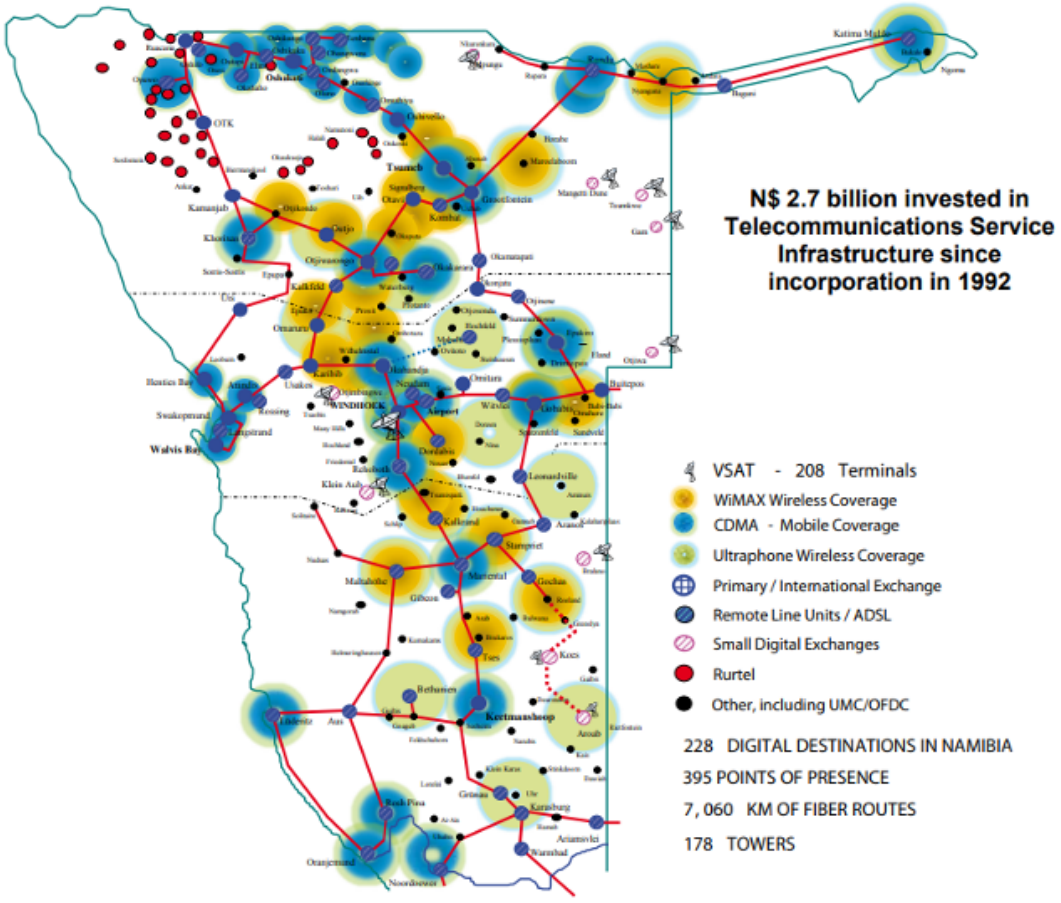


Figure 17: Digital Infrastructure map of Namibia

Table 1: The United Nations The frontier technology "country readiness index":

Dimension	Description (What does it measure?)	Indicators	Namibia (2019)
ICT deployment	The level of the spread of information and communication technology to ensure access to all societies, and to evaluate the quality of infrastructure that allows for more use that is effective	Internet users - % of population	0.41
		Mean download speed (Mbps)	
Skills	The skills required to support the adoption of the concept of technology based on acquiring knowledge through the educational environment, and acquiring skills through the work environment	Expected years of schooling	0.30
		High-skill employment - % of working population	
Research & Development	The extent to which countries can improve technology and match it with the requirements of the local market	Number of scientific publications on frontier technology	0.15
		Number of patents filed for frontier technologies	
Industry Activity	The ability of the local industry to manufacture advanced technology and export digital services	High technology manufactured exports -% of total merchandise trade	0.54
		Digitally deliverable services exports - % of total service trade	
Finance	The availability of financing to the private sector and the resources provided by other financial companies to the private sector.	Domestic credit to private sector (% of GDP)	0.70

Table 2: World Economic Forum Future of Production

Future of Production	Weight	Score
Structure of Production	100%	3.0
Complexity (Economic Complexity Index – ECI)	60%	3.9
Scale (Manufacture Value Added – MVA)	40%	1.6
Drivers of Production	100%	3.9
Technology and Innovation	20%	3.9
Human Capital	20%	3.6
Global Trade and Investment	20%	3.3
Institutional Framework	20%	5.3
Demand Environment	15%	4.0
Sustainable Resources	5%	2.5

Table 3: Digital Quality of life Index

	2021	2022	Place change
Internet affordability (rank/index)	62nd/0.04	96th / 0.02	34 lower
Time to work to afford the cheapest mobile internet (rank/seconds)	92nd /856	102nd /1203	10 lower
Time to work to afford the cheapest broadband internet (rank/minutes)	62nd / 228	83rd / 419	22 lower
Internet Quality (rank / index)	62nd / 0.48	104th / 0.26	42 lower
Mobile Speed (rank /Mbps)	99th / 19.68	99th / 22.16	Same
Broadband speed (rank / Mbps)	102nd /16.27	105th / 18.37	3 lower
Mobile internet stability (rank/ index)	66th / 0.13	92nd / 0.11	26 lower
Broadband internet stability (rank/index)	84th / 0.13	96th / 0.12	12 lower
Mobile speed improvement (rank/index)	47th / 0.07	74th /0.01	27 lower
Broadband speed improvement (rank/index)	19th / 0.12	104th / 0.00	85 lower
Electronic Infrastructure	96th / 0.48	101st / 0.48	5 lower
Individuals using the internet (rank / per 100 inhabitants)	98th / 52.10	99th / 52.08	1 lower
Network readiness	95th / 0.22	104th / 0.22	9 lower
Electronic security	102nd / 0.31	103rd / 0.16	1 lower
Cybersecurity	108th / 0.06	11st / 0.06	3 lower
Data protection laws (rank / score)	Moderate / 1	Very low / 1	-
Electronic government	90th / 0.48	97th / 0.45	7 lower
Online service index	92nd / 0.26	94th / 0.26	2 lower
AI readiness	85th / 0.22	102nd / 0.19	17 lower

Table 4.1: Pre-conditions for F4IR- Infrastructure

	Unit of measure	Year (s)	Estonia	Namibia	South Africa	Botswana	Angola	Zimbabwe	Zambia	Rwanda	Kenya
Total area	Km	2018	45 227	825 615	1 221 037	582 000	1 246 700	390 757	752 612	26 338	580 367
Population size	no. of individuals	2018	1 329 254	2 587 344	60 041 996	2 397 240	33 933 611	15 092 171	18 920 657	13 276 517	54 985 702
Density	people/km²	2018	31	3	49	4	27	39	25	538	97
Infrastructure											
Physical											
Access to electricity	% of pop	2020	100	56.3	84.4	72	46.9	52.7	44.5	46.6	71.4
Urban	% of pop	2020	100	75	89	91		86	82	86	94
Rural	% of pop	2020	100	36	75	26	74	37	14	38	63
Access to safe drinking water	% of pop	2020	100	84.27	93.89	92.21	57.17	62.67	65.41	60.41	61.63
Urban	% of pop	2020									
Rural	% of pop	2020									
Access to sanitation	% of pop	2020	100	35.26	78.47	80.03	51.66	35.19	31.9	68.83	32.7
Urban	% of pop	2020									
Rural	% of pop	2020									
Digital											
ICT regulator has cybersecurity	Yes/No	2020-2021	No	Yes	Yes	Yes	Unknown	Yes	Yes	Yes	Yes
Individuals using the interned	% of pop	2020-2021	89	41	70	41	36	29.3	19.8	26.5	29.5
Mobile cellular subscription	per 100 people	2020-2021	145.17	114.06	161.8	162.84	44.56	88.76	103.92	81.95	114.2
Households with computer	%	2020-2021	87	21	23	28	32	14	8.1	2.5	8.8
Active mobile broadband	per 100 people	2020-2021	170	69	110	95	20	59	56	43	47
Fixed broadband subscription	per 100 people	2020-2021	31.33	2.8	2.2	11.04	0.7	1.37	0.45	0.14	1.25
Additional digital indicators											
Number of internet users		2022	71.6	35.6	48.8	38	25.9	28.7	33.9	38.6	45.1
Number of mobile devices		2022	21	109	70	102	126	122	112	101	84
Mobile internet coverage		2022	62.4	30.9	45.5	36.2	19.8	25	25	29	38.7
Fixed broadband coverage		2022	63.6	35.4	46.4	36.2	28.4	30.3	33.9	34.9	43
Active mobile broadband		2022	85.4	39.8	61.2	42	32.2	35.2	43.6	47.5	57.2
Cost of data	N$/GB	2022	74.9	39.4	42.2	37.5	23.4	24.2	33.1	43	41.6

Table 4.2: Pre-conditions for Education and Skills

	Unit of measure	Year (s)	Estonia	Namibia	South Africa	Botswana	Zimbabwe	Nigeria	Zambia	Rwanda	Kenya
Total area	Km		45 227	825 615	1 221 037	582 000	390 757	923 768	752 612	26 338	580 367
Population size	no. of individuals		1 329 254	2 587 344	60 041 996	2 397 240	15 092 171	211 400 704	18 920 657	13 276 517	54 985 702
Density	people/km²		31	3	49	4	39	232	25	538	97
Education											
Government expenditure on tertiary education	% of GDP	2014-2015	1.4	1.6	1.1		1		0.5	0.8	0.7
Gross enrolment ratio for tertiary education	% of pop	2016-202	70.4	27.8	23.8	25.1	10		4.1	6.2	11.5
% of graduates from tertiary education graduating from ICT programmes	% of pop	2015-2019	6.7	2.9	3		8.4			5.4	5.3

Table 4.3: Pre-conditions for 4IR- Innovation Systems

	Unit of measure	Year (s)	Estonia	Namibia	South Africa	Botswana	Zimbabwe	Nigeria	Zambia	Rwanda	Kenya
Total area	Km	2018	45 227	825 615	1 221 037	582 000	390 757	923 768	752 612	26 338	580 367
Population size	no. of individuals	2018	1 329 254	2 587 344	60 041 996	2 397 240	15 092 171	211 400 704	18 920 657	13 276 517	54 985 702
Density	people/km squared	2018	31	3	49	4	39	232	25	538	97
Innovation System											
Entrepreneurship											
Time required to start a business		2019	3.5	54	40	48	27	7.2	8.5	4	23
Ease of Doing Business		2019	89	41	70	41	29.3	35.5	19.8	26.5	29.5
Partnerships											
Public-private partnerships investment in energy	current US$, thousands			70 000	826 300	104	65 700	40 000	336 000	362 000	98 410
Knowledge Generation											
Patent Applications, residents		2019	21	8	542	2	8	410	16	6	341
Gross Domestic Expenditure on Research and Development (GERD)		2019	1.8	0.4	0.75	0.54	n/a	0.2	n/a	0.75	0.8

Appendix 3: SWOT, PESTLE and Risk Mitigation framework analysis

1. SWOT analysis

Colour legend as per Strategic Pillar: Digital Infrastructure, Digital Skills, Digital Government, Industry Innovation, Policy and Regulations

Strengths	Weaknesses
Relatively good mobile penetration	Low mobile broadband penetration
Legal Framework driving digital transformation	High cost of internet connectivity (data affordability)
E-Government	Internet uptake low
Pro-active stakeholders	Low level of digitisation activities and integration of local content
Positive cases: digital government initiatives	No definitive measure on community or enterprise readiness/maturity levels in terms of broadband adoption
	Low intensity of mobile apps development
Good potential for IoT, AI, etc.	Scarcity/Lack of technical talent
Fintech Innovation	Digital skills and education amongst certain groups is low (Age, Education levels, Income levels)
E-Commerce Growth	Change resistant personnel
Collaboration with the AU-EU D4D Hub	Security Concerns
Labour force with basic digital skills	Heavy reliance on outdated legacy systems
Relative research excellence in digital content themes and specific topics.	Financial constraints
Digital coalition and activities	Low level of R&D ICT support both from business and government.
Smart industry Action Plan	Lack of technological innovation capacity because of low level of ICT R&D founding.
Strong country identity	Low ICT expenditure that present low option for economy of scale in adoption of ICT.
	Low level of early adoption capacity for participative web services among general population.
	E-learning, e-commerce and e-banking are not used at the high rate.
	Lack of awareness of available support & training
	No digital L&D programme in place
	Low investment in cybersecurity to date
	Digital inclusion ‘zones’ not actively managed
Opportunities	**Threats**
Foster a culture of innovation and agility	Stopped digitisation efforts because of lack of funds
Enable the disruption of industries	Missing participation in mobile content economy, because of low mobile broadband penetration.
Driving economic growth, creating jobs, and addressing societal challenges.	Underdeveloped copyright legislation that is not harmonised with the new realities in the digital content technologies could become a barrier to digitalisation of content and its.
Public Procurement Innovation	Not catching upwith the useof more advanced services can cause skill gaps that would prevent to follow the advances in future internet evolution.
Ever changing customer needs and expectations	Ageing population not being able to tackle with the contemporary technology and usage
Better integration of MICT efforts in digitisation sharing best practices in tackling financial, technology, organisational and process issues.	Cyber Security threats
Rising usage rate for more advanced services could have positive impact for local economy and society.	Economic uncertainties could have a significant national and local impact and timely investment in the NDS
Increasing percentage of individuals with a specialised internet and computer knowledge and skills.	Digital inequality
Remote working/Digital Hubs	Access to broadband
Enhanced digital infrastructure	Access to equipment – Devices, etc.
Great potential for cloud roll-out	Trust: online safety
Economic Growth & Job Creation	Time and financial obstacles in networks build-up
Access to digital technologies in teaching, learning and assessment in all schools	Shortcomings of business system vendors
Funding available to support digital innovation	Legal risk: website breaks accessibility law
Higher than average young population with string population growth	Reliance on broadband market forces
Infrastructure development within the country	
Improved internal workflow processes and productivity for the public and private sectors	
Comprehensive systemic change of education	

Social acceptance of AI	
Public administration reform	
Digital transformation of key sectors (health, food and agriculture, mobility, tourism, finance, etc.	
Use in productive activities (e-banking and e-commerce)	
Digital can help make services more accessible – health, education, security, etc.	
Government can lead by example in the services it offers and the way it uses digital technologies to deliver those services	
Greater collaboration to deliver support for communities and enterprises to tap into the potential	

2. PESTLE Analysis of digital transformation in Namibia

Political	Economic
- Sourcing of data and tech - New administration- no support - Protection of rights and freedom - Understanding bills, change management and political office bearers - Policy implementation - Political leadership – incentives/ fear of change - Regulation of emerging tech – slow pace to develop - Slow adoption - Accountable service delivery	- Sourcing of data and tech - Conducive environment for start-ups and incentivisation - Tax incentives- expensive devices - Local context matters – economic stability - Job losses- redundancy - Financial constraints- funding for infrastructure and skills - Affordability of infrastructure - Growth opportunities - Assistive tech more expensive - Local expertise - Private sector - incentivisation
Environmental	**Socio- Cultural**
- Tech for good - Sustainability - Responsible consumption and disposal - Climate change - Basic electricity and energy	- Leverage indigenous knowledge and tech - Tech for good - Morals/values - Fear of change - Trust and adoption - Digital identity - Navigation of complexity - Mind change- techno fear - Digital divide – stigma, bias and discrimination - Gender – Need to manage change, Futures and foresight. - Mis- disinformation - Info pollution - Localisation (language and assistive technology) - Ethical watching

Legal	Technological
- IP- incentivisation of youth innovators - Understanding of open data, standards and frameworks - Cybercrime and security as well as others that are missing - Local expertise - Compliance to international laws and framework - 5G-Effective governance - Data storage (Where is data stored) - Who owns the data? - Digital hubs for accountability	- Digital hubs for accountability - Localisation (language and assistive technology) - Ethical watching - Reach across all the 14 regions - AI, Blockchain (Future fit emerging tech) - Capacitate youth – payment systems - Accessible services - Cybersecurity (data privacy and service use) - Upgrade infrastructure in rural areas - Lack of data -siloed data - Standardisation (parallel systems, digital as well as paper) - Mitigation of parallel systems to open

3. Digitalisation risk mitigation framework for Namibia

Human Capital

RISK	MITIGATION
Lack of childhood development	Integrating digital literacy in ECD
Lack of skilled digital workforce	Development programmes
Financial contracts	Establish Private Public Partnership
Outdated legislative framework (HR)	Policy review, benchmark consultations
Limitation to digital information	Public education, open data platforms
Brain Drain	Incentives
Lack of skills transfer	Succession plan

Digital infrastructure

RISK	MITIGATION
New administration, same infrastructure agenda and projects	Align with national/regional/African development plans -Surveys+ press release -Update of digital services
Accountable service delivery	Performance agreements Procedures standards/Eliminate loopholes
Internet freedom	Legislative vigilance on Internet freedom
Global instability costs	Bidding in local currency (providers) Responsible economic policy
Risks/ Technology responsiveness	Monitoring and evaluation flamework
Interoperability	Due diligence and diplomatic strategy International standards adoption
Monopoly	Active competition regulation
Legal/contractual ambiguity	Upskilling public and legal capacity
Technology adoption -connectivity -Devices costs	Reduce tax on consumer electronics

Political will

RISKS	MITIGATION
New admin-no supports	-Clear process, structures-roles, and responsibilities -Visible leadership support- people in high places to drive the technology digital agenda -Availing of funds (educate, awareness, media)
Protection of rights and freedom	-Clear constitution recognition of digital rights (privacy, access, freedom, expression)
Understanding bills, cm, political office	-Raise awareness and educate political office bearers so that they can present/advocate for the people. -Training on change management and allocation of change management compliance in organisation.
Policy implementation	-Involvement of stakeholder/co-ordination /monitoring (awareness, compliance/clear procedures)
Political leadership (incentives/ fear of change)	-Implementation of policies/environment that supports emerging tech
Regulation of emerging tech	-Regulatory sandboxing/national/data center -Policies and regulatory framework
Slow Adoption	-Awareness, inclusion in formal and tertiary education
Accountable service delivery	-Hiring of competent resources to drive service deliver/ benchmarking e-services

Business Environment

RISKS	MITIGATIONS
High service cost	-Tax incentives (SME)
Upgrade infrastructure in rural areas	-Price regulation
Higher capital investment	-Tax incentives

Appendix 4: Policy landscape mapping

i. Vision 2030 for the Republic of Namibia, the Namibian Government's Vision 2030 stipulates that ICT must be the most crucial sector in the economic development of the country by 2030.
ii. Task Force on the Fourth Industrial Revolution Final Report (August 2022)
iii. Namibia National Payment System Vision and Strategy (2021 – 2025)
iv. The National eHealth Strategy (2021 – 2025), is the response to a national vision of a healthy nation enjoying a high standard of living and quality health and social services enabled by eHealth. It is envisioned that the eHealth Strategy will provide a guide for how Information Communication Technologies (ICTs) will contribute to Namibia's health systems transformation agenda, which is envisioned through a strategy of strengthening health service delivery through utilisation of electronic solutions that are adaptive to the priority needs of Namibia.
v. Electronic Transactions Act 4 of 2019, provides for the legal recognition of electronic transactions and the admissibility of electronic evidence, as well as consumer protection in electronic commerce.
vi. Fifth National Development Plan NDP5 (2017-2022), outlines a development strategy to improve the living conditions of every Namibian. It aims to ensure that Namibia has universal access to information, affordable communication and technology infrastructure and services.

vii. Harambee Prosperity Plan II (HPP2), is a targeted Action Plan to accelerate development in clearly defined priority areas, it ensures that the following ICT targets are met, Broadband Infrastructure Development, Ensuring Accessibility and Affordability of Broadband. Promote e-services and innovations and Confidence and security of broadband network.

viii. E-government Policy for the Public Service 2005, is the use of Information and Communication Technologies in public administration, combined with organisational change and new skills, to improve public and democratic processes and strengthen support to public policies.

ix. Cybersecurity Strategy and Awareness Creation Plan 2022-2027, the Strategy aims to safeguard the National Critical Information Infrastructure, educate, and create awareness, and collaborate on cybersecurity to continuously improve the safety of internet users in cyberspace.

x. National Broadband Policy for the Republic of Namibia (2018-2022), the policy aims to respond to the need for a framework and a holistic development of Broadband in the Republic of Namibia which is universally available and affordable and transform Namibia into a digital economy.

xi. E-government Strategic Action Plan 2014 – 2018, the e-Government Strategic Action Plan for the Public Service of Namibia contains and defines the details of the GRN's comprehensive five-year plan to transform its delivery of information and services through e-government Information Technology (IT) Policy for the Public Service 2008 The purpose of this document is to set out the Information Technology Policy for the Republic of Namibia.

xii. Overarching ICT Policy 2009 (OICTP 2009), the purpose of this document is to set out the Overarching Policy in the context of the convergence of Telecommunications, Broadcasting, Information Technology, and Postal sectors for the Republic of Namibia.

xiii. Universal Service and Access Policy (2013), seeks to promote an enabling environment within which regulatory authorities and operators can interact to achieve telephony and broadcasting service and promote Internet and broadband access to the nation.

United Nations Vision 2030: By aligning with the UN's Vision 2030, a nation can prioritise digital initiatives that contribute to sustainable development goals, such as improving access to quality education through digital platforms, enhancing healthcare delivery with telemedicine solutions, fostering transparent and accountable governance through e-governance, and promoting economic growth through digital innovation and entrepreneurship.

Global strategy on digital health (2020-2025): The global strategy aims to create a shared understanding among all Member States regarding the importance of digital health solutions, and an approach towards creating an interoperable digital health ecosystem which is to be understood as a digital interoperable information technology infrastructure that is primarily used by the health care community across all care settings, in particular by health Global strategy on digital health 2020-2025.

Recommendation of the Council on Digital Government Strategies: The document presents the Recommendation on Digital Government Strategies aimed at bringing governments closer to citizens and businesses. It was developed by the Public Governance Committee (PGC) in 2014.

AU Digital Transformation Strategy for Africa (2020-2030): The AU's Digital Transformation Strategy (2020-2030) is a stand-alone policy framework that aims to guide digital transformation in Africa, with a view to helping the continent build its Digital Single Market by 2030.

e-SADC Strategic Framework: The e-SADC Strategic Framework was set up as part of the implementation of the African Information Society Initiative. The e-SADC Strategic Framework focuses on the harmonisation of ICT infrastructure, services and indicators and promotes ICT usage for regional economic integration, enhancement of connectivity and access to ICT

services among and within the Member States.

Appendix 5: Public Survey

1.1. Statistical analysis except

Analysis of Survey Data: Examining Significant Differences Among Age Groups, Gender, and Urban-Rural Categories Using SPSS

Introduction:

In this report, an in-depth analysis of survey data utilising the Statistical Package for the Social Sciences (SPSS) software to investigate significant differences among respondents based on age groups, gender, and urban-rural categories is presented. With focus on 5 questions from the survey; *on Digital Literacy and Attitudes* as well as *Digital Experience* and *Digital Behaviors and Usage*.

Question 1 *Which of the following digital activities do you find important. [1] Being least important and [5] as the most important.*

Descriptives

		N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
						Lower Bound	Upper Bound		
Instant Messaging Apps (WhatsApp, Telegram etc)	Male	27	3.67	1.144	.220	3.21	4.12	1	5
	Female	62	3.76	1.302	.165	3.43	4.09	1	5
	Other	3	4.67	.577	.333	3.23	6.10	4	5
	Total	92	3.76	1.244	.130	3.50	4.02	1	5
Entertainment (Netflix, streaming, gaming)	Male	27	2.33	1.240	.239	1.84	2.82	1	5
	Female	62	2.90	1.315	.167	2.57	3.24	1	5
	Other	3	1.67	1.155	.667	-1.20	4.54	1	3
	Total	92	2.70	1.315	.137	2.42	2.97	1	5
Education and Work (Online Learning, Research	Male	27	3.81	1.210	.233	3.34	4.29	1	5
	Female	62	3.65	1.319	.168	3.31	3.98	1	5
	Other	3	4.00	1.732	1.000	-.30	8.30	2	5
	Total	92	3.71	1.288	.134	3.44	3.97	1	5
Social Media (Facebook, Instagram, Twitter)	Male	27	2.59	1.248	.240	2.10	3.09	1	5
	Female	62	3.31	1.139	.145	3.02	3.60	1	5
	Other	3	3.00	2.000	1.155	-1.97	7.97	1	5
	Total	92	3.09	1.228	.128	2.83	3.34	1	5
Business and meeting apps (Zoom, Microsoft Team, Whatsapp business)	Male	27	3.56	1.340	.258	3.03	4.09	1	5
	Female	62	3.47	1.399	.178	3.11	3.82	1	5
	Other	3	4.00	1.000	.577	1.52	6.48	3	5
	Total	92	3.51	1.363	.142	3.23	3.79	1	5

In a One-way ANOVA analysis with six age groups and a Likert scale question (ranging from 1-Least important to 5-Most important.) we have the mean Likert scale scores for each age group.

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
Instant Messaging Apps (WhatsApp, Telegram etc)	Between Groups	2.701	2	1.351	.871	.422
	Within Groups	138.038	89	1.551		
	Total	140.739	91			
Entertainment (Netflix, streaming, gaming)	Between Groups	9.392	2	4.696	2.822	.065
	Within Groups	148.086	89	1.664		
	Total	157.478	91			
Education and Work (Online Learning, Research	Between Groups	.808	2	.404	.239	.788
	Within Groups	150.268	89	1.688		
	Total	151.076	91			
Social Media (Facebook, Instagram, Twitter)	Between Groups	9.608	2	4.804	3.348	.040
	Within Groups	127.696	89	1.435		
	Total	137.304	91			
Business and meeting apps (Zoom, Microsoft Team, Whatsapp business)	Between Groups	.887	2	.443	.235	.791
	Within Groups	168.102	89	1.889		
	Total	168.989	91			

Using One-way ANOVA to analyse significant difference among gender:

1. Null Hypothesis(H0): There is no significant difference in mean Likert scale scores among gender.
2. Alternative Hypothesis:(H1): There is a significant difference in mean Likert scale scores among gender.

With p-values, which are greater than the significance level of 0.05, we would fail to reject the null hypothesis. This suggests that the differences in mean Likert scores (for Instant Messaging Apps (WhatsApp, Telegram etc.), Entertainment (Netflix, streaming, gaming), Education and Work (Online Learning, Research) and Business and meeting apps (Zoom, Microsoft Team, WhatsApp business), are not large enough to be considered statistically significant. Therefore, based on the data and the ANOVA analysis there is not enough evidence to conclude that the mean Likert scores significantly vary among the gender groups.

With a p-value of 0.040, which is less than the significance level of 0.05, we reject the null hypothesis. This suggests that the differences in mean Likert scores are statistically significant. Therefore, based on the data and the ANOVA analysis we have enough evidence to conclude that the mean Likert scores significantly vary among the gender groups for Social Media (Facebook, Instagram, Twitter).

Question 3 *Do you think technology skills increase employability?*

Descriptives

Do you think technology skills increase employability?

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
Male	27	4.37	.688	.132	4.10	4.64	3	5
Female	63	3.76	1.316	.166	3.43	4.09	1	5
Other	3	4.67	.577	.333	3.23	6.10	4	5
Total	93	3.97	1.184	.123	3.72	4.21	1	5

In a One-way ANOVA analysis with six age groups and a 5-point Likert scale question (ranging from 1-Strongly Disagree to 5- Strongly agree). We have the mean Likert scale scores for each gender in the table above.

ANOVA

Do you think technology skills increase employability?

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	8.512	2	4.256	3.182	.046
Within Groups	120.392	90	1.338		
Total	128.903	92			

Using One-way ANOVA to analyse significant difference among the age groups.

1. Null Hypothesis(H0): There is no significant difference in mean Likert scale scores among the gender.
2. Alternative Hypothesis:(H1): There is a significant difference in mean Likert scale scores among gender.

With a p-value of 0.046, which is less than the significance level of 0.05, we reject the null hypothesis. This suggests that the differences in mean Likert scores are statistically significant. Therefore, based on the data and the ANOVA analysis there is enough evidence to conclude that the mean Likert scores significantly vary among gender.

1.3. Public Survey questionnaire questions

- What is your gender?
- What age group do you fall into?
- Do you require any assistance due to a disability?
- What is your highest level of education?
- Could you please indicate the type of area you currently reside in?
- Where are you located?
- What is your current occupation?
- In which sector does your organisation/institution primarily operate in?
- How often do you use the internet during the day?
- Do you currently own the following?
- Which of the following digital activities do you find important? [1] Being least important and 5as the most important:
  - Instant Messaging Apps (WhatsApp, Telegram etc)
  - Entertainment (Netflix, streaming, gaming)
  - Education and Work (Online Learning, Research
  - Social Media (Facebook, Instagram, Twitter)
  - Education and Work (Online Learning, Research}}
  - Business and meeting apps (Zoom, Microsoft Team, Whatsapp business)
- In general, how does technology and digitalisation make you feel?
- Do you think technology skills increase employability?
- On a scale from 1 to 5, please indicate the extent to which you believe schools are preparing students in the following areas of digital literacy: (ranging from 1- Not at all Prepared to [5]- Very Well Prepared):
  - Computer Science and Coding
  - Using the Internet to Find Reliable Information
  - Teaching Responsible Online Behaviour (Privacy Protection and Mental Health)
- What are your top concerns about technology and digitalisation? Select up to 4 options.
- What limits your usage of technology and the internet?
- To what extent does the cost of data limit your productive use of the internet for entrepreneurial, employment or educational purposes?

- To what extent does unreliable internet connection limit your productive use of the internet for entrepreneurial, employment, or educational purposes?
- To what extent does the lack of an appropriate internet enabled device (like a smartphone/ laptop) limit your productive use of the internet for entrepreneurial, employment, or educational purposes?
- Which of these categories best describe you: The category you choose will take you to the final section with 4 questions specific to your category?

- In your opinion, what are your academic institution's greatest strengths when it comes to scaling up and accelerating digital transformation? (List at least three)
- In your opinion, what are your academic institution's greatest weaknesses when it comes to scaling up and accelerating digital transformation? (list at least three)
- In your opinion, what are the greatest opportunities of digital transformation and development in your academic institution/company/? (list at least three)
- In your opinion, what are the greatest threats of digital transformation and development in your academic institution? (list at least three)
- In your opinion, what would be the greatest benefits of digital transformation as someone who is unemployed (list at least three)
- In your opinion, what are the biggest barriers to increased digitalisation in the workplace?
- In your opinion, what are the biggest threats that digital transformation poses to you as someone who is currently without a job? (list at least three)

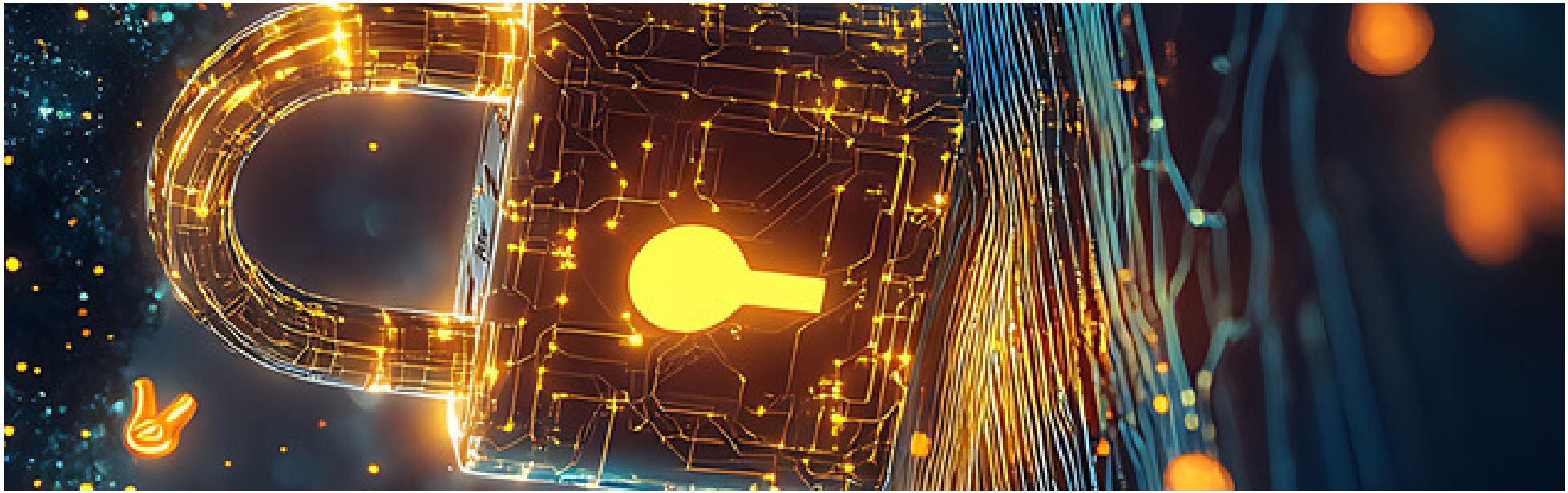
1.3. Survey limitations.

Considering the survey's predetermined sample target of 100 respondents (94 responses were eventually received), it was logistically unfeasible within the confines of this project to undertake an extensive, nationally representative study. Consequently, the insights garnered should not be construed as nationally generalisable. Instead, the survey serves as a valuable randomised poll that sheds light on the behaviours and trends among Namibians, considering the distinctive regional, environmental, and gender dynamics within the surveyed population.

Appendix 6: Implementation Action Plan

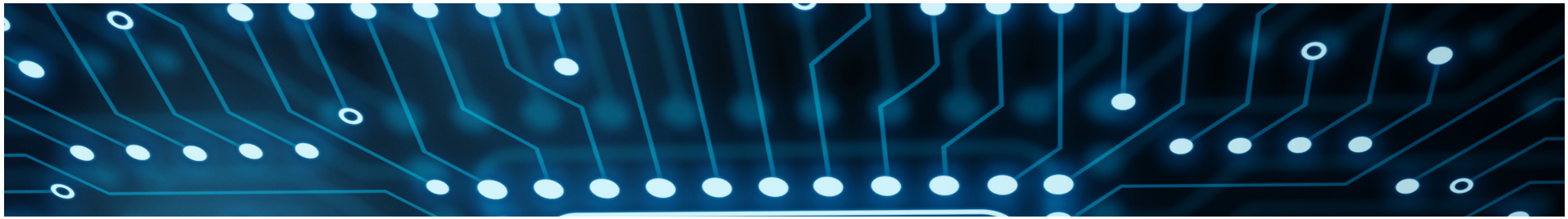
Outcome	Actions	KPIs	Base line	Timeline			Budget (NAD), 000			Responsible entities
				2025 /26	2026 /27	2027 /28	2025 /26	2026 /27	027 /28	
Strategic Pillar 1: Digital Infrastructure										
Strategic Objective 1: Accelerate digital infrastructure development and accessibility										
1.1. Improve the accessibility and affordability of digital services and retail digital infrastructure	Re-evaluating import tariff schedules for fit-for purpose mobile consumer electronic devices that would drive digital adoption in Namibia	% of progress towards the completion of the market study on tariff revisions	60%	100%	-	-	100	-	-	MOF; NAMRA; CRAN
		% of progress towards piloting tax exempt smartphone consignments	0	60%	100%	-	-	-	-	MOF; NAMRA, CRAN
		% of progress towards defining criteria for mobile consumer electronics to qualify for exemption	10%	30	50%	100%	-	-	-	MOF; MICT CRAN
		% of obligations imposed on operators for the provision of broadband to schools and institutions in unserved and underserved areas	-	-	-	100%	-	-	-	CRAN
	Discontinue legacy systems and allocations	% of progress towards phasing out spectrum allocation for 2G and 3G by 2027	50%	-	-	100%	-	-	-	CRAN
	Reduce internet data prices to be in the top 10 most affordable countries in Africa	% of progress of Namibia towards the top 10 countries in Africa for most affordable internet by 2027	30%	-	-	100%	-	-	-	CRAN
1.2. Provide high quality, reliable and financially sustainable digital infrastructure	Implementation of an 'Open Access Network' infrastructure sharing regime	% of progress towards Enforcement of regulatory regime	40%	-	-	100%	-	-	-	CRAN
	Operationalise the Universal Service Fund to finance last mile connectivity	% of progress towards the operationalisation of the Universal Service Fund		100%	100%	100%	-	-	-	CRAN
	Identify and activate alternative financing modalities for last-mile connectivity	% of progress towards the studies on 3 alternative financing modality for last-mile connectivity		100%	-	-	2000-3000	-	-	MICT, CRAN
	Tax incentive regime for infrastructure development	% of progress towards the development of the regulatory mechanisms and application process for tax benefits				100%	2000-3000	-	-	MICT, CRAN, MOF

Outcome	Actions	KPIs	Base line	Timeline			Budget (NAD), 000			Responsible entities
Strategic Objective 2: Create a secure, resilient and sustainable digital infrastructure ecosystem										
1.3. Safeguarding digital infrastructure against cyber threats and vulnerabilities	Operationalise the Namibia Cyber Security Incident Response Teams (Nam-CSIRT)	% of progress made towards the operationalisation of the Nam-CSIRT	60%	100%	100%	100%	-	-	-	CRAN
	Create a Master Cyber Response Plan	% of progress towards the creation of the Master Cyber Response Plan	-	-	-	100%	-	-	-	CRAN
1.4. Network Resilience and Disaster Risk Reduction	Develop and implement a National Emergency Telecommunications Plan	% of progress towards the development of the National Emergency Telecommunications Plan	50%	100%			-	-	--	MICT, OPM,CRAN,
		% of progress towards the execution of the National Emergency Telecommunications Plan	0	20%	75%	100%%	1 0 0 000	1 0 0 000	1 0 0 000	MICT, OPM,CRAN, MAFWLR, MWT
1.5. Environmentally responsible digital growth	Adoption t the National Policy on the Management of Waste Electrical and Electronic Equipment	% of progress towards the adoption and implementation of the National Policy on the Management of Waste Electrical and Electronic Equipment	10%	-	100%	-	-	-	-	MEFT
	Green electricity for telecommunications	Renewable energy used to power telecommunications services								ECB; MIME



Outcome	Actions	KPIs	Base line	Timeline			Budget (NAD), 000			Responsible entities
Strategic Pillar 2: Digital Skills										
Strategic Objective 1: Basic Digital Literacy										
2.1. Enhance the digital competence of the Namibian populace, enabling efficient use of digital technology in essential daily activities and online services	Conduct Digital Literacy baseline assessments every 3 years	% of progress towards the development of the Digital Literacy baseline assessment methodology	0	60%	100%	100%	-	-	-	MEIYSAC; MICT
		% of progress towards achieving a pre-determined pass rate of digital literacy across samples by 2030.	0	60%	80%	100%	-	-	-	MEIYSAC;
		No. of Reviews and updates assessment criteria every 4 years								MEIYSAC;
	Develop a community-based digital literacy, and AI training programs	% of progress on Completion and implementation of digital literacy training programs	5%	20%	60%	100%	-	-	-	MEIYSAC;, MICT,
		% of progress to Integrate modules on child online safety into digital literacy programs	5%<	20%	75%	100%	-	-	-	MEIYSAC; NTA, MICT,
	Awareness campaigns on child online safety	% of progress on public awareness on online safety for children and provide resources for parents and educators to support their efforts	25%	50%	75%	100%	-	-	-	MICT; MEIYSAC;

Outcome	Actions	KPIs	Base line	Timeline			Budget (NAD), 000			Responsible entities
Strategic Objective 2: Digital Pedagogies and ICT Curriculum Reform										
2.2. Revise and enhance curricula and teaching methodologies to integrate ICT effectively, fostering critical thinking and problem-solving skills	Integrate ICT subjects as core subjects in school curricula	% of progress on computer programming and data science integrated into the core national curriculum	20%	50%	75%	100%	-	-	-	MEIYSAC
		% of progress Implementation of a 4-yearly curriculum review process to ensure relevance and currency								MEIYSAC
	Development of a unified TVET framework and curriculum review that prioritises technical and vocation training focused on digital skills and competencies	% of progress towards on adoption and implementation of unified TVET framework	60%	-	100%	-	-	-	-	NTA
	Enhance ICT integration in pedagogical methods to improve education quality and access	% of schools equipped with IT infrastructure by 2028	40%	-	-	100%	-	-	-	MEIYSAC;
	Development and recognition of online Open Education Resources (OER) micro-credentials and Massive Open Online Courses (MOOCs)	% of progress towards the development of OER				100%				MEIYSAC; NAMCOL
		% of progress towards the establishment of certification and equivalence process for MOOCs and Micro-credentials								NQA



Outcome	Actions	KPIs	Base line	Timeline			Budget (NAD), 000			Responsible entities
Strategic Objective 3: Educational Administration and Staff Capacity										
2.3 Boost the digital skills of educators and administrators for effective ICT integration in teaching, administration, and curriculum development	Implement a comprehensive digital literacy training program for educators	% of progress on conducting a baseline digital literacy assessment	0	60%	100%	-	-	-	-	MEIYSAC;
		% of progress the development of a digital literacy portal	0	10%	20%	60%	-	-	-	MICT
		% of people achieving a passing score on digital literacy assessments	0	60%	80%	100%	-	-	-	MEIYSAC;
	Build educator capacity in ICT subject matter	% of schools with certified IT teachers	20%	40%	70%	100%	-	-	-	MEIYSAC;
	Rollout of Education Information Management Systems in the public school system	% of public schools implementing EIMS	20%				-	-	-	MEIYSAC;
Strategic Objective 4: Demand led skilling and job creation										
2.4 Produce market relevant graduates and capacitated Namibians. Facilitate practical, digital skills training for the workforce, focusing on real-world applications	Establish Digital Skills Training Internships and entry-level job programs in the knowledge economy	Launch of 2 major job programs with private sector partnerships Number of job programs launched with private sector partnerships	0	1	1		-	-	-	MEIYSAC; NCCI
	Collaborate with the private sector to develop job programs that open up the global digital knowledge economy	Number of individuals trained in digital skills annually	1000	2000	2000	-	-	-	-	MEIYSAC; NCCI; MICT
	Understand and address the market demand and skills supply mismatch	% Completion and publication of the Labour Force Survey and Skills Audit	0	70%	100%	-	-	-	-	NSA, MJLR
		% of progress made on the review of the 1996 Namibian Standard Classification of Occupations (NASCO) to accommodate future occupations	0%	100%	-	-	-	-	-	MJLR, NQA, NSA, OPM
		% of progress made on the commissioning of a study to understand and recommend steps to address market skills mismatch	0	70%	100%	-	-	-	-	MJLR

Outcome	Actions	KPIs	Base line	Timeline			Budget (NAD), 000			Responsible entities
Strategic Pillar 3: Digital Government										
Strategic Objective 1: Digital Identity										
3.1. Empower Namibians with a unique digital ID which will form the core requirement to access digital public services	Establish the systems and processes to graduate Namibians to use digital ID systems by 2030	% of progress towards the implementation of chapters 3,4 and 5 of the Electronic Transactions Act, 2019, to formally accept e-signatures	50%	70%	80%	100%	5 mil	2 mil	1.5 mil	CRAN, MICT
		% Completion and execution of the pilot digital ID project	0	80%	100%	-	-	-	-	MHAISS; BoN;
		% of target individuals and businesses assigned Unique Identification Number (UINs)	0	80%	100%	-	-	-		MHAISS; OPM, BIPA
Strategic Objective 2: Digital Public services										
3.2. Increased government data sharing to allow for improved accessibility and efficiency of public services by offering citizens a single gateway portal for digital public services and relevant information	Operationalise government data exchange systems and ensure safe and efficient interoperability between population registers across Offices Ministries and Agencies (OMAs)	% of progress made on the development, adoption and implementation of the Interoperability framework	75%	85%	100%	-	-	-	-	OPM
		% of progress made on operationalise data sharing agreements between 6 OMAs	20%	40%	60%	100%	-	-	-	OPM, OMAs/RCs
	Digitally transform 10 essential public services that are subsequently accessible through a centralised national digital portal	% of progress towards the development and scale a digital service catalogue of 100% of all OMAs	20%	-	-	100%	-	-	-	OPM, OMAs/RCs
		% of progress towards the digitisation and launching of 10 priority public services	-	-	-	100%	-	-	-	OPM, OMAs/RCs
		Number of public services available on the portal	0	2	6	10				OPM
	Digitise paper records	% progress reduction in paper usage per service	60%	70%	80%	-	-	-	-	OPM, OMAs/RCs

Outcome	Actions	KPIs	Base line	Timeline			Budget (NAD), 000			Responsible entities
Strategic Objective 3: Change management and public sector capacity										
3.3. Ensure a digitally literate public service that are champions of digital government. Additionally, build up a pipeline of competent public sector IT specialists to maintain the government's IT infrastructure	Develop a holistic change management plan that would guarantee civil servant buy-in to public sector digital transformation.	% of progress towards the development and implementation of a comprehensive change management program for government employees to adapt to digital processes	0%	50%	100%	-	2000	2000	3000 3000	OPM; NIPAM
		% of progress towards the business process redesign of top 10 digital services	0%	25%	50%	75% 100%	3000	3000		OPM; NIPAM
	Digital capacity building of government	% of employees acquired necessary digital skills	0%	70%	100%	-	4000	4000	-	OPM; NIPAM
Strategic Objective 4: Government Data Centre and Cloud Plan										
3.4. Secure and safeguard critical public digital infrastructure	Develop a National Data Storage Strategy to evaluate public data storage option to ensure security of critical public data	% of progress towards drafting and publishing a National Data Storage Strategy	0				-	-	-	OPM, MICT
	Rollout of Government Cloud Storage plan to evaluate best options for hosting public data	% of progress towards the launch and scale government cloud platform	0							OPM, MICT
Strategic Pillar 4: Industry & Innovation										
Strategic Objective 1: Entrepreneurship Ecosystem Deepening										
4.1 Establish a fertile ground for innovation and entrepreneurship to drive context relevant and bottom up economic growth	Creation of ICT hubs and support systems	% of progress towards the establishment of ICT hubs per region by Q1 2027		-	-	100%	-	-	-	MICT, NIPDB, NCRST
	Create a National Registry of Innovators to track and promote pioneering activities	# of additional startups and innovators		-	-	100				MIRT, NIPDB, NCRST
		No. of Baseline Entrepreneurial Ecosystem designed and operationalised	0		1		-	-	-	NIPDB
	Establish support mechanisms for the commercialisation of local research and innovation	% of progress towards the establishment of funding mechanisms and support structures for local innovation annually	40%	-	-	-	-	-	-	MOF; BON, NCRST
		No. of additional tertiary education IP products commercialised	0	5	10	20	-	-	-	Tertiary education institutions, BIPA

Outcome	Actions	KPIs	Base line	Timeline			Budget (NAD), 000			Responsible entities
Strategic Objective 2: Digital Industrialisation Strategy										
4.2. Propel Namibia into a leading position in the knowledge-based digital economy	Position Business Process and IT Outsourcing as a key industrialisation and job creation strategy for Namibia	% of progress towards the development of a national BPO/IT strategy	-	-	100%	-	-	-	-	NIPDB; NPC; MJLR
		% progress on made on the skills development program to build local capacity in in-demand outsourcing jobs	-	-	100%	-	-	-	-	MEIYSAC;NTA; MJLR
		% progress made on establishing incentives and concessionary debt financing support to companies employing 50 or more Namibians in digital outsourcing jobs	-	-		100%	-	-	-	MOF; BON
	Implement mechanisms to streamline digital trade, both National and internationally	% progress made on digital payment transactions	10%	50%	50%	50%	-	-	-	PAN; BON
		Number of applications in the regulatory sandbox	0	5	5	5	-	-	-	PAN; BON, NAMFISA
		Number of participants in the regulatory sandbox	0	1	2	2	-	-	-	PAN; BON, NAMFISA
	Develop market studies for the 6 sectors identified as 'high impact' for the application of technology from the 4IR report. Namely: Energy, Financial services, media, health, agriculture and technology hardware manufacturing and assembly	% of progress towards the development of a White Paper and market impact report spearheaded by the most relevant line Ministry	0	100%	-	-	-	-	-	MIME, MIRT, MAFWLR, MOF
Strategic Objective 3: Research and Innovation Agenda										
4.3 Establish the mechanisms and partnerships for development-oriented and market driven research and development	Establish national Artificial Intelligence (AI) Institute with the mandate local AI-driven research and deployment as conceived in the Presidential 4IR report	% of progress towards the establishment of the National AI Institute.	10%	30%	50%	100% 100%	-	-	-	NCRST
	Formalisation of Public-Private Partnerships for market-driven, future-oriented research and development	No. of partnerships between public institutions and private organisations within the digital sector	2	3	3	2	-	-	-	NCCI;MIRT
		% increase in joint Public-Private R&D investment	10%	20%	50%	100%	-	-	-	NCRST

Outcome	Actions	KPIs	Base line	Timeline			Budget (NAD), 000			Responsible entities
Strategic Pillar 5: Policy and Regulation										
Strategic Objective 1: Emerging technology governance										
5.1 roactive governance on emerging technology, ensuring provisions for innovation, security, and ethical safeguards	Develop a Central Bank Digital Currencies (CBDCs) Roadmap to assess the implications and feasibility of adopting CBDCs	% of progress towards the development of the CBDC Roadmap including a concept design of a potential Namibian CBDC, legislative gap analysis exercise and proof of concept plan	20% 0%	-	70%	100%	-	-	-	BoN, PAN
		% of progress towards the development of the regional CBDC (CMA)_ Roadmap	0	-	50	100%	-	-	-	BoN, PAN
	To establish a Strategic and policy framework that promotes the responsible development and deployment of AI technologies	% of progress towards the UNESCO AI Readiness Assessment for Namibia	20%	50%	100%					MEIYSAC,NCRST, UNESCO,
		% of progress towards the development of the National Artificial Intelligence Governance Strategy and Framework	0	-	50%	100%	-	-	-	MEIYSAC NCRST MICT
Strategic Objective 2: Adoption of outstanding and outdated legislation										
5.2. Adoption and implementation of this legislation creates an enabling environment for Namibia to leverage digital technologies for economic growth, innovation, and enhanced public service delivery	Finalise the Data Protection Bill to promote trust and security in digital services and facilitating economic growth	% of progress towards the finalisation of the Data Protection Bill	80%	90%	100%		-	-	-	MICT
	Finalise the Cybercrime Bill to boost confidence in digital transactions and protects critical infrastructure	% of progress towards the finalisation of the Cybercrime Bill	80%	90%%	100%	-	5 0 0 000	5 0 0 000	-	MICT
	Finalise the amendments to the Communications Act, Act No. 8 of 2009 to enhance improve service delivery and deployment of digital infrastructure	% of progress towards the finalisation of the amendments to the Communications Act, Act No. 8 of 2009	80%	90%	100%	-	5 0 0 000	5 0 0 000	-	MICT, CRAN
	Finalise the Civil registrations and National Identity Bill to facilitate access to public services, improve security, and support the development of digital economies	% of progress towards the finalisation of the Civil registrations and National Identity Bill	80%	85%	95%	100%	-	-	-	MHAISS
	Finalise the Namibia Investment Promotion Bill to stimulate innovation, attract digital investments, and support the growth of Namibia's digital landscape	% of progress towards the finalisation of the Namibia Investment Promotion Bill	80%	85%	90%	100%	-	-	-	MIRT
	Revise the Namibia e-Government Policy of 2005	% of progress towards the revision the Namibia e-Government Policy of 2005	80%	90%	95%	100%	-	-	-	OPM
	Finalise the consolidation and implementation of the updated ICT policy that accommodates contemporary trends and opportunities in the ICT sector	% of progress towards the finalisation and implementation of the consolidated ICT Policy	50%	100%			-	-	-	MICT

Outcome	Actions	KPIs	Base line	Timeline			Budget (NAD), 000			Responsible entities
		% of progress towards the implementation of the consolidated ICT Policy	0%	50	75%	100	2 0 0 000	3 0 0 000	3 0 0 000	MICT
Strategic Objective 3: Regulatory Reform to promote adoption of digital financial services										
5.3. Accelerated regulation of emerging digital services through responsive regulatory innovation	Accelerate regulatory maturity in non-bank financial services in Namibia	% of progress towards updating regulations or new policies introduced that promotes emerging digital services	0	20%	50%	100%	-	-	-	BON, PAN
	Pilot a cross-sectoral sandbox program that aims to solve socio-economic challenges in difficult regulatory environments	% progress made on identify key sectors where regulations inhibit innovation or growth	-	100%	-	-	-	-	-	MICT, NCRST
		% progress made on the launching of sandbox program	0	50%	100%	-	-	-	-	CRAN;BON, NAMFI-SA, PAN

Notes

NATIONAL DIGITAL STRATEGY NAMIBIA 2025 - 2028

Republic of Namibia