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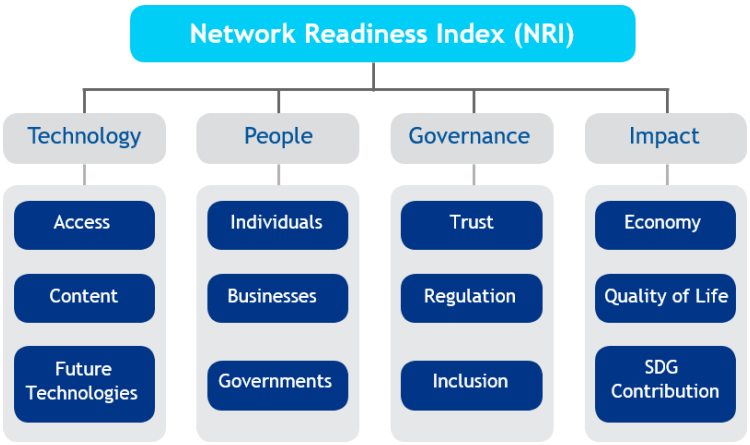
Network Readiness Index 2019 Botswana

The Network Readiness Index (NRI) is one of the leading global indices on the application and impact of information and communication technology (ICT) in economies around the world. In its latest version of 2019 the NRI Report maps the network-based readiness landscape of 121 economies based on their performances in four different pillars: Technology, People, Governance, and Impact. Each of these pillars is itself comprised of three sub-pillars (see Figure 1) that have been populated by a total of 62 variables.

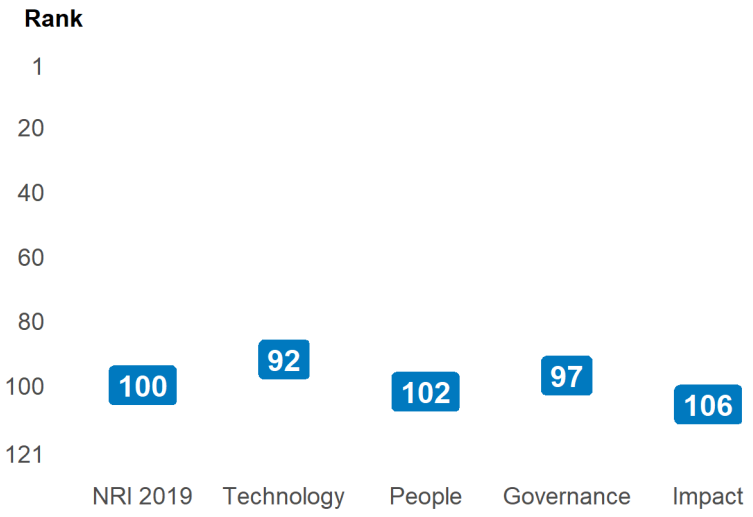
Figure 1: The NRI 2019 model



Global NRI position of Botswana

Botswana ranks 100th out of the 121 economies included in the NRI 2019 (Figure 2). Its main strength relates to Technology. The greatest scope for improvement, meanwhile, concerns Impact.

Figure 2: Botswana global ranking, overall and by pillar



Performance at sub-pillar level

When it comes to sub-pillars, the strongest showings of Botswana relate to Future Technologies, Regulation and Trust, among others (Table 1). More could be done, though, to improve the economy's performances in the Inclusion, Quality of Life and Economy sub-pillars.

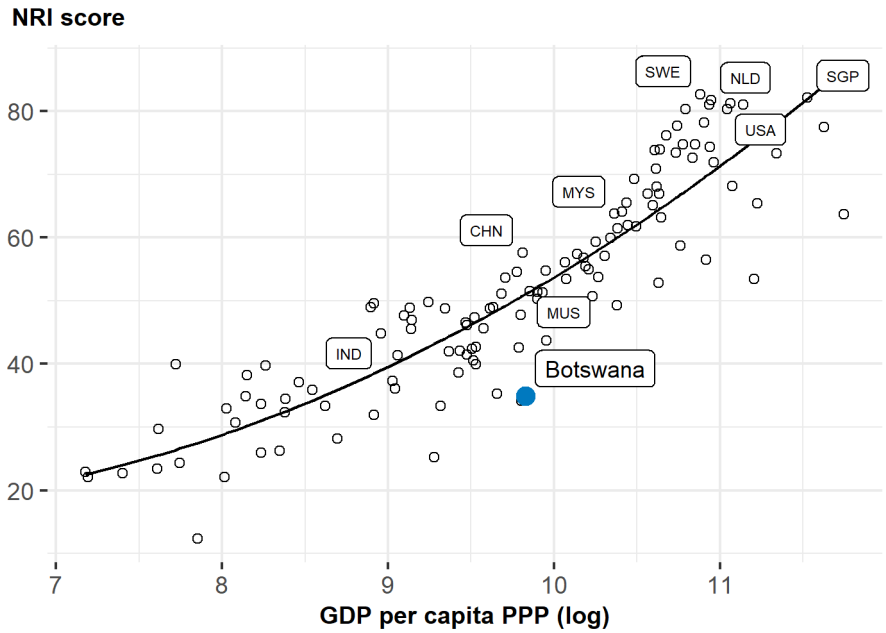
Table 1: Botswana rankings by sub-pillar

Sub-pillar	Rank	Sub-pillar	Rank
Future Technologies	55	Businesses	97
Regulation	70	Content	100
Trust	82	Governments	108
Access	89	Inclusion	113
Individuals	93	Quality of Life	115
SDG Contribution	93	Economy	117

NRI score and income

Figure 3 shows the position of Botswana in terms of both NRI score and GDP per capita (PPP). The trend line shows the expected NRI score given an economy's income level. As can be seen, Botswana is well below the trend line, which suggests that it is underachieving and that one would expect it could raise its network readiness in view of its income level.

Figure 3: NRI score and GDP per capita PPP (log)



Note: SWE = Sweden (rank: 1), SGP = Singapore (2), NLD = Netherlands (3), CHN = China (41), IND = India (79). USA is ranked 8th. Botswana belongs to the group of upper-middle-income countries, where the best performer is Malaysia (MYS). The top performer of its region—Africa—is Mauritius (MUS).

Performance against its income group and region

Upper-middle-income countries

Botswana is ranked 35th in the group of upper-middle-income countries (Figure 4, left panel). In terms of pillar performance, it has a score below the income group average in each of the four pillars. At the sub-pillar level, it outperforms upper-middle-income countries in two of the twelve sub-pillars: Future Technology and Regulation.

Africa

Botswana is ranked 6th within Africa (Figure 4, right panel). It outperforms its region in each of the four pillars. With regard to sub-pillars, it outperforms the average in Africa in eight of the twelve sub-pillars: Access, Content, Future Technology, Individuals, Businesses, Trust, Regulation and SDG Contribution.

Figure 4: Performance of Botswana against its income group and region, overall and by pillar

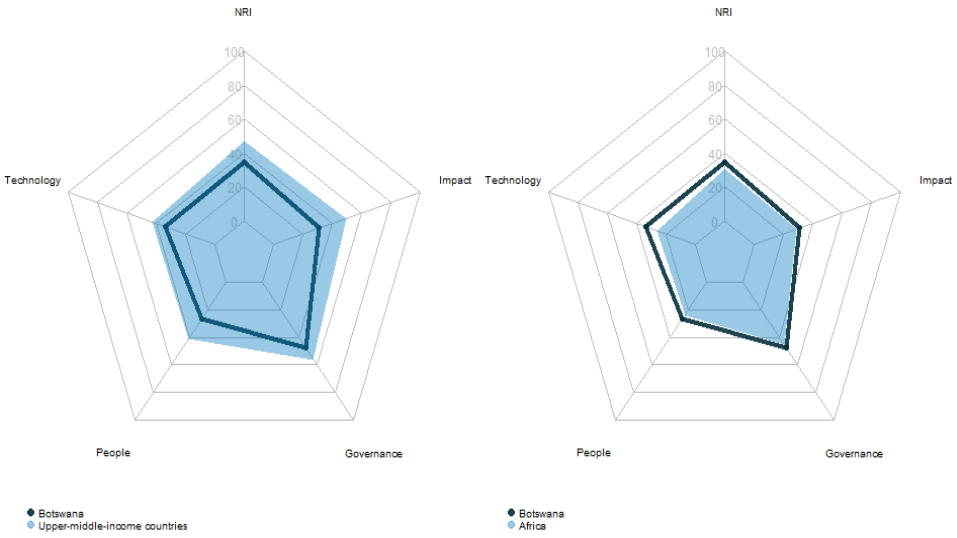


Table 2: Botswana scores vs. averages of its income group and region, overall and by pillar

Dimension	Botswana	Upper-middle-income countries	Africa
NRI	34.85	47.40	31.07
Technology	33.55	42.66	26.03
People	26.68	41.07	23.76
Governance	47.96	56.24	45.32
Impact	31.23	49.62	29.15

Strongest and weakest indicators

The indicators where Botswana performs particularly well include Government procurement of advanced technology products, Online trust and safety, and Handset prices (Table 3). By contrast, the economy's weakest indicators include Government online services, Happiness, and E-Participation.

Table 3: Top-ranked and bottom-ranked indicators of Botswana

Strongest indicators	Rank	Weakest indicators	Rank
Government procurement of advanced technology products	27	Digital participation and content creation	99
Online trust and safety	29	Income inequality	102
Handset prices	39	Fixed-broadband subscriptions	105
Rule of law	42	Healthy life expectancy at birth	105
Regulatory quality	48	Availability of local online content	108
Reading proficiency in schools	53	Medium and high-tech industry	109
ICT skills	55	High-tech exports	109
R&D expenditure by governments and higher education	55	E-Participation	117
Social safety net protection	57	Government online services	118
Maths proficiency in schools	58	Happiness	118

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NRI 2019 At-A-Glance: Botswana

Network Readiness Index Rank: 100 (out of 121) Score: 34.85

Pillar/sub-pillar	Rank	Score
A. Technology pillar	92	33.55
1st sub-pillar: Access	89	45.76
2nd sub-pillar: Content	100	22.55
3rd sub-pillar: Future Technologies	55	32.33
B. People pillar	102	26.68
1st sub-pillar: Individuals	93	37.74
2nd sub-pillar: Businesses	97	19.90
3rd sub-pillar: Governments	108	22.40
C. Governance pillar	97	47.96
1st sub-pillar: Trust	82	47.42
2nd sub-pillar: Regulation	70	61.67
3rd sub-pillar: Inclusion	113	34.78
D. Impact pillar	106	31.23
1st sub-pillar: Economy	117	4.13
2nd sub-pillar: Quality of Life	115	33.09
3rd sub-pillar: SDG Contribution	93	56.46

The Network Readiness Index in detail

Indicator	Rank	Score
A. Technology pillar		
1st sub-pillar: Access		
1.1.1 Mobile tariffs	96	46.05
1.1.2 Handset prices	39	58.28
1.1.3 Internet access	83	42.09
1.1.4 4G mobile network coverage	93	65.00
1.1.5 Fixed-broadband subscriptions	105	1.18
1.1.6 International Internet bandwidth	94	61.98
1.1.7 Internet access in schools	NA	NA
2nd sub-pillar: Content		
1.2.1 Digital participation and content creation	*	*
1.2.2 Mobile apps development	97	39.65
1.2.3 Intellectual property receipts	88	0.04
3rd sub-pillar: Future Technologies		
1.3.1 Availability of latest technologies	88	40.72
1.3.2 Company investment in emerging technology	90	24.99
1.3.3 Government procurement of advanced technology products	27	54.54
1.3.4 ICT PCT patent applications	NA	NA
1.3.5 Computer software spending	77	9.09
1.3.6 Robot density	NA	NA
B. People pillar		
1st sub-pillar: Individuals		
2.1.1 Internet users	90	41.40
2.1.2 Active mobile-broadband subscriptions	61	29.34
2.1.3 Use of virtual social networks	85	40.75
2.1.4 Tertiary enrolment	87	17.70
2.1.5 Adult literacy rate	67	80.97
2.1.6 ICT skills	55	16.26
2nd sub-pillar: Businesses		
2.2.1 Firms with website	88	23.37
2.2.2 Internet shopping	95	4.60
2.2.3 Professionals	88	16.00
2.2.4 Technicians and associate professionals	62	33.51
2.2.5 Extent of staff training	61	39.54
2.2.6 R&D expenditure by businesses	61	2.41
3rd sub-pillar: Governments		
2.3.1 Government online services	118	12.31
2.3.2 Publication and use of open data	93	5.89
2.3.3 ICT use and government efficiency	70	40.98
2.3.4 R&D expenditure by governments and higher education	55	30.40

Indicator	Rank	Score
C. Governance pillar		
1st sub-pillar: Trust		
3.1.1 Rule of law	42	63.97
3.1.2 Software piracy rate	83	12.16
3.1.3 Secure Internet servers	93	41.73
3.1.4 Cybersecurity	85	46.16
3.1.5 Online trust and safety	29	73.06
2nd sub-pillar: Regulation		
3.2.1 Regulatory quality	48	61.43
3.2.2 Ease of doing business	80	63.62
3.2.3 Legal framework's adaptability to digital business models	76	38.34
3.2.4 E-commerce legislation	66	75.00
3.2.5 Social safety net protection	57	45.93
3.2.6 ICT regulatory environment	60	85.72
3rd sub-pillar: Inclusion		
3.3.1 E-Participation	117	8.91
3.3.2 Socioeconomic gap in use of digital payments	93	44.09
3.3.3 Availability of local online content	108	20.54
3.3.4 Gender gap in internet use	78	37.91
3.3.5 Rural gap in use of digital payments	72	62.45
D. Impact pillar		
1st sub-pillar: Economy		
4.1.1 Medium and high-tech industry	109	7.08
4.1.2 High-tech exports	109	1.18
4.1.3 PCT patent applications	NA	NA
4.1.4 Labour productivity per employee	NA	NA
2nd sub-pillar: Quality of Life		
4.2.1 Happiness	118	8.41
4.2.2 Freedom to make life choices	65	66.93
4.2.3 Income inequality	102	25.53
4.2.4 Healthy life expectancy at birth	105	31.50
3rd sub-pillar: SDG Contribution		
4.3.1 Access to basic services	92	78.64
4.3.2 Pollution	70	82.50
4.3.3 Road safety	98	34.06
4.3.4 Reading proficiency in schools	53	55.71
4.3.5 Maths proficiency in schools	58	27.88
4.3.6 Use of clean fuels and technology	90	60.00

* Confidential data

Sources

Berry, B. (2019). berryFunctions: Function Collection Related to Plotting and Hydrology. R package version 1.18.2. URL: https://CRAN.R-project.org/package=berryFunctions

Dutta, S., & Lanvin, B. (eds.) (2019). The Network Index 2019: Towards a Future-Ready Society. Washington DC: Portulans Institute.

Gohel, D. (2019). officer: Manipulation of Microsoft Word and PowerPoint Documents. R package version 0.3.6. URL: https://CRAN.R-project.org/package=officer

Gohel, D. (2019). flextable: Functions for Tabular Reporting. R package version 0.5.6. URL: https://CRAN.R-project.org/package=flextable

Milton Bache, S. & Wickham, H. (2014). magrittr: A Forward-Pipe Operator for R. R package version 1.5. URL: https://CRAN.R-project.org/package=magrittr

Nakazawa, M. (2019). fmsb: Functions for Medical Statistics Book with some Demographic Data. R package version 0.7.0. URL: https://CRAN.R-project.org/package=fmsb

R Core Team (2018). R: A language and environment for statistical computing. R Foundation for Statistical Computing, Vienna, Austria. URL: https://www.R-project.org/.

Slowikowski, K. (2019). ggrepel: Automatically Position Non-Overlapping Text Labels with 'ggplot2'. R package version 0.8.1. URL: https://CRAN.R-project.org/package=ggrepel

Wickham, H. (2007). Reshaping Data with the reshape Package. Journal of Statistical Software, 21(12), 1-20. URL: http://www.jstatsoft.org/v21/i12/.

Wickham, H. (2016). ggplot2: Elegant Graphics for Data Analysis. Springer-Verlag. New York.

Wickham et al., (2019). Welcome to the tidyverse. Journal of Open Source Software, 4(43), 1686, URL: https://doi.org/10.21105/joss.01686