

The KENYA INSTITUTE for PUBLIC  
POLICY RESEARCH and ANALYSIS

# Leveraging on Digital Readiness to Enhance the Creative Economy in Kenyan Arid and Semi-Arid Lands

Kelvin Kamunye and John Kioko

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THE KENYA INSTITUTE FOR PUBLIC POLICY  
RESEARCH AND ANALYSIS (KIPPRA)

YOUNG PROFESSIONALS (YPS) TRAINING  
PROGRAMME

# **Leveraging on Digital Readiness to Enhance the Creative Economy in Kenyan Arid and Semi-Arid Lands**

*Kelvin Kamunye and John Kioko*

*Kenya Institute for Public Policy  
Research and Analysis*

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Bishops Garden Towers, Bishops Road

PO Box 56445-00200 Nairobi, Kenya

tel: +254 20 2719933/4; fax: +254 20 2719951

email: [admin@kippra.or.ke](mailto:admin@kippra.or.ke)

website: <http://www.kippra.org>

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## **Abstract**

*Leveraging on digital connectivity for growth of the creative economy is a key focus of Bottom-up Economic Transformation Agenda (BETA) which aligns with Kenya's Vision 2030 goal of transitioning into a knowledge-based economy driven by technology, knowledge, and skills. However, challenges persist in effectively gauging the readiness of utilizing digital platforms in Arid and Semi-Arid Lands (ASALs), to enhance opportunities in the creative economy. This study investigates the potential of leveraging digital readiness to enhance the creative economy in Kenyan ASALs. The study assesses the digital readiness in Kenyan ASALs by developing a Digital Readiness Index (DRI) and evaluates the impact of the digital readiness on employment in the creative industries of Kenyan ASALs. Using an Ordinary Least Squares (OLS) regression model, the influence of the Digital Readiness Index (DRI) on employment in creative industries across different aridity-based categories was examined. The results indicate that digital readiness significantly affects employment in the creative economy. A unit increase in infrastructure subindex is associated with an approximately 4.49 % increase in employment in creative industries while a unit increase in education subindex is associated with a 2.83 % increase in employment in creative industries. The study recommends tailor made interventions based on the specific interplay between digital readiness and employment; prioritization of comprehensive digital infrastructure development and skill enhancement to empower local creatives and foster economic growth; and targeted strategies attuned to the distinct needs of each aridity-based region, addressing both digital readiness and creative industry expansion.*

## **Abbreviations and Acronyms**

ABE	Adult and Basic Education
ASALs	Arid and Semi-Arid Lands
DAI	Digital Adoption Index
DRI	Digital Readiness Index
KECOBO	Kenya Copyrights Board
KNBS	Kenya National Bureau of Statistics
NRI	Network Readiness Index
UNCTAD	United Nations Conference on Trade and Development
UNESCO	United Nations Education, Science, and Culture Organization
UNIDO	United Nations Industrial Development Organization
WIPO	World Intellectual Property Organization
WPPT	WIPO Performance and Phonograms Treaty

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## 1. Introduction

The role of digital capacity in driving the contribution of the creative economy to the productivity and growth of a country relies on creativity and human capital across the related industries and activities. The nexus between the creative economy and the digital technologies augers well with Vision 2030 which seeks to transition the country into a knowledge-based economy, where technology, knowledge, and skills drive economic growth and competitiveness (Republic of Kenya, 2007). The combination of creativity and economics can create extraordinary value and wealth (Howkins, 2002). The United Nations Educational, Scientific, and Cultural Organization defines cultural and creative industries as activities “whose principal purpose is production or reproduction, promotion, distribution or commercialization of goods, services and activities of a cultural, artistic or heritage related nature” (Ernst & Young, 2015). The Creatives Economy Report (UNCTAD, 2022), lists industries or activities in advertising, architecture, books, music, movie, gaming, newspaper, and magazines, performing arts, radio, TV, and visual arts as being included in the creative and cultural industries.

Creativity and intellectual capital are the principal inputs in a creative economy. This linkage between the creative economy and the knowledge economy is highlighted in UNIDO (2013) and (Manyala, 2016) who emphasize the close link between creative economy and the knowledge economy as the driving force for endogenous growth through investments in human capital. The Creative Economy Report (2008) by the UNACTAD noted that the mix culture, creativity, economy, and technology have the potential to generate income, jobs and export earnings while also concurrently promoting social inclusion, cultural diversity, and human development.

Digital readiness is one of the pre-conditions for effective take-off of the creative economy. The digital readiness plays a crucial role in accelerating the creation, production, distribution, and consumption of digital content within the creative economy. The readiness refers to how well-positioned a community, area, or person is to harness and exploit the opportunities offered by digital technologies (CISCO, 2020). Opportunities that present themselves in leveraging digital tools include improved earnings through content monetization, attracting new and wider markets, and creating employment. ASALs comprise approximately 80 per cent of Kenya’s land mass and are home to about half of Kenya’s population (Republic of Kenya, 2012). With a rapidly growing population, the economic potential of the creatives sector can be harnessed using digital tools to tackle unemployment which was 4.9 per cent as at the last quarter of 2022 (KNBS, 2023). This view is shared by the Bottom-up Economic Transformation Agenda where the digital superhighway is viewed as an enabler of the creative economy.

Several measures have been taken to enhance digital uptake in the country. They include development of various policy frameworks, laying of the fiber optic cable, increasing electricity connectivity, enhancing internet coverage, digital literacy program among others. The National ICT Policy (National ICT Policy, 2019) and the Digital Master Plan (Republic of Kenya, 2022) provide frameworks for leveraging of the opportunities presented by the digital economy. The Kenya Digital Master

Plan envisions a thriving digital ecosystem where all Kenyans, including ASAL communities, have access to reliable internet connectivity, digital infrastructure, and the necessary skills to leverage digital platforms and resources. This would provide equal opportunities for economic empowerment, cultural representation, and sustainable development for local creatives. They would be able to showcase their talents, reach broader audiences, and participate in the digital economy, leading to job creation, innovation, and knowledge exchange.

According to the Creative Economy Report of 2008 by UNCTAD, with appropriate policies, the creative economy can generate cross-cutting linkages with the overall economy at macro and micro-levels. It presents a new development frontier that developing nations can pursue in their quest to generate high economic growth and hence the need for adequate funding.

The recent initiatives that have been undertaken by the government to further the role of the creative economy in development include launching of the Talanta Hela initiative which aims to monetize talent and revolutionize the sports and creatives space into a mega industry. The government also hosted the first National Creatives Summit in 2022 under the theme 'Bringing creatives together to chart a path for a better future' which aimed to discuss the opportunities, and challenges affecting creatives. There have been tax incentives like lowering of withholding tax on digital content from the proposed 15 per cent to 5 per cent in Finance Bill 2023/24, and simplification of patenting and copyright registration.

County governments have also taken initiatives to promote digital technology and the creative economy. Some of these include Annual Festivals, allocation of budget, and review of the laws inhibiting photography, videography, and film in the city. However, each of these individual project, programs and initiatives individually does not tell us about their impact on the creative space. Specifically, the extent to which the uptake of digital tools and technologies has influenced the production, distribution, and consumption in the creatives industry. The paper gauges how ready each county is to take advantage of opportunities offered by the digital technologies for the betterment of their creative economies. The recognition of the creative industries ability to spur development and particularly in ASALs is recent in Kenya. To harness the potential of the creative industry a policy objective to be considered is to reinforce the nexus between creatives and digital technology which will then lead to the identification of innovative policy responses for enhancing the creative economy for development gains.

Besides all these initiatives, communities in ASALs face disproportionate challenges in adapting to digital transformation. Factors such as high access costs, lack of skills, limited connectivity, information gaps, restricted mobility, limited asset ownership and control, and safety and security concerns perpetuate their digital exclusion consequently limiting the potential of the creative spaces in ASALs (Republic of Kenya, 2022). These challenges hinder the effective utilization of digital platforms, and this perpetuates the digital divide, exacerbates socioeconomic disparities, and prevents ASAL communities from fully realizing their potential in the digital era.

Funding to the creative industries in Kenya has been inadequate. The budget allocation for the State Department for Culture and Heritage for financial year 2023/24 is Ksh 2.8 billion, a decline compared to Ksh 3.1 billion allocated in 2022/23 financial year. As a proportion of the total budget, the allocation is only 0.13 per cent. The budget estimates are projected to increase to Ksh 3.4 billion in financial years 2024/25 and 2025/26 (Republic of Kenya, 2023).

In order to evaluate the use of digital technology in promotion of the creative economy, the study seeks to explore and analyze the potential of leveraging digital readiness to enhance the creative industry in ASAL Counties in Kenya. Towards this end, the study focuses on the following specific objectives:

1. Assess the current state of digital readiness in Kenyan ASALs; and
2. Evaluate the influence of digital readiness on employment in creative industries of the Kenyan ASALs;

The rest of the paper is organized as follows: Chapter two covers literature review, chapter three methodology, chapter four results and discussion, chapter five conclusion and recommendation.

## **2. Literature Review**

### **2.1 Digital Technologies**

Digital technologies have developed rapidly in the last decade and have come to define many facets of our daily routine lives. And just like in our lives, these technologies are having a considerable impact on the creative industries. They have transformed the way creative works are produced, distributed, and consumed in today's interactive multimedia environment, and led to the emergence of new creative industries such as videos games (Towse & Handke, 2013).

A notable digital revolution in Kenya was the migration from the analogue TV broadcasting to digital TV broadcasting in 2016. Ndonge et al., (2015) highlights the benefits which include: high picture and sound quality, unlimited choice of channels, more audience gratification and unlimited access. The number of local television and radio stations and particularly vernacular ones grew significantly. The increase has afforded local creatives many platforms to showcase their talent and content across the country.

The internet has also vastly extended the distribution of creative works whereby it can be distributed to thousands of people in an instant. Towse & Handke, (2013) considers digitization as a basis of change and the internet as a means of delivering digital goods and services. This view posits that digitization, and the internet are complementary, and the full benefits of the digitization cannot be realized with either missing. Therefore, for the creative industry to grow and bring the desired economic benefits, it is important for it to be viewed through the dual lenses of digitization and internet connectivity.

Telecommunication must be considered as it provides a platform for distribution and accessibility of creative content. The total data/internet subscription for the third quarter of financial year 2022-2023 was 47.96 million out of which 67.1 per cent was through mobile broadband. The mobile phone is the primary device through which most Kenyans access the internet. Total mobile phone devices were 62.96 million translating to a device penetration rate of 124.5 per cent over the same period (Communication Authority, 2023). The very same enablers of the creative industry such as digitization, internet and telecommunication have presented new challenges such as piracy.

Digitization has had a huge impact on the efficacy of copyright laws which are the primary means of regulation (World Intellectual Property Organization, 2021). For the creative industry and particularly those in ASALs to leverage digital technologies, content creators need to be assured that their works are protected. Legal protection guarantees them the ability to monetize their content. In Kenya, the Kenya Copyrights Board (KECOBO) is charged with the overall administration and enforcement of copyright issues. For the copyright laws to reflect current developments in the digital landscape, the Copyright Act 2012 was updated to incorporate two World Intellectual Property Organization (WIPO) treaties: the WIPO copyright treaty and the WIPO Performance and Phonograms Treaty

(WPPT). These treaties address issues that arose with the use of copyright works in the digital environment and make it an offence to circumvent any technical measures designed to protect copyright works or to remove any rights management information.

## **2.2 Creativity and Culture Economics**

To help better conceptualize and understand the issue of funding in creative industries cultural economics should be distinguished from economics of creative industries (Towse & Handke, 2013). Cultural economics, they reasoned, focuses on the social welfare problems that accrue to the supply of worthy but often commercially nonviable cultural goods and services while economics of creative industries is focused on the opportunities of new technologies, and on the role of the creative industries sector in driving economic growth, entrepreneurship, job creation and regional development. They argued that in cultural economics, cultural goods and services should be viewed as public goods. The classification as public goods then warrant cultural goods and services be financed by the public through taxation. The areas of performing arts, artistic and cultural heritage such as museums are encompassed in cultural economics. Commercial and digital media, fashion, design advertising, architecture and video games fall in the field of economics of creatives industries. From the work of Towse and Handke it can then be argued that National and County Governments should set aside funds in their budgets for the creatives sector/industry. The term cost disease was coined to explain why the costs of labor-intensive services experience dramatic increases (Baumol W.J & Bowen W.G., 2016). It should be noted that the creative industry in Kenya is very labor intensive. For example, sculptors still rely on rudimentary tools to make their carvings. The theory asserts that some services, notably live performance arts in the creative industry are vulnerable to decline in quality if there is a reduction in the time and effort devoted to them. In his view, the cost disease is harmless unless met with rash responses such as budget cuts. If his theory holds, then budget allocation and funding for the creative industry is crucial to its viability and success. Both the national and county governments should allocate adequate resources to this budding industry to guarantee its long-term survival. Nigeria is a perfect example of how continuous and consistent budget allocation can spur the industry. Nigeria's film industry contributed to 2.3 per cent of its gross domestic product in 2016 and in 2020 it was expected to earn \$1 billion in export revenues.

The interface between the creative economy or industry and culture and cultural industries at large is blurred and confusing at times. Using UNCTAD concept of creative industries, culture and cultural industries are classified as a subset of creative industries. The UNCTAD's concept departs from the limited concept of 'creativity' to adopt the wider concept of 'any economic activity producing symbolic products with a heavy reliance on intellectual property and for as wide a market as possible'. Throsby gave six distinguishing characteristics of cultural goods. They were cultural goods are experience goods, display aspects of public goods, contain symbolic messages, yield non-pecuniary value, contain intellectual property,

contain symbolic messages and results from a production process relying on human creativity (Throsby, 2003). The wholistic nature of the creative industry then gives ASAL counties and their residents a platform and in a unique position to project their own unique cultural identities and provides a source of economic growth and employment creation. From the Lamu festival to the Turkana and Rusinga festivals, and the rich Masai culture Kenya ASALs are rich and diverse culture.

### **2.3 Digital Readiness Index Concept**

Digital Readiness Index (DRI) measures the propensity of a business, a country, or a region to exploit the opportunities offered by information and communications technology. Several indices have been developed to reflect DRI. One of such indices is the Network Readiness Index (NRI) which is a composite index made up of three levels. The primary level consists of four pillars that make up the dimensions of network readiness. Each of the fundamental pillars divides into additional sub-pillars that constitute the second level. The third level consists of individual indicators that are used to calculate the sub-pillar scores. The NRI report maps the network readiness landscape of 131 economies based on their performance in four areas: Technology, People, Governance, and Impact. The NRI report supports governments in leveraging digital technologies for economic development and social progress (Silva et al., 2022).

The World Bank's Digital Adoption Index (DAI) measures countries' digital adoption across people, government, and business. It assigns equal weight across the three dimensions. The business cluster represents the average percentage of business with websites, 3G coverage in the country, download speed and number of secure servers. The people clusters averages internet access and mobile access at home. The government cluster is the simple average of core administrative systems, online public services, and digital identification. DAI can be used to improve policy and make comparisons between the levels of digital adoption across countries as well as across key agents of national economy (World Bank Group, 2016).

To understand factors supporting digital readiness, CISCO built a framework to define, measure and discover the key interventions need. The model can be scaled to regional and state level. The model utilizes basic needs, human capital, ease of doing business, technology adoption, technology infrastructure, start-up environment, and business and government investment to determine digital readiness (Dutta & Lanvin, 2020).

The above indices are constructed to at state level. This paper constructs sub-national level digital readiness indices specifically at the county level in Kenya. The choice of indicators is informed by literature and government commitments relevant to topic of study.

---

### **3. Methodology**

#### **3.1 Theoretical framework**

The Creative economy framework as developed by Howkins explains the creative economy as the product of economic activities that are directly related to the creation of intellectual property. The creative economy is an economic system that is based on the production and consumption of creative goods and services. The creative economy framework identifies innovations, entrepreneurship, talent, education, and infrastructure as the key drivers of its growth (Howkins, 2002). Innovation refers to the generation of new ideas which can lead to new products, services, and businesses. Entrepreneurship captures the willingness to take risks and start own businesses. Talent encompasses creative people who can think creatively and solve problems in new and innovative ways. Education asserts that the creative economy requires a well-educated workforce. Creatives need to have skills and knowledge necessary to produce creative goods and services. Infrastructure recognizes that a strong infrastructure foundation is required for the creative economy to thrive. It encapsulates things like access to broadband, electricity, associated devices such as computers and mobile phones and a supportive business environment.

#### ***Digital divide theory***

Postulated by Van Dijk in 2005, the theory defines the digital divide as the gap between those who have access to information and communication technologies (ICTs) and those who do not. It is a complex issue with multiple dimensions, including access, use, and skills. Access refers to the physical and financial ability to connect to the internet and use ICT technologies. Use refers to the ability to use ICTs for a variety of purposes, such as communication, education, and work. Skills refers to the knowledge and ability to use ICTs effectively.

The digital divide can have several negative consequences, including economic inequality, social exclusion, and political disenfranchisement. Economic inequality can occur when those who have access to ICTs are able to use them to improve their economic opportunities, while those who do not have access are left behind. Social exclusion can occur when those who do not have access to ICTs are unable to participate in online communities and activities. Political disenfranchisement can occur when those who do not have access to ICTs are unable to participate in online political activities, such as voting and contacting elected officials.

Some factors that contribute to the digital divide include income inequality, education inequality, gender inequalities, and access to amenities such as electricity and ICT infrastructure (Dijk, 2005). Addressing the digital divide will help to ensure that everyone has an opportunity to participate in the digital economy and benefit from the opportunities that it offers.

## **3.2 Analytical framework**

### ***Digital Readiness Index***

In assessing the current state of digital readiness for the ASALs, a digital readiness index was constructed. The index has four pillars: infrastructure, education, entrepreneurship, and innovation.

#### **Infrastructure**

Infrastructure creates a platform for the creative economy. It plays a key role in enabling counties to advance digital readiness. Affordable, accessible, and reliable infrastructure is essential to achieve an inclusive creative economy. To measure infrastructure, we examined mobile internet access, broadband internet, fixed internet, ownership of ICT gadgets, mobile phone ownership, access to electricity, access to FM coverage and Digital Terrestrial television (DTT) coverage.

#### **Education/digital skills**

The ability to utilize and leverage digital tools to grow the creative economy is dependent on a digitally skilled population. They are a prerequisite for benefiting from any technology. Five factors were considered in accessing the presence of an appropriately skilled population. They are implementation of the digital learning program, literacy levels, average years of schooling, primary net-enrollment, and secondary net-enrollment.

#### **Entrepreneurship**

Education and infrastructure can only contribute to the economy if the people can start enterprises or businesses, they so desire. A thriving business ecosystem is a key determinant of a county's digital readiness. The following factors were considered when measuring it: access to financial services and products, MSMEs that use formal financial services and products, MSMEs that use informal financial services and products, MSMEs that use other financial services and products, use of mobile money accounts, MSMEs survival rate licensing, ease of getting business licenses and permits, prevalence of corruption and possession of entrepreneurship skills.

#### **Innovation**

The creative economy is characterized by innovations that can benefit entire markets and communities. It demonstrates high levels of agility in terms of ability to adapt to new technologies and is a leading creator of new wealth and source of job creation. Four factors were considered when computing it: access to business incubation services, ability to cope with new technologies, county innovation score and county patenting score.

The components, subcomponents, and indicators to be used to develop the digital readiness index (DRI) for ASAL counties are presented in Table 3.1.

**Table 3.1 Components, sub-components, and indicators for DRI**

Component	Sub-component	Indicator	Source of data
<b>Infrastructure</b>	Mobile internet	% of households with mobile internet access per county	National Population and Housing Census, 2019
	Broadband internet	% of households with broadband internet access per county	Kenya Integrated Household and Budget Survey 2015/16
	Fixed internet	% of households with fixed internet access per county	Kenya Integrated Household and Budget Survey 2015/16
	Mobile Phone Ownership	% of households owning mobile phones	Kenya Population and Housing Census, 2019
	Ownership of ICT gadgets (laptop, tablet, or computer)	% distribution of households by ownership of ICT gadgets by County	Kenya Population and Housing Census, 2019
	Mobile Phone ownership	% of the population per county that own mobile phones.	Kenya Population and Housing Census, 2019
	Access to electricity	Households with access to electricity (%)	Kenya Population and Housing Census, 2019
	Access to FM coverage	% of population per county with FM coverage	Communications Authority (Baseline Survey for Broadcasting Services in Kenya 2022)
	DTT coverage	% of sub-locations per county with DTT coverage	Communications Authority (Baseline Survey for Broadcasting Services in Kenya 2022)
<b>Education/digital skills</b>	Digital Learning Program	Rollout rate of the digital learning program (DLP)	DLP County Summary, Digischool.go.ke 2023
	Literacy	Literacy rates per county	Kenya Integrated Household and Budget Survey 2015/16
	Years of schooling	Average years of schooling	Education Statistical Abstract 2018
	Primary net-enrollment	Primary net-enrollment by county (percent)	Kenya Integrated Household and Budget Survey 2015/16
	Secondary net enrollment	Secondary net enrollment by county (percent)	Kenya Integrated Household and Budget Survey 2015/16
<b>Entrepreneurship</b>	Access to financial products and services	Percentage of population who have access to financial products and services	CBK (FinAccess County Perspective, 2022)

	MSMEs that use formal financial services and products	Percentage of MSMEs who use formal financial services and products as main source of finance	CBK (FinAccess County Perspective, 2022)
	MSMEs that use informal financial services and products	Percentage of MSMEs who use informal financial services and products as main source of finance	CBK (FinAccess County Perspective, 2022)
	MSMEs that use finances from self, friends, or family	Percentage of MSMEs who use non-financial/self-services and products as main source of finance	CBK (FinAccess County Perspective, 2022)
	Use of mobile money accounts	Percentage of the population that use mobile money accounts per county	CBK (FinAccess County Perspective, 2022)
	MSMEs survival rate	MSMEs survival rate	County Business Environment for MSEs (2022)
	Prevalence of corruption	Governance Score	County Business Environment for MSEs (2022)
	Ease of doing business	Ease of doing business score	County Business Environment for MSEs (2022)
	Entrepreneurship skills	Possession of entrepreneurship skills	County Business Environment for MSEs (2022)
<b>Innovation</b>	Business Incubation	Access to incubation services	County Business Environment for MSEs (2022)
	Coping with new technology	Adapting to technology score	County Business Environment for MSEs (2022)
	Innovations	County Innovation Score	County Business Environment for MSEs (2022)
	Patents	County patenting score	County Business Environment for MSEs (2022)

*Source: Authors compilation*

The four components (infrastructure, education, entrepreneurship, and innovation) were used in computing the digital readiness index. Sub-components were developed under each component. Using indicators for each of the subcomponents, sub-indices were developed for each component. For each of the subcomponents, indicators were identified as indicated in Table 3.1 above.

The DRI, sub-indices for each subcomponent were standardized on a scale of 0 to 1 based on the minimum and maximum values of each sub-component or indicator using the transformation formula:

$$(x-min)/(max-min) \dots\dots\dots (1)$$

The sub-index for each component, is got by taking a simple equal weighted average of the sub-components under each component.

Sub-indices were averaged to get the final index for each county as shown in Equation (2) below. The DRI is constructed using simple equal weighted averages of the components indices to avoid bias.

$$Digital\ Readiness\ Index\ (DRI) = (Infrastructure + Education\ Enterpruenership + Innovation) /4 \dots\dots\dots (2)$$

**Effect of Digital Readiness of Employment**

To determine the specific effect of each component of the DRI, we use an OLS regression equation presented below:

$$Log(Y) = \beta_0 + \beta_1 InfrastructureSI + \beta_2 EducationSI + \beta_3 EnterpruenershipSI + \beta_4 InnovationSI + \beta_5 Aridity\_dummy + \varepsilon \dots\dots\dots (3)$$

Where:

*Log(Y)* is the log of employment in creative industries and is the dependent variable measured as the number of people employed in creative industries (proxied by number of people employed in the Arts, Entertainment and Recreation Section); *InfrastructureSI*, *EducationSI*, *EnterpruenershipSI* and *InnovationSI* are the computed infrastructure, Education, Entrepreneurship, and Innovation Sub-indices respectively.

Aridity dummy is a dummy variable that takes the value of 0 for Arid (85-100%) counties, 1 for Semiarid (30-84%) counties; 2 for Semiarid (10-29%) counties; 3 non-Asal counties; and  $\varepsilon$  is the error term.

**3.3 Data Sources**

The study used secondary data obtained from education statistical booklets, MSME Survey, 2016, Kenya Integrated Household and Budget Survey 2015/16, the National Population and Housing Census 2019, and the Comprehensive Poverty Report 2020, Baseline Survey for Broadcasting Services in Kenya 2022, ICT Authority and County Business Environment for MSEs report 2022.

### **3.4 Reliability Tests**

Cronbach's alpha and Principal Component Analysis reliability tests were conducted. These tests were crucial in evaluating whether the indicators utilized in the index computation met the statistical criteria for reliability and consistency.

## 4. Results and Discussion

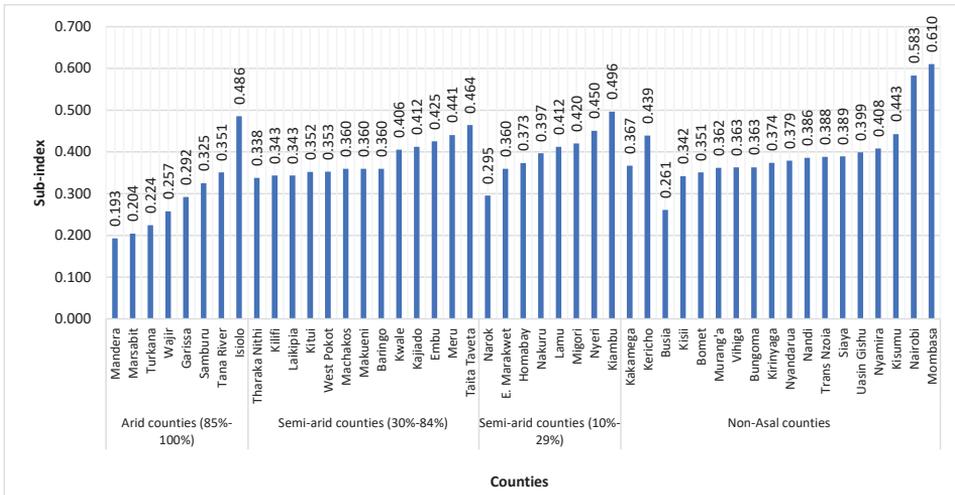
### 4.1 Sub-Indices

The results are presented in figures and tables heat maps. The figures show the performance of each of the forty-seven counties by component this is infrastructure, education, innovation, and entrepreneurship. To enhance the visualization of the scores for each component, the table heat maps are coded with three colors: green for the best score (1), yellow for average score (0.5) and red for the worst score (0).

#### 4.1.1 Infrastructure Component

The infrastructure component measures the level of infrastructure development in counties through a set of nine indicators. It assesses how affordable, accessible, and reliable is the digital infrastructure in the forty-seven counties.

**Figure 4.1: Infrastructure performance by County**



Source: Authors compilation

Out of the 5 counties with the least infrastructure index four are classified as arid: Mandera, Marsabit, Turkana and Wajir. The four counties represent half of the counties classified as arid. However, Isiolo County which is classified as an arid county has the 4<sup>th</sup> best infrastructure index out of the forty-seven counties. The city counties of Mombasa and Nairobi are first and second respectively. Annex 1 shows the indicators for the infrastructure component of all the forty-seven counties with table 4.1 showing the infrastructure index per county. Table 4.1 highlights the performance of each infrastructure indicator by arid category.

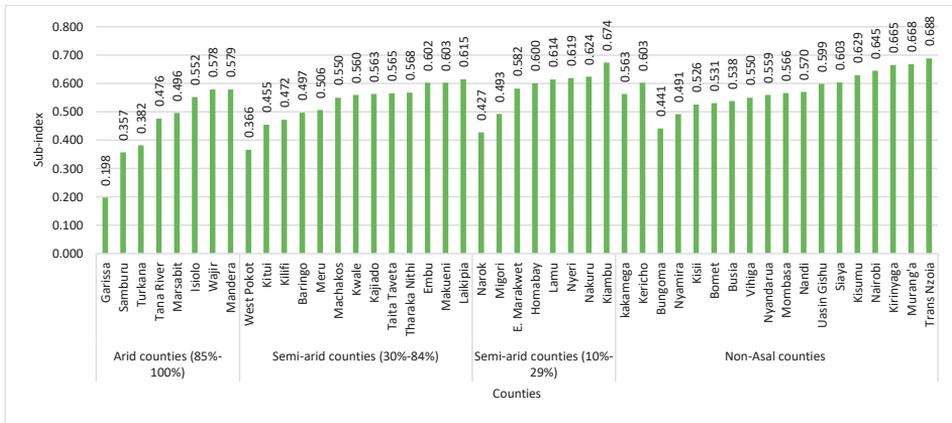
**Table 4.1 Infrastructure Indicators by Aridity categories**

Indicator/ Categorization	Arid counties (85%-100%)	Semi-arid counties (30%-84%)	Semi-arid counties (10%-29%)	Non-ASAL counties
ICT gadgets ownership Index	0.055	0.204	0.257	0.239
Internet Access Index	0.050	0.240	0.305	0.267
Fixed Wire Broadband Index	0.043	0.147	0.292	0.217
Terrestrial Fixed Wireless	0.024	0.029	0.024	0.021
Mobile Broadband Index	0.161	0.194	0.161	0.167
Mobile Phone Ownership index	0.718	0.761	0.742	0.672
Electricity Access Index	0.118	0.318	0.410	0.404
% of Sublocations with DTT coverage Index	0.499	0.669	0.499	0.753
% of Population with FM radio coverage index	0.572	0.867	0.980	0.979
Infrastructure Sub- Index	0.249	0.381	0.408	0.413

Out of all the 9 indicators, ASALs counties scored below average except for Mobile Phone Ownership, Percentage of sublocations with DTT coverage, percentage of population with radio coverage, newspaper reading and access to social media. Ownership of mobile phones was higher in arid counties as compared to Non-ASAL counties.

#### **4.1.2 Entrepreneurship Component**

The entrepreneurship component captures how easy it is for creatives to start and run successful enterprises or businesses they so desire. A thriving business ecosystem is a key determinant of a county's digital readiness.

**Figure 4.2: Entrepreneurship performance by County**

Source: Authors compilation

Of the ten counties with the least entrepreneurship indices, 4 are categorized as arid, 4 semi-arid and 2 non-ASALs. Kiambu is the only ASAL county in the top five counties with the highest entrepreneurship index at number two with an index of 0.674. Appendix II shows all indicators for the entrepreneurship component for the forty-seven counties.

**Table 4.2: Entrepreneurship Indicators by Aridity Categories**

Indicator/ Categorization	Arid counties (85%-100%)	Semi-arid counties (30%-84%)	Semi-arid counties (10%-29%)	Non-ASAL counties
Ease of getting licenses and permits	0.435	0.345	0.548	0.460
Governance Score	0.277	0.586	0.433	0.463
Business running skills	0.420	0.491	0.310	0.427
% of Pop with access to financial products or services	0.455	0.608	0.643	0.705
Use of formal financial products and services	0.349	0.492	0.517	0.412
Use of Informal financial products and services	0.628	0.295	0.266	0.285
Use of internal financing as main source of finance	0.284	0.479	0.489	0.532

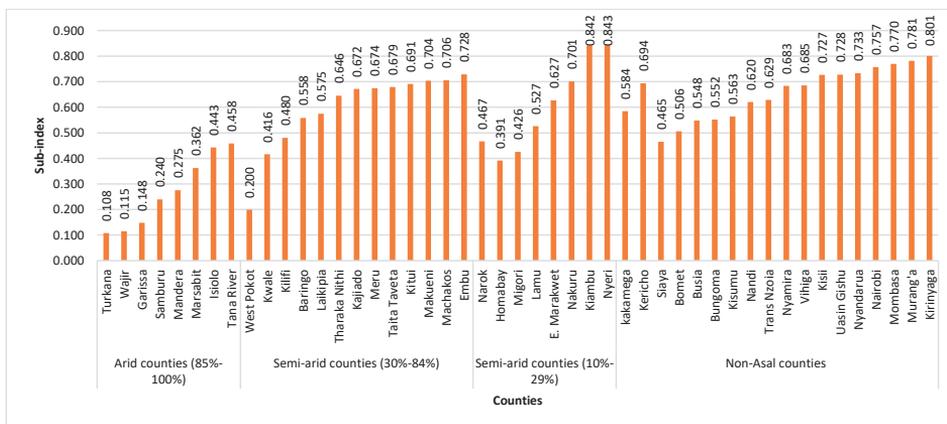
Use of mobile money accounts	0.478	0.582	0.635	0.681
MSE survival rate	0.501	0.398	0.590	0.551
Entrepreneurship Sub-Index	0.430	0.478	0.492	0.505

Informal sources of finance performed better in arid counties when compared to other sources of finance. Though Non-ASAL counties have the highest percentage of population with access to finance, the use of formal financial products was below average with the use of personal saving and borrowing from friends and relatives was more preferred.

### 4.1.3 Education component

The education component captured the ability to utilize and leverage digital tools to grow the creative economy. It assessed the digital skills levels of the population in each county.

**Figure 4.3: Education performance by County**



Source: Authors' compilation

Arid counties recorded relatively low education sub-indices compared to the semi-arid and non-ASAL counties. The bottom 12 counties are all ASAL counties with all the 8 arid counties falling in this category. However surprisingly, Nyeri and Kiambu counties which are classified as semi-arid counties led in the education index. Generally, non-ASAL counties perform better as compared to ASAL counties. Appendix III shows the underlying indicators for the education component for the forty-seven counties.

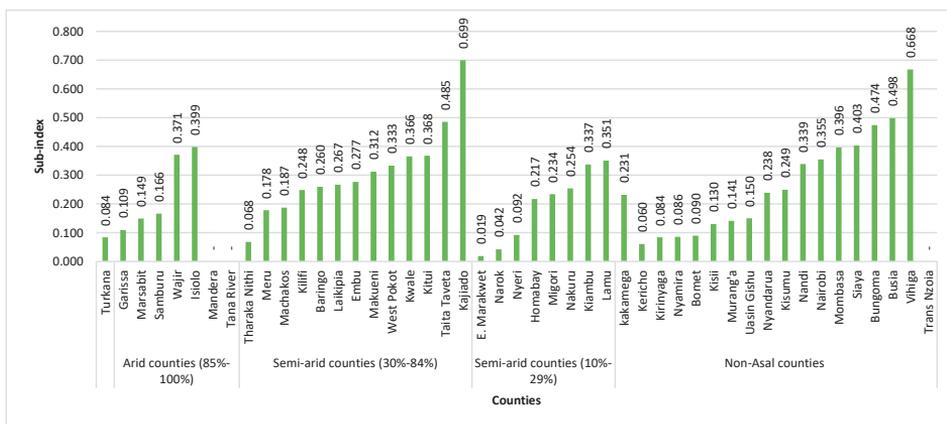
**Table 4.3: Education Indicators by Aridity Categories**

Indicator/ Categorization	Arid counties (85%-100%)	Semi-arid counties (30%-84%)	Semi-arid counties (10%-29%)	Non-ASAL counties
Mean Years of Schooling	0.148	0.405	0.503	0.547
Rate of rollout of Digital Literacy Programme Index	0.461	0.768	0.746	0.834
Literacy Rate	0.179	0.758	0.853	0.883
Primary School net enrolment	0.313	0.741	0.801	0.849
Secondary School net enrolment	0.153	0.464	0.362	0.398

ASAL counties performed poorly in all education indicators except for the rate of rollout of the Digital Literacy Programme. This is an indication that there are fundamental factors affecting education across arid counties.

#### 4.1.4 Innovation Component

Innovation is the implementation or creation of something new that has value to others. It captures the ease with which creatives transform their ideas to reality. It was assessed through four sub-components.

**Figure 4.4: Innovation performance by County**

Source: Authors' compilation

Kajiado, a semi-arid county had the highest innovation index. The arid counties of Isiolo and Wajir are among the top 10 counties with the highest innovation

index. The two counties have indices higher than all the counties categorized as semi-arid (10-29 per cent). Appendix IV shows all the indicators for the innovation component for all the forty-seven counties.

**Table 4.4: Innovation Indicators by Aridity categories**

<b>Categorization</b>	<b>Arid counties (85%-100%)</b>	<b>Semi-arid counties (30%-84%)</b>	<b>Semi-arid counties (10%-29%)</b>	<b>Non-ASAL counties</b>
Innovation Score	0.070	0.172	0.129	0.286
Patenting Score	0.155	0.199	0.046	0.084
Coping with new technology Score	0.216	0.497	0.291	0.338
Access to business incubation services	0.466	0.374	0.278	0.401

ASAL counties performed better than all the other aridity categories in terms of access to business incubation services. Nonetheless despite the poor performance in the patenting score across all aridity categories, they had the second highest patenting score after semi-arid counties (30% - 84%).

## 4.2 Digital Readiness Index

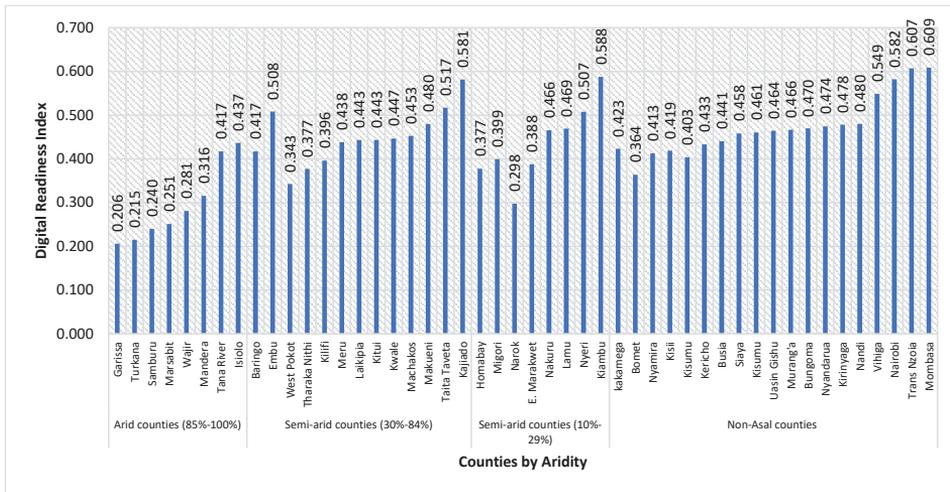
The DRI was computed by getting the simple average of the four components of infrastructure, education, innovation, and entrepreneurship.

**Table 4.5: Sub-Indices and Overall DRI by Aridity categories**

	Infrastructure sub-index	Education Sub-index	Entrepreneurship sub-index	Innovation sub-index	Overall DRI
<b>Arid counties (85%-100%)</b>	0.292 {4}	0.269 {4}	0.452 {4}	0.213 {3}	0.317 {4}
<b>Semi-arid counties (30%-84%)</b>	0.381 {3}	0.594 {3}	0.532 {3}	0.311 {1}	0.455 {2}
<b>Semi-arid counties (10%-29%)</b>	0.400 {1}	0.603 {2}	0.579 {2}	0.193 {4}	0.444 {3}
<b>Non-ASAL counties</b>	0.400 {2}	0.657 {1}	0.580 {1}	0.255 {2}	0.481 {1}
<b>National</b>	0.368 [3]	0.531 [2]	0.536 [1]	0.243 [4]	0.424

Nationally, the innovation component had the worst performance followed by infrastructure. They both had a below average performance. The education and entrepreneurship components had above average performance. However, when the education components is taken disaggregated by aridity level, there evidently are significant difference across the categories. Care should therefore be taken when interpreting the overall results.

**Figure 4.5: Digital readiness index by County**



Source: Authors' Compilation

From figure 4.5, there is an inverse relation between the levels of aridity and the DRI. Five of the arid counties have DRI lower than the least DRI in semi-arid counties. The highest and second highest DRI were recorded in the non-ASAL counties of Mombasa and Trans-nzoia at 0.609 and 0.607 respectively. Nairobi County ranked the fourth best county with a DRI of 0.582 just behind Kiambu county with a DRI of 0.588. Isiolo county was the only arid county with an above average performance in DRI.

### 4.3 Influence of digital readiness on employment in creative industries

The regression estimates for employment in creative industries are presented in Table 4.6, which reports estimation of results from equation 4. The results reveal that a one-unit increase in infrastructure subindex is associated with an approximately 4.485% increase in the dependent variable (employment), holding other variables constant. A one-unit increase in education subindex is associated with an approximately 2.826% increase in the dependent variable. Being in a Semi-arid (30-84%), Semi-arid (10-29%), or Nonasals region is associated with significant positive increases employment in creative industries compared to Arid (85-100%) regions.

**Table 4.6: Influence of Digital Readiness Index on Employment in Creative Economy**

<b>log_employment in creative industries</b>	<b>Coef.</b>	<b>p-value</b>
InfrastructureSI	4.485*	0.056
EducationSI	2.826**	0.036
EnterprenuershipSI	-2.572	0.225
InnovationSI	-0.317	0.745
Semiarid (30-84%)+	1.655***	0.008
Semiarid (10-29%)+	1.912***	0.004
Nonasals	1.726***	0.008
Constant	3.951	0.000
R-squared 0.655		

Where \*\*\* ; \*\* and \* denote significance at 1% level, 5% and 10% level respectively.

+Reference Aridity\_dummy was Arid (85-100 %)

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## **5. Conclusion and Policy Recommendations**

The study aimed at assessing the state of digital readiness of counties in Kenya. The results revealed that the County of Mombasa had the highest digital readiness index with a score of 0.609 while Garissa had the least with a score of 0.206. Nairobi City County ranked 4th overall. The overall average DRI across all counties was estimated at 0.424 indicating a below average level of digital readiness across the forty-seven counties in the country. Overall, out of the 47 counties classified ASALs, 18 had indices that were below the overall average of the counties. About 60 per cent of the ASAL counties had indices that were below overall average.

These results illustrate different levels of the forty-seven counties in embracing digital technologies as well as capitalizing on them to enhance and grow the creative economies within them. The findings emphasize on the importance of a multi-faceted approach in assessing the overall impact of various programs and project initiated by the government aimed at deepening digital adoption and how these technologies can be harness for the benefit the creative economies. The assessment serves as a valuable resource for policymakers, offering a nuanced understanding of each county's strengths and areas that need improvement. The DRI factored in Education, Innovation, infrastructure, and entrepreneurship all discussed below.

### **Innovation**

The innovation component has the worst performance nationally and across all the four categories of aridity. Four indicators were considered in determining the innovation sub-index namely innovations score, patenting score, how businesses cope with new technologies and access to business incubation services. Though as the four indicators performed poorly, innovation and patenting were worse off out of the four. To improve its performance, there should be strict enforcement of copyright and patent laws in all the counties and capacity building of creatives in term of knowing the process and procedure of patenting and copyrighting their content. Also, counties can entrench business incubation services for start-ups in the creative industries.

### **Education**

The Education component considered mean years of schooling, rate of rollout of the digital literacy programme, literacy rates, and primary and secondary school net enrollment rates for all the counties. Performance of education for the arid counties was poor across all the indicators and even compared to the other aridity categories. This represents a troubling reality for arid counties. There is need for all stakeholders to in the education sector to come together and address the root causes of poor education outcome in arid counties.

### **Infrastructure**

Nine indicators were considered when computing the infrastructure sub-index namely ICT gadget ownership, internet access, fixed broadband, wireless broadband, mobile broadband, mobile phone ownership, electricity access, percentage of sublocation with digital terrestrial television coverage, percentage

of population with FM radio coverage and Internet access infrastructure. Internet access infrastructure and electricity access in across all the aridity categories was below average hence classified as poor. Mobile phone ownership and digital terrestrial television and FM coverage were all above average in all the aridity categories. Notable programs such the National Optic Fibre Network (NOFiB) project, whose outcome is to enhance access to the internet and reduce cost are underway. Also in the electricity realm, the push for adoption of solar and the last mile project are greatly enhancing access to electricity. This project ought to be upscaled and adequately financed to reach all the counties.

### **Entrepreneurship**

Nine dimensions were considered in accessing entrepreneurship across the forty-seven counties. They are ease of getting permits/licenses, corruption, entrepreneurship/business skills, percentage of the population with access to financial products and services, MSMEs that use formal financial products and services as main source of finance, MSMEs that use informal financial products and services as their main source of finance, MSMEs that use other sources of finance as their main source of finance, use of mobile money and the MSMEs survival rate. MSMEs in arid counties relied more on informal financial products and services as their main source of finance. Across boards however, performance across the aridity categories across all the indicators was either average or below average with departure in percentage of population with access to financial products and services and use of mobile money indicators. Non-ASAL counties despite having the highest score on the number of people with access to financial services and products, scored below average when it came to the number of MSMEs that use formal financial product and services as their main source of finance. Activities to enhance financial deepening across all counties complemented by deliberate measure to create favorable business environment should be explored.

### **Digital economy readiness and creative economy**

In assessing the effect of digital readiness on employment, the results indicate that there is a positive relationship between digital readiness and employment in the creative economy. The results indicate that digital readiness could play an important role in enhancing the potential of the creative economy and influencing employment. Policies that enhance digital readiness could be pursued as a measure to address unemployment.

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## Appendices

### Appendix I: Summary Statistics

The arid counties are 8 with a mean employment in the creative industries of 247 indicating a moderate contribution to employment by the creative economy in these counties. The indicator has a minimum and a maximum of 21 and 888 respectively as shown in Table A1 below.

Ownership of ICT gadgets averages around 2.56 percent in arid counties, indicating low ownership. Internet access averages around 5.41 percent, implying low internet access and hence digital connectivity. The roll out of digital literacy program is around 81.13 per cent, suggesting a moderate level of success in digital literacy initiatives. Electricity access is present in 7 out of 8 counties, with a mean of 20.41 per cent implying a low electricity connectivity in the region. Literacy rate, primary and secondary net enrolment rates show moderate educational indicators. The unemployment rate is relatively high, with a mean of 27.26 while the GCP per capita averages at 110998, showing economic diversity. The monetary poverty incidence and multidimensional poverty indicators depict significant socio-economic challenges.

**Table A1: Summary statistics for Arid (85-100 per cent)**

Indicator	Number of Counties (N)	Mean	Standard deviation	Minimum	Maximum
Arts entertainment and recreation	8	247.422	281.304	21	888
Arts entertainment and recreation (%)	8	3.019	1.238	.769	5.162
Ownership of ICT gadgets	8	2.563	.991	1.4	4.5
Access to internet	8	5.412	1.861	3.5	8.9
Rollout of Digital Literacy Program	8	81.127	11.217	67	98.74
Fixed wire broadband	7	.227	.601	0	1.59
Terrestrial fixed wireless	7	.366	.717	0	1.96
Mobile broadband	7	9.25	5.524	0	18.17
Mobile ownership	7	89.933	5.954	81.83	100
Access to electricity	7	20.414	10.623	8.6	40.6
Literacy rate	8	46.362	11.788	35.8	68.6
Primary net enrollment	8	55.962	11.078	37.8	72.2
Secondary net enrollment	8	21.3	6.896	9.3	30.9

Share unemployed	8	27.257	12.965	10.885	54.486
GCP per capita	8	110998	29635.095	76338	162445
Monetary Poverty incidence	8	65.825	9.922	50.7	78.5
Multidimensional Poverty	8	77.8	14.43	53.1	91.5
Sublocations with DTV signals	8	49.913	39.322	0	100
Population with FM radio signals	8	71.659	24.155	33.73	92.93
Population with access to finance	8	74.675	11.081	60.3	87.8
Msme accessing formal finance	8	14.95	9.605	6.4	34.7
Msme accessing informal finance	8	39.587	15.912	14.4	62.9
Msme accessing self-finance sources	8	45.462	20.163	24	78.7
Population who use mobile money	8	73.325	11.758	58.1	86.6

The arid counties are thirteen in total with a mean employment in the creative industries of 2759.028, a minimum and a maximum of 217.244 and 9,526 respectively as shown in Table A2. The mean employment in creative industries is notably higher, suggesting a stronger creative sector presence compared to arid counties. Ownership of ICT gadgets and internet access both show increased values compared to arid counties. High roll out success of digital literacy (91.87 percent) signifies substantial efforts in enhancing digital skills in the regions. Electricity access averages 36.54 percent, indicating better infrastructure than arid counties. Literacy rate, primary and secondary net enrolment rates are relatively higher than those of arid counties. The unemployment rate is 9.44, which is lower than the arid counties. GCP per capita is significantly higher, around 186,798.92, showcasing economic progress. Monetary poverty incidence and multidimensional poverty show welfare improvements compared to arid counties.

**Table A2: Summary Statistics for semi-arid (30-84 per cent)**

Indicator	Number of Counties (N)	Mean	Standard deviation	Minimum	Maximum
Arts entertainment and recreation	13	2759.028	2667.79	217	9526
Arts entertainment and recreation (%)	13	7.627	1.439	5.427	10.088
Ownership of ICT gadgets	13	5.738	3.318	1.4	14.6
Access to internet	13	12.754	6.443	3.5	29.1
Rollout of Digital Literacy Program	13	91.873	10.211	65	100
Fixed wire broadband	13	.674	1.012	0	3.29
Terrestrial fixed wireless	13	.697	1.67	0	5.9
Mobile broadband	13	11.946	12.849	.32	50.16
Mobile ownership	13	86.623	14.022	43.94	97.78
Access to electricity	13	36.538	15.052	11.8	67.4
Literacy rate	13	91.873	10.211	65	100
Primary net enrollment	13	80.446	8.182	61.5	92.4
Secondary net enrollment	13	80.823	11.746	66	95.2
Share unemployed	13	45.785	22.846	15.5	87.9
GCP per capita	13	9.442	3.369	5.929	18.165
Monetary Poverty incidence	13	186798.92	50271.197	126085	283253
Multidimensional Poverty	13	37.108	11.533	18.9	57.3
Sublocations with DTV signals	13	57.815	15.25	37.8	82.2
Population with FM radio signals	13	92.843	13.641	51.064	100
Population with access to finance	13	91.214	9.613	72.05	100
Msme accessing formal finance	13	80.362	8.774	57.7	89.6
Msme accessing informal finance	13	21.077	13.944	2.4	41.4
Msme accessing self-finance sources	13	18.738	9.747	4.3	37.3
Population who use mobile money	13	60.177	18.221	26.9	84.7
Read newspapers	13	77.431	8.454	54.5	87.6
Use of social media	13	26.308	10.927	15	55

Table A3 presents statistics for semiarid counties with aridity levels of between 10 and 29 per cent. The mean employment in creative industries is the higher among the two categories above, suggesting a thriving creative sector. Ownership of ICT gadgets, internet access, and digital literacy rollout exhibit positive trends as compared to more arid counties. Electricity access is having a higher mean than the previous categories. Compared to the two previous categories of aridity, higher literacy rates, net enrolment rates, and relatively low unemployment rates point towards better socio-economic conditions in these counties. GCP per capita and poverty indicators show improvement compared to arid counties.

**Table A3: Summary Statistics for semi-arid (10 -29 per cent) counties**

Indicator	Number of Counties (N)	Mean	Standard deviation	Minimum	Maximum
Arts entertainment and recreation	8	4507.567	5049.209	357	14339
Arts entertainment and recreation (%)	8	7.088	2.361	4.52	10.271
Ownership of ICT gadgets	8	6.875	5.801	2	19.6
Access to internet	8	15.275	11.404	5	39.1
Rollout of Digital Literacy Program	8	91.109	11.044	71	100
Fixed wire broadband	8	1.34	1.137	0	3.27
Terrestrial fixed wireless	8	.715	1.19	0	3.41
Mobile broadband	8	12.401	7.444	5.05	27.17
Mobile ownership	8	85.543	7.198	71.87	92.8
Access to electricity	8	44.6	28.093	18.4	91.7
Literacy rate	8	91.109	11.044	71	100
Primary net enrollment	8	86.037	7.902	69.3	94
Secondary net enrollment	8	84.313	8.196	75.1	95.9
Share unemployed	8	37.775	14.948	20.9	60.5
GCP per capita	8	7.448	3.191	2.891	12.934
Monetary Poverty incidence	8	227311.13	74053.273	125925	309402
Multidimensional Poverty	8	29.65	8.702	19	43.1
Sublocations with DTV signals	8	52.962	22.03	18.1	78.4
Population with FM radio signals	8	91.555	21.959	37.379	100
Population with access to finance	8	98.69	1.934	94.26	100
Msme accessing formal finance	8	81.7	9.82	64.9	93.8
Msme accessing informal finance	8	22.113	12.895	2.1	42.7
Msme accessing self-finance sources	8	16.925	9.258	5.3	26.8
Population who use mobile money	8	60.962	18.114	44.1	92.5
Read newspapers	8	79.513	9.416	63.9	91
Use of social media	8	25.375	5.344	19	36

Table A4 provides insights into counties classified as non-ASAL. Employment in creative industries exhibits substantial variation, with a mean of 4,000.83. Ownership of ICT gadgets and internet access are higher than in arid and semiarid categories. Digital literacy rollout is around 94.18, indicating proactive digital skill development. Electricity access is relatively widespread, with a mean of 45.69 per cent. High literacy rates, net enrolment rates, and relatively low unemployment rates denote relatively favorable socio-economic conditions. GCP per capita is higher than the other categories averaging Ksh 233,874.72, reflecting relatively better welfare. Poverty indicators show improvement compared to arid and semiarid categories.

The summary statistics tables provide a nuanced understanding of digital readiness and socio-economic indicators across different aridity-based categories of counties. The trends and variations observed in employment, digital connectivity, education, poverty, and other indicators highlight the diverse socio-economic landscape of the regions.

**Table A4: Summary Statistics for non-ASAL Counties**

Indicator	Number of Counties (N)	Mean	Standard deviation	Minimum	Maximum
Arts entertainment and recreation	18	4009.825	6967.477	750	30934
Arts entertainment and recreation (%)	18	7.223	2.459	2.536	12.193
Ownership of ICT gadgets	18	6.5	4.836	3.3	22.7
Access to internet	18	13.794	9.07	7.2	42.1
Rollout of Digital Literacy Program	18	94.177	7.309	79.59	100
Fixed wire broadband	18	.996	1.197	0	4.59
Terrestrial fixed wireless	18	1.063	3.114	0	13.39
Mobile broadband	18	16.02	13.531	4.05	46.22
Mobile ownership	18	81.638	15.045	44.87	94.65
Access to electricity	17	45.688	22.562	19.7	96.5
Literacy rate	18	94.177	7.309	79.59	100
Primary net enrollment	18	87.794	4.226	78.9	94.7
Secondary net enrollment	18	87.15	4.064	80.3	94.6
Share unemployed	18	40.561	10.69	22.9	62.1
GCP per capita	18	8.465	6.057	3.006	25.106
Monetary Poverty incidence	18	233874.72	137783.82	117356	699848
Multidimensional Poverty	18	35.067	11.298	16.6	68.2
Sublocations with DTV signals	18	51.844	18.598	12.6	76.2
Population with FM radio signals	18	96.263	9.002	66.857	100
Population with access to finance	18	98.576	4.686	80.81	100
Msme accessing formal finance	18	84	6.241	73.9	95
Msme accessing informal finance	18	17.639	11.732	.1	34.6
Msme accessing self-finance sources	18	18.156	12.757	.3	38.9
Population who use mobile money	18	64.194	22.301	29.6	99.6
Read newspapers	18	81.333	6.822	71.4	93.9
Use of social media	18	28.444	7.732	18	43
Arts entertainment and recreation	18	33.778	6.035	25	46

## Appendix II: Infrastructure Component Indicators

**Table A5: Infrastructure Component indicators per county**

County	Mobile Broad-band	Fixed wireless Broad-band	Ter-restrial Fixed broad-band	Owner-ship of ICT	Mobile Phone Owner-ship	Access to elec-tricity	FM Cover-age	DTT cover-age	Access to social media	News-paper reader-ship
Garissa	0	0	0	0.056	1	0.17	0.134	1	0	0.78
Isiolo	0.362	0	0	0.146	0.676	0.364	0.893	1	0.761	1
Mandera	0.175	0	0	0.005	0.843	0.081	0	0	0.341	0.678
Marsabit	0	0	0	0.052			0.791	0.412	0.716	0.254
Samburu	0.196	0	0.146	0.085	0.79	0.071	0.871	0.733	0.33	0.271
Tana River	0.237	0.346	0.022	0.061	0.726	0.193	0.85	0.575	0.795	0
Turkana	0.122	0	0.023	0.033	0.885	0	0.729	0.139	0.375	0.136
Wajir	0.198	0	0	0	0.823	0.063	0.311	0.133	0.83	0.475
Baringo	0	0.052	0	0.085	0.769	0.224	0.844	1	0.557	0.305
Embu	0.362	0	0	0.23	0.932	0.437	0.954	1	0.386	0.085
Kajiado	0.175	0	0	0.62	0.791	0.669	0.742	0	0.568	0.305
Kilifi	0	0.246	0	0.192	0.697	0.34	0.998	0.412	0.58	0.102
Kitui	0.196	0	0.146	0.099	0.635	0.097	1	0.733	0.477	0.407
Kwale	0.237	0.294	0.022	0.136	0.852	0.261	0.94	0.575	0.557	0.424
Laikipia	0.122	0.198	0.023	0.258	0.924	0.382	0.812	0.139	0.25	0.305
Machakos	0.198	0.401	0	0.376	0.761	0.452	0.742	0.133	0.375	0.153
Makueni	0.253	0	0	0.122	0.96	0.134	0.676	0.91	0.511	0.237
Meru	0.076	0.717	0	0.136	0.936	0.359	1	1	0.33	0.119
Taita Taveta	0.192	0	0.157	0.23	0	0.444	1	1	1	0.763
Tharaka Nithi	0.307	0	0.034	0.164	0.753	0.297	0.578	0.878	0.375	0.119
West Pokot	0.408	0	0	0	0.888	0.036	0.99	0.91	0.375	0.271
Homabay	0	0	0	0.127	0.872	0.111	0.969	1	0.466	0.441
Migori	0.362	0.231	0	0.131	0.871	0.167	0.987	1	0.42	0.305
Nakuru	0.175	0.505	0	0.385	0.74	0.635	1	0	0.284	0.186
Narok	0	0.418	0	0.061	0.623	0.126	0.913	0.412	0.352	0.254
Nyeri	0.196	0.163	0.146	0.338	0.498	0.719	1	0.733	0.398	0.305
E. Marakwet	0.237	0.305	0.022	0.028	0.824	0.179	1	0.575	0.511	0.237
Kiambu	0.122	0	0.023	0.854	0.778	0.945	0.992	0.139	0.477	0.203
Lamu	0.198	0.712	0	0.131	0.73	0.394	0.98	0.133	0.886	0.153
Kakamega	0	0	0	0.136	0.83	0.188	1	1	0.409	0.339
Kericho	0.362	0	0	0.155	0.772	0.413	1	1	0.375	0.559

County	Mobile Broad-band	Fixed wireless Broad-band	Terrestrial Fixed broad-band	Ownership of ICT	Mobile Phone Ownership	Access to electricity	FM Coverage	DTT coverage	Access to social media	Newspaper readership
Kirinyaga	0.175	0.388	0	0.211	0.878	0.645	1	0	0.386	0.169
Kisii	0	0.142	0	0.169	0.722	0.349	1	0.412	0.455	0.373
Kisumu	0.196	0	0.146	0.394	0.572	0.501	1	0.733	0.511	0.39
Mombasa	0.237	1	0.022	0.545	0.817	0.879	1	0.575	0.455	0.542
Murang'a	0.122	0.285	0.023	0.164	0.905	0.59	1	0.139	0.295	0.237
Nairobi	0.198	0.447	0	1	0.773	1	1	0.133	0.523	0.339
Nandi	0.253	0.198	0	0.103	0.872	0.251	1	0.91	0.364	0.153
Nyamira	0.076	0.444	0	0.108	0.843	0.39	1	1	0.398	0.136
Nyandarua	0.192	0	0.157	0.15	0.403	0.372	1	1	0.341	0.322
Siaya	0.307	0.357	0.034	0.131	0.642	0.126	0.903	0.878	0.318	0.458
Trans Nzoia	0.408	0.272	0	0.174	0.771	-0.098	1	0.91	0.352	0.169
Uasin Gishu	0.138	0	0	0.408	0.176	0.628	1	1	0.295	0.305
Vihiga	0.067	0	0	0.136	0.894	0.339	1	1	0.284	0.136
Bomet	0.215	0.333	0	0.089	0.323	0.154	1	1	0.375	0.254
Bungoma	0.044	0.037	0	0.127	0.895	0.148	1	0.861	0.398	0.39
Busia	0.006	0	0	0.108	0.017	0.199	0.71	1	0.375	0.356

### Appendix III: Entrepreneurship Component Indicators

**Table A6: Entrepreneurship Component indicators per County**

County	Access to financial products & services	MSMEs that use formal financial products	MSMEs that use informal financial products	MSMEs that use self-finance	Use of mobile accounts	MSME survival rate
Garissa	0.134	0.148	0.47	0.528	0.157	-
Isiolo	0.893	0.369	0.423	0.442	0.815	-
Mandera	0	0.394	0.786	0.127	0.741	0.705
Marsabit	0.791	0.491	0.872	0	0.591	0.313
Samburu	0.871	0.162	0.225	0.724	0.213	0.037
Tana River	0.85	0.244	0.618	0.351	0.416	0.632
Turkana	0.729	0.169	1	0.077	0.091	0.807
Wajir	0.311	0.812	0.626	0.024	0.797	0.514
Baringo	0.844	0.246	0.196	0.698	0.454	0.548
Embu	0.954	0.167	0.268	0.685	0.746	0.603
Kajiado	0.742	0.418	0.224	0.579	0.84	0.342
Kilifi	0.998	0.791	0.395	0.228	0.475	0.158
Kitui	1	0.054	0.201	0.803	0.563	0.016
Kwale	0.94	0.969	0.436	0.091	0.447	0.737
Laikipia	0.812	0.852	0.112	0.427	0.627	0.7
Machakos	0.742	0.178	0.196	0.737	0.734	0.29
Makueni	0.676	0.732	0.241	0.386	0.772	0.358
Meru	1	0.838	0.591	0.038	0.586	0
Taita Taveta	1	0.716	0.064	0.544	0.673	0.439
Tharaka Nithi	0.578	0.237	0.463	0.483	0.65	0.496
West Pokot	0.99	0.202	0.441	0.521	0	0.489
Homabay	0.969	0.573	0.404	0.343	0.627	0.661
Migori	0.987	0.293	0.292	0.593	0.495	0.389
Nakuru	1	0.603	0.371	0.353	0.797	0.437
Narok	0.913	0.047	0.081	0.906	0.239	0.584
Nyeri	1	0.284	0.08	0.775	0.896	0.388
E. Marakwet	1	0.549	0.423	0.34	0.429	1
Kiambu	0.992	0.784	0.353	0.266	0.926	0.667
Lamu	0.98	1	0.12	0.336	0.67	-
Kakamega	1	0.343	0.358	0.511	0.548	0.661
Kericho	1	0.031	0.026	0.963	0.721	0.771
Kirinyaga	1	0.493	0.361	0.423	0.848	0.648
Kisii	1	0.007	0.019	0.979	0.622	0.498

County	Access to financial products & services	MSMEs that use formal financial products	MSMEs that use informal financial products	MSMEs that use self-finance	Use of mobile accounts	MSME survival rate
Kisumu	1	0.298	0.163	0.697	0.812	0.76
Mombasa	1	0.739	0.615	0.074	0.865	0.239
Murang'a	1	0.498	0.227	0.532	0.911	0.623
Nairobi	1	0.678	0.617	0.107	1	0.422
Nandi	1	0.786	0.123	0.455	0.586	0.499
Nyamira	1	0	0	1	0.457	0.538
Nyandarua	1	0.81	0.281	0.311	0.508	0.38
Siaya	0.903	0.364	0.522	0.362	0.693	0.615
Trans Nzoia	1	0.756	0.565	0.104	0.855	0.82
Uasin Gishu	1	0.42	0.267	0.542	0.782	0.676
Vihiga	1	0.38	0.326	0.516	0.558	0.553
Bomet	1	0.533	0.267	0.479	0.525	0.378
Bungoma	1	0.052	0.026	0.95	0.429	0.26
Busia	0.71	0.223	0.372	0.565	0.538	0.579

## Appendix IV: Sub-indices and the DRI

**Table A7: Sub-indices and the DRI for the forty-seven counties**

County	Infrastructure sub-index	Education Sub-index	Entrepreneurship sub-index	Innovation sub-index	Overall DRI
Garissa	0.292	0.148	0.198	0.109	0.187
Isiolo	0.486	0.443	0.552	0.399	0.470
Mandera	0.193	0.275	0.579	-	0.349
Marsabit	0.204	0.362	0.496	0.149	0.303
Samburu	0.325	0.24	0.357	0.166	0.272
Tana River	0.351	0.458	0.476	-	0.428
Turkana	0.224	0.108	0.382	0.084	0.200
Wajir	0.257	0.115	0.578	0.371	0.330
Baringo	0.36	0.558	0.497	0.26	0.419
Embu	0.425	0.728	0.602	0.277	0.508
Kajiado	0.412	0.672	0.563	0.699	0.586
Kilifi	0.343	0.48	0.472	0.248	0.386
Kitui	0.352	0.691	0.455	0.368	0.466
Kwale	0.406	0.416	0.56	0.366	0.437
Laikipia	0.343	0.575	0.615	0.267	0.450
Machakos	0.36	0.706	0.55	0.187	0.451
Makueni	0.36	0.704	0.603	0.312	0.495
Meru	0.441	0.674	0.506	0.178	0.450
Taita Taveta	0.464	0.679	0.565	0.485	0.548
Tharaka Nithi	0.338	0.646	0.568	0.068	0.405
W. Pokot	0.353	0.2	0.366	0.333	0.313
Homabay	0.373	0.391	0.6	0.217	0.396
Migori	0.42	0.426	0.493	0.234	0.393
Nakuru	0.397	0.701	0.624	0.254	0.494
Narok	0.295	0.467	0.427	0.042	0.308
Nyeri	0.45	0.843	0.619	0.092	0.501
E. Marakwet	0.36	0.627	0.582	0.019	0.397
Kiambu	0.496	0.842	0.674	0.337	0.587
Lamu	0.412	0.527	0.614	0.351	0.476
Kakamega	0.367	0.584	0.563	0.231	0.436
Kericho	0.439	0.694	0.603	0.06	0.449
Kirinyaga	0.374	0.801	0.665	0.084	0.481
Kisii	0.342	0.727	0.526	0.13	0.431

County	Infrastructure sub-index	Education Sub-index	Entrepreneurship sub-index	Innovation sub-index	Overall DRI
Kisumu	0.443	0.563	0.629	0.249	0.471
Mombasa	0.61	0.77	0.566	0.396	0.586
Murang'a	0.362	0.781	0.668	0.141	0.488
Nairobi	0.583	0.757	0.645	0.355	0.585
Nandi	0.386	0.62	0.57	0.339	0.479
Nyamira	0.408	0.683	0.491	0.086	0.417
Nyandarua	0.379	0.733	0.559	0.238	0.477
Siaya	0.389	0.465	0.603	0.403	0.465
Trans Nzoia	0.388	0.629	0.688	-	0.568
Uasin Gishu	0.399	0.728	0.599	0.15	0.469
Vihiga	0.363	0.685	0.55	0.668	0.566
Bomet	0.351	0.506	0.531	0.09	0.369
Bungoma	0.363	0.552	0.441	0.474	0.458
Busia	0.261	0.548	0.538	0.498	0.461

## Appendix IV: Education Component Indicators

**Table A8: Education Component indicators per County**

County	Digital learning program	Literacy	Years of schooling	Primary net-enrollment	Secondary net-enrollment
Garissa	0.429	0.1	0.063	0	0.101
Isiolo	0.571	0.413	0.333	0.592	0.275
Mandera	0.481	0.19	0.063	0.351	0.206
Marsabit	0.793	0.034	0.208	0.265	0.183
Samburu	0.335	0.076	0.208	0.324	0.092
Tana River	0.964	0.557	0.104	0.539	0.225
Turkana	0.057	0.065	0.208	0.167	0
Wajir	0.057	0	0	0.263	0.14
Baringo	0.541	0.812	0.458	0.776	0.458
Embu	0.917	0.854	0.583	0.971	0.441
Kajiado	0.465	0.808	0.604	0.909	0.709
Kilifi	0.966	0.752	0.208	0.604	0.141
Kitui	0.986	0.801	0.292	0.485	1
Kwale	0.937	0.542	0.146	0.503	0.079
Laikipia	0.657	0.71	0.563	0.656	0.424
Machakos	0.781	0.961	0.542	0.988	0.513
Makueni	0.997	0.789	0.458	0.978	0.383
Meru	0.788	0.722	0.417	0.499	0.994
Taita Taveta	1	0.895	0.438	0.842	0.436
Tharaka Nithi	0.945	0.772	0.438	0.898	0.302
West Pokot	0	0.436	0.125	0.518	0.155
Homabay	0.171	0.859	0.417	0.718	0.26
Migori	0.33	0.879	0.396	0.68	0.298
Nakuru	0.831	0.946	0.646	0.921	0.406
Narok	0.81	0.569	0.25	0.659	0.148
Nyeri	0.978	0.966	0.75	1	0.644
E. Marakwet	1	0.829	0.417	0.864	0.228
Kiambu	0.941	0.988	0.854	0.921	0.651
Lamu	0.908	0.788	0.292	0.642	0.265
Kakamega	0.76	0.761	0.396	0.849	0.333
Kericho	0.972	0.859	0.5	0.936	0.366
Kirinyaga	0.928	0.905	0.625	0.978	0.672
Kisii	0.984	0.934	0.583	0.862	0.478

County	Digital learning program	Literacy	Years of schooling	Primary net-enrollment	Secondary net-enrollment
Kisumu	0.417	0.986	0.604	0.866	0.366
Mombasa	0.911	1	0.729	0.835	0.604
Murang'a	0.982	0.868	0.625	0.957	0.561
Nairobi	0.901	0.879	1	0.768	0.359
Nandi	1	0.952	0.438	0.819	0.224
Nyamira	0.754	0.837	0.625	0.847	0.508
Nyandarua	0.967	0.932	0.563	0.895	0.506
Siaya	0.429	0.898	0.396	0.752	0.284
Trans Nzoia	0.992	0.932	0.458	0.814	0.252
Uasin Gishu	0.994	0.832	0.708	0.824	0.385
Vihiga	0.97	0.895	0.458	0.893	0.42
Bomet	0.417	0.732	0.438	0.9	0.27
Bungoma	0.715	0.886	0.333	0.762	0.397
Busia	0.914	0.801	0.375	0.731	0.173

## Appendix V: Innovation Component Indicators

**Table A9: Innovation component indicators per County**

County	Access to Business Incubation services	Coping With New Technology	Innovations score	No. of Patents registered in the past 3 years
Garissa	0.325	0.026	0.015	0.07
Isiolo	-	0.55	-	0.247
Mandera	-	-	-	-
Marsabit	-	0.11	-	0.188
Samburu	0.415	0.045	-	0.039
Tana River	-	-	-	-
Turkana	-	0.026	0.141	-
Wajir	0.659	0.538	0.055	0.232
Baringo	0.793	0.094	0.111	0.04
Embu	0.125	0.534	0.403	0.045
Kajiado	-	1	0.098	1
Kilifi	0.2	0.442	-	0.103
Kitui	0.256	-	0.479	-
Kwale	0.391	0.716	0.142	0.215
Laikipia	0.637	0.288	0	0.142
Machakos	-	0.475	0.05	0.037
Makueni	-	0.569	-	0.054
Meru	0.24	0.042	0.254	-
Taita Taveta	-	0.812	-	0.159
Tharaka Nithi	0.068	-	-	-
West Pokot	0.659	-	0.008	-
Homabay	0.534	0.107	0.205	0.023
Migori	0.367	0.41	0.041	0.118
Nakuru	0.041	0.707	-	0.016
Narok	-	0.079	0.045	0.003
Nyeri	0.108	0.114	-	0.054
E. Marakwet	-	0	0.001	0.056
Kiambu	0.34	0.622	-	0.05
Lamu	-	-	0.351	-
Kakamega	0.215	0.437	-	0.042
Kericho	-	0.032	0.073	0.076
Kirinyaga	0	0.169	-	0.082
Kisii	0.052	0.2	0.254	0.012

County	Access to Business Incubation services	Coping With New Technology	Innovations score	No. of Patents registered in the past 3 years
Kisumu	0.199	0.517	0.185	0.096
Mombasa	-	0.803	0.167	0.219
Murang'a	-	0.311	0.05	0.064
Nairobi	0.3	0.598	-	0.166
Nandi	0.827	0.323	0.008	0.198
Nyamira	0.256	0.009	0.055	0.023
Nyandarua	0.566	0.202	0.12	0.065
Siaya	0.552	0.541	-	0.117
Trans Nzoia	-	-	-	-
Uasin Gishu	0.219	0.102	0.238	0.042
Vihiga	1	0.895	-	0.107
Bomet	0.205	0.064	-	0
Bungoma	0.821	0.063	1	0.012
Busia	0.404	0.485	1	0.104

**Note:**

- Indicates that the counties were not assessed for the respective indicators. They were not included when calculating the average for this indicator.

## Appendix VI: Principal Component Analysis

### *Infrastructure*

Table A10 reveals that the first principal component (Comp1) accounts for a substantial portion of the variance in the dataset, with an eigenvalue of 2.58932. This component explains approximately 25.89% of the total variance and is characterized by relatively high loadings for variables like “Ownership of ICT gadgets,” “Fixed wireless broadband,” and “Electricity Access,” suggesting that these factors contribute significantly to this component. The second and third components (Comp2 and Comp3) also make substantial contributions to the overall variance. However, the remaining components contribute less and less variance. The cumulative proportion of variance explained by the first five components is 78.03%, suggesting that these components capture most of the information in the data.

**Table A10: Principal Component Analysis: Infrastructure Component**

Principal components (Correlation)			Principal components (eigenvectors)								
Component	Eigenvalue	Cumulative	Indicator	Comp1	Comp2	Comp3	Comp4	Comp5	Comp6	Comp7	Comp8
Comp1	2.589	0.259	Ownership of ICT gadgets	0.484	0.135	-0.263	0.331	0.064	-0.316	-0.116	-0.088
Comp2	1.843	0.443	Fixed wireless broadband	0.315	-0.238	0.339	0.245	-0.278	0.299	0.689	0.039
Comp3	1.244	0.568	Terrestrial broadband connectivity	0.011	0.527	0.030	-0.348	0.147	-0.338	0.429	0.496
Comp4	1.168	0.684	Mobile broadband	-0.001	0.121	0.492	0.235	0.759	-0.042	0.062	-0.314
Comp5	0.959	0.780	Mobile phone ownership	-0.053	-0.549	0.034	0.256	0.288	-0.149	-0.122	0.709
Comp6	0.718	0.852	Electricity Access	0.522	0.136	-0.237	0.294	-0.018	-0.171	0.038	0.023
Comp7	0.598	0.912	Sublocations with access to Digital TV signals	0.425	-0.126	-0.184	-0.341	0.276	0.442	-0.197	0.077
Comp8	0.503	0.962	Sublocations with access to FM signals	0.418	0.070	0.384	-0.403	0.004	0.182	-0.216	0.141

**Education**

Table A11 results indicate that of five principal components derived from the dataset, the most dominant among them is Comp1, characterized by a substantial eigenvalue of 3.37756, explaining 67.55% of the total variance. This component is primarily influenced by variables such as “Years of Schooling,” “Digital Learning Program,” “Primary Net Enrollment Rate,” “Secondary Net Enrollment Rate,” and “Literacy rate.” Comp2, with an eigenvalue of 0.657978, contributes 13.16% of the variance, followed by Comp3 at 11.91%. As we move to Comp4 and Comp5, the eigenvalues decrease, explaining 5.29% and 2.09% of the variance, respectively. Collectively, these five components account for the entire variance in the data, signifying their effectiveness in summarizing the original variables.

**Table A11: Principal Component Analysis: Education Component**

Principal components (Correlation)			Principal components (eigenvectors)					
Component	Eigenvalue	Cumulative	Variable	Comp1	Comp2	Comp3	Comp4	Comp5
Comp1	3.378	0.675	Years of Schooling	0.472	-0.242	-0.253	0.801	-0.114
Comp2	0.658	0.807	Digital Learning Program	0.370	0.733	0.543	0.177	0.015
Comp3	0.596	0.926	Primary Net Enrollment Rate	0.492	0.113	-0.414	-0.286	0.702
Comp4	0.264	0.979	Secondary Net Enrollment Rate	0.380	-0.624	0.642	-0.190	0.135
Comp5	0.104	1.000	Literacy Rate	0.504	0.049	-0.241	-0.457	-0.690

**Entrepreneurship**

The Principal Component Analysis (PCA) results presented in table A12 reveal the presence of five principal components that explain the variance in the dataset. Comp1 explains the most variance, followed by Comp2, Comp3, and so on. Cumulative proportions show the proportion of total variance explained up to each component. The loadings indicate the contribution of each variable to the principal components. Variables with higher absolute loadings have a stronger influence on the respective component. Comp1 is associated with licensing ease. Comp2 is related to governance, business skills, and mobile money usage. Comp3 is strongly linked to access to finance. Comp4 is associated with access to both formal and informal finance. The cumulative proportion suggests that the first four components capture a substantial portion of the total variance in the data. Collectively, these five components capture nearly all of the variance in the data, signifying their effectiveness in summarizing the original variables. The eigenvectors illustrate how strongly each variable contributes to a given component.

**Table A12: Principal Component Analysis: Entrepreneurship Component**

Principal components (Correlation)			Principal components (eigenvectors)							
Component	Eigenvalue	Cumulative	Variable	Comp1	Comp2	Comp3	Comp4	Comp5	Comp6	Comp7
Comp1	2.584	0.323	Ease of licensing score	-0.295	-0.431	0.323	0.168	0.500	0.555	0.191
Comp2	1.603	0.523	Governance score	0.250	0.424	0.470	0.208	-0.361	0.265	0.541
Comp3	1.179	0.671	Business skills	0.201	0.031	0.192	0.813	0.252	0.367	-0.249
Comp4	1.087	0.807	Access finance	0.534	0.078	-0.117	-0.004	0.019	0.555	-0.463
Comp5	0.645	0.887	Access to formal finance	0.377	-0.557	0.056	-0.104	-0.038	-0.333	0.391
Comp6	0.477	0.947	Access to informal finance	-0.557	0.342	0.026	0.075	0.016	-0.078	-0.013
Comp7	0.425	1.000	Use of mobile money	0.269	0.446	-0.030	-0.304	0.744	-0.155	0.241
Comp8	0.000	1.000	MSME survival rate	0.003	-0.027	0.787	-0.399	-0.018	-0.193	-0.428

### ***Innovation***

The Principal Components Analysis (PCA) results of patenting, coping with new technology, incubation services, and innovation as presented in Table A13 yielded four components. The first component (Comp1) dominated with an eigenvalue of 2.397, explaining 59.9% of the variance. It displayed strong positive loadings for patenting, coping with technology, and innovation, suggesting a comprehensive representation of these factors. Comp2, with an eigenvalue of 0.931, contributed to a cumulative proportion of 83.2%, emphasizing incubation services and innovation. The third component (Comp3) added further explanatory power (eigenvalue: 0.601, cumulative proportion: 98.2%) by capturing variability in patenting and incubation services. The fourth component (Comp4) had a minimal eigenvalue (0.070), representing residual variance. The components effectively summarized the dataset, providing insights into the relationships among the variables.

**Table A13: Principal Component Analysis: Innovation Component**

Principal components (Correlation)			Principal components (eigenvectors)				
Component	Eigenvalue	Cumulative	Variable	Comp1	Comp2	Comp3	Comp4
Comp1	2.397	0.599	Patents score	0.468	-0.240	0.835	-0.159
Comp2	0.931	0.832	Coping with technology	0.489	-0.600	-0.345	0.531
Comp3	0.601	0.982	Incubation services	0.435	0.751	0.066	0.491
Comp4	0.070	1.000	Innovation Score	0.594	0.133	-0.422	-0.672

## Appendix VII: Cronbach’s Alpha

The Cronbach alpha results range between 0 and 1 in giving out the overall assessment of a measure’s reliability. Generally, the higher the Cronbach’s alpha, the more intercorrelated the indicators are among themselves. For this case, the rule of thumb is that:

- Alpha values close to 0 indicate uncorrelated indicators or share no covariance.
- Alpha values close to 1 indicate highly correlated indicators.
- Negative alpha values indicate negatively correlated indicators.
- Alpha values of below 0.50 are unacceptable.

Alpha values between 0.65 and 0.80 (or higher in many cases), indicate a good coefficient (Pallant, 2020).

**Table A14: Cronbach’s Alpha test results**

Component	Indicators	Cronbach’s Alpha	Decision
Infrastructure	<ul style="list-style-type: none"> <li>• Mobile internet</li> <li>• Broadband internet</li> <li>• Fixed internet</li> <li>• Ownership of ICT gadgets (laptop, tablet, or computer)</li> <li>• Mobile Phone ownership</li> <li>• Access to electricity</li> <li>• Access to FM coverage</li> <li>• DTT coverage</li> </ul>	<p>Scale reliability coefficient: 0.5247</p> <p>Average interitem covariance: 0.0171</p> <p>Number of items in the scale: 9</p>	<p>The scale reliability coefficient, reported as 0.5247 is relatively low, suggesting relatively low internal consistency among the indicators in this component. This implies that though the indicators are measuring the component in a relatively consistent manner, adding more indicators to the component could improve the internal consistency. The 8 indicators are therefore included in the index.</p>
Education/digital skills	<ul style="list-style-type: none"> <li>• Digital Learning Program</li> <li>• Literacy</li> <li>• Years of schooling</li> <li>• Primary net-enrollment</li> <li>• Secondary net enrollment</li> </ul>	<p>Scale reliability coefficient: 0.8689</p> <p>Average interitem covariance: 0.036171</p> <p>Number of items in the scale: 5</p>	<p>The scale reliability coefficient, reported as 0.8689 is quite high, suggesting strong internal consistency among the indicators in this component. This implies that the indicators are measuring the component in a consistent manner. The five indicators are therefore included in the index.</p>
Entrepreneurship	<ul style="list-style-type: none"> <li>• Ease of licensing score</li> <li>• Governance score</li> <li>• Business skills</li> <li>• Access finance</li> <li>• Access to formal finance</li> <li>• Access to informal finance</li> <li>• Use of mobile money</li> <li>• MSME survival rate</li> </ul>	<p>Scale reliability coefficient: 0.6885</p> <p>Average interitem covariance: 0.0163137</p> <p>Number of items in the scale: 8</p>	<p>The scale reliability coefficient, reported as 0.6885 is high, and implies a modest level of internal consistency among the indicators in this component. The 8 indicators are therefore included in the index.</p>

Innovation	<ul style="list-style-type: none"><li>• Business Incubation</li><li>• Coping with new technology</li><li>• Innovations</li><li>• Patents</li></ul>	Scale reliability coefficient: 0.7409  Average interitem covariance: 0.0199175  Number of items in the scale: 4	The scale reliability coefficient, which measures the internal consistency of the items, was found to be 0.7409. This coefficient indicates a moderate to good level of reliability for the scale. This value contributes to the overall assessment of the scale's reliability, and in this case, supports the reasonable internal consistency. The four indicators are therefore included in the index.
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**Kenya Institute for Public Policy Research and Analysis  
Bishops Garden Towers, Bishops Road  
PO Box 56445, Nairobi, Kenya  
tel: +254 20 2719933/4, 2714714/5, 2721654, 2721110  
fax: +254 20 2719951  
email: [admin@kippra.or.ke](mailto:admin@kippra.or.ke)  
website: <http://www.kippra.org>**