White Paper

ICT Talent Cultivation
for Kenya's Digital Economy

Executive Summary

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EXECUTIVE SUMMARY

Background, Problem statement, purpose, and methodology

Background

The digital economy is increasingly becoming a key driver in the global economy. It is projected that by 2026, it will account for 25 % the global Gross Domestic Product (GDP), up from 15.5 % in 2016. Kenya is amongst the few countries in Africa that are taking an early lead to tap the benefits of digital technologies for economic growth. As a result, while Africa expects the digital economy to contribute about 5.2% of its GDP by 2025, Kenya's digital economy is expected to generate 9.24% of the total GDP by 2025. This, amongst other factors, demonstrates the importance of the digital economy to Kenya's economic prospects and transformation. Therefore, interventions that can contribute to further strengthening the digital economy in Kenya, is desirable. One such intervention is talent cultivation.

Problem statement

The digital economy requires new sets of skills and knowledge, which many countries, including Kenya, are deficient in. By the year 2030, over 230 million new jobs will be created in Sub-Saharan Africa which will require ICT skills. Consequently, an estimated 130 billion USD investment opportunity lies in digital skills cultivation in Africa. During this period, 50-55% of jobs in Kenya will depend on digital skills. These call for concerted efforts, both at national and industry levels, for digital talent cultivation in Kenya to address the gap between the existing ICT knowledge and skills in the context of the projected demand by the industry to help drive and sustain the digi¬tal economy.

Purpose and scope of this whitepaper

The purpose of this whitepaper is to generate evidence to support Kenyan policymakers in developing a country-level strategy on talent cultivation for the digital economy. The specific objectives are to: (a) Explore and analyze the need for digital talent cultivation in Kenya; (b) explore the status of talent cultivation in Kenya; and (c) to propose a new talent cultivation approach to meet the demand and challenges identified. These objectives were pursued by addressing the three policy questions shown here below

Methodology

This whitepaper adopted a six-step approach, briefly described here below:

1. **Demand Analysis** focused on two key areas: understanding the current level of the digital readiness of Kenya and the role of talent cultivation to improve; and documenting the skills required by the Kenyan ICT industry, currently and in the future.
2. **Supply Analysis** of existing interventions by Kenyan training institutions, the government, private sector as well as development partners in developing talent to meet the demand identified.
3. **Analysis of policies and strategies** that support talent cultivation efforts by various stakeholders.
4. **Benchmarking and best practice** to situate and contextualise the current practices on digital talent cultivation in Kenya compared to international best practices. Eight countries (India, Morocco, Tunisia, China, Mauritius, South Korea and UK) that have performed very well in digital readiness ranking and other aspects of digital economy were used.
5. **Gap analysis** taking into consideration the results of the situation and the benchmarking.
6. **Recommendations** based on the analysis and benchmarking for how Kenya can strengthen talent cultivation.

Q1

Why is digital talent cultivation important for Kenya?

Q2

What is the current approach to digital talent cultivation ion Kenya?

Q3

How would an effective ICT talent cultivation look like and how long would it take to realize it?

Main Findings

1. Demand for ICT Skills

a) Kenyan's progress towards the digital economy is still in early days, ranked in the top 3 or 5 in Africa in most indexes but lower in global context: 70 out of 79 countries by Huawei Global Connectivity Index (2020), 84 out of 134 countries by Network Readiness Index (2020) and 105 out 158 countries by UNCTAD's 2021 readiness for frontier technology index (right).

> Positions of benchmark countries by UNCTAD Assessment
>
> Singapore: 5
> South Korea: 7
> China: 25
> India: 43
> South Africa: 54
> Tunisia: 60
> Morocco: 77
> Kenya: 105

b) High current and future demand for ICT skills with 50-55% of jobs in Kenya expected to depend on digital skills by 2030, up from 25-30% in 2019 (Caballero & Bashir, 2020). Agriculture will account for 35-40 %, industry 45-50 % and services 60-65 %. Cumulatively some 32 million ICT skills training opportunities will have been created by then, 21 million will be basic ICT skills (foundational), 1.9 million intermediate skills and 1.3 million advanced skills. In addition, another 8 million training opportunities will be from occupation outside ICT specialties and will be generated by enterprises adopting digital technologies, e.g. accountants using accounting packages.

c) Significant ICT skills gaps exist now and expected in the future in security, data analysis and processing, cloud computing, IoT and connected devices, and value addition through the incorporation of artificial intelligence and machine learning. Companies are likely to adopt these technologies and need such skills; the gaps in the labour market are serious barriers to the adoption of new technologies (WEF 2020).

d) Need for National ICT skills database to guide demand by documenting the current ICT skills gaps in the industry and future ICT skills requirements. There is the Kenya Labour Market Information System (KLMIS), which was established in 2017 and serves as a Labour Market observatory/ intelligence/ watchtower for the economy through the provision of timely, relevant, and reliable labor market information. However, inadequate funding limits KLMIS capacity to undertake regular research, data collection and sectoral surveys.

> Benchmarks
>
> Some countries undertake annual ICT skills surveys to inform ICT skills development plan. For example, Morocco has in place the Digital Skills Matrix, while South Africa has University Advisory Boards that checks the current ICT industry trends and align them with the training in universities.

2. Supply of ICT skills

a) Need to update strategy on ICT Talent Cultivation to build on the policies. Digital Economy Strategy has commendable pillar on ICT Skills that needs to be turned into an in-depth plan. Provisions related to talent cultivation are scattered in different policies and are being implemented by different agencies (if implemented at all), making coordination difficult. The only standalone strategy, *National ICT Strategy for Education and Training (2006)* needs to be updated.

b) Initial progress at enhancing ICT readiness at basic education level from DLP investments ensuring most primary schools now have electricity and devices, but still need to ensure adequate skilled ICT teachers and connectivity. Need to expand programme to secondary schools and only 19 % of Kenyan households have computers for effective learning at home.

c) Growing—but still low—number of ICT graduates at intermediate and advanced ICT skills level with total estimated at less than 5,000 ICT students graduating per year.

d) Progress with online content but low use of eLearning due to relatively high cost of internet connectivity, low ownership of devices suitable for learning, power challenges and low ICT literacy skills. KICD and many private providers of online content have made great progress during COVID-19. Projections by the 2020 World Economic Forum Report on future of jobs indicate that the demand for online learning and training will rise several fold.

e) Limited progress so far ensuring ICT curricula are market driven as still a disconnect between academia and

the private sector on the whole. Despite some exceptions, this leads to universities offering curricula and teaching practices that are not adequately aligned with the needs of the job market. With a rapidly evolving ICT technologies, the slow curricula review processes, most universities are constrained to catch up with expanding demand for IT skills on emerging technologies.

f) Need for more funding and opportunities for industrial attachment and internships especially at TVET level. PDTP is very helpful for graduate students, but there are few undergraduate internship opportunities and most students have to find their own industrial attachments and internships with only 5% helped by their respective departments. There is also scarcity of industrial attachment opportunities offered by the private sector.

> **Benchmarks and Best Practices**
>
> - In India, as a policy, all TVETs and universities are required to have a dedicated training and placement cell headed by Training and Placement Officer (TPO) to address all aspects of industrial attachment and internship.
> - Tunisia has a national agency responsible for industrial attachment and internship.
> - China has introduced a framework for supporting their graduates to undertake sponsored internships in UN bodies.

g) Weak Academia-Industry collaboration overall despite some successes. Tertiary institutions in Kenya collaborate with industry in various ways including curriculum development, student placement, staff engagement and consultancies, innovation and community-based initiatives. Several institutions have set up incubators, accelerators, and hubs with varying success and the Kenya Industry and Entrepreneurship Project (KIEP) in collaboration with Linking Industry with Academia (LIWA) and The Kenya Private Sector Alliance (KEPSA) aims to increase productivity and innovation in selected private sector firms. However, the level of university-industry collaboration is rated low due to several barriers including the absence of policies for incentivizing partnership efforts in the universities, and lack of institutional and national support structures to coordinate establishment of such partnerships.

> **Benchmarks and Best Practices**
>
> China encourages universities to establish university-run enterprises, supports collaborative R&D between universities and industries and allow large sized private enterprises to run apprenticeship programs. Tunisia requires that each TVET Centre should have a public-private advisory committee chaired by private sector representative. Mauritius has a program to attract business to locate near university campuses whereas Singapore, through their CorpLab@university scheme, support the establishment of key laboratories by industries in universities.

h) Incentives for private sector participation have not been implemented. The Education for Sustainable Development Policy for Education Sector (2017) and the National ICT Policy (2019) have provided for incentives to enable ICT companies to participate in ICT training and apprenticeship for students from tertiary institutions. The former commits the government to provide tax incentives to companies offering apprenticeships and the latter commits the government to incentivize industry with ICT specialization to conduct their own training program and contribute to institutional training programs. However, these provisions have not been implemented. Currently, the few ICT industries that participate in training and provision of industrial attachment and internship do so on their own accord. As a result, there are not adequate opportunities for industrial attachment and internship for the ICT students.

> **Benchmarks and Best Practices**
>
> Some countries such as Singapore and South Korea, are effectively implementing incentive programs. For example, under the US$ 50 billion Korean Digital New Deal, which is an ambitious plan to enable digital technology players in the private sector to create an enabling eco-system for innovation, the government intends to provide incentives such as lowered taxes, and procurement quotas for businesses to hire young employees in IT-related fields and for providing short-term internship programs for young employees. On the other hand, the government of Singapore has an incentive structure which include providing subsidy or grants to businesses for training local talent to operate new technologies.

3. Desired Future ICT Talent Cultivation Approach
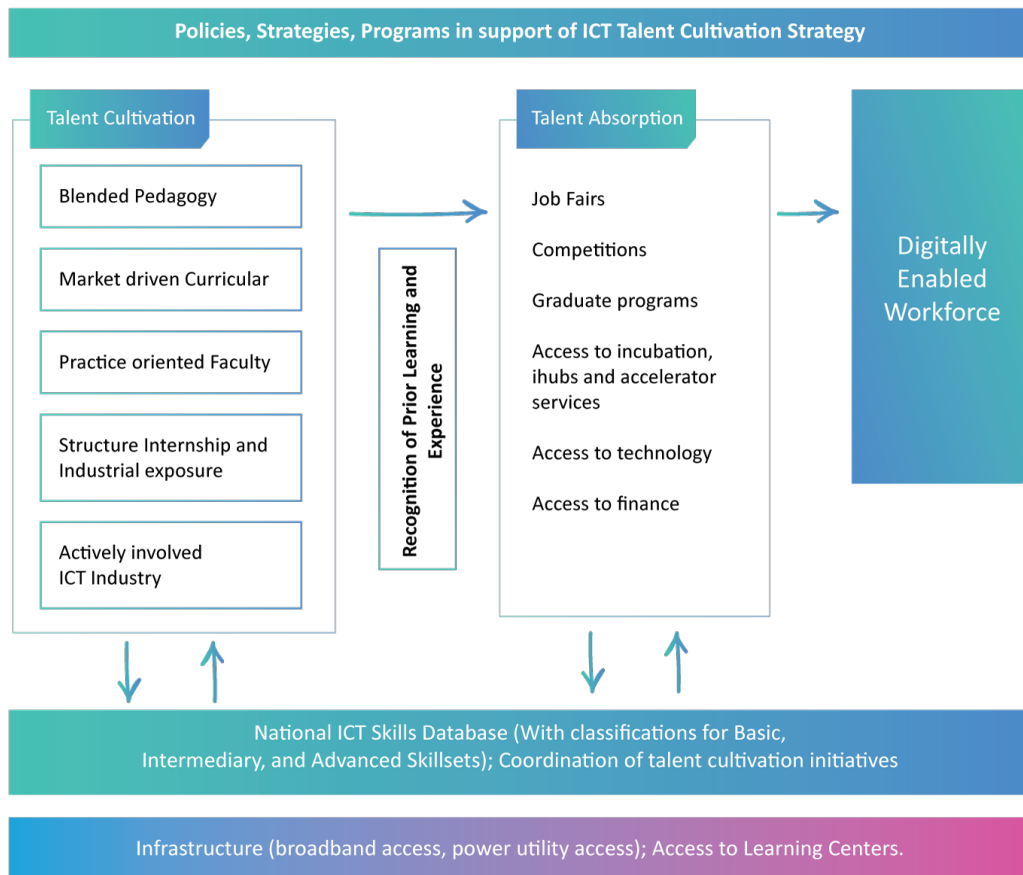
Based on the Situation analysis, benchmarking, and gap analysis, The Figure below presents a picture of how an effective ICT talent cultivation would look like.

a. Policies, strategies and programmes: Updated, integrated, and aligned set of policies, strategies and programmes that are implemented.

b. Infrastructure: Enhancement of relevant infrastructure in educational institutions and individuals' homes.

c. Blended and ICT supported pedagogy: A move from the traditional face-to-face teaching to blended (face-to-face) and online, to facilitate enhancement of the number of ICT students admitted and graduated to meet the increasing demand for ICT skills without significantly expanding the infrastructure and compromising the quality.

d. Market driven curricula: This requires enhanced involvement of the industry players in curriculum through a well-coordinated academician-industry collaboration.

e. Practice oriented Faculty: A move from the traditional academic oriented faculty to a faculty with blended academic/industry experience. This may require faculty to spend some time in industry as well as use of industry professionals as part time faculty.

f. Internship and industrial attachment: Increase in supply of industrial attachments and internships based on incentives and expected tangible benefits, and better matching.

g. Involvement in training and certification by ICT industry: Policy incentives and guidelines to encourage participation of more ICT private players in the training and certification of ICT graduates.

h. Recognition of prior learning and experience: An approach that recognizes prior learning and experience in ICT fields for the purpose of certification

i. Talent Absorption: Involvement of the private sector, development partners and NGOs in enhancing employability and opportunities for self-employment through job fairs, competitions, graduate programs, as well as access to new technologies and finance.

j. National ICT Skills Database: To inform curricula, other trainings, and job placement.

k. Coordination: Coordinate initiatives by government, development partners, private sector and NGOs, to expand the scope and outreach so more Kenyans benefit.

Recommendations

1. Demand for ICT Skills

To improve ICT Talent Cultivation in Kenya and grow the Digital Economy, the following recommendations should be considered:

1. **Develop an ICT Talent Cultivation Strategy**

   The government, under the leadership of the Ministry of Education supported by the Ministry of ICT and other relevant stakeholders should develop an ICT Talent Cultivation Strategy by updating the existing National ICT strategy for Education and Training, 2006, and to operationalize the Digital Economy Strategy Skills and Values Pillar.

2. **Establish a National ICT Skills Database**

   The government, under the leadership of the Ministry of Labor and Kenya National Bureau of Statistics and in collaboration with the Ministry of ICT and other relevant stakeholders should develop, within the National Labor Market Information System, a National ICT Skills Database, which should be updated yearly due to the rapidly evolving ICT technologies. It should be based on a clear assessment of the kinds of skills needed for different types of workers in different sectors that can then inform training programs for such workers and calculations of future demand.

3. **Improve Academia-Industry collaboration and support for upscaling private sector initiatives and certification programs**

   There is a need to develop coordination structures to strengthen academia-industry collaboration including training and internships for faculty, and mechanisms to review, support, and scale-up success stories of such collaborations as well as other private sector programs including private sector certification initiatives. The government, under the leadership of the Ministry of Education and in collaboration with Ministry of ICT, could help facilitate such structures.

4. **Revisiting the process of ICT curricula review**

   The government, under the leadership of the Commission for University Education, KNQA, CDAC and TVETA and in collaboration with the Ministry of Education and the Ministry of ICT should come up with modalities of fast tracking the review of ICT curricula.

5. **Implement Policy Incentives for Private Sector Participation in ICT Talent Cultivation**

   The government, under the leadership of Treasury, and in collaboration with the Ministry of Education and relevant stakeholders should implement the various incentives in Education for Sustainable Development Policy for Education Sector (2017) and the National ICT Policy (2019), to encourage ICT companies to participate in ICT training, industrial attachments, internship, and certification programs.

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