Issue at-hand

Africa is experiencing an unprecedented pace of economic and social transformation due in great part to the development and penetration of Information and Communication Technologies (ICTs) in all spheres of life. Over the last two decades, the digital economy has transformed many key sectors including agriculture, business, financial services (eBanking), government, health, climate change adaptation, education etc. In a few countries such as South Africa and Kenya, the ICT sector has been outperforming all the other sectors of the economy by a wide margin. In Kenya, for instance, it has been growing at an average of 20% during the last ten years (Mtebe, 2016). In Africa, and in the last five years, the sector has grown on average at 40% (InfoDev, 2014).

The transformative potential of the ICT sector for Africa’s economic growth and social development has however barely been tapped into. For example, and with very few exceptions, its capacity to boost entrepreneurship and innovation for sustained economic growth and poverty reduction has not been fully realized. The World Bank (2012) has highlighted, among other potential advantages, the role of ICTs in enhancing African regional trade and integration as well as the need to build a competitive ICT industry to promote innovation, job creation and the export potential of African companies.

However, this potential is currently being thwarted by Africa’s indecisiveness in seizing the opportunity offered by ICTs and Massive Open Online Courses (MOOCs) to produce a critical
number of computer scientists who will contribute to the upliftment of its people. The current participation of Africans in computer science MOOCs in the world stands at a mere 2% as most participants come from North America and Europe.

**Policy Recommendation: Boosting access to computer science education through blending face-to-face postgraduate courses delivery with MOOCs in Sub-Saharan African Universities**

In a paper presented at the 20163rd International Conference of the AVU entitled “Blending face-to-face postgraduate courses delivery with MOOCs in a sub-Saharan African University: Students’ experience and perceptions, Joel Mtebe points out that “... in order for ICT sector to bring about the expected economic and social impact, there is need to strengthen computer science education in Africa. Students need to be equipped with skills that will enable them to develop innovative solutions that will solve various social problems facing Africans. At the moment, the ICT sector is not contributing as much as it was expected in improving African economy due to poor computer science education offered in many African institutions.”

The urgency to tackle this important issue has been felt by African leaders at the national, sub-regional and regional levels. Mtebe (2016) lists a number of initiatives geared towards increasing the number of graduates with computer science skills. For example, individual African universities, such as the University of Dar es Salam (Tanzania), the Kigali Institute of Technology (Rwanda), the University of Cape Coast (Ghana) and the Addis Ababa University (Ethiopia) have all benefitted from a partnership program on computer science with a foreign university (Royal Melbourne Institute of Technology) funded by the World Bank and implemented by the AVU. The latter has also recently launched another initiative funded by the African Development Bank (AfDB) to enhance computer science education in 18 African universities.

According to Mtebe, all these initiatives are laudable but not enough and sustainable over time due to inherent flaws in their conception and their high costs. Instead, he advocates for the use of MOOCs as they are free (at no cost to the user) and are offered by reputable institutions. He argues that the best approach to providing affordable and effective computer science education is to blend traditional face-to-face courses with MOOCs.

In a study he carried out using his proposed approach at the University of Dar es Salam, the following key findings on the perception of students were reported in his paper:

- Videos used in the specific MOOCs (Coursera platform) for teaching Human Computer Interaction (HCI) and Research Methodology were found to be useful (71.5% of participants) in helping students understand the concepts discussed in the
classroom (face-to-face). This finding corroborates similar findings in other African contexts.

- Language used in the MOOCs (American English) was not found to be a barrier for understanding the course material (90% of the students). This is contrary to other studies that have found language to be one of the barriers to the use of MOOCs in Africa.
- Low Internet bandwidth was listed as a key barrier to MOOCs as they are delivered in video format.

A similar study in Rwanda that sought to improve completion of a program geared towards upgrading the knowledge and skills of the employees of the Ministry of Health was conclusive as 52.6% of the participants managed to finish the course successfully.

**Recommendations**

Mtebe acknowledges that blending MOOCs with face-to-face courses requires huge amount of motivation and time commitment from instructors. This commitment can however be engineered through incentives. Therefore, this is a policy decision that the leadership should take as it involves using additional financial resources to incentivize faculty in moving from face-to-face to a blended mode with MOOCs.

More specifically, the following can be recommended:

- African governments should focus on developing 21st skills throughout the education system. A list of those skills (STEM or STEAM related) should be agreed upon and official curriculums/programs should integrate them.
- The most cost-efficient/effective methods of imparting the skills should be sought and as suggested by Mbete the potential for MOOCs should be explored at all levels. This also implies that retraining teachers/lectures/instructors is an imperative in addition to the incentives.

Internet bandwidth infrastructure should be a top priority for Africa as it is currently lacking in many countries and thereby undermining the potential that can accrue to the use of ICTS and MOOCs for economic and social development.

**References**
