

Africa's Inspiring Innovators Show What the Future Could Hold

by

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The potential for economic and technological growth in Africa is clear. Yes, many African countries still face challenges related to infrastructure, security and education, to name but a few. Nevertheless, their young people have forged paths towards sustainability for themselves and their families.

African immigrants boast higher levels of education than the overall US population, according to a January 2018 report by the New American Economy. Forty per cent have at least a bachelor's degree, and of them, about 33% have degrees in Science, Technology, Engineering and Maths (STEM).

By 2025, 97% of worldwide growth will occur in the world's emerging markets, many of which are in Africa. Africans are watching technology develop and evolve in ways never seen before. The continent leads the way in mobile payments, with money transfer service M-Pesa serving 30 million users across ten countries. Africa isn't just driving technology change for Africa, but for the world at large. By 2025, the population of Africa will exceed that of India and of China. Shortly after that, about 40% of the world's working-age population will be in Africa, a continent of 54 countries.

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If not carefully implemented, new technologies can amplify inequalities. An economy driven by changing technology can also result in the exclusion of lower-skilled workers from an evolving labour force, which can contribute to a gender gap. New technologies could concentrate value in the hands of the wealthy, while people who haven't benefited from earlier industrializations risk being left even further behind. We can no longer be silent and allow the continued dominance of established interests that are heavily invested in conventional systems, local patronage networks and the failure of good governance.

In order to break free of these systems and usher in new ones, we have to step up and lead like we have never led before. If it is to successfully enter the Fourth Industrial Revolution, Africa must foster a culture of production. To do that, it needs to innovate. Innovation comes from the reality of constraints. In a culture built on need, innovations will happen, but for them to become part of the culture, they must come from local talent.

We need to make sure that the future of Africa and of African employment is based on a competitive structure, rather than on a defensive, backwards-looking approach that will not be competitive in the long term. The Fourth Industrial Revolution is important for Africa, because the new technologies it creates will make it possible to transition into a circular economy. This will decouple production from the constraints inherent in the gathering of natural resources, ensuring that nothing goes to waste.

If Africa embraces the new technological economy, how do we adopt and use its technologies in ways that improve inclusive growth? The First Industrial Revolution resulted in the reduction of the working day. Today's technologies have the potential to liberate humanity from much toil and repetition, freeing us to do something more productive. Provided this is done in an inclusive way, it could be a huge boon to smaller players, and could herald a new age of entrepreneurship. Africa represents the fastest-growing region for entrepreneurship in the world. Approximately 90,000 of its entrepreneurs have migrated to the US and are making meaningful contributions to its economy through earnings and taxes.

Technology has the power to influence and enhance education corridors, by providing experiences that lead to deep learning. It allows students to learn collaboratively, test out and redesign models, and articulate their knowledge both visually and verbally. In 2015, Youth for Technology Foundation (YTF) launched 3D Africa, a program that teaches youth and women to use 3D printing technologies to launch marketable businesses. The 3D printing industry marks a quantum leap forward into our digital future, and will help Africa reclaim the power of custom-crafting from the pre-industrial age.

YTF identifies pivotal and highly consequential technologies that are relatively easy to learn. It gives young people the skills necessary to build careers, and focuses on digital skills because they are marketable online. The ability to distribute work output virtually is critical, because there is not enough local demand for the skills with which YTF provides its students, though this is likely to change before long.

YTF is working with several universities in Nigeria to establish engineering and prototype spaces where students can create, develop, and share their ideas before taking them to market. We envision a classroom that includes wireless technologies, remotely accessible switches and routers, and collaboration tools, all in the service of creating an “intelligent” environment for the invention of real-world Internet of Things (IoT) products, services, and experiences.

Last summer, YTF partnered with a university in Nigeria and launched HackforGood, an annual hackathon into which 30 young people, 34% of them female, were accepted after a rigorous and competitive call for proposals. Over the course of 72 hours, they modeled and prototyped different products. They were evaluated by a panel of international judges from the best American technology companies, and from the best universities for entrepreneurship in both the US and Europe. HackforGood2018 will be announced shortly.

Emmanuel Odunlade, a 23-year-old electrical engineering graduate, won the ‘best hacker’ award. We observed throughout the hackathon how he worked with his team and helped other students by demonstrating necessary leadership traits such as empathy and consideration. Emmanuel shared some of the other innovations he was working on, including iGas, an IoT-enabled device that allows people to get real-time status updates on the amount of gas left in their cooking cylinders. Emmanuel and his team implemented a machine learning algorithm to help users predict gas levels and detect leakages. The device also features a marketplace app that makes it easy for users to order refills from a nearby dealer.

Rukeme Imoniovu, a 24-year-old mathematics graduate, worked with her team to pivot the direction of their product when she discovered they were missing some of the necessary materials to make a self-powered hybrid generator. Instead, they innovated a wind turbine with solar panels that worked just as well.

YTF’s HackforGood teams created a variety of prototypes, including a robotic arm manipulator, a hybrid solar wind power generator, a green lens crop disease detector and a road traffic alert sensor. The student innovators of the alert sensor went on to win the Open Mic Africa global innovation competition, hosted by the Legatum Center for Development and Entrepreneurship at MIT in partnership with The MasterCard Foundation. Through this process, our young people have learned that it is very challenging to raise the type of patient capital needed for some of these innovations. But they have not been deterred. They continue to develop their skills, with our support. Their goal is to turn themselves into “factories of talent”, instead of filling the cheaply-staffed workbenches of the developed world.

There are many other remarkable inventions coming from Africa. Nigeria's Osh Agabi has developed a neurotechnology device that can detect both explosives and cancer cells. A team of Congolese engineers has created human-like robots to tackle the traffic problem in Kinshasa. Brian Turyabagye, a Ugandan inventor, created a biomedical smart jacket that can diagnose pneumonia four times faster and with more accuracy than a doctor.

These are Africans. These are people. They have all learned that while talent is universal, opportunity is not. In some cases, they have sought ways to provide for their families in the US, not by freeloading, but by working hard and contributing to the economy and to the world as global citizens. They are survivors. They are heroes.

Africa doesn't need aid, it needs effective public policy and business development. Governments, the private sector and civil society must work together to ensure a shared future of collaboration and innovation in a very fractured world, and to fulfill the promise of the Fourth Industrial Revolution. When we lift up others, we lift up ourselves.