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Theme: Digital Transformation of Africa - Hype or Reality?

Preamble

On March 13th 2018 the world celebrated 30years of the world wide web, arguably the greatest invention of this century. It has completely changed the way that we work, play and live and many of us in this room today cannot imagine life without the internet and the web. On March 12th 2019, to celebrate the 30th anniversary of the web, Sir Tim Berners-Lee, the founder of the world wide web, took a historic 30 hour journey starting at the European Centre for Nuclear Research (CERN) in Geneva where he invented the web and ending in Lagos, Nigeria on March 13th where he said, profoundly, that Nigeria (and I take Nigeria as a proxy for Africa) represents both the present and future of the web. The present in the sense of the vibrant tech community that he engaged with and the way the internet is already impacting lives and the future in the millions that are yet to be connected, and the resulting social and economic impact when all our citizens are connected to the internet and the worldwide web.

This impact is in essence what we could term a digital transformation - the use of ICTs to radically improve performance, reach, efficiency, growth of a company, a country or in our case today a continent. What does digital transformation look like? In the 1950's South Korea was one of the poorest countries in the world. Today she is one of the most advanced ICT economies in the world - ubiquitous connectivity is a way of life; access to fast broadband is about 98.8%; digital payments are accepted in almost every retail outlet; South Korea is home to leading electronic and ICT companies (Samsung, LG and Korea

Telecom); there is a full-fledged egovernment procurement system as well as many other government services that can be accessed over the internet. This massive transformation has been largely attributed to three things – an advanced education system, purposeful leveraging of the positive aspects of Korean culture (pali-pali) and consistent and sustained involvement, intervention and commitment of the South Korean government. I make this reference to South Korea to demonstrate that regardless of where Africa is today, and what our realities are, it is possible to achieve digital transformation. But the point that I also want to buttress, because I am speaking to an audience which includes very senior government officials is that digital transformation of a country or continent as with any transformation requires a vision and long term commitment from all stakeholders, most especially government.

The digital transformation of Africa is no longer a luxury or a nice-to-have. It has become a necessity; a necessity spawned in fact by Africa's developmental agenda setters. This is because none of our documented aspirations - the 2030 Agenda for Sustainable Development, Agenda 2063 – the Africa we want, Africa Continental Free Trade Area, Boosting Intra Africa trade, the Single African Air Transport Market can be achieved without significant advancements in information and communication technology. Put another way, these aspirations are attainable only because of the power of ICTs to enable us leapfrog in our journey towards development.

This lecture topic makes the assumption that Africa is already undergoing a digital transformation but questions whether it is a real transformation that will deliver tangible outcomes, like those seen in South Korea or whether it is a transformation that is lacking in real substance and is exaggerated beyond its capacity to deliver real results. A lot of the popular narrative that has been constructed around Africa through the decades is exaggerated. Just look at the 'headliners' on the African continent in the last ten to fifteen years from the popular business periodical, The Economist. From the 'Hopeless Continent' to 'Africa Rising' to the most recent one 'The Scramble for Africa'. None of these sweeping statements tell a complete or accurate story about the continent or even the individual countries that make up the continent. They were narratives promoted at various points based on what the promoters saw, or thought they saw. In essence, they were simplistic and short on nuance.

The narrative and hype that we hear about digital transformation is again being largely fuelled by what people see. And what do they see – they see the

tremendous opportunity and potential that is before us to truly transform this continent through digital technology.

The most compelling observation is the increasing rate of mobile phone ownership across Africa and the incredible computing power that is present in a smartphone or even some of the more advanced feature phones today. About 50% of Africans own a mobile phone; another 15- 20% who do not own a mobile phone have access to one, making the mobile phone access rate about 65-70%. Arising from this is a paradox: more Africans have access to mobile phones than to pretty much anything else that they really need – only 28% of Africans have access to financial services, only 33% have access to power through their home country's national grid and only 31% have access to decent sanitation.

But the real excitement is that innovation around mobile enabled technology is providing many more Africans with things they really need but cannot get in an offline world. TLCom Capital, the venture fund in which I am a partner has now raised a fund specifically focused on discovering and supporting mobile enabled innovation that solves what we call the grand challenges of Africa. There are thousands of companies and entrepreneurs working in this space and I will give a few examples.

Eneza and Gidimobile are companies in the education space that are digitising curricula and complementing classroom learning in a way that places students at the centre of learning thus improving learning outcomes.

Mkopa and Rensource are using off grid solar to power individual homes and markets respectively and using innovative 'pay as you go' mobile enabled payment systems to address affordability and broaden access. Lifebank in Nigeria is using mobile enabled technology to match on-demand blood requests from hospitals with available blood from an inventory of blood banks across the country – reducing the time to deliver blood to a patient and saving lives in the process. Kangpe provides retail medical insurance at between $10 - $18/month (less than a dollar a day), payable in instalments –only possible through the online aggregation of doctors that can respond and treat minor ailments that do not require a clinic or hospital visit. There is a plethora of companies, Branch, Tala, mines, Pezesha, 4G capital offering small loans to individuals and small businesses that do not meet the onerous credit qualification criteria of traditional banks or financial institutions. Riby digitises the activities of age old co-operatives (isusu, ajo, chamas) allowing them to save, invest and lend to each other seamlessly. SMeasy has developed a software as a service subscription

model to provide management and accounting services to small and medium enterprises at an affordable cost. Twiga, an ecommerce and logistics company, streamlines a very fragmented fruit and vegetable delivery value chain in Nairobi to deliver bananas directly from the farm to petty traders on the streets of Nairobi effectively eliminating middle men and reducing the cost of bananas. Andela, in the last five years has trained over 1000 world class African software developers who live and work on the continent but are 'virtually' embedded in the engineering teams of USA and European technology companies.

Farmcrowdy, ThriveAgric, Apollo, WeFarm are all companies in the agricultural space that are using mobile technology to provide finance for farm inputs such as seed and fertiliser, provide information on climate and weather patterns and extension services, all for small scale farmers who are the mainstay of many African economies and who are largely unserved or underserved by traditional offline institutions. And finally, no discourse on digital transformation and the power of mobile on the continent and indeed beyond would be complete without mention of Mpesa…mobile enabled peer to peer payments, an innovation that addresses the unique needs of Africans to conveniently make small payments in informal situations. and is also replicable in the developed world.

These companies are doing what has eluded traditional institutions and successive governments and they are all inspired and enabled by increasing mobile ownership. I think these are the 'greenshoots' or arrowheads of Africa's digital transformation.

There is no better evidence of these green shoots of transformation than the increasing interest of the rest of the world in the innovation in Africa to solve uniquely African challenges. African entrepreneurs are being hosted in world class accelerators in Silicon Valley like Y Combinator to support them to build major tech companies; major international events where tech talent and tech companies are discovered and supported now have African versions Tech Disrupt (started as a Silicon Valley, Berlin and London based event but now has Nairobi and Lagos editions and Demo which again started as a Silicon Valley event but has now been hosted in Lagos, Kigali and Cape Town. The Duke of Edinburgh, Prince Andrew now supports and hosts an event in London creatively called Pitch@Palace to discover and showcase some of the most promising African technology entrepreneurs. There are numerous start-up pitch competitions, hackathons, demo days that are happening at the local level with increasing regularity supporting the tech ecosystem. In an interesting reversal

of roles, last week I participated as a judge in a pitch competition involving Belgian start-ups that had come to Lagos to pitch their Africa focussed companies to an audience of African investors. Venture capitalists and other firms are providing capital to fund the scaling and commercial success of tech companies that are solving uniquely African challenges in innovative and creative ways. In 2018 start-ups in Africa received a total of $334.5 million dollars from local and international VCs. A 71% increase from 2017 and these levels of growth have been witnessed since 2015 and show no evidence of declining.

Yes, it is true that most of the companies that I have mentioned above are yet to reach scale, which is why I have called them green shoots or arrow heads but some of them will in spite of the difficulties they will encounter along the way.

So while it could be argued that this digital transformation is hyped because of the lack of scale, quite a few of these companies are on a growth trajectory that strongly suggests scale, already have operations in more than one African country and so I believe there is enough evidence that Africa can be digitally transformed.

So what holds Africa back from being propelled into a digitally transformed future. A few things come to mind.

Infrastructure. Despite the fact that 600m Africans own or have access to a mobile phone, the digital infrastructure through which they access the internet and the web is not only insufficient, it is slow and expensive. These three factors are a major deterrent to the deployment and adoption of digital/online services. Mobile network operators and other digital infrastructure providers have concentrated the deployment of digital infrastructure in the most commercially viable areas. Access gap studies of many African countries reveal huge swathes of the continent that do not even have a 2G signal despite the presence of substantial economic activity. The implication of poor connectivity in rural areas is that digital opportunities to support and include the large and vulnerable populations that live in the rural areas are sub-optimal. The longer term implication is that Africans that are excluded in the offline world will most likely be excluded in the online world unless something is done to address the infrastructure gap.

The poor integration in our road, rail and air infrastructure is unfortunately also present in our digital infrastructure. We joke about flying to Europe and back as

being the fastest way to make a trip between two African countries. The same is sadly true of our digital infrastructure which is at this time dominated by sub-sea cable. For instance, digital information passed between Cape Town and Cairo must first leave Africa, travel through undersea cable through London and Palermo before landing in Cairo 209msecs later. Terrestrial fibre between these countries will cut that time down to 97msecs. The most ludicrous of this is a signal from Cape Town to Khartoum which must again leave Africa and travel to London, New York, San Jose, Santa Clara, Tokyo via various undersea cables and then land in Khartoum 450msecs later. Again intra African terrestrial fibre will reduce this time to 84msecs. This data is courtesy of Liquid Telecom an Africa focussed digital infrastructure player that has a vision of building or connecting fibre from Cape to Cairo, Cairo to Dakar, Lagos to Addis, Cape to Kinshasha and everywhere in between. A grand vision undoubtably but an achievable one. The interesting thing is that some of this terrestrial fibre is already built but largely unutilised and what is required is collaboration between neighbouring governments to literally link them together and fire the fibre to start transmitting.

But the capital required to do this is not insignificant.

With the liberalisation and privatisation of the telecoms industry in most African countries, government exited the funding of the industry and quite rightly so. Private capital for digital infrastructure has largely been deployed to where the highest returns can be gained. Quite rightly so too. The challenge before us today is to connect all Africans regardless of where they live and how much they earn so they can be included in and benefit from a digital transformation. This requires innovation in finance. The concept of blended finance has been mooted to facilitate the deployment of infrastructure in the rural parts of a country or the continent which may not be commercially viable but where connectivity is still required; a blend of private capital, government grants, low interest funding from development finance institutions (DFIs) and universal service access funds that reduces the cost of finance so that decent financial returns on the infrastructure can still be achieved even with lower access fees.

The second constraining factor is **affordability.** The Alliance for Affordable Internet has proposed an affordability target, now been accepted as a global target for 1GB of data not to cost more than 2% of average monthly income. On average, in Africa, the cost of a 1GB connection is 8.76% of average monthly income, in Latin America and the Caribbean it is 3.58% and in Asia it is 1.54%. Not only are internet users in Africa paying the highest prices for mobile data

relative to average national income, the latest affordability report reveals that this has increased over the past year while it is either dropping or staying the same in other regions. In many African countries the cost of 1GB of data is as high as 10% of average national income. At these prices, connectivity is a luxury not a need despite the fact that the services that are over-layed on this connectivity are needs and not luxuries. There is clearly a lot of work to be done to bring prices down to the level needed to open up access to those online.

There is also a disturbing trend that impacts the affordability of an internet connection. These are taxes that are imposed on either the digital infrastructure or the use of the digital infrastructure. In many parts of the continent there is a constant battle between state and local governments and the mobile network operators around taxes and levies on infrastructure. I should know I was in the middle of many of those battles for four years trying to balance the cash flow needs of state governments with the need to rapidly build out digital infrastructure to facilitate the execution of Nigeria's National Broadband Plan; taxes on telecoms towers and base stations, right-of-way costs for laying terrestrial fibre. In some instances, these taxes contributed up to a third of what it cost to deploy the infrastructure and these costs are invariably passed onto the consumer with the resultant effect of a costly connection.

The other taxes are utilisation taxes - so-called social media or communication taxes, collected ostensibly to fund government projects in security, education and health for instance. There is nothing more seductive or alluring to governments that need cash than the concentration of their citizens on one platform which makes collection very easy. Through pro-active citizen action, Nigeria successfully repelled a communications tax. Uganda imposed a social media tax that ended up raising the cost of an internet connection to about 10% of average national income. The unintended consequence of this has been a reduction in data utilisation and a slowdown in the expansion of networks and economic growth, the exact opposite of what is required for a digital transformation.

Thirdly, **policy and regulation.** I won't dwell too much on policy because I have the policy experts in the room but suffice it to say that a necessary condition for digital transformation is not only an ICT policy or a digital strategy but a national broadband plan that provides the public and private sector with clear guidelines and a roadmap to sector development and also gives operators legal and regulatory certainty and promotes investment.

But beyond having a broadband plan, policy makers, regulators and administrations need to spend the time to understand how tech businesses are built, the subtle differences between tech and traditional business (case in point being the propensity to scale) and based on this develop regulations, rules and guidelines that don't necessarily give a competitive advantage to online companies over their offline counterparts but allow these companies to continue to innovate and scale. For instance, the Central Bank of Nigeria requires that at least two credit bureaus be checked before a loan is disbursed to a prospective borrower. According to EfiNa as at 2018 only 8.3% of the adult population borrowed funds in the twelve months leading up to the survey through a bank or alternative formal channel. By inference the credit bureau list is not robust as not enough borrowers are listed there for the value proposition of a mandatory credit check to add value. In addition credit checks cost money and when what is being borrowed or lent are small amounts ($5 - $100) they add even less value. Digital companies use digital identities, artificial intelligence and data-mining technologies to build profiles of borrowing customers and attach credit scores to the customer. Defaulting or bad borrowers can be blacklisted across lending platforms.

An urban mobility start-up requires up to fifteen state and local government licences to deploy each bike taxi. An unintended value proposition for driver onboarding is the acquisition of these licences on behalf of drivers. But when you think about it, why should you need fifteen licences to deploy a bike taxi in a city? These companies have ambitions to deploy 10,000 bikes in the next few years – that's scale. This means acquiring 150,000 licences and permits every single year – scaling i.e. providing services to great numbers of customers, which is the unique value proposition of a tech company in a mobile first continent is very difficult in these kind of circumstances.

The fourth constraining factor to our digital transformation are the **relevant skills and talent** that are required to support and sustain a digital transformation which Africa doesn't have in sufficient depth and numbers. You may recall that one of the contributory factors to South Korea's digital transformation was an advanced education system. Majority of young Africans, upon whose heads the future of this continent lies, do not have the early exposure and comfort with digital technology. Our education systems are largely misaligned with the needs of employers and the workforce today.

Africa doesn't have enough software developers, network and communication engineers, data analysts, data scientists and even the few that we have are

looking for the next opportunity to board a plane to Canada, Germany or whichever country is the highest bidder for the world class skills that they possess.

The answer to this could be the complete transformation of the education system and a relentless focus on aligning the skills and competencies gained in formal education with the workforce needs. This is good and probably what South Korea did. We should ofcourse do these but let us be mindful that these they are big transformative efforts in and of themselves requiring enormous resource mobilisation and deployment and time to manifest. I would suggest that we do some short term and more immediately impactful things. Software coding schools that close the loop between training and skills acquisition and employment. No more programmes to randomly train people to 'code' but more programmes to first of all find off-takers and then equip young Africans with the relevant tools and competencies to deliver to the offtakers. Nobody ever built a power plant or a refinery without first acquiring off-takers. We should take the same approach to talent and skills development in the digital world.

It would be remiss of me not to mention the digital gender gap. The digital gender gap takes expression in a number of disparities between men and women in the access to and use of ICT resources, but also in the seeming inequality of opportunity between young men and women (or boys and girls) in the development of ICT skills and capabilities.

It is not enough to say that women are less likely to own a phone or be connected to the internet than men, which is by itself a serious problem of gender inclusion that needs addressing. We must also worry about whether young women who have ICT centric dreams and aspirations or even innate capabilities for innovation in these areas are being consciously or unconsciously denied the opportunity to pursue those dreams.

Across the continent, most of the initiatives focussed on driving digital gender inclusion such as Girlcode Academy and WTEC in Nigeria are non-governmental. This often means scope and scale limitations, because of resource limitations. Active support by governments to spur inclusion is still required.

So, how do we close the gap between the hype or the tangible potential for a digital transformation and the reality that confronts us? I have already made

some suggestions in earlier part of this paper but permit to elaborate on them now.

The goal of universal access requires several billions of dollars to be invested in the expansion and improvement of digital infrastructure across Africa. African governments need to make it easier for both private and public capital to be deployed to finance the expansion of internet/digital infrastructure. All African countries must have a coherent, well-articulated and documented broadband plan that provides the public and private sector with clear guidelines and a roadmap to sector development and gives mobile network operators and other infrastructure providers the legal and regulatory certainty that promotes investments. These plans must have clear targets, clear accountabilities as well as clear frameworks for monitoring and reporting progress. In addition, these plans must feed into regional and continent wide digital infrastructure plans that promote fast and high quality connectivity between countries to support our regional and continent-wide aspirations. This requires planning, collaboration and execution across governments.

According to A4AI research, the cost of an internet connection is determined by competition, the geographic attributes of a country and country policy. The A4AI has identified a number of good policy practices for countries to follow to achieve the global affordability target. They include evidence-based regulatory decision making, transparent benchmarks for quality of service, clarity on infrastructure sharing rules, effective use of universal access funds, increased investments in public access solutions and a competitive mobile market. In the 61 low to middle income countries that were included in the 2018 affordability report there was a clear link between policy advocacy of this kind and the cost of an internet connection.

With regards to enabling relevant policy and regulation to support companies that are facilitating the digital transformation Tunisia's Start-Up Act is a good example. This act has 20 measures that are directed towards encouraging entrepreneurship, making it easier to start and end businesses, making it easier to access funds and international markets. For instance, young entrepreneurs in Tunisia can qualify for start up leave from an employer to focus on a new business and earn a stipend while doing this. A start-up portal has been established around which the administrative and regulatory processes for the creation, development and liquidation of start-ups will be settled. While this initiative is not wholly focused on technology start-ups, this is a clear case of a government that has taken the time to try and understand the tech ecosystem

and is now using policy and regulation to accelerate the journey towards digital transformation

Nowhere is more critical to close this gap between our current reality and digital future than in the area of skills and talent required to function in and support and sustain a digital transformation. While the quality of education varies widely across the continent there is some uniformity in the number and quality of STEM skills across board. It is low. There are various kinds of STEM talent – software development, software engineering, communication and electronic engineering, data science etc.

Africa needs to prioritise the funding of institutes of middle and higher learning that focus on the development of STEM skills and ensure that the curriculum for these courses are aligned with the needs of companies in the market. How about addressing the low interest in STEM subjects by incentivising the teaching and learning of STEM subjects above most other subjects or developing technology clusters that are less about the real estate but more about concentrating ICT resources in ways that enable collaboration and harnesses scale economies to drive learning and innovation.

The interesting thing is that Africa is not alone in the shortage of engineering talent to power a digital economy. There is a severe shortage of engineering talent and the global demand for software engineers exceeds supply. It's easy to understand why. In a op ed for the Wall Street journal titled Why Software is eating the world Marc Andressen, founder and partner of one of the most successful VC firms in the world pointed out that the world's largest bookstore (Amazon), video provider (Netflix), recruiter (LinkedIn) and music company (Spotify/Apple/Pandora) were software companies and that old economy stalwarts like Walmart and FedEx used software to drive their business. In 2015 the Chairman of BBVA one of the largest banks in Europe was quoted as saying that 'BBVA will be a software company in the future'

Africa's abundant supply of young trainable citizens could give us a competitive advantage here. China became the manufacturing hub of the world through deliberate government policy and cheap labour, could not Africa be a net supplier of tech talent to the world through deliberate government policy that leverages on the youthful population/youth bulge? Perhaps some back-of-the-envelope arithmetic would help drive home the point. There are 1 billion Africans and the continent's median age is 19.4 years, both of which suggest

there is a larger demographic pool of potential STEM students and eventually, professionals, in Africa than in most other continents.

Andela may have only 1000 developers across the continent supporting tech companies across the world but the success of this company would indicate that the notion of being a net supplier of tech talent to the world is not that far fetched. This is not about brain drain but about the future of work and the future workforce.

Egovernment – There is no better way for governments to support, facilitate and hasten a digital transformation than to deliver services to and engage with citizens online. There are a number of collateral benefits from this – accurate and efficient delivery of government services, reduction in corruption and revenue leakages, increase in inclusion and helping to serve national security interests. In countries like Estonia citizens can access about 1000 government services online. In implementing egovernment services African governments can focus first on the low hanging fruits such as enabling the payments for services online – the payments infrastructure in many African countries already allow this – even if the service is delivered offline. Then moving on to the delivery of more qualitative services – company registration, tax filings that deliver the transparency and efficiency that both governments and her citizens crave. The provision of egovernment services requires all citizens to have a digital identity. National identity projects that include some form of digital identification are now a necessary requirement for a digital transformation. India recently surpassed the 1bn mark meaning that almost every Indian has a national identity and is known to and recognised by the government. African governments must work to deliver digital identities to all her citizens to enable us function in a digital world.

This year's lecture theme was set as a question and I must admit it has been quite difficult to answer the question because it is not a simple yes or no answer. It is actually the most frustrating of answers – it depends. Whether the digital transformation of Africa is hype or reality depends on a number of factors:

- How willing policy makers are to migrate to policies and innovative regulation that favour online business and the reality that we will increasingly live most of our lives online;
- How well governments, development institutions and the private sector collaborate to jointly finance the digital infrastructure required for digital transformation;

- Our ability to translate the bulging youth demographic into a robust and formidable technology workforce that can serve not only Africa but the rest of the world and:

Finally, governments' willingness to transition from a government centric to a citizen centric world where citizens are equipped and supported to pursue their dreams and aspirations in a 21st century where economic power will closely correlate to technological capability.

Thank you.