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Title:

The State of the Entrepreneurial Society in Africa – *Blockchain* and the Potential of Leapfrog Technologies

When driving across the spectacular landscape and diverse wildlife treasures of Pilanesberg National Park, it only seems natural that some of the oldest human skeleton remains have been found not far from here. Maropeng a'frika and the Cradle of Humankind in South Africa were declared a UNESCO World Heritage Site in 1999. Mrs Ples, a 2.3 million years-old fossil skull, was discovered here by South African paleontologists in 1947.

The endeavors of the early humans in places like this laid the foundation for the success of our civilization today. According to Darwin, it was the survival of the fittest that has driven our evolution. It is often misunderstood that the “fittest” that Darwin describes is not the one that boasts the greatest strength or stamina. It is the one that is the best “fit” for its environment. Ever since these early days, the risk-takers were able to find the best environments to thrive in. Back in Mrs Ples' times, it was the ones that climbed down the trees to explore the open plains.

Part I. The State of the World Today

Today, the situation in Africa seems a lot gloomier. The continent is ridden by endemic poverty, corruption, and complex political and ethnic conflicts. According to the acclaimed Corruption Perceptions Index published by Transparency International (TI), five out of the ten most corrupt countries are located in Africa (2015). South Africa, the largest economy on the continent¹ struggles due to its dependence on the mining industry and the dramatic fall in commodity prices in recent months. Nigeria tries to cope with terroristic activities by Boko Haram, the world's deadliest terror group according to the Global Terrorism Index (2015). And most recently, Burundi is facing

¹ Depending on the economic measure you choose, South Africa might have been recently overtaken by Nigeria as the largest economy in Africa. Note that Nigeria has a population more than three times the size of South Africa.

increased destabilization and ethnic tensions between Hutu and Tutsi ghastly reminiscent of the conflicts preceding the Rwandan Genocide in the early 1990s.

This is in stark contrast with the developments in the developed world today, where disruptive technologies are changing everything. A staggering convergence of emerging technologies such as the internet of things (“IoT”), artificial intelligence (“AI”), and 3D Printing puts us right at the center of the fastest pace of development ever seen in human history. Beyond its sole impact on the state of our collective knowledge, technological advancements are also embedded in our greater social reality.²

The culmination of technological progress is having an impact on every nuance of our life. While Klaus Schwab announces the “Fourth Industrial Revolution” in his eponymous book (2016), in some parts of Africa, the second industrial revolution hasn’t even occurred. In a world driven by globalization and interconnectivity, a global village seemingly without barriers, how is this still possible? Does it lack entrepreneurs and clever minds to develop solutions for Africa?

Part II. The African Entrepreneur is Alive

This couldn’t be further from the truth. Two years ago, I was travelling to Africa as a member of the managing committee of the *St Gallen Symposium*, one of the largest student-run conferences worldwide. What I found was a society that boasts gigantic entrepreneurial drive.

One of the people I met was Ludwick Marishane, a graduate from the University of Cape Town. After completing a prestigious internship at Goldman Sachs, a global investment bank, he decided to pursue something more purposeful in life than sitting behind a trading desk. Being born in Limpopo, a poor region in rural South Africa, he understood that water is a luxury. To help those with limited access to water, Ludwick invented DryBath, a “bath without water”. It provides a cheap, clean and convenient alternatives to bathing for rural Africans and helps them raise their hygienic standards and thereby increases their overall health.³

There are plenty of stories similar to Ludwick’s. They show impressively that there are millions of smart minds that are eager to help move the continent out of poverty and forward. Rather than going the easy route, they take ownership of surrounding problems and turn them into opportunities.

Part III. Schumpeter, Drucker, and the Significance of the *Blockchain*

A major opportunity lies in the transfer of technologies and knowledge from developed countries. One of the technologies which hold the greatest potential is the Blockchain, the core technology Bitcoin is based upon. While Bitcoin was initially introduced in 2009 and gained some traction since, developers have recently recognized the potency of the digital currency’s underlying protocol. In its simplest form, it serves as a decentralized ledger that can be reviewed by everyone, thus eliminating the need for a trusted third party to check a transaction’s legitimacy. This is a function that banks and payment company’s have long served. In a fully decentralized financial system, these intermediaries will therefore no longer be needed. This enables a financial infrastructure that is both more transparent and cost-efficient. Above all that, the technology can be applied to a much wider field of use cases. Simply put, everything that needs to be kept track of by more than one party can be done so more efficiently by using the Blockchain. (Swan, 2015)

² One could argue that the situation in the West is far from the technology-driven spirit of optimism depicted in this paragraph. The financial crisis in the US, the debt and refugee crises in Europe, and warnings over a secular stagnation don’t sound like a bright future after all. From a more long-term perspective, however, it is clear that the West experiences a pace of innovation that is unprecedented in speed, breadth, and depth, allowing for increases in living standards that are impossible to measure by GDP growth alone.

³ For more on Ludwick Marishane’s story, visit his Ted talk under <http://bit.ly/1V5IJDd>

The idea of decentralization and simplification has long been heralded by Peter Drucker, a leading business thinker of the 20th century (1985). Being fascinated with authority and control early in his academic work, he argued that decentralized decision making is superior to a centralized command model. This led him to believe that outsourcing non-core functions is a better solution. Today, with ever more abundant technologies at hand, one can spin this thought further. Better than outsourcing a non-value-adding control-process like bookkeeping is to fully decentralize and automate it, thereby simplifying the value chain by cutting out the middle-men.

Africa might even bring an unexpected advantage over developed markets for the introduction of disruptive technologies like Blockchain: Because an infrastructure simply does not exist in many places, a cheaper alternative to bookkeeping systems opens tremendous opportunities for companies, states, and entrepreneurs that develop use cases around it. Joseph Schumpeter helps us understand why that is the case. In his mind, innovation can only be understood as an evolutionary process of continuous “creative destruction” (1942). An innovative technology can drive productivity and growth, create jobs and new industries. At the same time, it replaces and destroys existing systems and infrastructure that has become obsolete. If the created value is greater than the destruction, then innovations have a net positive effect on society as a whole.

That said, a lot of creation happens without the displacement of existing products (Economist, 2009). McKinsey, a global management consultancy, found out that while the internet today accounts for 21% of GDP growth, it has created 2.6 jobs for each job lost to technology-related efficiencies (Manyika et al., 2011). In highly underdeveloped regions, creation may outweigh destruction to an even larger extent, due to the lack of existing infrastructure and high unemployment. Where people don’t have jobs, they can’t lose them. This situation implies a significant latent potential that could be set free by entrepreneurial minds.

For the Blockchain, this conclusion applies to a great extent. With its unique properties, the protocol could provide a trustless ledger that could act as the basis of a cheap and reliable financial infrastructure that is available to everyone.⁴ However, its areas of application go far beyond the financial industry. Even in relatively developed countries like Greece, only 7% of all properties are mapped in a centralized cadaster (Economist, 2015). Other properties are recorded in obscure land registers that are incompatible with each other. This shows us that keeping track of assets can be incredibly hard. Nevertheless, certainty about a property’s legal status and all associated rights are necessary for a functioning property market.

This also applies to fields such as birth certificates, legal marriages, and certificates of freedom from enforcement action. For states, keeping track of all these things requires a large administrative body and is expensive. In emerging markets, current solutions are often incomplete or do not exist at all.

This leaves the field open for a Blockchain-based solution. There is no incumbent system competing with such a novel solution. Similar to the way mobile leapfrogged fixed line communications, Blockchain could leapfrog the way Africa keeps book. Thus, Barclays is right in stating that “Blockchain could be the most significant Innovation to Impact Africa in 100 Years.” (Redman, 2016)

Part IV. The Role of State in the Entrepreneurial Ecosystem

The people, the culture and the technology are there. What, then, is missing? Leapfrog technologies come with its limitations. Only when a functioning infrastructure for an entrepreneurial ecosystem to thrive upon exists (necessary condition) and solutions will be adapted to local needs (sufficient

⁴ Blockchain-based applications in the African fintech space exist already today. Some early enthusiasm has risen around remittances, as they are fundamentally important to family life and current solutions are either too expensive (MoneyGram) or too inaccessible to them (traditional bank accounts). One noteworthy example is BitPesa, a payment platform operating headquartered in Nairobi, Kenya.

condition), only then will they be adopted by the market (result). If these conditions are not met, solutions will never be created.

This implies two things: First, at least some infrastructure is needed to help spread these technologies across geographies. Technologies are often combined with other technologies to create a use case that is actually useful. GPS as a standalone technology would only be useful to a few tech-savvy users. The combination of GPS, touchscreens, and a broad mix of communication standards finally led to the development of the smartphone. The astonishing rise of mobile, “the world’s first universal tech product” (Blair, 2016), might serve as a valuable foundation for the dissemination of Blockchain-based solutions.⁵ Second, and more importantly, the application of advanced technologies need inherently African solutions, and this can only be done by local entrepreneurs. They are the only ones that truly understand the local needs and structures.⁶

The state plays a central role in this ecosystem. It is the only (single) institution with access to sufficient funds and powerful enough tools to make a structural difference on a macroeconomic scale. Investments in education will enable more ventures to succeed by providing access to skilled workers and essential know-how. A reliable infrastructure in energy, telecommunication and transportation provide a solid foundation for businesses to thrive on. Undertakings in rural areas with unstable energy supplies and bad road access will never be able to compete on the cross-regional market.

While entrepreneurs by nature embrace risk and failures in finding a solution, it has been shown that there is a positive relationship between incentives and risks that someone is able to take (Chen et al., 2016, p. 79). To allow entrepreneurs to be able to take greater risk, the perceived marginal payoff has to be even greater. In places like Sub-Saharan Africa, the legal system, capital markets and other institutions are still underdeveloped, leading to the exact opposite situation: greater uncertainty at lower returns. Political leaders thus can make an impact by either breaking down barriers (lower risk) or ensuring additional benefits (greater returns).

Lower risk

While it has been shown that property markets need a comprehensive land registry to function, similarly, ventures require strong ownership rights, predictable legal decisions and low bureaucratic barriers. Start-ups simply do not have the resources to cope with administrative challenges that arise with great legal uncertainty and obscure bureaucratic processes. A transparent and reliable system of law and order is absolutely necessary to enable the African entrepreneur, and the lack of it is one of the continent’s biggest challenges today.

Greater returns

Benefits can either be set up as prolonged tax benefits for young companies or subsidies in strategic key industries. Similar strategies have been central to the astonishing success of the Asian tiger states in the past decades.⁷ A venture-friendly regulatory and tax environment is key to enable entrepreneurs.

Another important factor is sufficient access to capital. Alas, a thriving venture capital industry such as the one around Silicon Valley does not exist in Sub-Saharan Africa. Mariana Mazzucato, an

⁵ M-Pesa, a mobile money platform in Kenya, is a hugely successful example of a mobile-based solution fostering financial inclusion for the unbanked in Africa.

⁶ This is one of the main reasons foreign aid fails so often, as Dambisa Moyo demonstrates in her widely acclaimed book “Dead Aid” (2009).

⁷ To some extent, they have utilized highly controversial protectionist approaches. While an in-depth look at the up- and downsides of different methods would go beyond the scope of this essay, it is worth noting that a mere replication of these strategies will likely not lead to success. An African policy-solution that takes in account local circumstances is indispensable.

economics professor at the University of Sussex, argues that governments play a much more central role in creating innovative clusters than generally accepted (2011). Looking at the way major breakthroughs have occurred, she found that a surprisingly large number of what we consider private sector achievements were fundamentally driven by public actors. Touchscreens, the Global Positioning System (“GPS”), and the protocol that underlies the internet were all developed by state-funded institutions.

While Western governments have often invested in new technologies through military organizations such as the Defense Advanced Research Projects Agency (“DARPA”) in the US, African states could instead create state-led innovation funds. Set up as a long-term approach to provide entrepreneurs with capital, this solution benefits from the fact that the state would retain equity stakes to reap profits. Distributions from successful investments could serve as funds to reinvest in additional projects.

Part V. The Way Forward

We have seen that Africa is just as rich in wildlife and stunning landscapes as it is in entrepreneurial potential, it just hasn’t been realized yet. While structural problems such as legal uncertainty and opaque bureaucracy still exist, the lack of incumbent systems might be a blessing in disguise. If entrepreneurs are able to capture the most recent technological advancements of the developed world, the lack of existing infrastructure allows for a faster adoption of cutting edge technologies such as Blockchain in a wide array of use cases. Similar to the rapid developments around mobile platforms, Africa could use decentralized ledgers to leapfrog obsolete applications of the Western world and develop some of the world’s most advanced bookkeeping systems, for businesses as well as public institutions.

To allow for this to happen, it needs truly African solutions that can only be created by local entrepreneurs who understand the local culture and structures. The state must not only break down barriers and increase benefits for entrepreneurs, but get actively involved in fostering a thriving entrepreneurial ecosystem. It should invest in promising ventures by creating innovation funds, also allowing for reinvestments of profits in new projects down the road. The entrepreneurs, for one, are eagerly waiting to move the continent forward and let Africa become the greatness that it deserves to be. Africans, once again, might be the ones climbing down the trees to explore the open plains.

Word count: 2862

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