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How technology is set to change the financial sector in East Africa



Two articles caught my eye in the press this past week. The first was about artificial intelligence stocking a possible global financial system crush.

The second concerned Bitcoin topping at a value of $7,000 in November 2017 up from a value $100 in June 2013. Additionally, Coinbase reported that between 35,000 and 50,000 people were signing up as new users of digital currencies per day!

These two events form part of what we have, over the past decade, observed as rapid development of a broad range of technological innovations that are changing the world of finance, Financial Technology (FinTech).

Technology now drives payment systems, saving, borrowing, risk management and financial advisory services. Through the application of advanced algorithms to big data, for example, Artificial Intelligence has been used to derive patterns that predict behaviour and prices; mimicking human judgements to provide automated decisions on trading, credit approvals, regulatory compliance and fraud detection, among others. Distributed ledgers have also emerged as a key technology supporting multiple applications.

One structure of a distributed ledger, Blockchain, has particularly stood out and has offered the potential to use virtual currencies that have transformed payments and securities settlements. Developments in cryptography have facilitated a variety of applications including smart contracts and robust security systems, complimented by biometrics and sensing technologies.

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Finally and something many of us would relate to, mobile access Internet has enabled millions of East Africans to access a wide range of financial services. These have included the convenient digital wallets, mobile banking, crowd-funding and peer to peer transactions. Innovations in mobile financial services are currently at the front line of spurring financial inclusion in a number of low income countries. But this is just the beginning! Take a moment, step into a time machine and fast forward to the next 20 years down the road. We are in the evening of our master plan, Vision 2040 and indeed, it is the year 2040. The East African Central Bank (EACB) Governor is holding a monetary policy tele press conference over a hologram, from his office possibly in Kampala.

The monetary currency issued is the East African Shilling, but the East African Parliament has passed into law the introduction of an East African Virtual Currency, termed 'PesaCoin'.

The debate is about shifting monetary policy implementation from policy rates guided by macroeconomic models forecasting inflation, to virtual pricing units generated by advanced algorithms, with the help of artificial intelligence. The traditional role of banking services has been completely transformed; bank vaults have been rendered meaningless as currency is now stored over computer cloud spaces. These new innovations involving virtual currencies, artificial intelligence and new models of financial intermediation are the order of the day and are having a profound effect on central banking and on consumers' financial way of life. Let us examine the impact of some of these innovations.

First, consider virtual currencies, these differ widely from e-money or money remittance platforms like MTN mobile money, Airtel Money, Mpesa or Western Union; which are backed by already existing fiat currencies. Virtual currencies provide their own unit of account and payment systems, without the need for central clearinghouses. In the year 2040, virtual currencies are posing a threat to physical currencies and central banks have to deal with the reality of the situation. Indeed, the technological challenges that virtual currencies posed over 20 years ago have been addressed. They are highly secure from hackers; their technology is scalable; and they have low volatility, thus less risky.

The reality is that virtual currencies are offering genuine alternatives for countries contemplating monetary unions and they permit regional and international cross-border payments at lower costs. So in many different ways, virtual currencies are giving physical currencies a literal 'run for their money'. For the EACB, the implications are clear - monetary policy will have to respond to the new realities and demands.

What about artificial intelligence? The use of artificial intelligence is now the order of the day in 2040. Machines now have enhanced capabilities to assist in policy making. For example, they are able to offer real time inflation and output projections and are capable of uncovering macro-financial linkages in the micro-economies of East Africa.

The phenomenon of big data is now much clearer and already adopted by most companies. More data is available and more accessible thanks to advanced wireless networks, more social networks and vast storage capacity; and it is more valuable when paired with artificial intelligence.

By now, this data is more granular with details such as economic agents' behavioural trends with regards to consumption, expenditure, investment and saving during different stages of the business cycles. The EACB's main activity is to find ways to leverage this information in its efforts to provide and implement more effective monetary policy and undertake more forward-looking financial sector supervisory actions. It should be pointed out though, that humans are still needed in the EACB because their judgement is an indispensable tool. Someone has to be accountable for bank failures before ministers of finance, the East African parliament, member state presidents or the populace.

Finally, in 2040, models for financial intermediation have expanded beyond the traditional banking services that we are accustomed to. Traditional bank deposits and loans have largely been overtaken by alternative technology driven solutions or services, especially electronic wallets and peer to peer lending platforms, with an edge in big data and artificial intelligence for credit scoring. For the EACB, this means that the scope for financial regulation has broadened beyond the focus on the traditional financial intermediaries, to also oversee other parties in, and providers of technology led financial services, such as telecoms and social media companies. The mechanisms for transmission of monetary policy have also been revised.

Back in 2017, national central banks of EAC member states primarily used commercial banks as transmission mechanisms for monetary policy, by providing liquidity through the banks. However, in 2040, with more models for financial intermediation in play, the EACB has expanded its counter-parties for open market operations, as well as widened its regulatory scope in this perspective. The realm of central banking has grown; regulatory practices have shifted as regulated entities are no longer the 'well-defined entities' we were accustomed to.

Financial regulation has expanded its focus beyond "financial entities" to "financial activities". Employees in the EACB now require expertise in assessment of the soundness and safety of computer algorithms and well equipped to monitor, analyse and promptly act upon massive amounts of real time financial activity data.

Stepping out of our time-machine and back to 2017, this fast-changing environment requires us to take actions in a number of areas now. First, there is need for more co-operation, research and information sharing between regulators, policymakers, academics, investors and financial services firms within and across countries in this new area of FinTech. Second, we need to harness the opportunities that FinTech provides to improve the conventional payments and settlements systems, facilitate greater financial inclusion, financial deepening and increased efficiency as well as increased transparency in the financial system.

Third, there are still a number of risks that need to be overcome. Virtual currencies currently have high operational risks due to the decentralised nature of systems that they operate on with limited or no formal governance structures and are greatly susceptible to cyber risk. The anonymity of participants and un-tracked cross-border transfers could also potentially facilitate illicit activities like terrorism financing, money laundering, evasion of capital controls and taxes.

In terms of financial stability, the increased interconnectedness could give rise to systemic financial risks as a result of high volatility and herding effects. These risks and challenges make the FinTech mountain a little steep to climb, but the opportunities are difficult to resist. The good news is that FinTech itself will offer some of the regulatory and supervisory solutions that we seek to avert the potential challenges implied by the new normal.

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