Blockchain to improve capital flow into Africa increasing supply chain efficiency and transparency

Africa is the world's second largest and second most-populous continent with a population of 1.2 billion, but is also one of the world's most financially distressed regions. By utilizing blockchain technology, businesses in Africa can become more transparent, increase supply chain efficiencies, and obtain funding faster. This will significantly increase capital flow into Africa and lead to greater investments, better infrastructure, and higher economic growth.

Africa's capital market landscape

According to the Financial Times, about 40 percent of Sub-Saharan African countries are now at high risk of debt distress—double the proportion of five years ago. This significantly affects small and medium-sized businesses, which consists of at least 83% of Africa, that are attempting to receive debt financing for business expansion.

Banks and financial institutions tend to overlook businesses in Africa for funding, many of which are legitimate businesses with positive cash flow and operations which can support additional debt. These same businesses, with limited access to finance, hold the key to job creation and increased tax revenue generation. They are also directly linked to the populace that is living in extreme poverty.

However, banks are currently denying business loan applications because there is no easy way to audit these companies to evaluate their financials. Furthermore, businesses in Africa are very behind technologically and many lack the business acumen to succeed on the world stage. For

example, the agriculture industry in Africa, with over 50 million farms, is plagued with supply chain issues and is grossly inefficient.

80% of African farms are less than 2 hectares in size—the size of 4 football fields

Since agriculture makes up about 30% of the entire region's GDP, it makes sense to focus on increasing capital flow into this market first before expanding into other subsequent markets.

Issues with Africa's agricultural supply chain
- Most farms are not registered with the government
- Supply chains are highly inefficient and complex
- Large amounts of crops are lost or stolen during distribution phase
- Africa struggles with rampant food fraud

According to ingeni.io, partnered with Technology Fund Africa, majority of African businesses and individuals are unregistered entities. Ian McNeill, CEO of ingeni, emphasizes that "this makes the process for government tax and fee collection extremely difficult and inefficient".

However, not only is the fee and collection process inefficient, but the entire agricultural supply chain is inefficient too. With over 160 million farmers and 50 million farms, the supply chain is very complex and consists of hundreds of stages, several different (municipalities) locations, a multitude of invoices and payments, and extend over months. By not integrating technology into farming practices, the entire supply chain is opaque and slow.

As a result of a severe lack of transparency, approximately 10-20% of crops are lost or stolen during transit between farms and distribution centres—most are considered inside jobs. With no proper audit trail or traceability of crops, these problems are expected to persist and result in millions of lost revenues per year.

In addition to lost revenues from unsold or stolen crops, food fraud is another problem that plagues the entire nation's agriculture industry. According to PwC, food fraud affects more than 10 percent of all commercially sold food products and costs the global food industry $40 billion every year.

Across Africa, there are many incidences of plastic rice packaged as high-grade rice

Data focused on the African continent is not as readily available, but what exists is alarming. Recent research by the Confederation of Tanzania Industries estimates that over 50% of all goods, including food, drugs and construction materials, imported into Tanzania are fake.

How blockchain can improve supply chain efficiency
- Register farms with the government
- Streamline entire supply chain to improve efficiency
- Reduce lost or stolen crops during distribution phase
- Solve Africa's food fraud epidemic

First step in improving supply chain efficiencies is to register African farms. This will tremendously improve the tax and fee collection process as current government representatives must physically visit farms in order to collect fees and manually calculate outstanding balances for all farms. Blockchain technology enables government to maintain a public and distributed ledger of all registered farms in Africa, automating tax and fee collection and saving time with record-keeping and auditing.

By now you should understand the complexity of Africa's entire agricultural supply chain. With blockchain, tasks like logistics and record keeping, tracking orders and shipment, handing receipts and invoices, linking physical goods with serial numbers, and sharing information with suppliers and vendors, can all be done instantaneously. Streamlining supply chain tasks will free up time for important value-added tasks such as marketing, environmental CSR, and international expansion. ingeni is attempting to achieve this with their key product, ingeni *TraceAbility*™. By streamlining supply chains across Africa, the company aims to reduce fraud,

optimize tax collection, and disseminate farming data and best practices across Africa in the process.

Another example of where blockchain can improve supply chain efficiencies is in maintaining an instant snapshot of the entire supply chain (i.e. creating an audit trail). By combining blockchain technology with tracking technology like GPS, fog computing, and biometric sensors for live crops, farms can maintain 24-hour surveillance on shipment to reduce lost or stolen goods. This will also prevent against food fraud: the misrepresentation or adulteration of a product for economic gain. For example, if a truck driver attempts to substitute low-quality cocoa beans for high-quality cocoa beans during shipment, the farmer will be notified immediately and can take actions to remedy the situation and prevent it from happening in the future.

Partnership: World Bank/IFC and INGENI

In 2017, ingeni partnered with World Bank / International Finance Corporation, BASF, and Credit Dnipro (a major Ukrainian bank) to develop a farmer registration and loans platform that provided additional financing to farmers in emerging markets. The goal of this partnership was to increase financial aid for farmers in Ukraine for inputs such as seeds, pesticides and fertilizers. ingeni is bringing the experience they acquired through the World Bank partnership, to register African farmers and businesses with the blockchain. Africa has shown massive support for blockchain and digital currencies. Its agriculture industry, valued at $300 billion in 2017, is plagued with supply chain inefficiencies and registration issues, and is ripe for disruption.

Market Insights

Africa has maintained a very positive stance towards cryptocurrency, blockchain and distributed ledger technology thus far. According to some crypto experts in Africa, the nation needs blockchain technology and decentralized digital currencies "more than any part of the world".

When it comes to the agriculture industry in Africa, blockchain technology can revolutionize the entire supply chain, increase efficiencies, and legitimize millions of farms and farmers who require bank loans and other forms of financing to continue and expand its operations. Despite the need for industry-wide reform in Africa, "blockchain itself will not solve all of Africa's supply chain issues," says McNeill, "but it's an important step forward".