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TECHNOLOGICAL INNOVATION OF AGRI-FOOD INDUSTRY IN NIGERIA: A BETTER FUTURE

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Introduction

To achieve the UN Sustainable Development Goal of a "world without hunger" by 2030, more productive, efficient, sustainable, inclusive, transparent, and resilient food systems will be needed. [1, 4, 9].This will require an urgent transformation of the current agri-food system. Digital technologies are opening up new avenues for smallholders to participate in a digitally driven agri-food system [10].

The digital agriculture revolution

Value chains will become traceable and coordinated at the most detailed level, allowing different fields, crops, and animals to be managed precisely to their own optimal prescriptions. Digital agriculture will result in highly productive, anticipatory, and adaptable systems to changes such as those caused by climate change. As a result, food security, profitability, and sustainability may improve. In the context of the SDGs, digital agriculture has the potential to provide economic benefits through increased agricultural productivity, cost efficiency, and market opportunities.

Disruptive Technologies in Agriculture

Infield and outfield hardware, software and applications, data chains for decision support, processes and assimilation and learning; and monitoring and evaluation are the main components of AgriTech. However, five key categories emerge from the combination of building blocks. These include:

1. *D*igital agriculture that are powered by information and communication technology and artificial intelligence (AI). Agricultural digital platforms and farming apps are two key examples that are driving e-commerce and the servicing of agriculture.

2. Farm robotics and automation based on mechanical and electronic engineering combined with artificial intelligence. Farm robotics includes drones, which are unmanned aerial vehicles (UAVs) used in agriculture for monitoring and data collection. They are frequently outfitted with sensors that allow for the capture of images to aid in crop monitoring. Their multi-spectral sensors aid precision farming management systems by identifying farm areas that require water or nutrients.

3. Smart warehousing and logistics, for example, using block chain technology, fleet optimization software, and enterprise resource planning (ERP). Radio frequency identification (RFID) and quick response (QR) codes, for example, have been used on agricultural value chains to trace commodities from consumers back to the farm. Block chains are a more recent innovation that are decentralized, distributed, and public digital ledgers that are used to record transactions in blocks across all computers.

Digital Agricultural Technologies in Nigeria and Africa

While digital tools have already proven to be effective in other parts of the world, agricultural technology pioneers in Sub-Saharan Africa face challenges in scaling up due to the fact that the majority of the continent's farmland is managed by smallholder farmers [3, 6, 7, 8].

This is particularly evident in Nigeria where agriculture is the backbone of the economy, while its practice has remained unchanged over millennia. A

country where more than 60% of the working population is employed in agriculture and yet there is still widespread poverty in farming communities calls for a rethink. To feed its growing population, Nigeria must embrace emerging digital technologies.

This is especially evident in Nigeria, where agriculture has been the backbone of the economy for millennia. Digital agricultural technologies provide the opportunity to leapfrog traditional technologies and reimagine how food is produced, processed, and marketed, upending the status quo throughout the Nigerian agricultural value chain. A country where more than 60% of the working population is employed in agriculture and yet there is still widespread poverty in farming communities calls for a rethink. To feed its growing population, Nigeria must embrace emerging digital technologies.

Conclusion

There is still a lot of work to be done in the area of digitalization in agriculture and rural areas. There are some important factors to consider in this work. To begin, a significant barrier to comprehending digital agricultural transformation is a scarcity of systematic, official data on the subject. Much of the data, for example, on e-literacy levels, is only available at the country level, with no distinction between urban and rural areas. Meanwhile, network data focuses solely on coverage and does not provide information on service quality or affordability. There is also a lack of information about government support and regulatory frameworks for digital transformation; thus far, this has been interpreted through proxies such as the availability of government e-services and connectivity and data protection regulations. Another point to consider is that there are significant differences in the adoption of digital agriculture technologies between developed and developing countries.

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