Title: A mobile app that coconnects farmers and buyers in Ghana

**- Problem statement:** Many farmers in Ghana face challenges in accessing markets, getting fair prices, and reducing post-harvest losses. On the other hand, many buyers, such as restaurants, hotels, and supermarkets, struggle to find reliable and quality sources of fresh produce.

- Solution description: AgriTech Connect will allow farmers to list their products, prices, and locations on a digital platform. Buyers can browse the available products, compare prices, and place orders directly with the farmers. AgriTech Connect will also facilitate payments, delivery, and feedback between the parties.

- Originality: AgriTech Connect will be the first of its kind in Ghana to offer a comprehensive and convenient solution for both farmers and buyers. It will leverage the growing use of smartphones and mobile money in the country to create a seamless and secure transaction process.

- Feasibility: AgriTech Connect will be developed using existing technologies and platforms, such as Firebase, Flutter, and Google Maps. AgriTech Connect will generate revenue from commissions on each transaction, as well as from advertising and premium features. AgriTech Connect will partner with local transporters, aggregators, and cooperatives to ensure efficient and timely delivery of the products.

- Scalability: AgriTech Connect will start with a pilot phase in one or two regions in Ghana, where there is a high demand and supply of agricultural products. AgriTech Connect will then expand to other regions and eventually to other countries in West Africa, where similar problems and opportunities exist.

- Employability: AgriTech Conmect will create employment opportunities for various stakeholders in the value chain, such as developers, marketers, transporters, aggregators, quality inspectors, and customer participants. AgritTech Connect will also empower farmers to increase their income and improve their livelihoods.

- Impactfulness: AgriTech Connect will have a positive impact on the social, economic, and environmental aspects of the agricultural sector in Ghana. It will reduce post-harvest losses, improve food security, enhance market efficiency, promote fair trade, support local production, and reduce carbon footprint.

**Introduction**

Agriculture is one of the most important sectors in Ghana, contributing to about 18% of the gross domestic product (GDP) and employing about 45% of the population. However, the sector faces many challenges that hinder its growth and development, such as poor infrastructure, low productivity, limited access to finance, and high post-harvest losses. One of the most critical challenges is the lack of efficient and effective market linkages between farmers and buyers. Many farmers in Ghana rely on traditional and informal channels to sell their produce, information dealers, brokers, and local markets. These channels often result in low prices, delayed payments, information asymmetry, and quality issues. On the other hand, many buyers, such as restaurants, hotels, and supermarkets, struggle to find reliable and quality sources of fresh produce. They often face problems such as high prices, limited variety, inconsistent supply, and adulteration.

To address this challenge, we propose to develop a mobile app called AgriTech Connect that connects farmers and buyers in Ghana. AgriTech Connect will allow farmers to list their products, prices, and locations on a digital platform. Buyers can browse the available products, compare prices, and place orders directly with the farmers. AgriTech Connect will also facilitate payments, delivery, and feedback between the parties. The main objectives of the AgriTech Connect is to:

- Increase the income and profitability of farmers by eliminating middlaccountabilityediaries

- Reduce post-harvest losses by ensuring timely and efficient delivery of produce

- Improve food security by increasing the availability and accessibility of fresh produce

- Enhance market efficiency by reducing transaction costs and information gaps

- Promote fair trade by ensuring transparency and accountability in the value chain

- Support local production by encouraging consumption of locally grown products

- Reduce carbon footprint by minimizing transportation rage emissions

AgriTech Connect will be the first of its kind in Ghana to offer a comprehensive and convenient solution for both sellers and buyers. It will leverage the growing use of smartphones and mobile money in the country to create a seamless and secure transaction process. The app will generate revenue from commissions on each transaction, as well as from advertising and premium features. The app will partner with local transporters, aggregators, and cooperatives to ensure efficient and timely delivery of the products.

**Market Analysis**

The target market for the app is the agricultural sector in Ghana, which consists of about 4.5 million and 30 million consumers. The app will foon high-value crops, such as fruits, vegetables, and spices, which have a high demand and a short shelf life. The app will also target the urban and peri-urban areas, where there is a large and growing population of middle-class consumers who are looking for quality and convenience in their food purchases.

The app will segment its customers into two groups: farmers and buyers. The farmers are the suppliers of the products, regularly holder farmers with limited access to markets and information. The buyers are the consumers of the products, who are mostly restaurants, hotels, supermarkets, and households that need fresh produce on a regular basis. The app will cater to the needs and preferences of both groups by offering them a platform that connects them directly and efficiently.

The app will face competition from various sources, such as existing middlemen, brokers, and local markets, as well as other digital platforms that offer similar services. Some of the potential competitors are:

- Esoko: A mobile-based platform that provides market information, such as prices, weather, and tips, to farmers and traders in Ghana and other African countries.

- AgroCenta: A web-based platform that connects smallholder farmers to buyers and provides them with logistics, financing, and training services.

- Farmart: An online marketplace that allows farmers to sell their produce directly to consumers and businesses in Ghana.

- M-Farm: A mobile app that connects farmers to buyers and provides them with market information, group selling, and collective bargaining services in Kenya.

The app will differentiate itself from its competitors by offering a unique value proposition that is based on:

- Convenience: The app will provide a one-stop solution for both farmers and buyers, allowing them to list, order, pay, and deliver their products with a few clicks on their phones.

- Quality: The app will ensure that the products are fresh, safe, and traceable by using quality standards, ratings, and reviews.

- Affordability: The app will offer competitive prices for both farmers and buyers by eliminating middlemen and intermediaries.

- Variety: The app will offer a wide range of products from different regions and seasons by using a network of transporters, aggregators, and cooperatives.

- Social impact: The app will have a positive impact on the social, economic, and environmental aspects of the agricultural sector by reducing post-harvest losses, improving food security, enhancing market efficiency, promoting fair trade, supporting local production, and reducing carbon footprint.

* **Financial Analysis**

The app will generate revenue from two main sources: commissions and advertisements. The app will charge a commission of 10% on each transaction between the farmers and the buyers. The app will also display relevant and targeted advertisements from various sponsors and partners, such as input suppliers, financial institutions, and government agencies. The app will also offer premium features, such as analytics, insights, and recommendations, for a monthly or annual subscription fee.

The app will incur costs from three main categories: development, operation, and marketing. The development costs include the expenses for designing, building, testing, and launching the app, such as salaries, software licenses, hosting fees, and equipment. The operation costs include the expenses for maintaining and improving the app, such as salaries, software updates, hosting fees, and customer service. The marketing costs include the expenses for promoting and expanding the app, such as advertising, events, incentives, and partnerships.

The break-even point is the point at which the total revenue equals the total cost. To calculate the break-even point, we need to estimate the fixed costs (FC), the variable costs (VC), and the contribution margin (CM). The fixed costs are the costs that do not vary with the volume of transactions, such as salaries, hosting fees, and equipment. The variable costs are the costs that vary with the volume of transactions, such as commissions to transporters and aggregators. The contribution margin is the difference between the revenue per transaction and the variable cost per transaction. The break-even point can be expressed as:

Break-even point = FC / CM

Assuming that the average revenue per transaction is GH¢10.00 (based on a commission of 10% on an average order value of GH¢100.00), and the average variable cost per transaction is 2 GHS (based on a commission of 20% to transporters and aggregators), then the contribution margin is GH¢8.00. Assuming that the fixed costs are GH¢100,000.00 per month (based on an estimated salary of GH¢50,000.00for 10 staff members, a hosting fee of GH¢10,000.00, an equipment cost of GH¢10,000.00, and a marketing budget of GH¢30,000.00), then the break-even point is, Break-even point = 100,000 / 8 = 12,500 transactions per month.

This means that the app needs to facilitate at least 12,500 transactions per month to cover its costs and start making profits.

The projected profit and loss statement is a summary of the expected income and expenses for a given period. It shows how much revenue the app will generate, how much cost it will incur, and how much profit or loss it will make. Here is a possible profit and loss statement for the first year of operation of the app:

|  |
| --- |
| Month Revenue Cost | Profit/Loss |
|  |
| 50,000 150,000 -100,000 |
| 100,000 120,000 -20,000 |
| 150,000 110,000 40,000 |
| 200,000 105,000 95,000 |
| 250,000 100,000 150,000 |
| 300,000 100,000 200,000 |
| 350,000 100,000 250,000 |
| 400,000 100,000 3000 |
| Total 2 ,100 ,000 800 ,000. 1 ,300 ,000 |
|  |

The table shows that the app will start making profits from the third month onwards and will have a total profit of GH¢1,300,000.00 by the end of the first year.

* **Conclusion**

In conclusion, we have presented a mobile app that connects farmers and buyers in Ghana. The app will solve the problem of inefficient and ineffective market linkages in the agricultural sector by offering a platform that allows farmers to list their products, prices, and locations, and buyers to browse the available products, compare prices, and place orders directly to the farmer the app will also facilitate payments, delivery, and feedback between the parties. The app will be original, feasible, scalable, employable, and impactful. The app will generate revenue from commissions, advertisements, and premium features. The app will incur costs from development, operation, and marketing. The app will break even in the third month of operation and make a profit of GH¢1,300,000.00 by the end of the first year.

The app will have a positive impact on the social, economic, and environmental aspects of the agricultural sector in Ghana. It will reduce post-harvest losses, improve food security, enhance market efficiency, promote fair trade, support local production, and reduce carbon footprint. The app will also create employment opportunities for various stakeholders along the value chain.

We believe that this app is a viable and innovative business idea that deserves to be supported and funded by the National Innovation Challenge. We invite you to join us in making this idea a reality and transforming the agricultural sector in Ghana.

Thank you for your attention and consideration.