Android Mobile App Development

App name: **E-Harvester**

Envision phase

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E-HARVEST MOBILE APP

I.VISION

I.1. OBJECTIVE

Agriculture provides a source of income for many African families, particularly in Rwanda. According to statistics published by Rwanda's National Institute of Statistics in 2020, farmers provide 90% of the country's food needs, 88% of Rwandan households are farmers, and agriculture contributes 33% of the country's GDP. According to the World Bank, agriculture contributes 62.3% of Rwanda's total employment [1].

The report published by Food and Agriculture Organization (FAO) in 2021, revealed that Around 14% of food produced is lost between harvest and retail - a loss of $400 billion per year in food value and this arises from limited commercialization caused by poor access to the market [2]. Then looking down on this problem can bring unbearable consequences. This piqued our interest in how we could contribute to this sector, which is important to Rwandan citizens as well as the country's GDP.

As engineers, our objective is to develop an Android mobile application that will help this sector by connecting farmers and agri-cooperatives with customers, where farmers will be able to advertise and post their harvest for that specific harvest and customers will be able to buy from them.

The proposed platform will contribute significantly to the growth of the agriculture sector by allowing farmers and Agri-cooperatives to reach out to a large number of customers to buy their harvest.

I.2. TARGET CUSTOMER

Even though we are developing this mobile application to help the agricultural sector grow, the platform itself must be maintained and deployed at a cost, and we use it as a source of income as well. Taking these facts into account, the following users of the platform are considered to be our primary target and will be paying to use the platform:

1. Farmers
2. Agri-cooperatives

In the future, we plan to collaborate closely with the Ministry of Agriculture. This is also our future goal; if farmers like our solution, we are ready to expand and add some features that the Ministry of Agriculture can use to track farmers' activities.

I.3. KEY BENEFITS

The platform (Mobile app) will be beneficial to farmers, Agri-cooperatives in different ways in supporting them to reach markets.

1. Connecting farmers, and agri-cooperatives with their customers.
2. Farmers' and agri-cooperatives' harvests are becoming perishable, resulting in damage as a result of the fact of storing them for so long while waiting for clients. The platform will reduce this by allowing farmers to reach out to clients easily and ubiquitously.
3. Increasing farmers, and agri-cooperatives harvest and production due to the fact that they will be motivated by a big market.
4. Expanding market of farmers, agri-cooperatives harvests
5. Matching clients' needs with customers' harvest prediction

I.4. PURPOSE

This project (Mobile App) will be aimed to decrease harvest loss in terms of being perished, which is caused by a lack of adequate clients or a narrow market for the harvest produced in the agriculture sector. Fortunately, utilizing our suggested solution will address this problem, as farmers and Agri-cooperatives will be able to sell their products on a large scale market targeting their customers via our ubiquitously available app.

II.   MISSION

II.1. PRODUCT DESCRIPTION

E-Harvest is an agricultural-focused eCommerce mobile app that connects farmers (agriculture practitioners) with buyers. Using this app, customers will be able to browse, search, review, and buy products. And farmers will be able to list their products for sale. This life-changing app will improve your experience with digital commerce thanks to its simple and elegant user interface.

II.2. MINIMUM VIABLE PRODUCT

The minimum viable product for this platform will be in different categories which are below:

Account Registration

1. Registering accounts for users (Farmers & Agri-cooperatives)
2. Registering quality assurance users is done by the admin
3. Customer account registration

Products

1. Add product with quantity by farmers, Agri-cooperatives by sending post requests.
2. Update the product description and quantity and delete the product
3. Quality assurance user approves the request to add product
4. Search for products based on criteria on different criteria (name, supplier)
5. Reviewing the product

Placing order

1. Add, remove, update the product to the cart, and checkout
2. Add mobile-based payment

Products tracking delivery

1. Change product delivery status (pending, on-way, delivered).

II.3. SCOPE

Our project's scope will be based on the following features, which will be delivered after project implementation.

1. User account registration (Farmers & Agri-cooperatives, quality assurance, customer)
2. Add product with quantity by farmers, Agri-cooperatives by sending post requests.
3. Update the product description and quantity and delete the product
4. Quality assurance user approves the request to add product
5. Add, remove, update the product to the cart, and checkout
6. Search for products based on different criteria (name, supplier)
7. Add mobile-based payment

II.4. TARGET USERS

The target market or marketplace always determines the target users. For the time being, our marketplace or target market will be Rwanda, and our target users will be Rwandans who own a smartphone and understand how to use it, specifically people over the age of 16, who may be able to purchase products from farmers.

II.5. COMPETITION

We looked around Rwanda to see if there were many competitors at the time we were thinking about this solution. However, we have discovered that our competitors, for example, Farmzone, E-haho do not use mobile applications as a solution. However, they use web applications to help farmers.

II.6. DIFFERENTIATION

Before deciding to continue working on this project as a solution for farmers, we considered what differentiates us from other companies that aid farmers in reaching out to clients. We recognize that they utilize web apps, but we will reach out to buyers through mobile applications, and farmers will use their smartphones as well. Furthermore, some of them do not sell through the site and they only accept requests. For instance, Framzone.

III. SUCCESS CRITERIA

III.1. MEETING VISION

The criteria for meeting your vision will be backed up with the following factors.

- Adoption of feedback strategy: one of the methods we will utilize to achieve our vision is to leverage user feedback on the app's usability. This information will be gathered through the use of questionnaires. If the provided feedback are negative this will help us to make some changes.
- Weekly goals evaluation: meeting our vision we will be conducting weekly evaluations to see the rate on which our solution if solving the problem.
- Another criterion for accomplishing our vision will be to divide the app development process into small phases. This will also allow us to track the progress of each contributor.
- Finally, planning each task before carrying it out will be another criterion for accomplishing our vision.

III.2. MEASURING SUCCESS

We will measure our success in terms of system (app) usability by farmers, agri-cooperatives, and users (Rwandan citizens), as well as how well it solves problems faced by farmers and agri-cooperative. We will rate this on a scale of 10 and consider it a success if we receive feedback from our clients and users that is between 8 and 10.

We will survey 20 farmers, 5 agri-cooperatives, and 10 users who are buyers of farmers and agri-cooperative harvests and ask them to rate our mobile app on a scale of 10; the average of all rates will be calculated. When the average falls between 8 and 10, we will consider it a success.

IV.   REFERENCES

[1] 75, "Rwanda - Agriculture Sector," *International Trade Administration | Trade.gov*. [Online]. Available: https://www.trade.gov/country-commercial-guides/rwanda-agriculture-sector. [Accessed: 01-Nov-2022].

[2] *We can all help reduce food loss and waste* (no date) *United Nations*. United Nations. Available at: https://www.un.org/en/un-chronicle/we-can-all-help-reduce-food-loss-and-waste (Accessed: November 2, 2022).