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## AGROLINK UG- TACKLING POST HARVEST WASTE THROUGH CONNECTING FARMERS TO BUYERS.docx

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**A project proposal submitted to the Makerere University Business School for the Study Leading to a Project Report in Partial Fulfillment of the Requirements for the Award of the Degree of Bachelor of Business Computing of Makerere University Business School**

November 20th, 2025

## DECLARATION

We, the undersigned, declare that to the best of our knowledge, this proposal is our original piece of work, and has never been published and/or submitted for any award in any other University or Higher Institution of Learning.


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## APPROVAL

This project proposal has been submitted with approval supervisor and my signature is here  
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## SECTION ONE

### 1.0 INTRODUCTION

#### 1.1 Project Background

Post Harvest Waste refers to the agricultural products that have been harvested but get damaged before being sold to buyers. These products usually get spoilt from storage areas, in transit and also in market places which leads to great losses for the farmers. Agriculture being the backbone of most African country's economies like Kenya, Tanzania, Rwanda, Ethiopia among others. In Sub-Saharan Africa, post-harvest rates are estimated to be between 5% and 13% for cereals, 12% to 18% for oil seeds and 13% to 29% for root and tuber crops (FAO, 2011) These countries highly face post-harvest losses causing financial losses, Reduced food availability which has led to shortage of food and high dependency on imported agricultural products which are more expensive compared to the locally produced products. Overall Post harvest waste weakens agricultural systems and this has significantly reduced development in many countries. In Uganda, many farmers are facing the challenge of post-harvest waste due to limited Market access, inadequate storage facilities, poor transportation and weather and environmental factors. This situation has resulted into reduced incomes for farmers as all their hard work fails to generate revenue. Perishable goods such as fruits and vegetables often get spoilt before reaching the market contributing to food insecurity in many communities. Additionally, the limit to market access and poor transportations it impossible for farmers to sell their crops in large quantities and fair prices. This system when developed, will bridge the gap between farmers to buyers.

Developing a website that will connect farmers to buyers has numerous advantages for instance it will help farmers to reduce post-harvest losses by ensuring that their crops spend less time in storage facilities, keeping perishable goods like fruits and vegetables fresh as they reach the market. Farmers will also able to sell their products at a fair price which will increase their income hence improving their standards of living. This will reduce food insecurity since the quantities that reach the market are more hence ensuring food availability. This website will ensure reliable connections between farmers and buyers which will reduce the dependency on middlemen who tend to exploit farmers. This system will encourage the farmers to adopt better agricultural practices such as better storage facilities and proper



handling which enhances the quality of their produce since they will have a reliable market. Farmers in different counties, from small scale producers to large commercial operations, they are increasingly using a mix of traditional and modern methods to connect with buyers. The choice of technology often depends on the farmers location, the type of crop and scale of their business.

Suruti farmers' Cooperative found in Molo subcounty face severe post-harvest losses, limited market access because of various factors. Poor transportation infrastructure like bad roads make it difficult for farmers to transport their produce to markets. Many farmers lack reliable information about market conditions and this forces them to sell their produce at a lower price than their desired prices or even leaving the crops unsold. Dependence on middle men also reduces bargaining power and access to larger markets. These challenges collectively reduce farmers income, increases food waste and this leaves farmers struggling to sustain their livelihoods. Our study is aimed to design a website to connect farmers to buyers which will provide a platform for them to sell their produce efficiently and reduce post-harvest losses.

## 1.2. Statement of the Problem

After harvesting, Farmers should be able to sell their produce to buyers without difficulty. However, there is limited market information which makes it hard for farmers to connect to their buyers directly and sell their produce, inadequate transportation facilities due to the bad feeder roads and expensive transportation costs. Farmers often rely on middlemen who purchase crops at low prices, limiting farmers earnings and reducing income. The farmer's failure to sell off their produce, will lead to post-harvest waste. Additionally, farmers lack timely information on market demand, pricing, and potential buyers, which leads to inefficient sales and wastage of their produce. The proposed website aims to connect farmers directly to buyers here by allowing farmers to post their produce in categories such as Dairy products, crops etc and buyers will be able to access the website and buy directly from them without relying on middlemen who tend to exploit them. This will increase their income thus improving their standards of living.

### 1.3. Project Goal and Objectives

#### 1.3.1 Project Goal

The website aims to directly connect rural farmers with buyers, providing reliable market information, facilitating transactions, and enhancing agricultural trade efficiency.

#### 1.3.2 Project Objectives

To analyze and study how a website can connect farmers to buyers to reduce post-harvest losses.

To design and develop a website that enables rural farmers to list their produce and connects directly with buyers

To conduct thorough testing of the website usability and that all components work together.

### 1.4. Project Scope Summary

This project will focus on developing and testing a website that connects rural farmers directly to buyers. The website will provide features such as product listing, real-time markets updates, buyer-farmers communication, and mobile money integration for secure transactions. It will also generate basic analytics for farmers, allowing them to track demand and sales trends.

The project will be used in a selected rural area, collecting data through user feedback and system testing.

### 1.5. Anticipated significance of the Project

This project aims to develop a responsive website that will help farmers connect directly to buyers thus solving the problem of post-harvest waste.

The anticipated importance of the project will be;

Increase in farmers profits: The website that will be developed will help farmers sell their produce directly to buyers thus eliminating exploitative middlemen who buy their products at a low cost and resell them expensively.

Elimination of post-harvest losses: The development of this website will help to eliminate the losses that come from post-harvest waste since this will be a faster way of selling off their produce before it goes bad.

Full disclosure of Prices. The website will provide farmers with current prices of their products on the market which will enable them set realistic prices of their products thus increasing their profits.

Anticipated level of learning;

The project will help team members learn and understand the current market prices of agricultural products.

The project will help team members understand more about how post-harvest waste comes about.

## 1.6 Project Assumptions

### ✓ Guidance and Supervision

An academic supervisor will be available for consultations and guidance through the process of developing the project

### ✓ Resource availability

Resources that are needed to develop the project will be available during the development period

### ✓ Team work

All members of the team will be available throughout the whole development process to brainstorm ideas and contribute significantly to the project

### ✓ Network availability

There will be access to reliable network that will aid in research during the developing of the project

## SECTION TWO

### LITERATURE REVIEW

#### 2.0. INTRODUCTION

Post harvest refers to losses or reduction of quantity or quality of agricultural products in the process of storage, transit or market before they are able to be sold to the buyers. This has led to great loss of the farmers incomes thus making them resort to exploitative middle men to help them sell their food. Research has shown that the post-harvest losses are up to 37% especially for perishable products like fruits, vegetables in developing countries like Uganda. (FAO, 2019)

##### 2.1 Challenges faced by smallholder framers in Uganda

The small holder farmers in sub-Saharan Africa (Affognon, 2015) often face problems like lack of knowledge about the market prices or available buyers which makes them sell their products at a low cost. Exploitative middlemen buy their products at a cheaper price and sell them expensively after thus reducing farmers profits. Last but not least poor storage facilities for perishable products like tomatoes, vegetables which have a short life span also leads to post harvest losses. Addressing these challenges is critical for improving agricultural productivity and economic development.

##### 2.2 Digital platforms and mobile based solutions to post harvest losses

These platforms will reduce post-harvest losses by providing farmers with real time information about the market prices, available markets for their products. This will also help farmers make better decisions on what to plant and sell in a particular season. These studies will help farmers sell their products faster before they are damaged

(Magesa et al. 2020) these digital platforms will increase farm productivity, provide real-time market information, and improve access to buyers, for example M-Farm has improved market transparency and increased farmers income by connecting them directly to buyers through mobile money technology (M-Farm 2024). Despite these benefits, there are several barriers that make adoption to these websites difficult for instance low digital literacy, limited device ownership, poor network connectivity, and high mobile data costs which make platform usage among rural farmers difficult.

### 2.3 Existing digital market platforms

Many digital platforms have been developed to connect farmers directly with buyers in Uganda and across East Africa. In Uganda, the kudu platform has been used to provide a mobile-based marketplace where farmers will sell their produce with buyers, which will result in generating a higher revenue. Additionally in Uganda YPA allows farmers to register through cooperatives agents and conduct transactions through SMS, making the system accessible to those without smartphones (YPA,2010). Platforms such as Ezy Agric and Bringo fresh provide market linkages, farm management tools, and advisory services while helping reduce post-harvest losses. These examples show that digital platforms can improve market access, but their effectiveness depends on user accessibility and platform design.

### 2.4 Benefits of connecting farmers directly to buyers

Connecting farmers directly to buyers will help reduce the problem of exploitative middlemen thus increasing the profits of the farmers. (Magesa et al, 2020). The direct connection of farmers to buyers will help shorten the period or time products remain in storage, transit this will reduce post-harvest waste. (Magezi et al, 2020) Evidence from the kudu platform indicates that farmers in surplus areas experienced increased revenue and reduce price dispersion ,other platforms such as YPA, allow farmers to access multiple buyers, enhancing bargain power and reducing income losses from middlemen.

## 2.5 Conclusion

In conclusion, the website will improve markets access, increase incomes and reduce dependency on middlemen that exploit farmers through selling their produce at higher prices than they buy them. However, barriers such as low digital literacy, poor connectivity have made it quite hard. Few studies have focused on designing localized farmer- friendly websites that will be make it easy for farmers to utilize(M-Farm,2024). This project wants to address this gap by developing a website that will meet the needs of farmers and connect them directly to buyers.

## SECTION THREE

### 3.0 RESEARCH METHODS

#### 3.1 PROJECT METHODS

This section outlines the research methods, design, data collection techniques, and development process for the website connecting rural farmers directly to buyers. The project will employ a Design Science Research (DSR) approach to develop the system, ensuring it effectively addresses the identified problem of post-harvest waste.

##### 3.2 Research Design / Research Approach

The project will adopt the Design Science Research (DSR) methodology, which focuses on creating and evaluating an innovative artifact (the web) to solve a real-world problem.

The DSR process will include the following steps:

1. Problem identification and Motivation

We shall review literature on existing post-harvest waste, digital marketplaces, and rural farmer challenges.

2. Definition of Objectives

We shall formulate clear objectives based on the identified gaps in current rural market systems.

3. Design and Development

We shall apply iterative, user-centered design principles to create a user-friendly website and gather stakeholder feedback.

4. Demonstration

We shall conduct usability testing with a selected group of farmers and buyers.

5. Evaluation

We shall assess pre-and post-implementation surveys to measure user satisfaction, ease of use, and the website benefits.

6. Communication

We shall document findings in final report and prepare recommendations for other institutions.

### 3.3 Illustration of DSR Process

DSR Stage	Objective Addressed	Method	Expected Output
Problem Identification	Identify gaps in how farmers interact with buyers and challenges with middle men	Literature review, Stakeholder interviews (farmers, buyers, Cooperatives)	Defined problem statement highlighting inefficiencies
Design and development	Develop the website to connect farmers with buyers	Prototyping, iterative testing, Agile Development	Functional platform prototype (web)
Validation	Ensuring the website effectively solves the identified problem.	Prepare test Scenarios, conducting the test and collecting metrics.	A working website that addresses the problem.

### 3.4 Project Organization

The primary clients are rural farmers of Suruti cooperatives and with the users being small holder farmers, individual buyers, wholesalers, retailers . The website will initially target a sample of 15 farmers and buyers in the selected rural area, with potential to expand to the entire District of Tororo. A sample of 15 farmers will be chosen randomly and will prevent biased results. This will also produce results that closely reflect characteristics of the farmers in the entire village.

### 3.5 Sources of data

- Primary Data

We shall conduct interviews with Farmers, buyers and cooperative leaders to find out the problems they are facing.

We shall use focus group discussions where farmers with the same problems will be put together to find possible solutions.



We shall use observe the behavior patterns of the farmers in the cooperatives to identify gaps.

We shall compile a number of questions and supply them to the cooperative leaders to provide us with information on what they are currently going through and this information will help us to come up with solutions.

### 3.6 Requirements Elicitation

#### Interviews

We shall interact directly with the farmers in the cooperative by asking them structured or unstructured questions. This will help us gather and understand the problems they face and how they want the problems to be solved

#### Observation

We shall watch how the framers carry out their daily activities like storage, harvesting, transporting them to the market and how they sell to their customers. This will help us identify the loopholes in their routines.

#### Mind mapping

We shall sit down with the cooperative leaders and members and brainstorm ideas on how to solve the effects of post-harvest waste. this will help us brainstorm the system requirements and how the system will work.

#### Focus group Discussions

We shall sit down with the farmers and cooperative leaders to discuss the challenges the farmers are facing and their needs. This will enable us make informed decisions of the website to be developed

### 3.7 System Analysis and Design approaches

The website will be developed using the structured design Approach. This is because this approach clearly provides a systematic way of breaking down the entire system into smaller

manageable functional units. This approach uses tools like Entity Relation Diagrams (ERD) which shows data structures and relationships, Process flow diagrams (PFD) which shows how processes will flow through the website and data flow diagrams. (DFD) which clearly show how data will move within the system. This approach is suitable for our website because the farmers' cooperative has clear records of their financial statements that is to say the money got out of selling crops, the losses made etc.

### 3.8 Design Techniques

#### 1. User interface design techniques

This will help us design a user-friendly website for the farmers cooperative which can be used by any farmer easily.

- **Prototype**  
We shall design a website prototype and it will be given to the cooperative to test its effectiveness.
- **User manuals**

We shall make manuals that will guide framers on how to go about the website.

#### 2. Data base design techniques

These techniques are essential for structuring data efficiently

- **Entity relationship diagram**

These will be used to show relationships within the websites, entities like crop entity, framers' entity, buyers' entity among others.

- **Data flow diagrams**

These will show how data moves within the system for example communications between the buyers' placing orders from farmers.

### 3.9 Anticipated Project Constraints (Obstacles and Solutions)

- I. The project might be hindered by poor network connections during the course of doing the research. We plan to buy a MiFi router which is more reliable and cheaper than mobile data
- II. The project might be hindered by inability to cater for transport to carry out research in Suruti village. We plan to solicit money from our parents in order to be able to solve this.
- III. We might not be having enough knowledge about coding to design our website. We plan to make research online on coding courses to enable us develop our website.

#### 4.0 Timeline and Milestones

The team developed a detailed timeline and milestones to ensure systematic progress in the development of the website for connecting farmers to buyers. The timeline outlines key deliverables and stages of the project.

Stage	Activities	Duration	Milestones
Identification and Analysis	Interviews, Focus Group discussions, Observation, Mind Mapping	Week 1 – week 2	
Website Design	Wireframes, Prototypes	Week 3 – Week 5	Accurate prototypes approved
Website Development	Frontend and Backend coding and database	Week 6– Week 8	Core Platform functionality complete(Farmers are able to post their products and buyers are able to create accounts and purchase )
Testing	Usability, User experience and Functionality	Week 9– week 11	User Acceptance finalized
Evaluation and Report	Final touches, Supervisor feedback and report writing	Week 12	The website is successfully completed and the final report put together.

#### 4.1 Disclosure and Declaration Statement

We intend to use Grammarly AI to avoid things like repetitions and ensure that our grammar is right.

Our topic of study has no conflict of interest.

#### 4.2 Ethical Considerations

The team intends to use acceptable ways and behaviors in which research is conducted. The team intends to use ethics like;

Consent. The team will first ask for approval from the cooperative farmers before they conduct the interviews with them. This is a form of acknowledgement to conduct the research.

Confidentiality. The team intends to keep the information or sensitive information like financial statements got from the farmers private.

Transparency. The team intends to tell the farmers' cooperative the purpose of the research, and effects of the research.

## 5.0 REFERENCES

Food and Agriculture Organization. (2019). The state of Food and Agriculture 2019: Moving forward on loss and waste reduction. *FAO*

Affognon, H., Mutungi, C., Sanginga, P., & Borgemeister, C. (2015). Unpacking post-harvest losses in Sub-Saharan Africa: A meta-analysis. *World Development*, 66, 49-68.

Minten, B., Reardon, T., & Chen, K. (2018). The quiet revolution in African food supply chains. *Agricultural Economics*, 49(S1), 71-84

Magesa, M., Kisangiri, M., & Ko, J. (2020). Access and use of agricultural market information by smallholder farmers: Measuring informational capabilities. *Electronic Journal of Information Systems in Developing Countries*, 86(6). <https://doi.org/10.1002/isd2.12134>

Ezy Agric Limited. (2025). Ezy Agric app for input quality tracing for Uganda smallholder farmers. CIAT. <http://www.cgiar.org/research/publication/ezyagric-app-input-quality-tracing-uganda-smallholder-farmers/>

Youth Platform Africa. (2025, May 9). President Museveni commands Youth Platform Africa for agribusiness expansion. State House Uganda. <http://statehouse.go.ug/President-museveni-commends-youth-platform-africa-for-remarkable-journey-of-transformation-and-agri-business-expansion/>

M-Farm. (n.d). Home. Retrieved November 19, 2025, <https://www.mfarm.co.ke/>

## 6.0 APPENDICES

### 6.1 Proposed Project budget

Item	Amount
Transport (Field Work)	Sh. 100,000
Communication	Sh. 50,000
Software Licenses	Sh. 100,000
Printing and Stationery	Sh. 50,000
Contingency	Sh. 100,000
Internet Costs	Sh. 100,000
Refreshments	Sh. 50,000
Total	Sh. 550,000