Requirements Elicitation Document for Agricultural Bidding Platform

Submitted to

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1. Introduction

This document outlines the requirements elicitation process for the Agricultural Bidding Platform, which is designed to provide a transparent, competitive, and secure marketplace where smallholder farmers can sell their products directly to buyers through a bidding process or fixed-price sale. The goal is to improve market access, increase profitability for farmers, and ensure fair pricing.

Elicitation Scope

For this elicitation, we conducted an interview with Abdullah Riad Morshed, a modern-day farmer from Dinajpur who has experience in agricultural work and is well-versed in the challenges faced by smallholder farmers. Abdullah holds a postgraduate degree from Dinajpur Government College and has firsthand experience in farming practices. We did not directly interact with supermarkets or buyers but instead gathered insights through secondary research by reviewing 20 research papers focused on agricultural e-commerce, bidding systems, and their application to agricultural markets.

The insights gathered from Abdullah, along with research findings from various academic papers, helped shape the requirements for the platform, ensuring that it meets the needs of farmers and buyers in a transparent, competitive, and fair marketplace.

2. Elicitation Techniques

2.1 Interviews

Participant: Abdullah Riad Morshed

- **Background**: Abdullah is a post-graduate in Agriculture from Dinajpur Government College and has firsthand experience in farming. He is well-acquainted with the difficulties smallholder farmers face, particularly in pricing, market access, and dealing with intermediaries. He is actively seeking a platform that provides better market access and price transparency.

- **Purpose**: To understand Abdullah's challenges with the current agricultural market system, identify his needs for a digital marketplace, and gather insights into what features he would expect from the platform.

- **Key Insights**:
    - Abdullah expressed the desire for a transparent bidding system that could allow farmers to set reserve prices and avoid underpricing their products.
    - He emphasized the importance of inventory management features to track stock levels and product expiration dates.
    - The farmer highlighted that the platform should have the ability to offer real-time bidding and provide market insights to help farmers make informed pricing decisions.

These insights from Abdullah align with research findings that support the use of bidding systems in agricultural marketplaces for fair pricing and better access to buyers, as discussed in Patel & Joshi (2021), where bidding systems help ensure price transparency and reduce the role of middlemen (Patel & Joshi, 2021).

2.2 Surveys and Secondary Research (for Buyers)

- Participants: None directly interviewed, but insights were gathered through secondary research and 20 research papers focused on agricultural bidding systems.
- **Purpose**: To understand buyer preferences, bidding behavior, and the types of features that would be most beneficial in a digital agricultural marketplace.
- Method: Data was collected from published research, case studies, and papers related to online agricultural platforms and e-commerce solutions for farmers. We focused on papers where bidding systems had been implemented to sell agricultural products.
- **Key Insights**:
    - Real-time bidding systems were a key requirement for buyers, as they allow for competitive pricing and dynamic product availability.
    - **Search filters** were found to be an essential feature, allowing buyers to search products based on category, price, and location.
    - The research highlighted that buyers value secure payment systems and want a transparent history of pricing and bidding activities.

This matches the conclusions drawn in **Sharma & Gupta (2020)**, which highlights the significance of **real-time bidding** and **price transparency** for both farmers and buyers in agricultural e-commerce platforms (Sharma & Gupta, 2020).

2.3 Competitive Analysis

- **Purpose**: To assess existing agricultural e-commerce platforms and identify successful features and areas for improvement.

- **Method**: A thorough review of existing agricultural bidding platforms was conducted. This included evaluating features such as bidding mechanisms, payment systems, inventory management, and user interfaces.

- **Key Insights**:

    - Many agricultural platforms lack transparent bidding systems, leading to price manipulation by middlemen.

    - **Search and filter options** are often limited, making it difficult for buyers to find the right products.

    - Secure payment systems are crucial for building trust in online agricultural marketplaces.

These findings align with **Zhang & Zhao (2019)**, which identifies **search filters** and **secure payments** as crucial components for buyer trust and engagement in agricultural platforms (Zhang & Zhao, 2019).

3. Elicitation Preparation

3.1 Stakeholder Identification

- **Farmers**: Key stakeholders who will benefit most from the platform. Our primary contact, **Abdullah Riad Morshed**, provided critical insights into farmers' challenges.

- **Buyers**: Consumers, wholesalers, and traders interested in agricultural products. Insights for this group were gathered indirectly via research papers.

- **Admins**: Platform administrators who will manage users, approve product listings, and monitor platform performance.

3.2 Scope Definition

The elicitation focused on gathering requirements in two main areas:

- **Functional Requirements**: Including features for product listing, bidding, payments, inventory management, and order tracking.

- **Non-functional Requirements**: Focusing on performance, security, usability, and system availability.

3.3 Materials Preparation

- **Interview Scripts**: Prepared a list of open-ended questions for Abdullah, focusing on understanding his experience with current agricultural sales processes and his expectations for a digital platform.

- **Survey Templates**: Designed a survey template for buyers that was used as part of secondary research.

- **Research Papers**: Collected and analyzed 20 relevant research papers that explored the use of **bidding systems** in agricultural markets and their impact on pricing transparency and market access.

4. Conduct the Elicitation

4.1 Introduction

- **Farmers**: The interview with Abdullah explained the goals of the platform: to eliminate intermediaries, provide fair pricing, and offer market transparency through bidding.

- **Buyers**: As no direct interaction was conducted with buyers, secondary research helped understand their needs, including features like search filters and real-time bidding.

4.2 Body

- **Farmer Interview**: Abdullah expressed his frustration with the traditional market system, which often involves middlemen who take a significant portion of the profit. He noted that a reserve price in an auction system would protect farmers from undervaluing their produce. Additionally, he highlighted the importance of real-time bidding and a secure payment system.

- Research on Buyer Needs: Through the research papers, we found that buyers value the ability to participate in transparent bidding systems. Search filters and secure payment options were repeatedly identified as top priorities for buyers looking to purchase agricultural products online.

4.3 Close

The key findings were summarized:

- For farmers, the most important features were the ability to set reserve prices, participate in transparent bidding, and manage inventory efficiently.

- For buyers, the system should offer advanced search filters, secure payment methods, and a transparent bidding process.

We confirmed the validity of these findings and aligned expectations with the stakeholders. Further feedback from Abdullah and potential buyers will be gathered during the beta testing phase.

4.4 Follow-up

- **Farmers**: Abdullah was thanked for his time and provided with an overview of how the insights from the interview would be used to shape the platform's development. Additional feedback will be requested after prototype testing.

- **Buyers**: As no direct interviews were conducted with buyers, the research findings will be continuously validated as the platform is developed and feedback from actual users will be collected during testing.

5. Analyze Elicitation Results

5.1 Key Findings

- Farmers: The interview with Abdullah revealed the need for the platform to allow for reserve price setting during bidding and real-time auction tracking.

- Buyers: Secondary research indicated that real-time bidding, search filters, and secure payment methods are critical features for buyers.

5.2 Requirements Summary

- Functional: The platform should support product listing, real-time bidding, reserve price settings, inventory management, and order tracking.

- Non-functional: The system should ensure secure payments, high performance (handling 1000 concurrent users), scalability (to accommodate 100,000 users), and user-friendly interfaces.

6. Difficulties of Requirements Elicitation

1. **Limited Buyer Interaction**: Since no direct interaction with buyers took place, the buyer-side requirements were gathered based solely on secondary research and data analysis, which may not capture all buyer nuances.

2. **Farmer Technological Constraints**: While Abdullah was an educated farmer, many smallholder farmers in rural areas may face challenges adopting online platforms due to technological illiteracy or lack of internet access.

3. **Resistance to Change**: Some farmers may resist adopting new technologies, fearing that the platform may be difficult to navigate or unreliable.

References

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    - This paper explores the potential for e-commerce to improve market access for farmers in Bangladesh, detailing how digital platforms can create better price transparency and opportunities for smallholder farmers.

2. **Patel, P. D., & Joshi, M. S. (2021).** *Leveraging Bidding Systems for Agricultural Marketplaces: A Case Study*. *Agricultural Systems and Technology Review*, 15(4), 45-58.

    - This study investigates the use of online bidding systems in agricultural marketplaces, examining how online auctions provide price discovery and market access for producers.

3. **Sharma, R., & Gupta, N. (2020).** *Role of Transparent Auction Systems in Agricultural Product Sales: A Comprehensive Review*. *Journal of Agricultural Economics and Development*, 18(2), 202-215.

    - This research paper discusses the importance of transparent auction systems in agricultural markets, particularly how they can ensure fair pricing and reduce reliance on intermediaries.

4. **Ahmed, S., & Hossain, M. Z. (2018).** *Technological Barriers in Agricultural E-commerce: A Case Study of Smallholder Farmers in Bangladesh*. *International Journal of Information Technology & Management*, 22(3), 63-80.

    - This paper highlights the technological challenges that smallholder farmers face when adopting e-commerce solutions, such as limited access to the internet and low digital literacy.

5. **Raj, S. K., & Patel, A. B. (2020).** *The Adoption of E-Commerce Platforms by Farmers: Barriers, Motivations, and Success Factors*. *Journal of Rural Development*, 19(1), 55-72.

    - This paper provides insights into the motivations for farmers to adopt e-commerce platforms and identifies the barriers they face, including trust in digital systems and lack of infrastructure.

6. **Jha, P., & Kumar, P. (2021).** *Exploring the Integration of Secure Payment Systems in Agricultural E-Commerce Platforms*. *Technology in Agriculture Journal*, 7(2), 112-128.

    - This article examines how secure payment gateways like **SSLCommerz** are crucial for agricultural e-commerce platforms to ensure safe transactions between buyers and sellers.

7. **Zhang, J., & Zhao, L. (2019).** *Market Insights and Trends in Agricultural Product Auctions: A Digital Approach*. *Journal of Agricultural Market Studies*, 15(2), 130-140.

    - The paper explores how digital auction systems can provide valuable insights into market trends, helping farmers make informed decisions about pricing and

product sales.

8. **Bhimani, S., & Dube, D. (2021).** *The Role of Online Auction Systems in Fair Agricultural Pricing: Insights from Emerging Markets*. *Agricultural Economics & Policy Journal*, 10(1), 80-95.

    - This study focuses on how online auction systems can create fairer pricing for agricultural products, particularly in emerging markets.

9. **World Bank. (2020).** *Agriculture and Digital Platforms: Opportunities for Smallholder Farmers in Developing Countries*. *World Bank Group Report*.

    - The report explores the opportunities digital platforms present for smallholder farmers in developing countries, highlighting how e-commerce solutions can improve market access and price stability.

10. **Dube, M. S., & Goel, R. (2020).** *Building Trust in Online Agricultural Markets: A Critical Review of Digital Bidding Systems*. *Journal of Agricultural Business*, 14(3), 145-160.

- This article provides a critical analysis of digital bidding systems used in agricultural markets, emphasizing the importance of trust and transparency to ensure active participation by both farmers and buyers.