

BID.IT-BIDDING AND E-AUCTION WEBSITE FOR FARMERS

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ABSTRACT

Due to middlemen who set low prices when buying from farmers and then sell the same at higher prices to consumers, farmers have experienced problems while trying to sell their food crops on the market. It is only accessible to farmers who have a farmer's ID and registered farmer phone number. Farmers can establish their own prices for their products through a web-based programme, which also enables purchasers to participate in an online auction. The farmer determines the initial beginning price by consulting the dashboard's demand page. To verify that the price mentioned reflects the current market value of agricultural items, a machine learning system was used to make the prediction. Buyers, including end users and product distributors, can peruse the available listings, evaluate the goods, and then submit appropriate bids. Farmers are guaranteed to receive the highest price for their goods because to the fair competition that the bidding procedure promotes among buyers. Before participating in an online auction, farmers can choose the opening bid amount depending on the products' quality, lifespan, and current market price. Since the dashboard is updated often, buyers can see the highest bid amount listed there. Once the validity of the bid has expired and the matching buyer and seller have been alerted by SMS, the choices are locked. Customers can put their questions on the interface and receive assistance from agricultural experts using it as a decision support system. It is a user-friendly website that was exclusively created with farmers' fundamental information in mind and to help cultivators make moneys.

Keyword: Farmers, Buyers, Prices, Dashboard, Goods, Market, Bid, Auction, Profits

1. INTRODUCTION

Most food products are currently transported to the market by farmers to be sold on specific days during auctions where intermediate individuals bid for the produce. But this system has given rise to some unfavorable practices. For instance, these intermediates form committees and pre-set a maximum allowable price for all types of agricultural products based on the current market rate and their desired profits, creating an unfair market condition for both farmers and end-users. To rectify this system and offer a more direct and profitable approach, the present paper proposes a web-based online auction of food crops. Here, farmers can list their products before harvesting and set the initial bidding timing as per their needs. As such, farmers get the autonomy to determine cost and buyers can directly bid for the products, eliminating the role of unfair intermediates. This innovative system is expected to provide farmers with the freedom to regulate their prices, cut down intermediaries' involvement, and give buyers a chance to book required food crops in advance, thereby averting situations of scarcity. However, development in this agricultural sector is necessary for this digital era and it's crucial to establish fair prices for food crops in agri-market. With this proposal, farming can once again emerge as a profitable sector, discouraging migration towards cities for alternate employment. This initiative can also help in dealing with unpredictable weather and questionable quality seeds and pesticides affecting the mindset of farmers.

1.1 Objectives

The proposed web based online auction of food crops system aims to streamline the marketing process in the agricultural sector. Specific objectives include:

- Establish a digital platform that allows farmers to list their crops up for auction, setting the price themselves. - Provide transparency for both farmers and buyers by removing intermediaries from the market equation, enhancing fairness and encouraging competitive pricing.
- Employ notifications system to alert customers about upcoming bidding opportunities, enabling them to participate actively.
- Facilitate direct collection of items by the winning bidder from the farmers, thus reducing the need for extra logistics and storage, and ensuring fresher product delivery.
- Mitigate forced low selling price for farmers and high purchasing cost for end-users by promoting a direct, demand-supply interaction.
- Motivate farmers to consider agriculture a profitable field by providing them with direct access to the market and a fair opportunity to price their labor and products.

1.2 Need for study

This study is necessitated by the existing disparities in the agricultural marketplace, where farmers' interests and consumer satisfaction are often compromised due to intermediary interference. It seeks to address these challenges in two key ways:

1. **Advancing Farmers' Interests:** By giving farmers the freedom to determine their crop prices and directly interact with buyers, we aim to encourage fairer trade and profitability. This, in turn, could reposition farming as a viable financial venture, reduce farmers' migration to cities for alternative employment, and ensure they don't have to sell their produce at prices lower than their expectations.
2. **Enhancing Consumer Satisfaction:** The study also targets greater consumer satisfaction. By allowing consumers to directly bid for produce and collect their winning bids from farmers, it ensures access to fresher products at potentially lower costs. Moreover, the provision of advance booking helps consumers, particularly large-scale buyers like hotels and function organizers, secure their required food crops in good time, eliminating last-minute supply shortages.
3. Essentially, this study proposes a digitally oriented restructuring of the agricultural market, serving as a crucial step toward promoting a more sustainable, equitable, and profitable farming sector. Further research is needed to fully understand the operational dynamics, potential challenges, and solutions for such a system.

1.3 Expected Outcomes

The main objective of the proposed web-based online auction for food crops is to establish fair pricing of crops. It aims to empower farmers by allowing them the freedom to set their own prices instead of being influenced by intermediaries. Moreover, it seeks to eliminate the involvement of middlemen in the market, resulting in direct benefit to both farmers and end-users. The foreseen outcomes incorporate measures to ensure secure and controlled transactions in the market. Only farmers with verified IDs and phone numbers will be able to sell their products, thus avoiding fraudulent activities. Moreover, farmers will have the liberty to dictate the start time of the auction for their crops. They will also be granted the flexibility to adjust details such as pricing and dates as per their convenience and market conditions. This study anticipates several impactful outcomes, which aim to revitalize the agricultural sector and ensure beneficial and fair practices for all stakeholders involved. Enhanced by a tech-driven algorithm that refers to the demand page, farmers are given the autonomy to effectively determine the initial start price for their produce. This ensures that their pricing aligns well with market dynamics and can greatly improve the potential profitability of their farming endeavors. The presence of a demand-referential algorithm could result in more transparency in pricing. It's expected that prices reflective of real-time demand will be more fair and competitive, ensuring that farmers get the right value for their produce. As the algorithm helps in gauging actual demand in real-time, it may provoke well-informed decisions, leading to improved market dynamics and less influence from external factors. Optimized prices, informed by actual market demand, could result in more stable, predictable market conditions, leading to greater consumer satisfaction. The introduction and use of machine algorithms to assist in agricultural marketing, coupled with a web-based auction system, indicates the advent of the 'Digital Era in Agriculture'. Secure

transactions will be enabled by limiting sale of goods to only farmers with valid IDs and contact numbers, mitigating the risk of fraud. It paves the way for more technological integration into agriculture, which can ultimately lead to a more efficient and robust sector.

2. PROPOSED WORKING PROCESS

Prices are volatile and alter quickly, having a significant impact on our everyday lives. So it is challenging to forecast the price of agricultural products. Based on the difficulty of predicting product prices, a model of back propagation neural networks was constructed to do so, using features of data mining classification techniques like neural networks, such as self-adaptation, self-study, and high fault tolerance. In the suggested work, a genetically based neural network is used to predict prices using time series data. Four steps make up the suggested work: Normalisation, Network structure development, Training, and Testing.

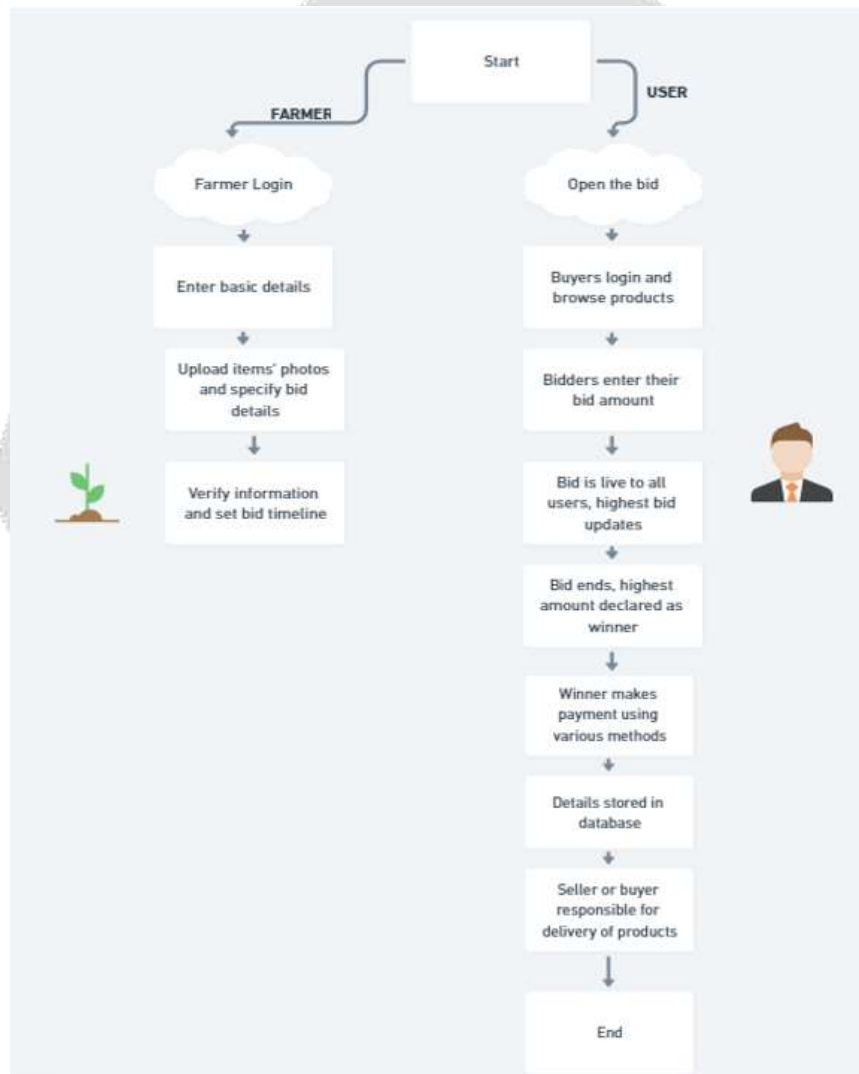


Fig -1 E-Auction and Bidding Process(Software Architecture)

2.1 Software Architecture

1. Farmers must login in order to sell their food crops.

2. After successfully logging in, the farmer should give basic details such as farmer's Name,Address,Phone number.
3. The items' photos, starting of bid price and the initial bid price as the minimum amount .
4. Once all information is verified as correct by farmer they can choose the timeline as how long the bid can be live.
5. Help these choose only dependable sellers or purchasers after the subsequent bidding.
6. Once they have agreed, the buyer or seller is exclusively responsible for the delivery of the products.
7. After successfully logging in, customers can browse the available products and select from the list. In order to bid, they must indicate their bid amount.
8. The bid will be live to all users and the highest bid will keep on updating.
9. Once the bid time gets over,the highest bid amount entered by the last user will be considered and declared as winner.
10. The user who wins the bid should pay the amount as mentioned.
11. The payment can be made by using various methods by using credit or debit cards,BHIM UPI,Phonepe,Gpay etc...
12. Once all process gets completed,the details of all users who wins will be stored in database.
13. stored in database.

2.2 Related Work

The prediction of prices, a more accurate approach could be the use of genetic algorithm-based neural networks. Genetic algorithms (GA) are optimization tools that use the principles of genetics and natural evolution. GA, combined with Neural Networks (NN), can be beneficial due to their ability to handle nonlinear data and evolve over time to enhance their predictive accuracy. In a GA-NN model, the genetic algorithm works to optimize the weights and biases of the neural network. This system introduces randomness in the search for the optimal solution, which can help avoid local minima, a common problem in normal neural network training. They have been found effective in predictions due to their capacity for learning and generalizing the relationship between multiple complex variables, making them suitable for predicting prices in dynamic markets such as agriculture. The factors such as weather, lack of availability, over production, transportation, supply and demand are taken as the feature vector inputs are considered. Using genetic algorithm-based Neural Networks could lead to higher levels of accuracy with reduced error rates and lower time consumption compared to traditional methods. This would facilitate fairer, more predictable pricing for farmers, benefiting all stakeholders in the marketplace.

2.3 Comparative study

The effectiveness of the evolutionary algorithm-based neural network, back propagation, and radial basis function is demonstrated. The comparative outcome demonstrates that the genetic algorithm's predictive accuracy is superior to that of the back propagation and radial basis functions.



Chart -1 Comparative Results of Three Algorithms

2.4 Comparative Results of Three Algorithms

The table demonstrates that the performance of the genetic algorithm-based neural network model is comparable to or superior to that of the other three models. The neural network based on back propagation is then employed after that. RBFN performs less well than a neural network that uses back propagation.

GENETIC ALGORITHM		COMPARISON TABLE		
ALGORITHM	RBFN	BPNN	GANN	
ACCURACY	52%	79%	89%	
ERROR RATE	0.48	0.21	0.11	
TIME TAKEN	0.58	0.33	0.13	

Table -1 Comparison of Accuracy,Time Taken and Error Rate

3.METHODOLOGY

The methodology for this study involves the development and implementation of an e-auction application for agricultural goods. Open source database MYSQL is mostly used to store data in text files on user any device. All relational database features, including insert, remove, and alter on structured data, are supported by MySQL.It was created with the aid of HTML, CSS, Javascript, PHP, and Bootstrap.It makes use of components like API and CI/CD Pipeline. Machine learning algorithms are used to predict prices.It utilizes resources like AWS, Cloudflare, and the MySQL database.

The sellers list their agricultural products for auction. Details include images of the product, quantity, initial bid amount, and other relevant details..A transparent bidding mechanism is followed where all bids are visible to registered users. The highest bid at the end of the auction is considered the winning price. Once bidding ends or direct purchase process is completed, the buyer transfers the agreed amount into the sellers' account through the integrated online payment system.The agreement policies should be followed by both farmers and customers which are mentioned on the website.

4.RESULTS

To sell: Additionally, there are alternatives like "Start Bid" option for users once it is live.If the seller wants to sell the commodities at market value or if the current product market is weak, he can select the price from demand page option. He will then need to enter the date on which he wants to sell the commodities.

To Buy: The items are divided into categories such as Vegetables,Fruits, non-vegan and Farming equipments . So, if a buyer wants to buy or engage in bidding for the first time, he must enter the basic details in the prompt. Buyers will receive SMS notifications during the bidding process or, if a product is confirmed, to the mobile number he provided before submitting the form.

To participate in bidding: The things available on that specific date are listed. The prompt includes the previous bid amount, product photos, and the current market price, among other things.The price of transportation, along with choices like "buy," will be displayed.if customer selects the "Buy Now" button, the following field, he must enter the sum that exceeds the current bid.The prior bidder will be informed via SMS of the new value and offer

price. Depending on the item and day, the bidding will be closed after a while. When the time period is over, the options will be closed, and the current SMS notifications will be sent to the buyer and seller. For different types of crop products, bidding is varied. For example, because they can be easily preserved in a store room, rice and wheat can be bid on for three to four days but vegetables can only be bid on for one day due to their short shelf lives. Decision Support System: Expert guidance on prices, including how to determine the current market price, is available to farmers as well. Machine learning can be used to anticipate pricing because it provides real-time information on the cost of agricultural items.

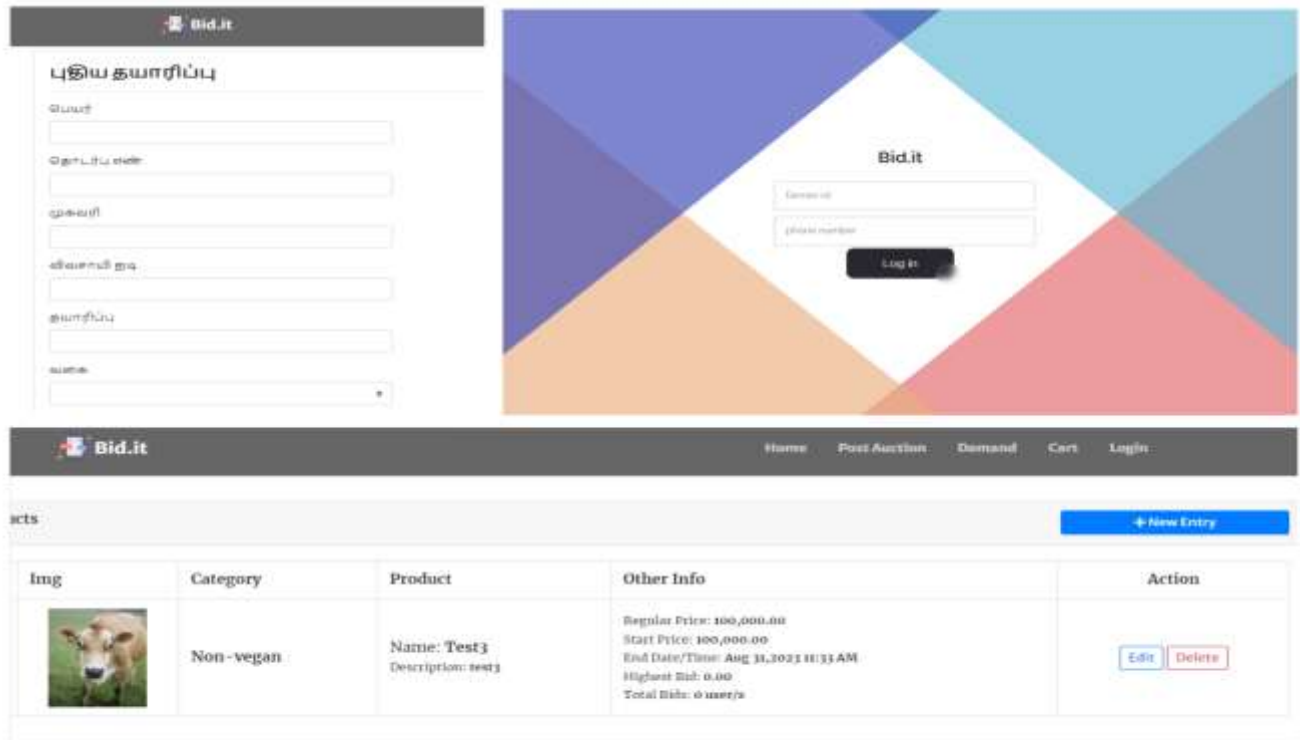


Fig-2 Farmer Page and Customer Page

5.CONCLUSION AND FRAMEWORK

Farmers and end users can both profit from e-applications because there is no need for a middleman. By asking specialists to measure in on the issues, it further facilitates the process of making judgements. The level of transparency of an online auction can be increased by incorporating online advance payment. Online product quality grading can help to better accurately categorise the products. As the time runs out, the customer who made the highest quote is declared the winner. Farmers profit more because there is no middleman involved. In consideration of the fact that farmers are the foundation of our society, we should support them in obtaining a profit that is sustainable for the crops they cultivate

6. REFERENCES

[1]. Dharmateja, M., Kothuri, S., & Venkateshwararao, K. (2018). E-application and dss for farmers to sell food crops through E-auction. International Journal of Engineering and Technology, 4, 101-103.

- [2]. Subhasree, M., & Priya, C. A. (2016). Forecasting vegetable price using time series data. *International Journal of Advanced Research*, 3, 535-641.
- [3]. Vikas, B., & Sebastian, S. (2020). Agriculture Auction. *International Journal of Scientific Research in Computer Science, Engineering and Information Technology (IJSRCSEIT)*, 6.
- [4]. Nalinipriya, G., Sangeetha, R., & Saniya, K. (2019, March). Agro Bidding-A Smart Dynamic System for Enhancement of Farmer's Lifestyle. In *2019 International conference on smart structures and systems (ICSSS)* (pp. 1-4). IEEE.
- [5]. Hossain, I., & Arif, A. S. (2016). Design and prototypical implementation of an online auction system:Farmer's Market'an online market for farmer and trader.
- [6]. Hossain, I., & Arif, A. S. (2016). Design and prototypical implementation of an online auction system:Farmer's Market'an online market for farmer and trader.

