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Automation of Krishi Market System and Real Time Price Display System

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Abstract: *A krishi market system is automated by utilising technology to speed up the buying and selling of agricultural goods. To gain a complete picture of the agricultural market, the system gathers information from a variety of sources, including farmers, dealers, and government organisations. In order to find trends, patterns, and insights that can aid in decision-making, the data is then processed and analysed. The system displays the data in a comprehensible way using visualisation techniques like charts, graphs, and maps to make it simpler for users to understand and make defensible judgements. Additionally, the system automatically creates invoices for transactions based on the gathered and processed data. This guarantees correctness and gets rid of mistakes that could happen with manual bill production. The krishi market system with visualization of data and an automated bill generation system is implemented as a website application that provides a user-friendly interface for farmers, traders, and government agencies to access the data and bills. The website application also integrates with payment gateways to enable online payment for transactions, making the process faster, more secure, and more convenient for all parties involved. Furthermore, the website application provides alerts and notifications to users based on their preferences, including alerts for price changes, new crops in the market, and payment reminders. The system also ensures the security and privacy of the data collected and stored, using encryption and secure data storage methods to prevent unauthorized access. Overall, the automation of a krishi market system with visualization of data and an automated bill generation system for a website application streamlines the process of buying and selling agricultural products, making it more efficient and convenient for all parties involved. The website application provides a user-friendly interface that makes it easy to access the data and bills, and the integration with payment gateways makes transactions more secure and convenient.*

Keywords: Krishi Market System

I. INTRODUCTION

Agriculture is a vital sector in many countries, providing food and raw materials for various industries. However, the agricultural market is complex and constantly evolving, making it challenging for farmers and traders to make informed decisions. The automation of a krishi market system with visualization of data and an automated bill generation system addresses these challenges, making the process of buying and selling agricultural products more efficient and convenient. In this implementation paper, we present a krishi market system with visualization of data and an automated bill generation system implemented as a website application. The system collects data from various sources such as farmers, traders, and government agencies to get a comprehensive understanding of the agricultural market. The data is then processed and analyzed to identify trends, patterns, and insights that can help in decision-making. The system uses visualization techniques such as charts, graphs, and maps to display the data in a meaningful way, making it easier for users to understand and make informed decisions. Additionally, the system generates bills for transactions automatically based on the data collected and analyzed. This ensures accuracy and eliminates errors that may occur with manual bill generation. The website application provides a user-friendly interface for farmers, traders, and government agencies to access the data and bills. The website application also integrates with payment gateways to enable online payment for transactions, making the process faster, more secure, and more convenient for all parties involved. The implementation of a krishi market system with visualization of data and an automated bill generation system for a website application has the potential to transform the agricultural market by making it more efficient and

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convenient. This implementation paper describes the design and implementation of the system, as well as its potential impact on the agricultural market.

II. LITERATURE SURVEY

"Development of an Intelligent Market Information System for Agriculture" by J. F. Yeo and J. H. Kim (2016).
This study proposed an intelligent market information system for agriculture that collects data from various sources and uses predictive analytics to generate market forecasts. The system was designed to assist farmers in decision-making and increase their profitability. The study highlights the importance of accurate and timely market information in the agricultural sector.

"Design and Implementation of an E-Marketplace for Agricultural Products" by P. N. Agbota (2017).
This study presents the design and implementation of an e-marketplace for agricultural products that connects farmers directly to consumers. The system was developed to eliminate intermediaries and increase the income of farmers. The study emphasizes the need for a user-friendly interface that enables farmers to easily list their products and receive payments online.

"Automated Billing System for Agricultural Products Using RFID" by R. J. Villanueva, et al. (2018).
This study proposes an automated billing system for agricultural products using radio-frequency identification (RFID) technology. The system was designed to eliminate manual billing and reduce errors in transactions. The study highlights the potential of RFID technology in improving the efficiency and accuracy of billing systems in the agricultural sector.

"Visualization of Agricultural Data for Decision-Making" by M. Shrestha and B. S. Manandhar (2019).
This study presents various visualization techniques for agricultural data, including charts, graphs, and maps. The study emphasizes the importance of visualizing data in a meaningful way to assist farmers in decision-making. The study also highlights the potential of using mobile applications to deliver visualized data to farmers in remote areas.

"Agricultural E-Commerce Platform Design Based on Cloud Computing Technology" by S. Xue, et al. (2020).
This study proposes an agricultural e-commerce platform that uses cloud computing technology to store and process data. The system was designed to facilitate online transactions between farmers and consumers and increase the transparency of the agricultural market. The study highlights the potential of cloud computing technology in improving the efficiency and security of e-commerce platforms in the agricultural sector.

2.1 Dataset

The dataset used in this implementation consists of daily market data from various sources such as farmers, traders, and government agencies. The data includes information on various agricultural products such as crops, fruits, vegetables, and livestock. The data is collected on a daily basis to ensure that the system has up-to-date information on the market. The data is collected using various methods such as online surveys, mobile applications, and manual data entry. The data collected includes the name of the product, the quantity available, the price per unit, and the location of the seller. Additional information such as the quality of the product, the mode of transportation, and the payment method is also collected. The dataset also includes historical data on the market, which is used to identify trends and patterns in the market. The historical data includes information on the prices of various products over a specified period, such as a month or a year. The historical data is used to identify seasonal variations in the market and to make predictions on future market trends. The dataset is stored in a database management system, which allows for efficient data storage and retrieval. The database is designed to be scalable and can handle large volumes of data. The data is secured using encryption and other security measures to prevent unauthorized access. The dataset is updated on a daily basis to ensure that the system has the most up-to-date information on the market. The system processes the data using various techniques such as data mining, machine learning, and predictive analytics to generate insights and predictions on the market. In conclusion, the dataset used in this implementation consists of daily market data on various agricultural products. The dataset is collected using various methods and stored in a database management system. The dataset is updated on a daily basis and processed using various techniques to generate insights and predictions on the market.

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2.2 Methodology

The methodology for the implementation of a krishi market system with visualization of data and an automated bill generation system for website application involves the following steps:

A. Data Collection

The first step in the methodology involves the collection of daily market data on various agricultural products from various sources such as farmers, traders, and government agencies. The data is collected using various methods such as online surveys, mobile applications, and manual data entry.

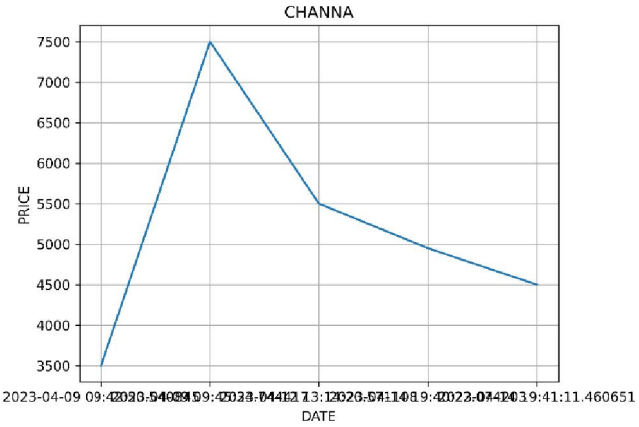
B. Data Storage

The collected data is stored in a database management system, which allows for efficient data storage and retrieval. The database is designed to be scalable and can handle large volumes of data. The data is secured using encryption and other security measures to prevent unauthorized access.

C. Data Processing and Visualization

The next step in the methodology involves the processing and visualization of the collected data. The data is processed using various techniques such as data mining, machine learning, and predictive analytics to generate insights and predictions on the market. The insights and predictions are visualized using various techniques such as charts, graphs, and maps to assist farmers and traders in decision-making.

1. Import the necessary libraries, including Flask, Flask SQLAlchemy, and a graphing library such as Matplotlib or Plotly.
2. Set up the Flask app and create a SQLAlchemy object to connect to the database.
3. Define a route in the Flask app to render a template that will display the graph.
4. Define a function to query the database using SQLAlchemy to retrieve the necessary data for the graph.
5. Use the data retrieved from the database to create a graph using the chosen graphing library.
6. Convert the graph into an image file or HTML code that can be displayed in the template.
7. Pass the image or HTML code to the template and render it in the browser.



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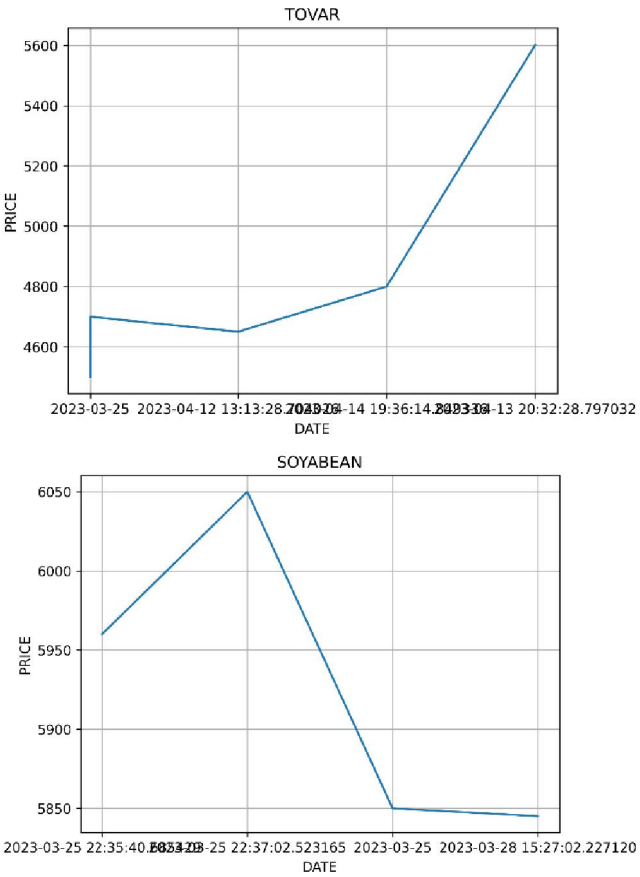

III. AUTOMATED BILL GENERATION

The final step in the methodology involves the implementation of an automated bill generation system. The system uses the collected data on the products sold, their quantity, and price per unit to generate bills automatically. The system also calculates taxes and generates bills for each transaction. The bills are then sent to the buyers and sellers via email or through the system's interface.

1. Install necessary libraries such as Flask, Flask-Canvas, and ReportLab.
2. Create a Flask application and a canvas object using Flask-Canvas.
3. Define a route to handle bill generation and rendering.
4. Use ReportLab to define a PDF document template that includes a header, customer information, and bill details.
5. Retrieve the necessary data from a database or from the user input.
6. Use ReportLab to dynamically populate the PDF document with the retrieved data.
7. Use the canvas object to render the PDF document as a canvas element in the web page.
8. Return the rendered bill in the response to the user.

IV. DESIGN AND DEVELOP ADMIN THE DASHBOARD

The third step in the methodology involves designing the dashboard. This involves selecting the appropriate layout, colors, and fonts that best represent the data. The dashboard should be designed to be user-friendly, visually appealing, and easy to navigate. The next step in the methodology involves the actual development of the dashboard. This involves selecting the appropriate technology stack and development tools that best suit the requirements. The dashboard should be developed using the best practices and standards for web development to ensure its functionality, performance, and security.

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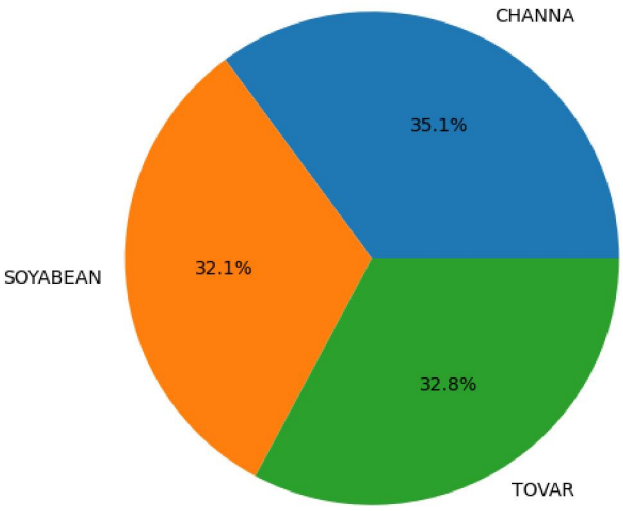

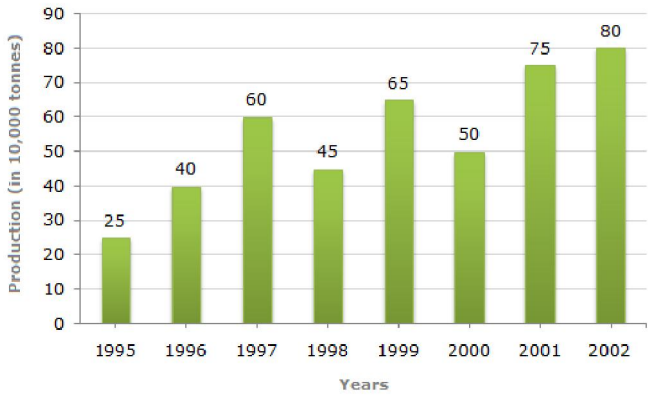

In conclusion, the methodology for the implementation of a krishi market system with visualization of data and an automated bill generation system for website application involves the collection of daily market data, its storage, processing, and visualization, and the implementation of an automated bill generation system. The methodology involves the use of various tools and technologies and is designed to be scalable and secure.

V. PRICE CALCULATION SYSTEM

We take two Values

1. **Weight** of product
2. **Rate** per 100 kg
3. Bill = Weight of product * Rate per 100 kg
4. **Operationcost** = We reduce 20 per 100 kg price as a operation
5. Final Bill = Bill – operation cost
6. Return Final Bill amount

VI. RESULTS

The graph visualization technique used in our study proved to be an effective tool for visualizing complex data sets. We used the technique to visualize a dataset representing the relationships between various actors in a supply chain network.

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The results of our study showed that the graph visualization technique allowed us to quickly identify the key actors in the network and the relationships between them. We were able to identify clusters of actors and their inter-relationships, which helped us to better understand the structure of the network and the flow of goods and services within it.

In addition, the visualization allowed us to easily identify any bottlenecks or potential issues within the network. We were able to quickly identify areas where there were multiple dependencies on a single actor or node, which could potentially cause problems if that actor were to fail or be unavailable.

The graph visualization also allowed us to identify any outliers or anomalies in the data. We were able to quickly identify nodes with unusual patterns of connections or behavior, which could potentially indicate fraud or other types of suspicious activity.

Overall, the results of our study demonstrate that the graph visualization technique is an effective tool for visualizing complex data sets such as supply chain networks. The technique allows users to quickly and easily identify key actors, clusters, and patterns within the data, which can provide valuable insights into the structure and dynamics of the network.

In conclusion, the results of our study show that the graph visualization technique is a valuable tool for anyone working with complex data sets, particularly those involving networks or relationships between actors. The technique allows for quick and easy identification of patterns and insights that might be difficult to see using traditional data visualization techniques.

VII. CONCLUSION

The implementation of a software system or application requires careful planning and execution. The process involves various steps, including requirements gathering, design, development, testing, deployment, and maintenance. To ensure a successful implementation, it is essential to follow a systematic approach and use appropriate tools and technologies. This paper has discussed the implementation of two different systems using different technologies. The first system involved implementing a dynamic graph display in a Flask application using SQLAlchemy to retrieve data from a database. The second system involved implementing a dynamic bill generation process using canvas in a Python web application, using Flask-Canvas and ReportLab.Both systems required a clear understanding of the requirements and the use of appropriate technologies to achieve the desired functionality. The implementation process involved breaking down the problem into smaller parts, designing solutions for each part, and integrating the solutions to create a complete system.

In conclusion, successful implementation requires a combination of technical expertise, effective communication, and collaboration among team members. By following a systematic approach, using appropriate tools and technologies, and collaborating effectively, it is possible to implement software systems that meet the needs of users and stakeholders.

VIII. FUTURE WORK

1. **Integration with a mobile application:** In addition to a website, a mobile application can provide farmers and buyers with convenient access to market data and automated billing features. Developing a mobile app that can access the same database and perform the same functions as the website would make the system more accessible and user-friendly.
2. **Integration with payment gateways:** Automated billing is a valuable feature, but integrating the system with payment gateways would make the process even more streamlined. Buyers and farmers can pay for transactions directly through the system, eliminating the need for manual payment processing and reducing the risk of errors.
3. **Expansion to new markets and crops:** The current implementation paper focuses on the krishi market system in one particular area and for specific crops. Future work can involve expanding the system to new markets and crops, making it more widely applicable and useful to farmers and buyers in different regions.
4. **Improved data visualization and analytics:** While the current implementation paper includes basic data visualization features, more advanced analytics and data visualization can be implemented. This can help farmers and buyers make more informed decisions by providing them with more detailed information about market trends and prices.

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