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Bachelor of Science in Computer Science

Datos-Ani: Farm's Harvest and Economic Performance with Crop Rotation Management for Harvested Crops

Database Management

BSCS – 1A

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April 2024

Abstract

Title: **Datos-Ani: Farm's Harvest and Economic Performance with Crop Rotation Management for Harvested Crops**

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The name "Datos-Ani" pertains to how the database system is used for farms; at the same time, the word itself means gathering data, which is how database systems work. The word "Datos" means data, while the word "Ani" means harvest, or in Filipino, it can also mean retrieve or gather. "Datos-Ani" is a farm management system that encompasses two (2) main purposes: harvest and economic performance; and keeping track of crop rotation. The researchers will use SQL and Java for the backend functionality

of the application. On the one hand, the frontend functionality or user interface of the application will be handled by Java Netbeans.

Farmers always face the repetitive and mundane task of farming. Aside from that, they need to facilitate their harvest, sales, or economic performance of the crops they are planting, keep track of crops that are fertilized or not, and crop rotation. For this reason, the researchers created Datos-Ani to solve these problems, make the lives of our farmers efficient and easy, and hopefully allow agriculture to enter the digital age. In terms of harvest and economic performance, the application will curate or organize the inputted data by the farmers to be concrete and easily understood information for us. This will allow the farmers to easily assess the performance of their harvest and its economic performance. On the one hand, in terms of tracking the crop rotation, it allows farmers to keep track of the crops planted on a specific patch or piece of land and keep track of the harvested crop before it can be planted again on the very soil it was harvested.

The integration and implementation of Datos-Ani will exponentially improve the conditions of our farms and solve the global problem of food security and scarcity. Aside from that, this will allow our farmers to have more time to put into more meaningful endeavors or for their leisure time.

Keywords: Datos-Ani, crop rotation, economic performance, harvest performance, farm management system, database systems, application, backend functionality, frontend functionality, user interface.

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CHAPTER 1

Introduction and It’s Background

Introduction

In the field of agricultural management, efficient data use has enormous potential to revolutionize traditional farming techniques while increasing overall production and sustainability. In this context, our study focuses on the creation and deployment of an intricate database system called "Datos-Ani: Farm’s Harvest and Economic Performance with Crop Rotation Management for Harvested Crops" that aims to enhance farm harvest and economic performance through strategic crop rotation management for harvested crops.

A key component of sustainable agriculture is crop rotation, which is the deliberate switching out of the crops planted in a particular field over a number of seasons or years. Crop rotation has long been known for its capacity to maintain soil health and control pests, but it also has important effects on harvest yields and economic viability when used strategically. Our database system utilizes data-driven insights to clarify the complex relationship between crop rotation techniques, harvest results, and farm economic performance.

The "Datos-Ani" database system is an innovative tool designed to meet the needs of modern farmers, with comprehensive data collection, analysis, and decision-making capabilities. "Datos-Ani" makes it easier to capture and analyze critical data points such as crop rotation schedules, harvest yields, economic measures, and market trends by integrating seamlessly with farm activities. Our database solution enables farmers to

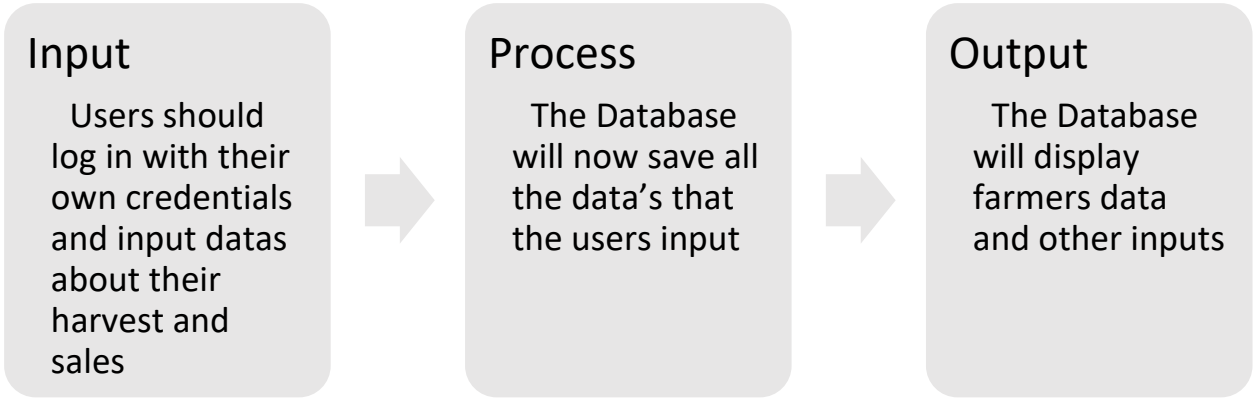
make knowledgeable decisions about crop rotation management, market timing, and resource allocation by centralizing and organizing this abundance of data.

Furthermore, "Datos-Ani" provides a platform for agricultural researchers to collaborate and share knowledge. Our database system aims to use community skills and insights in crop rotation management by encouraging data-sharing efforts and allowing interdisciplinary collaborations. "Datos-Ani" aims to accelerate positive change and promote sustainable agricultural development by collaborating with agricultural stakeholders, research institutes, and technological specialists.

In conclusion, the introduction of the "Datos-Ani" database system represents a significant milestone in agricultural management research. Our research aims to revolutionize crop rotation practices, enhance farm harvest and economic performance, and pave the road for a more sustainable and profitable agricultural future by utilizing data and technology.

Input-Process-Output (IPO) model

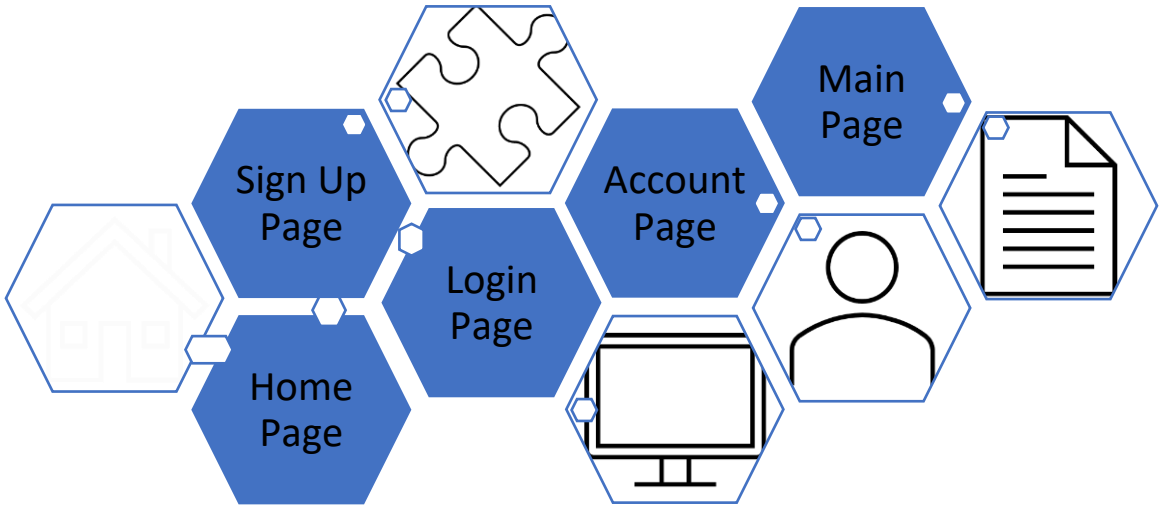
The figure below is used by the researchers as the IPO model of “Datos-Ani: Farm’s Harvest and Economic Performance with Crop Rotation Management for Harvested Crops”:



The input process begins on the login page, users have personalized accounts, allowing them to input vital data on their agricultural endeavors. Following that, the process stage begins, in which our database exactly stores each entry, ensuring a complete library of agricultural information. Our software records everything, from sales and costs transactions to agricultural yields, giving farmers useful insights to improve their operations. Finally, the database software now displays all the gathered data to farmers, providing a comprehensive view of agricultural trends and practices for in-depth analysis and inquiries.

Conceptual Framework

The figure below is used by the researchers as the conceptual framework of “Datos-Ani: Farm’s Harvest and Economic Performance with Crop Rotation Management for Harvested Crops”:



Upon entering the application, users will encounter authentication pages, including a login page. If the user lacks an existing account, a single button click will redirect them to the signup page. Until the user logs in, access to the Main and Account pages will be restricted. Once an account is created and the user logs in, they will be directed to the Main page, providing crucial information about the application's features and benefits.

On the Main page, a button will be visible, guiding users to the input section where they can input their data and see other inputted user data.

Scope

This study's focus is on farmers in the Philippine province of Rizal, and it aims to build and deploy a database system that will maximize crop rotation management for harvested crops. Using a database system "Datos-Ani," agricultural data about crop rotation plans, harvest yields, production costs, harvest sales, and economic returns will be centralized and organized. It will offer farmers practical data and decision-support tools to help them improve crop rotation methods, increase farm production and profitability, and promote sustainable agriculture practices.

The study will involve the collecting and analysis of agricultural data from a variety of sources, including government organizations, agricultural cooperatives, and private farmers. Surveys, interviews, and field observations will be used to evaluate present crop rotation methods, highlight difficulties and possibilities, and drive the design and functionality of the database.

The implementation phase will include the development and deployment of the "Datos-Ani" database system, as well as meetings and capacity-building initiatives to ensure that farmers can use it effectively. The study will also include monitoring and evaluation operations to see how the database system affects farm harvest and economic performance over time.

Limitations

Despite the comprehensive scope of this study, several limitations should be noted:

- Geographic Focus: Farmers in the Philippine province of Rizal are the study's primary subject matter. Findings and recommendations may not be applicable to

other locations or countries with varying agricultural environments and socioeconomic conditions.

- Technological Restrictions: Access to dependable internet connectivity and sufficient technological infrastructure are prerequisites for the successful deployment of the "Datos-Ani" database system. Farmers may find it difficult to accept and use technology due to their limited access to it and lack of digital literacy.
- Data Availability: The availability and quality of agricultural data, notably crop rotation techniques and economic performance, can vary depending on the source. Data gaps and inconsistencies may limit the scope and accuracy of the analysis.
- External Factors: Weather occurrences, market fluctuations, and policy changes may all have an impact on the study that the researcher cannot control. External influences may have an impact on the database system's deployment and outcomes.

Objectives of the Study

To develop and implement a comprehensive agricultural management system aimed at achieving the following objectives:

- Facilitating crop rotation for farmers by providing a structured and user-friendly interface to keep track of crop rotation schedules and historical data.

- Enhancing sales performance analysis by enabling farmers to efficiently monitor crop sales trends on a seasonal and yearly basis, thereby aiding in informed decision-making regarding market strategies.
- Improving harvest performance evaluation through the implementation of data-driven tools that allow farmers to assess crop yields and productivity per season/year, facilitating better resource allocation and planning.
- Tracking production costs associated with crop cultivation, offering farmers a clear overview of expenses incurred during the farming process.
- Providing insights into seasonal abundance by analyzing historical data to identify periods of peak productivity, aiding farmers in optimizing resource allocation and production planning.

Overall Objective:

To equip farmers with an advanced inventory management system that automates the tracking of crops and past harvests, thereby liberating them from manual record-keeping tasks and empowering them to focus on strategic decision-making to enhance their agricultural productivity, profitability, and sustainability.

Background of the Study

The agriculture industry plays a crucial role in the Philippine economy by creating employment opportunities for millions and ensuring food security. Farmers in Rizal encounter challenges such as fluctuating product prices, rising production costs, and the impact of climate change on weather patterns. One method to improve soil quality and enhance crop yield is through crop rotation, but farmers lack the necessary information

to implement this practice effectively. A proposed solution called "Datos-Ani" aims to provide farmers with a system to manage and access farm-related data, enabling them to make informed decisions and properly implement crop rotation. This initiative seeks to empower Rizal farmers by promoting environmentally friendly farming practices and ensuring adequate food supply for all.

CHAPTER 2

Economic Significance of the Study

Farming different crops per season affects how they manage their physical logbook. Finding older records, misplaced logbooks, or lost in a fire, flood, or other calamities and disasters will affect all the employees and owners. Employees will spend hours or even days repeating the same work they have already done but because it is a record where it can be easily damaged it causes the delayed time to their work. The logbook is a systematic way to manage data from activities to personnel personal information and the one who ensures that all important data will be recorded with supporting documents. Physical logbooks use papers that cause a limited resource, are not secured, and cost a lot of storage.

Statement of the Problem

This study aimed to develop the Datos-Ani: Farm's Harvest and Economic Performance emphasizing the Crop Rotation Management for Harvested Crops of the farmers in Sitio Ibayo, San Mateo, Rizal. This addresses the condition of the farm within their data.

The following specific questions of the study are:

1. What are the challenges that farmers are facing in their records and inventory, and how management system streamline the data?

2. How can a farm management system help farmers navigate the complexities of their preparation, planting, harvest, crop rotation, sales, production costs, and profit?
3. In what way does a farm management system help when it comes to keeping track of the process and progress from preparation to selling the crops?

Significance of the Study

According to the research, the following will benefit from the study findings:

- Professors. The result of the database system study can be used in discussions and studies by professors and educators. This study will inform them about how farmers cultivate their crops from preparation, planting, harvesting, and selling crops.

- Seller. It would inform the seller of the process and give transparency from farmers to sellers. This ensures a high quality of crops from farm sources to consumers.

- Government. This study enables the farmers to track all the chemicals, pesticides, and fertilizers that have been used on their crops to keep records for legal requirements like taxes and restricted supplements to the farmers' crops. Food safety and traceability come in to guarantee the safety of consumers.

- Consumers. The safety of consumers is one of the first things to think about when it comes to foods, through this study, will ensure the food that consumers consume.

- Farmers. Farmers will be able to monitor the worker's progress, generate clear time and date of work, optimize finance and inventory, and keep track of the sales of crops. The database system will benefit the farmers, it lessens the amount of work inputting manually into the physical logbook with a lot of paper and time to utilize.

Technical Justification

Datos-Ani is a farm management system application that focuses on farms inventory, crop rotation tracking, and economic performance of crops for the farmers of Sitio Ibayo, San Mateo, Rizal, Philippines. The researchers justify the following technical aspects of the application:

- **User-Friendly Interface**

  Datos-Ani prioritizes in easy-to-use user interface ensuring its user-friendliness while integrating an inventory, tracking, and curating of numerical data. Datos-Ani's primary users are farmers and the researchers understand that they might not have any technical literacy to use the application so Datos-Ani is carefully made to be simple and easy to use for the farmers.

- **Accessibility**

  Datos-Ani does not require internet connection and it is an application meaning that farmers in Sitio Ibayo can use Datos-Ani without encountering any problem, such as lack of internet connection or a working computer.

- **Implementation of Text-Based and Visual Based Display of Data**

  The integration of both text-based and visual-based display of curated data ensures that the primary users of the application understand through and through the data that the application gives to them.

- **Implementation User Authentication**

  The implementation of user authentication makes sure that all the data that the farmers provided to the application will remain solely for them. This ensure that their data, that might be crucial and sensitive are protected and safe.

- **Implementation of One-Tier Architecture Database Model**

  The implementation of a one-tier architecture database model is a cost-effective and simplest way to solve the problems of the farmers in Sitio Ibayo, San Mateo, Rizal, Philippines. The problem is that they don't have access to electricity or an internet connection, so having a local database that stays on their mobile devices is what they need.

In summary, the technical justification of the application Datos-Ani is carefully planned by the researchers to tend to the underlying problems that the farmers of Sitio Ibayo have. Allowing for a user-friendly interface and experience, accessibility, security, and privacy. All the technical aspects mentioned make sure that the application is reliable, relevant, and functionable in inventorying, tracking crop rotation, and the economic performance of farms.

Benefits of System and Device

In the last decades, management systems have been significant in the fields of agriculture and business. It is an important aspect of running a business, it enables one to meet the standard and systematic business, particularly in farming. Many farmers track their expenses, labor, routine from planting to harvest and sales, and shipping records. Keeping track of all the activities on farms gives adequate advantages in audit, and inventory, and ensures greater profit.

Datos-Ani benefits farmers, consumers, and government. It is an innovative tool designed to support farmers with data analysis, collection, and organizing. This allows the farmers to track the farm's ventures. Preparations have several processes to make the soil prepared for producing good crops and have healthy soil for other crops after crops. Planting takes a significant amount of time to take care of so that it will grow healthy, profitable, and a good one to sell and make as a crop. Harvest and sales are the important parts where sales and harvest should be monitored well. Harvest season is the season to count the number of crops harvested from the farm and when farmers check how healthy and good the crops are. Selling, can enhance farmer's cash flow and obtain a larger portion of consumer spending. Management systems benefit the farmers and sellers by tracking their sales, whether they profit, achieve their sales, or prevent further damages, and it encourages you to have smart decision-making.

The system is primarily for farmers mainly, and only they benefit from their inventory, crop rotation, facilitation of fertilizers, and automation of computing production

costs, sales, and profits. They are given an idea of which crops perform better in which season, the combination of crop rotation, fertilizer, and other uses as well as the money they use, so the grade quality and yield quantity of their crops gets better as time goes by.

Definition of Terms:

- Datos: It is a data or collection of information and facts that is collected, stored, and processed.
- Ani: It is a harvest in Filipino or a yield from plants in a growing season to pick and collect crops or to collect plants, animals, or fish as food.

- Economic Performance: Indicates the growth of increase in a country of the goods and products to the market value.
- Database: An organized collection of data or structured information that is stored in a computer system.

- System: An interconnected set of elements used to collect, store, process, and organize data.
- Application: This is typically used by end-users. It is designed to do a specific task.
- Backend Functionality: A portion of the website that cannot be accessed by the user. It is responsible for ensuring the quality of a program, organizing, and collecting data.

- Frontend Functionality: When visiting a program or application, it is what the users see and interact with. It is responsible for making the program pleasing to the eyes of users.
- Crops: A plant, fruits, or vegetables planted in a large agricultural area or soil.
- Crop Rotation: is the technique of planting different crops in succession on the same piece of land to improve soil health, maximize nutrient levels, and battle pest and weed pressure.
- Harvest Performance: Evaluating the weight and quality of harvested oranges to determine the effectiveness of irrigation and fertilization practices.
- Production Costs: Calculating the total cost of producing a hectare of wheat, including expenses for seeds, fertilizers, fuel, and labor.
- Seasonal Abundance: Noticing a surge in strawberry production during the spring months due to optimal weather conditions and adjusting marketing efforts to capitalize on the abundance.
- Inventory Management System: Using a digital tool to track the quantity and location of stored grain on a farm to ensure efficient storage and minimize losses.
- Crop Yield: Measuring the number of bushels of corn harvested per acre to assess crop yield and compare it to historical averages.

- Market Trends: Analyzing data on vegetable prices at local markets over several years to identify seasonal trends and inform crop planning decisions.
- Post-Harvest Losses: Monitoring the percentage of tomatoes that spoil or are damaged during transportation to identify areas for improvement in handling and packaging practices.
- Soil Health: Conducting regular soil tests to assess nutrient levels and pH, guiding decisions on fertilizer application rates and soil amendments to maintain soil health over time.
- User Interface: It is the overall visual elements that you interact with in a software, application, or a website.
- User Experience: It is the entire interaction to the software, application, or a website and how you feel about it.
- One-Tier Architecture Database: The database resides on the same machine or server. It is a local database that usually does not need an internet connection

CHAPTER 3

Review Related Literature

Foreign Literature

In the study, called, A Mobile App-Based Farm Management Information System for Sustainable Agriculture" has the potential to revolutionize sustainable farming practices in the region when integrated with Datos-Ani. By leveraging the mobile application's advanced data analysis capabilities, farmers can record and analyze farm data, receive personalized crop selection and rotation recommendations, and access agricultural services and markets **(Yarnia, S. (2021))**. This will help farmers maximize crop yields while minimizing environmental impact, promoting sustainable farming practices in the region.

Qamar et al. (2020) emphasize the significant advantages of leveraging information and communication technology (ICT) to enhance crop yields. Through the utilization of advanced analytics and remote sensing technologies, the researchers underscore the transformative potential of ICT tools in empowering farmers. By harnessing these tools, farmers are better equipped to monitor soil conditions, accurately predict yields, and efficiently manage water resources. This enhanced precision and insight enable farmers to mitigate the various risks associated with climate variability and market fluctuations, ultimately contributing to more sustainable and resilient agricultural practices.

Datos-Ani's data collection capabilities regarding crop rotation, harvest yield and crops prices will provide farmers with valuable insights for optimized crop selection and rotation plans. The app can analyze the data and suggest crops best suited for specific soil conditions and climate variations, promoting economic viability while conserving the environment. Connecting farmers with sustainable farming inputs, such as organic

fertilizers and pest management techniques, and supporting them in identifying market opportunities for sustainably produced crops, will promote economic viability alongside environmental sustainability.

Foreign Studies

Multiple studies have proven the efficacy of big data analytics in managing crop rotation. For example, **Johnson's (2021)** research in the "International Journal of Agricultural Informatics" emphasized using big data analytics to optimize crop rotation schedules in the United States. The findings indicated that farmers who employed data-driven crop rotation strategies saw a substantial rise in crop yield and decreased input costs.

Similarly, **Martin (2020)** created a cloud-based decision support system that incorporates big data analytics for crop rotation planning. This system leverages data from diverse sources to offer real-time recommendations to farmers regarding crop rotation. The research indicated that the system assisted farmers in enhancing their decision-making processes and attaining superior crop results.

Datos-Ani is designed to revolutionize the way farms manage their harvest and economic performance through crop rotation management for different crops. It leverages big data analytics to offer farmers precise insights and recommendations, enabling them to optimize crop yields, minimize resource use, and improve overall economic performance. By integrating data analytics into crop rotation management, Datos-Ani aims to promote sustainable agriculture practices while maximizing profitability for

farmers. Embracing this innovative approach will contribute to a more efficient and environmentally conscious agricultural industry.

Big data analytics has the potential to greatly improve crop rotation management and support sustainable agriculture. By delivering farmers with precise and actionable insights, data analytics can enhance crop yields, optimize resource utilization, and minimize environmental impact. However, it is crucial to address the challenges associated with its adoption to fully realize its potential. Ongoing research and development, along with supportive policies and collaborations, are essential for paving the way toward a data-driven future in agriculture.

Local Literature

Mendoza (2020) conducted a study on the use of information and communication technology (ICT) tools to improve crop rotation practices among smallholder farmers in Mindanao. The research, which was published in the "Journal of Philippine Agricultural Innovations," showcased how mobile applications and online platforms could deliver real-time data and personalized guidance to farmers regarding crop rotation. As a result, this approach contributed to improved crop management and increased productivity.

Mendoza's research corresponds with the concept of enhancing crop rotation practices, as outlined in Datos-Ani: Farm’s Harvest and Economic Performance with Crop Rotation Management for Harvested Crops. Their findings illustrate the capacity of ICT tools to improve crop rotation methods, ultimately resulting in greater harvest yields and economic benefits for farmers.

The use of data analytics has the potential to bring about a significant revolution in the practices of crop rotation in Philippine agriculture. By offering accurate and practical insights, data analytics can improve crop yields, streamline resource allocation, and encourage sustainability. Although challenges persist, ongoing research, training, and support for farmers, coupled with efficient data collection and sharing systems, will be vital in fully realizing the advantages of data-driven agriculture in the Philippines.

Local Studies

A recent study conducted by **Villanueva, (2021)** and published in the "Philippine Information Technology Journal" delved into the development of a database management system tailored for crop rotation in Central Luzon. This system is designed to gather and analyze soil conditions, crop history, and weather patterns, ultimately offering farmers valuable recommendations for creating optimal crop rotation schedules. According to the study, participating farmers have experienced heightened crop yields and notable improvements in soil health.

Recent studies highlight the significant role of ICT in Philippine agriculture. ICT tools such as mobile applications and online platforms improve farmers' decision-making processes by providing real-time data. Precision farming technologies help farmers monitor soil health and predict crop yields more accurately, leading to more efficient use of inputs. However, challenges such as limited access to ICT infrastructure in rural areas and high costs hinder widespread adoption of ICT in Philippine agriculture.levels **(Sarmiento et al., 2022).**

The Central Luzon Database Management System, as outlined in Villanueva's study, aligns with the concept of Datos-Ani, which focuses on enhancing farm's harvest

and economic performance through effective crop rotation management. By providing farmers with comprehensive data and recommendations for crop rotation, the system contributes to improved crop yields and economic performance, thus further supporting the principles of sustainable and efficient agricultural practices under the Datos-Ani framework.

In conclusion, the study "Datos-Ani: Farm’s Harvest and Economic Performance with Crop Rotation Management for Harvested Crops" aligns with the idea that ICT holds considerable promise in transforming agricultural practices and improving crop yields in the Philippines. The findings from this study contribute to the broader discussions on addressing technological, socio-economic, and infrastructural challenges in Philippine agriculture. By integrating these findings with comprehensive strategies that enhance digital literacy, invest in rural ICT infrastructure, and develop affordable technological solutions, the potential of ICT in improving agricultural practices can be maximized while mitigating risks. This underscores the importance of integrated and inclusive approaches to harness the full potential of ICT in Philippine agriculture.

CHAPTER 4

Methodology

Agile methodology is used in “Datos-Ani” to improve to the application development process which breaks the system into more organized and step-by-step method that cycling of planning, designing, developing, testing, deployment, and review

of the system. This helps the project with the decision-making, working together, and having an excellent result.

The cycle of this agile methodology is from: planning, which involves looking in different aspects of making from going to the province to gather informations, idea of benefits to the beneficiaries, solving the project and how they will achieved the plan though their guide of specific tasks, launch of the system, and feedback from beneficiaries. Designing the system user interface to be more adaptable, user friendly, and pleasing to eyes. Developing, where the system is going through a lot of process from working, changing, and finalization to develop a good project that has complete end-to-end functioning applications, integrations, and other deliverables that impact users—not just the technical components. Testing, which involves a lot of trial and error with the team, finalization, and going back to Rizal for the pilot testing of the system itself. Deployment is succeeding that emphasizes frequent collaboration and feedback, with the aim of continuously improving the software that will be delivering the value to the system's beneficiaries. Lastly, feedback or review, an informal meeting held at the end of a sprint, in which the Scrum team shows what was accomplished during this period.

Through agile methodology helps the performance of the team in building the system that will help the people in Sitio Ibayo, Rizal in managing their harvest, sales, or economic performance of the crops they are planting, keep track of crops that are fertilized or not, and crop rotation for crop's food security and assurance to their costumers.

Research Method Used

This study employs a quantitative research approach to systematically collect and analyze numerical data to evaluate the impact of crop rotation management on farm harvest and economic performance among farmers in Rizal, Philippines. The approach involves using structured interviews with predefined parameters to generate objective, reliable, and generalizable findings that can inform agricultural practices and policies in the region. The emphasis is on systematic gathering and analysis of numerical data to assess the influence of crop rotation management on farm harvest and economic performance. The goal is to produce findings that are objective, dependable, and broadly applicable to guide agricultural practices and policies in the region.

Data Gathering Procedure

The data gathering procedure for this study involves conducting structured interviews with farmers in Rizal to collect quantitative data on various parameters related to their farming practices and economic performance. The following steps outline the detailed procedure for data collection.

Preparation

1. Develop Interview Questionnaire:

Design a structured interview questionnaire that includes sections on personal information, crops, date planted, date harvested, pricing, sales, production costs, and profit. Ensure that the questionnaire is clear, concise, and easy for farmers to understand.

2. Sampling:

Identify a representative sample of farmers in Rizal using stratified random sampling to ensure diversity in farm sizes, crop types, and farming practices.

Data Collection

1. Conduct Interviews:

Schedule interviews at times convenient for the farmers to minimize disruption to their daily activities. Conduct face-to-face interviews with the selected farmers using the structured questionnaire.

2. Record Responses:

Accurately record responses provided by the farmers during the interviews, either on paper forms or directly into a digital data collection tool, depending on the availability of resources.

Questionnaire Parameters:

- Personal Information
- Crops
- Date Planted
- Date Harvested
- Pricing
- Sales
- Production Costs

- Profit

By following this detailed data gathering procedure, the study aims to collect comprehensive and reliable data on crop rotation management and its impact on farm harvest and economic performance among farmers in Rizal. The findings will provide valuable insights and recommendations to enhance agricultural productivity and sustainability in the region.

CHAPTER 5

Summary of Findings, Conclusion, Recommendations

Summary of Findings

The database system Datos-Ani yielded positive results from the farmers and surely to their inventory, tracking of sales and costs, and crop rotation. This is made possible through both quantitative approach that the researchers used as their research methodology to accurately get the expected data needed. The farmers in Sitio Ibayo, San Mateo, Rizal faced a lot of challenges in their seasonal and/or yearly endeavors in farming, crop rotation, inventory, sales, production costs, and profit that are mostly caused by human errors due to its mundane and repetitiveness. In addition, there are external factors that affects the mentioned elements such as extreme weather, economic collapse, pests, changed weather patterns, droughts, floods, et cetera. Therefore, the digital aspect, portability, and indestructible inventory and records of Datos-Ani revolutionized the way the farmers of Sitio Ibayo handle their records and inventory management of their farms.

This can be further supported by how Datos-Ani made the inputting and outputting the farm data of the farmers less complex, efficient, and faster. Datos-Ani improved the following aspects of farming process: preparation of lands much easier and with less dependency on memory; dates of planting and harvest of crops are accurately stored; crop rotation involves less preparation, thinking, and time; the computations of sales, production costs, and profit are handled seamlessly and accurately. All these data are simplified by the system by giving farmers both text-based and visual-based

depictions of data for them to easily identify the trends in different aspects of their farm whether it is economic or performance.

Conclusion

The improvements and revolutionization Datos-Ani offers in the life of the farmers will make it a vital part of every farm as this will act as farmers' co-pilot in handling the farmland. The heavily quantitative approach that the researchers used as their methodology helped to best describe the data that the farmers will need. This is further enhanced by the system by simplifying the data to help farmers understand it better for them to accurately and strategically plan their decisions in economic and production aspects. Datos-Ani beautifully succeeded in its main goal of helping the farmers in Sitio Ibayo to have a farm management system that is user-friendly and most importantly helping them in managing their farms.

Recommendations

Based on the findings and conclusion that the researchers discovered in their study, they formulate the following recommendations:

1. To the farmers of Sitio Ibayo, the continual used of the system will play a crucial role in improving its different functionalities and finding areas that are lacking in the system.

2. To the government and LGUs, the system will give them insights to conditions of our farmers, thus, enhancing their projects and programs towards farmers that accurately tends to their needs.

3. To the students, and educators, the research will be a good tool and reference for them to learn more about the development of farm management system.

4. To the future researchers, the further improvement of the system Datos-Ani will be beneficial not limited only to the farmers of Sitio Ibayo but to the farmers of the Philippines. By improving both the back-end and front-end functionality of it by utilizing current tools and technology.

Appendices

APPENDIX A: GUI

Figure 1: Home Page of the Application

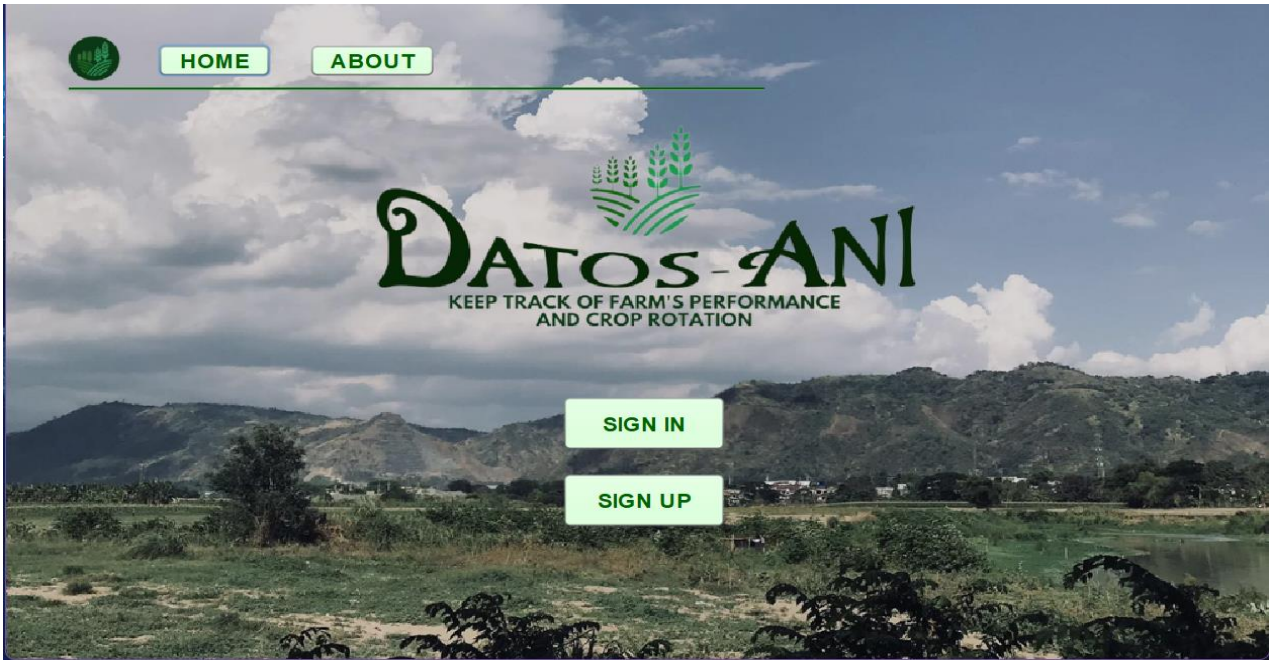


Figure 2: Signin page

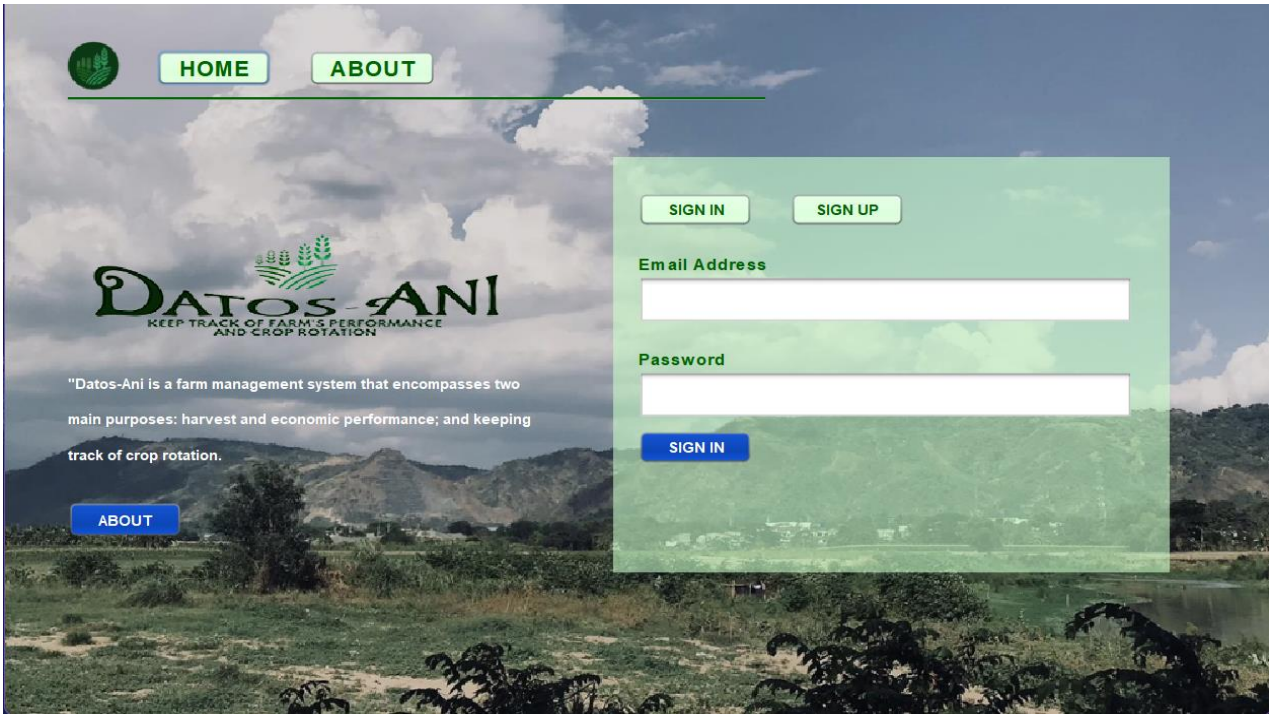


Figure 3: Signup page

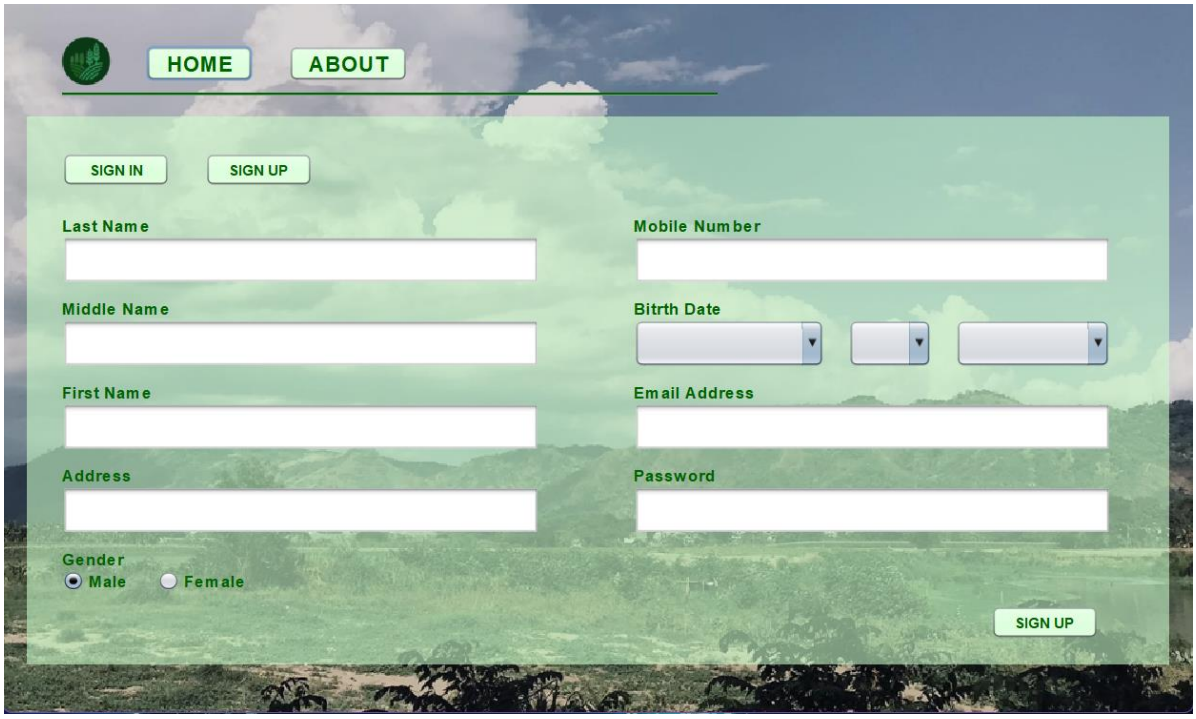


Figure 4: Authentication Page (OTP)

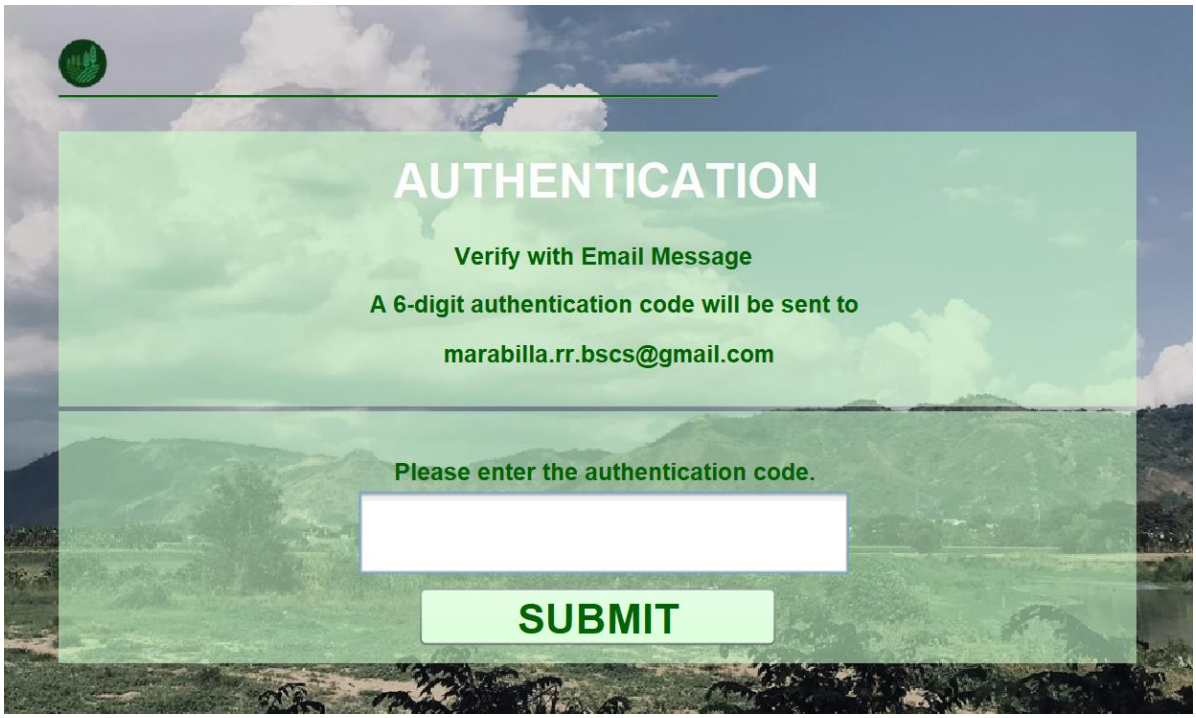


Figure 5: Home page of the user

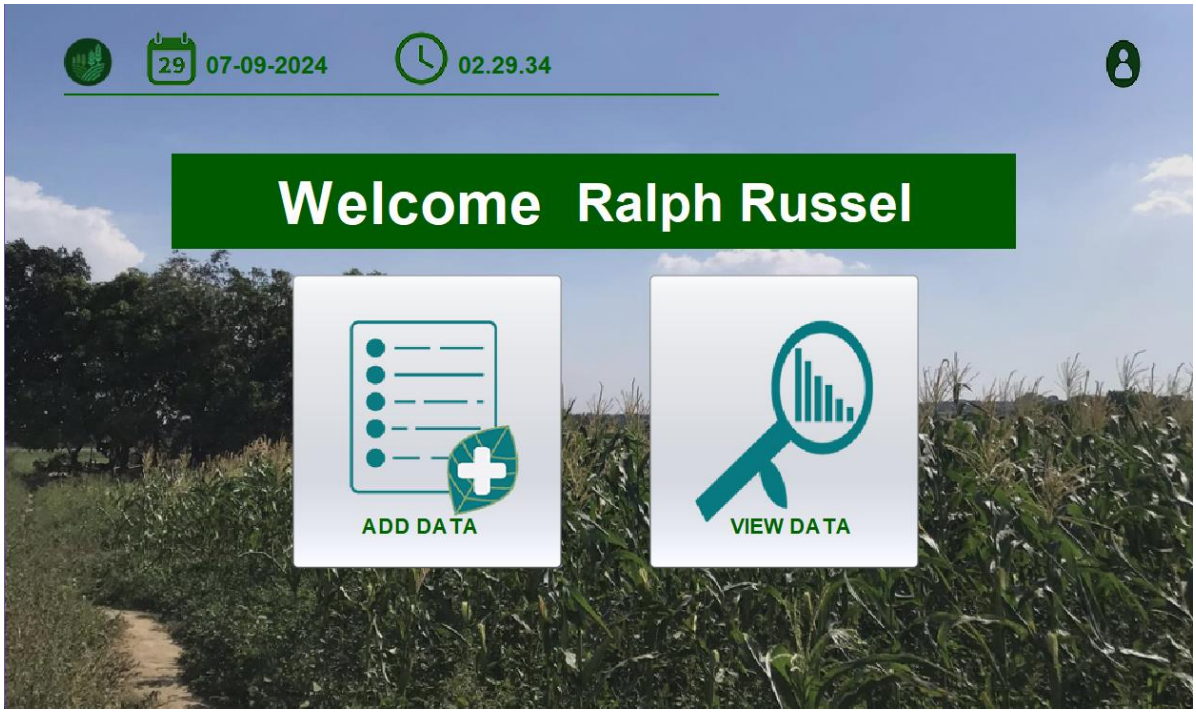


Figure 6: Add crop records

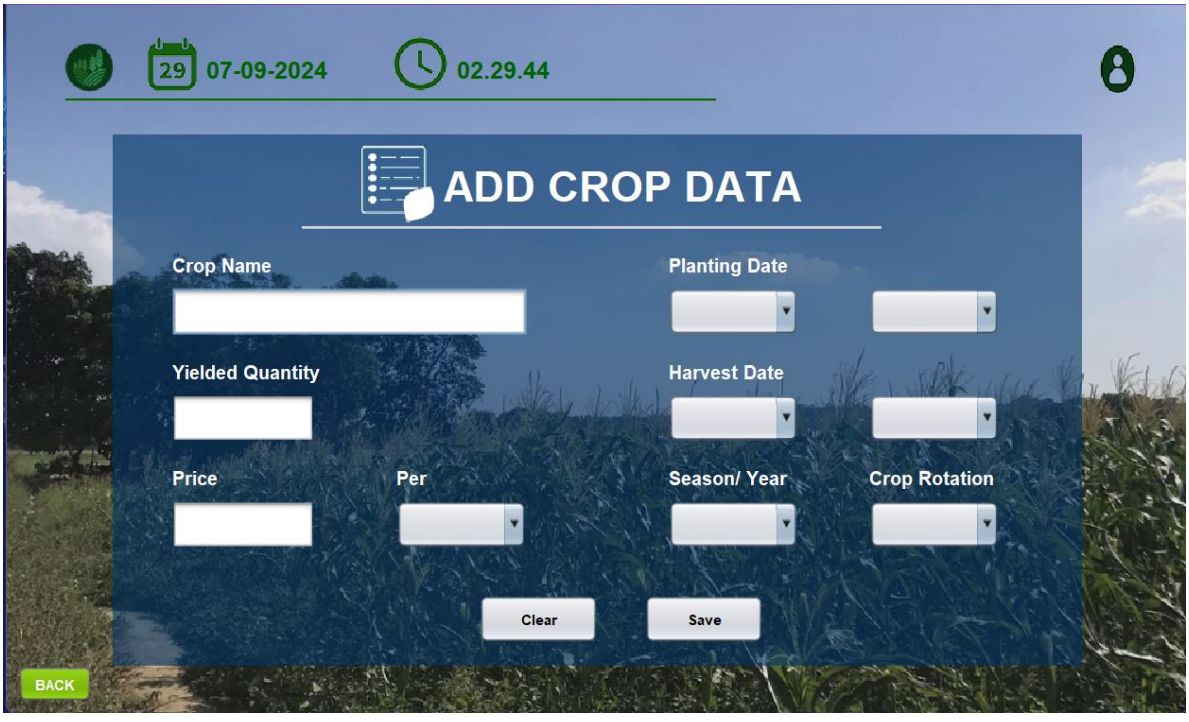


Figure 7: Different view/display of data of user

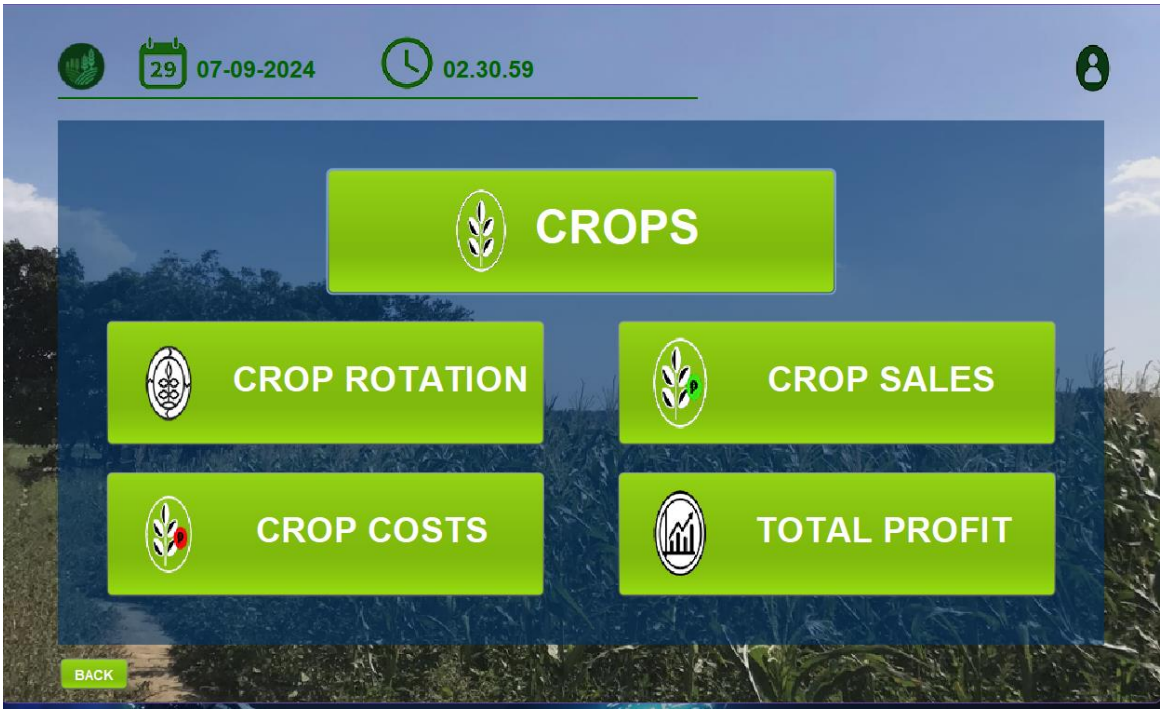


Figure 8: Display page of crop data where user can find specific crop base on name or season

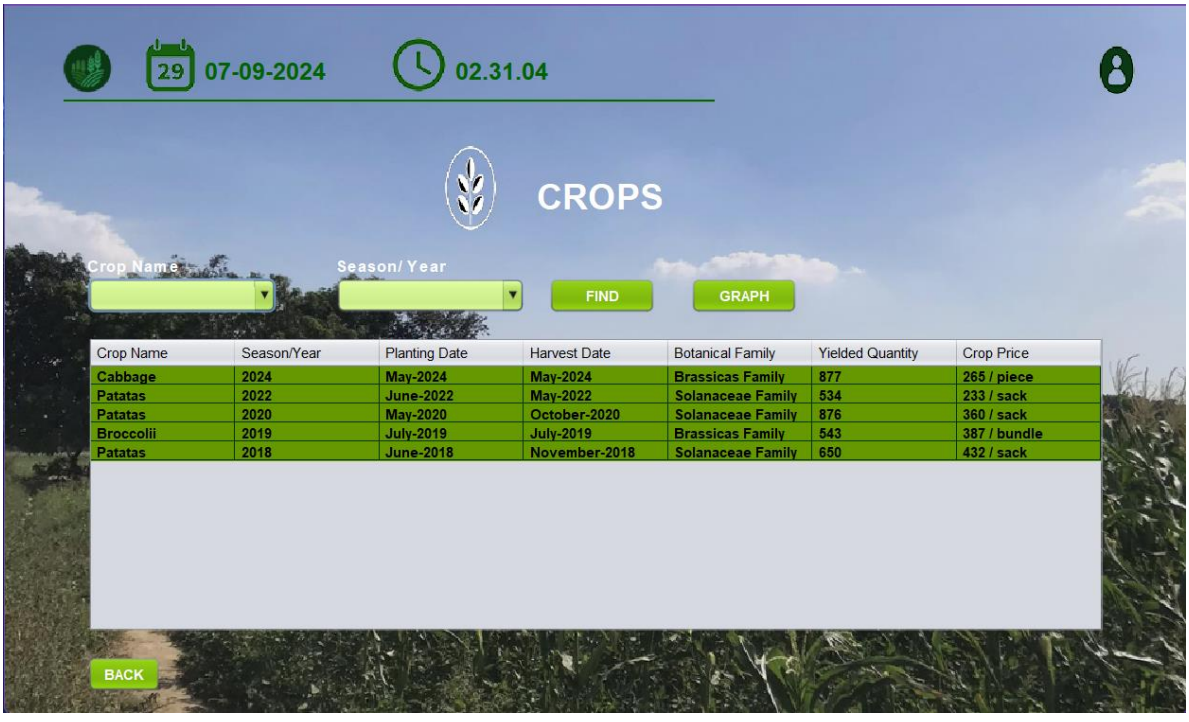
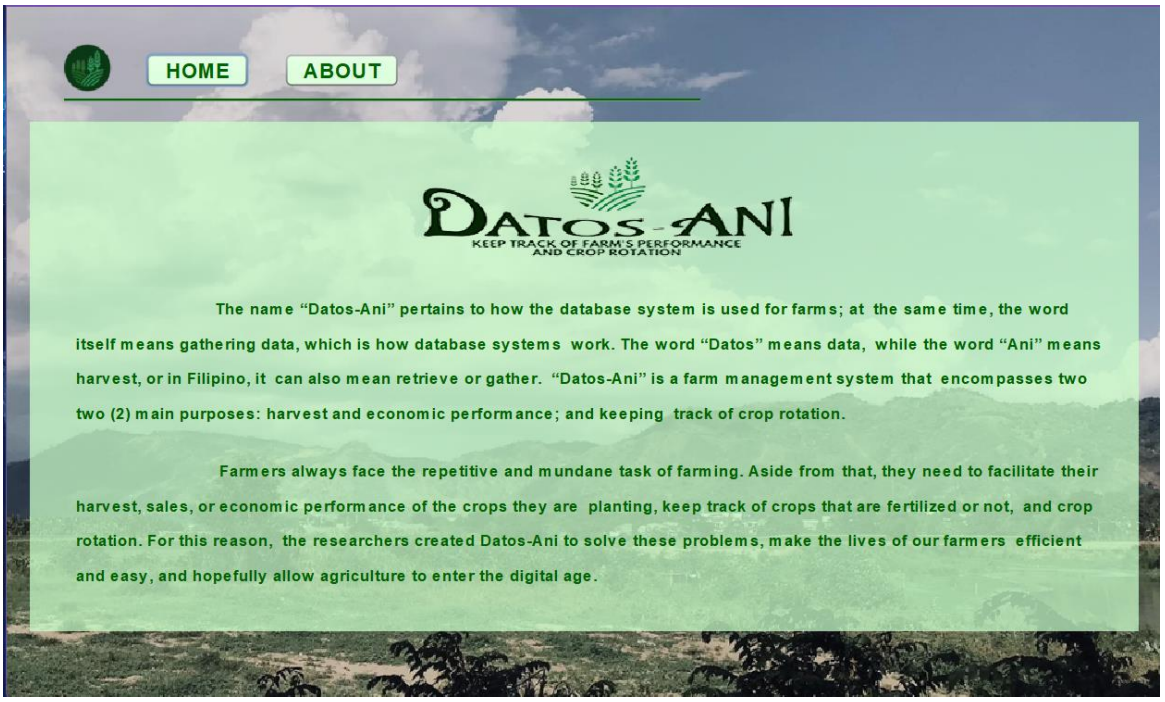


Figure 9: Looking for specific data

Figure 10: The view/display page is accompanied with charts (bar graphs)

Figure 11: About page



APPENDIX B: SOURCE CODE

Figure 12: This is how the signin works

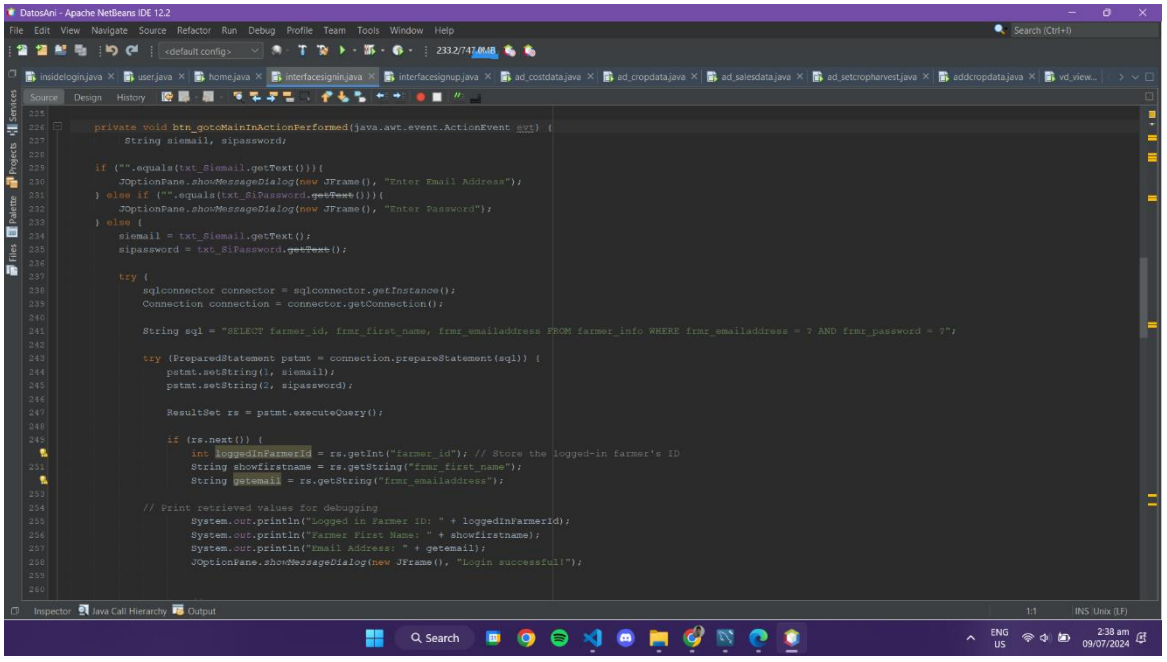


Figure 13: This is how the signup works

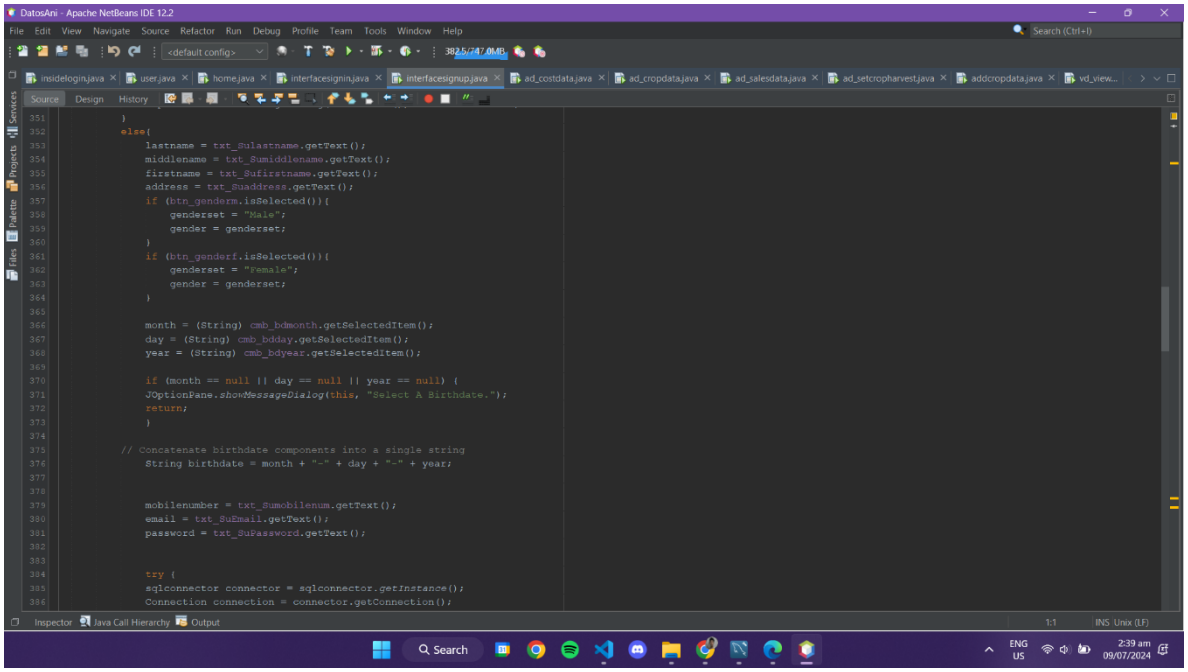


Figure 14: This is how OTP is generated

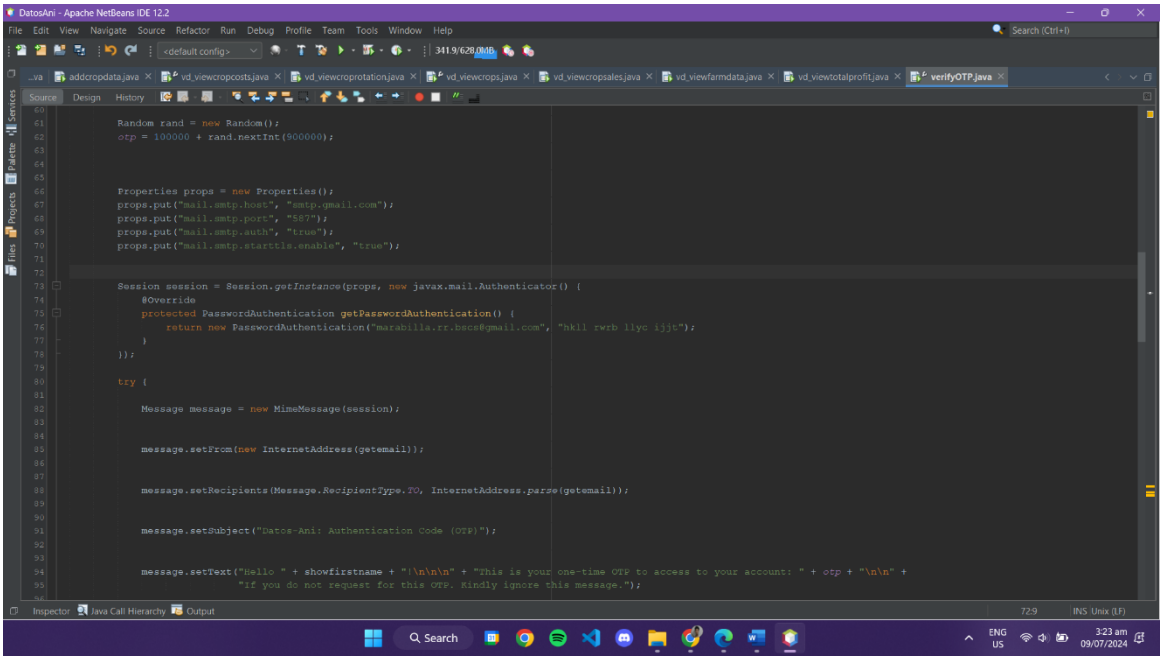


Figure 15: This is how the OTP is verify

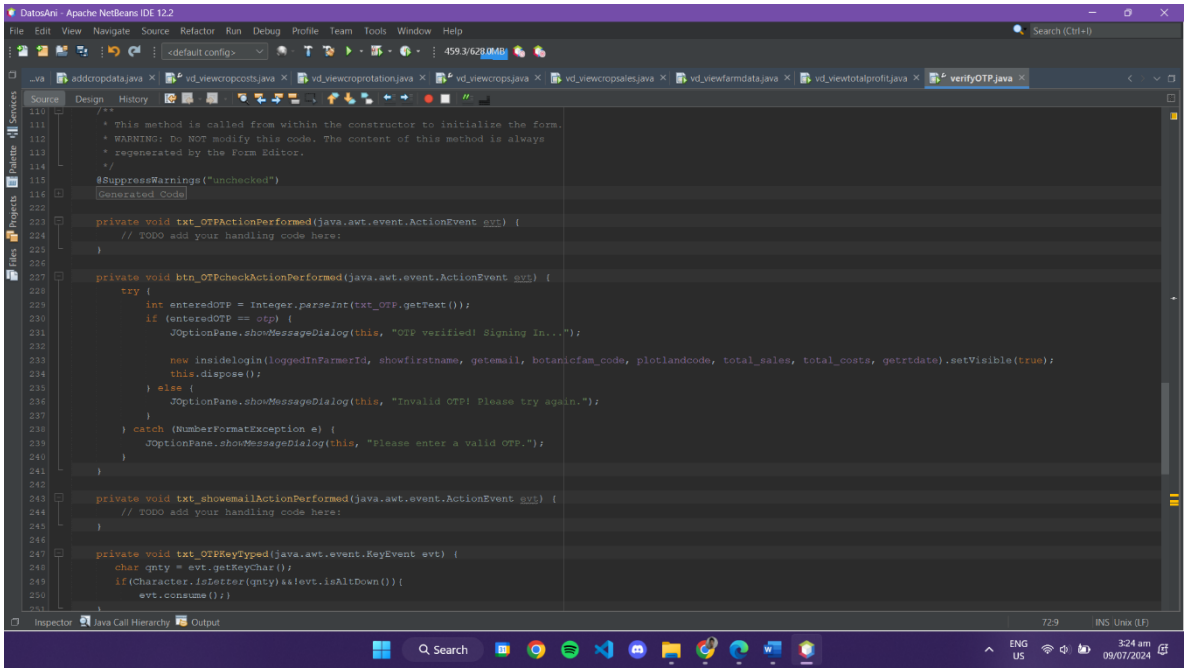


Figure 16: This is how the data are inserted to the database

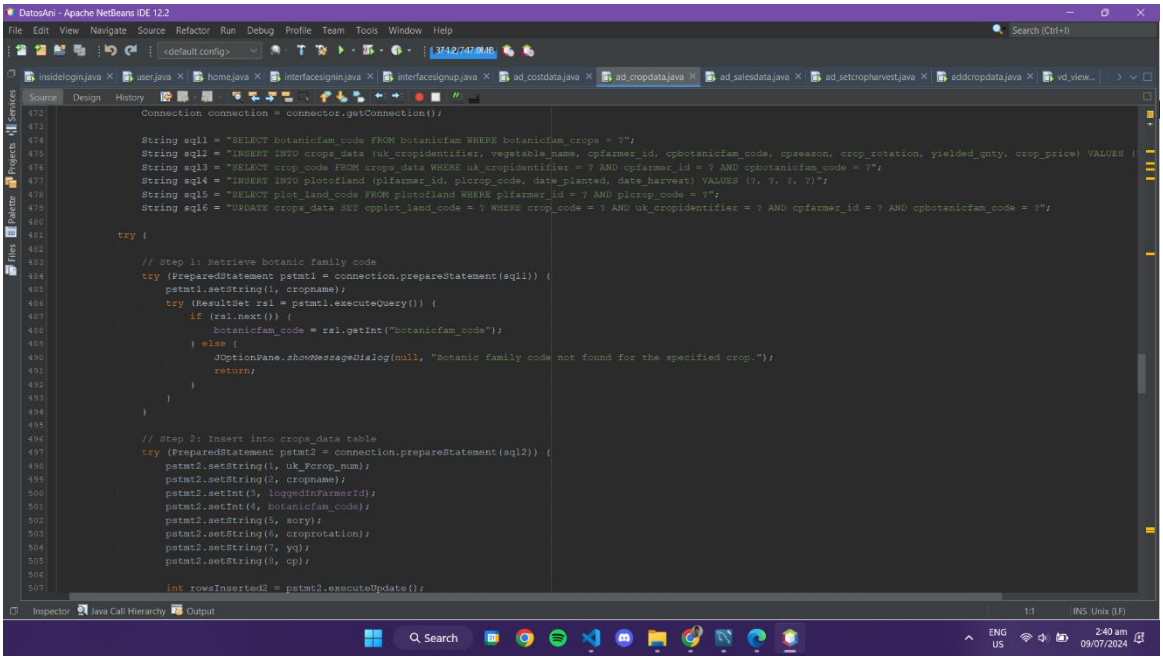


Figure 17: This is how the data are display and view

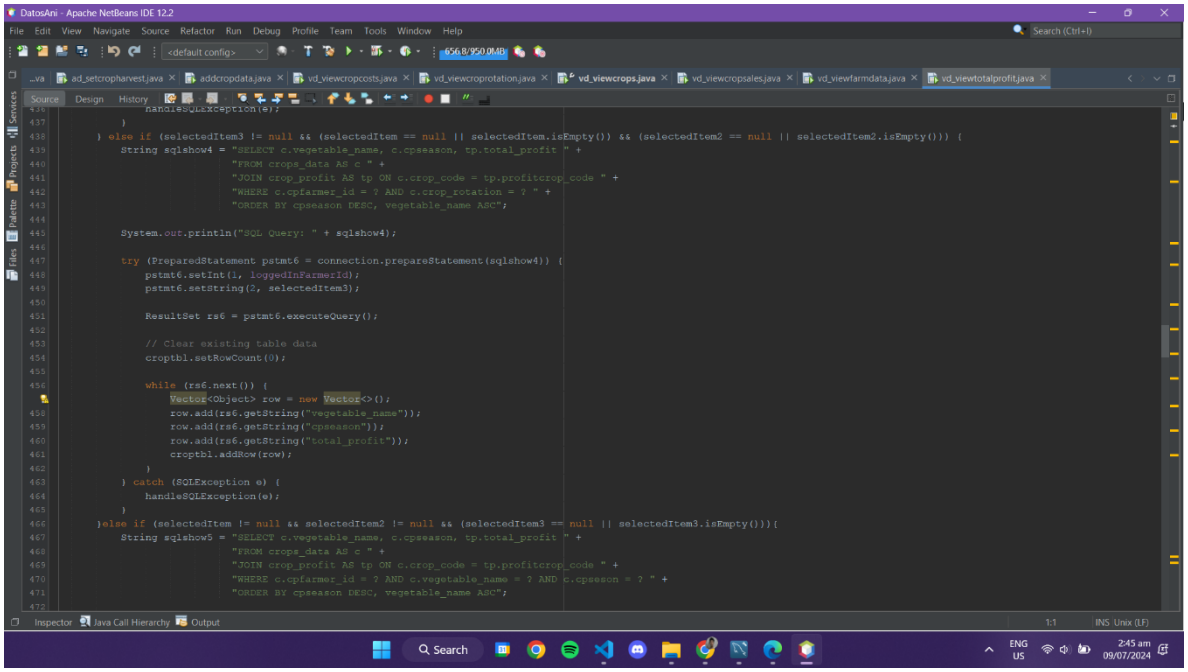


Figure 18: This is how to specifically find a data

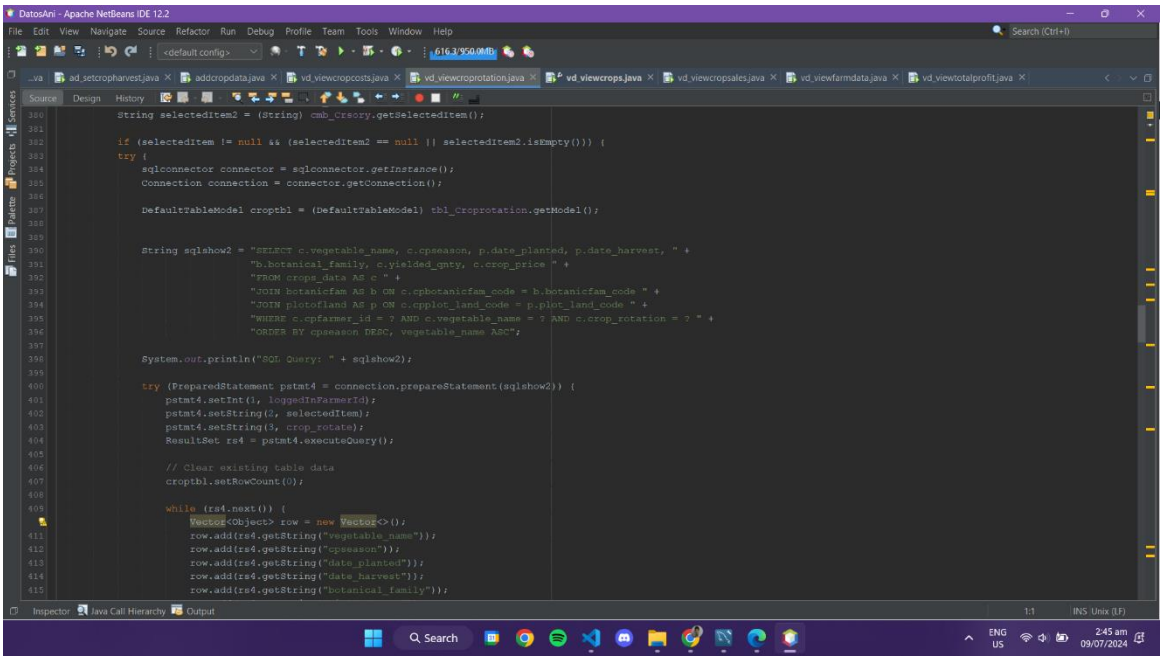


Figure 19: This is how we generate the graph for the data

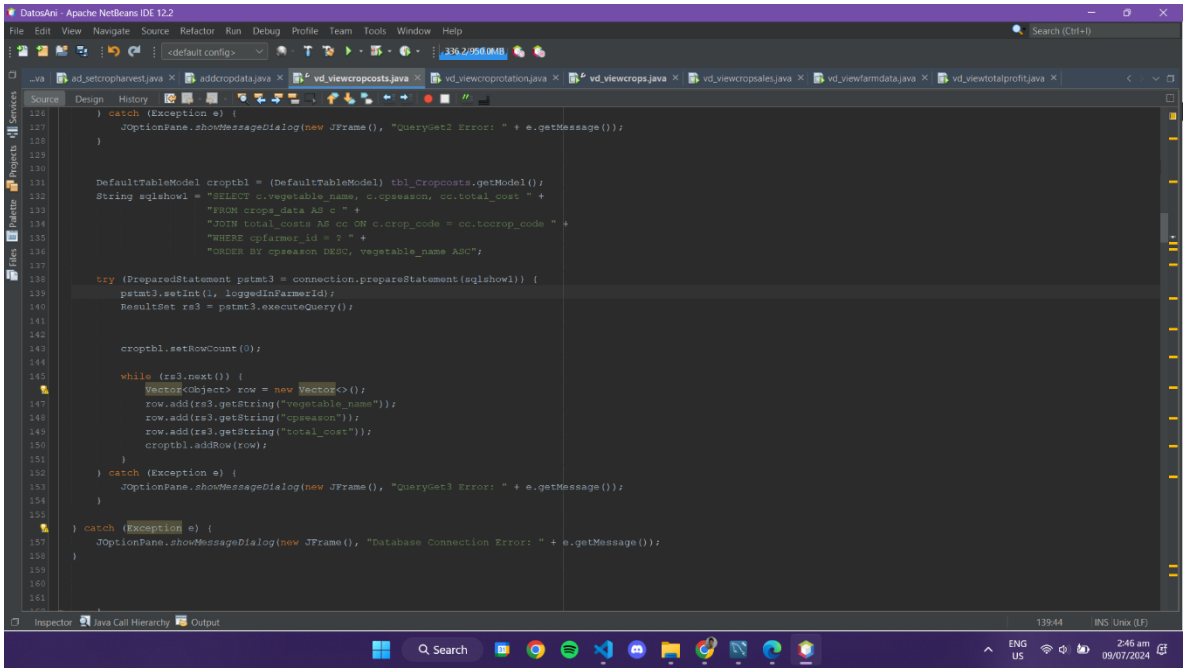


Figure 20: This is what the data look like in the database

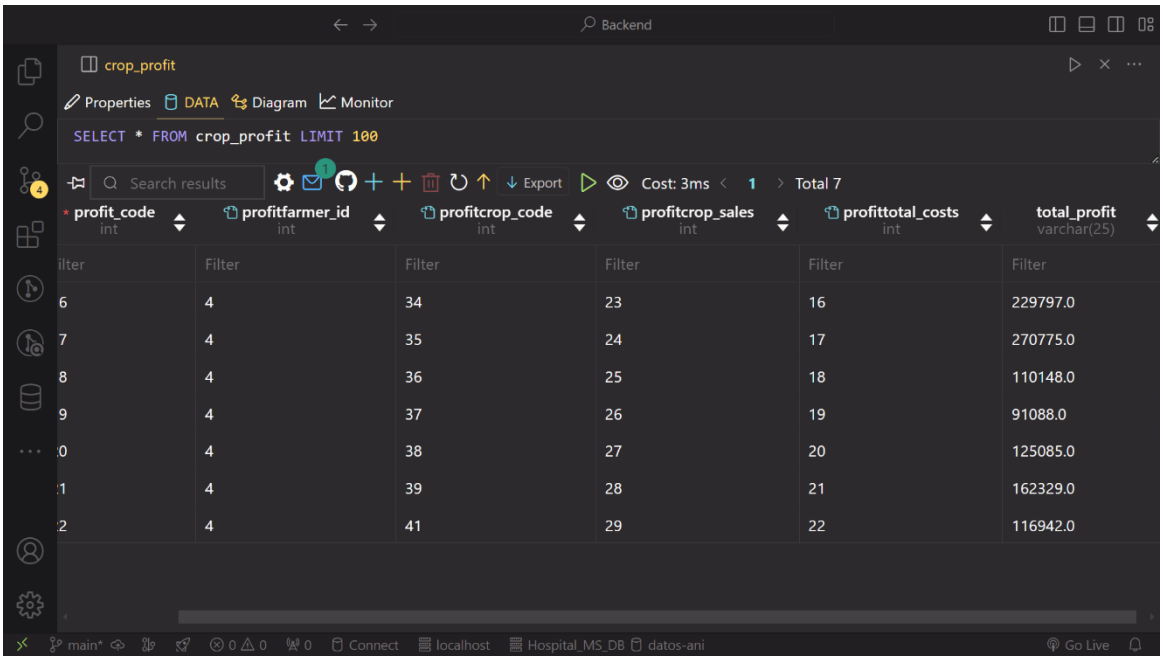
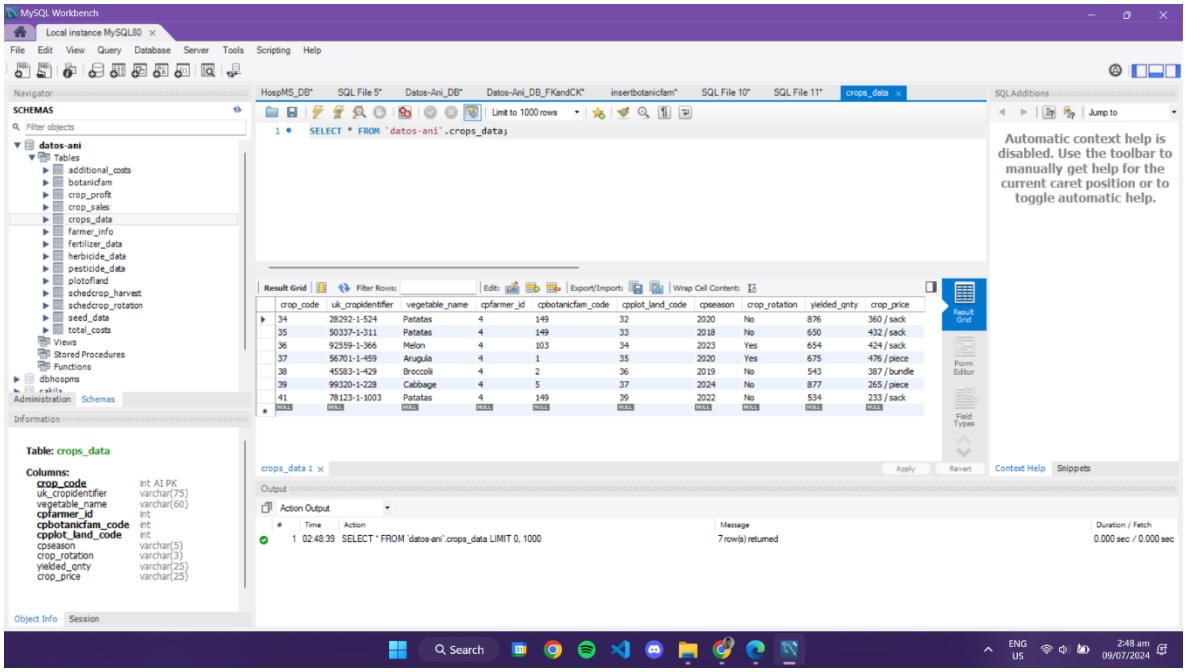


Figure 20: This is the entire database schema, tables, and query



PPENDIX C: SOURCE CODE 2

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