

A Web Service for Farming Management

BY

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A REPORT

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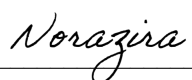
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It is hereby certified that **Kok Zhi Xin** (ID No: **21ACB01802**) has completed this final year project entitled “ *A Web Service For Farming Management* ” under the supervision of Miss Norazira Binti A Jalil (Supervisor) from the Department of Information Systems, Faculty of Information And Communication Technology.

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ABSTRACT

This project is a web service project with a farming industry focus. It aims to assist the farmers for better handling of their farms by exchanging information between other farmers, agricultural equipment vendors as well as customers. In the interim, it aims to maximize the profitability by providing a channel for the direct communication or deal in agricultural communities and marketplace. Through this way, it provides farmers with the opportunity to boost their profitability. Standard HTML, CSS, and JavaScript were used throughout the entire web project's development to create the frontend, and PHP and MySQL were used to create the backend. Simply put, the graphical user interface will leverage the strength of standard HTML, CSS, and JavaScript, which offers a clear user interaction. It is recognized that using an effective GUI on a web project that enables users to use the web service comfortably makes it possible to communicate clearly. The power of PHP and MySQL will serve as the web project's back end throughout all phases of development. Simply put, the SQL queries will be embedded using the PHP language, allowing for the retrieval, and updating of data from MySQL once embedded. In a brief, PHP is used to connect the front end and back end. In terms of hardware, a laptop running Windows 11 will be used for the timeframe of the web project's development. Additionally, Agile Methodology [10] will be used in situations where it is more adaptable to changes or add new functionalities over the course of a web project's development. By utilizing these methods or languages, it will be possible to create a web service for managing farms that is perfect and fully functional while also making it user-friendly.

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LIST OF ABBREVIATIONS

HTML	Hypertext Markup Language
CSS	Cascading Style Sheets
PHP	Hypertext Preprocessor
MySQL	My Structured Query Language
API	Application Programming Interface
GUI	Graphical User Interface
TFF	The Farming Forum

CHAPTER 1

Introduction

This chapter provides an overview of the project, outlining its background, problem statements and motivations, project scopes, objectives, contributions, as well as report organization. It provides a clear grasp of the project's backdrop and what to anticipate from the rest of the paper, setting the stage for the succeeding chapters.

1.1 Overview

Millions of people rely on agriculture for their food, raw materials, and livelihoods, making it the foundation of any economy. With a sizeable portion of the people employed in agriculture, farming has historically played a vital role in Malaysia. However, maintaining a farm successfully presents a number of difficulties for farmers. Their capacity to increase profitability and optimize operations is hampered by limited access to pertinent information, communication issues with other farmers, agricultural equipment vendors, and customers, as well as the lack of a centralized platform for knowledge exchange and cooperation.

Simply said, direct dealing and effective communication are essential for farming success. Farmers in today's fast-paced digital rely on interactions and information sharing to learn new things and better manage their farms, which helps the economy expand and remain competitive. By cutting out the middleman, keeping a sizeable percentage of the profit, and reinvesting it in farm improvements, direct trade helps farmers to maximize their profits while also boosting the economy and assuring a steady supply of the population's basic needs.

As a result of the difficulties farmers have in efficiently managing their farms, the project intends to provide a web service devoted to farm management. This comprehensive platform will help farmers overcome challenges, optimize their farm management techniques, address the growing demand for effective communication

channels, improved information access, and direct trade opportunities in the agricultural sector by leveraging technology and the Internet.

Overall, the initiative aims to transform farming practices, boost the agricultural sector, and support the economy's sustained growth through its emphasis on harnessing technology and encouraging collaboration.

1.2 Problem Statement and Motivation

Many new web-based farming management services are currently entering the market. A web service will always have flaws, regardless of how good it is. The following issues are present in today's web services for farming management:

1.2.1 Lack of a communication function

A portion of the farming management web services only display resources or news related to agriculture and do not have a communication function. Farmers won't be able to share information with one another if this specific function is absent. Consider this instance. Farmers who use web services that do not yet have a communication feature are unable to publish a post to ask a question or share what they know. In doing so, they run the risk of losing the most recent information or data, which may put the farm in risk. Therefore, having a web service with a communication feature will undoubtedly benefit farmers as it makes it very convenient for them to stay current and eliminates the need for outdated data. They can better manage their farms with the most recent information thanks to this communication function.

1.2.2 Lack of a channel to do a direct deal

Numerous web services for farming management are currently available, but they lack a way for farmers to deal directly with other farmers, agricultural equipment vendor or even customers. In the absence of this channel, the farmers will likely have to purchase their goods from a middleman. As we all know, since middlemen typically charge extra interest to make money, the items they sell are typically more expensive than the original price. Farmers will therefore have to pay more in order to purchase their desired goods. The farmers' farm operations will suffer as a result of this situation, which will reduce their profitability. Simply put, most web services ought to offer a channel for

direct transactions because doing so will greatly benefit farmers. Farmers will undoubtedly benefit more financially from dealing directly with suppliers or other farmers through the elimination of intermediary authorities or individuals.

1.2.3 Lack of a feature to show agriculture company information

A feature that would display information or data about agricultural companies is absent from the majority of farming management web services. Around the world, there are a lot of "unknown" small farms that serve as economic development's pillars. However, the biggest issue for small farms is that they might not know which agricultural company is best for them if they want to be involved in a particular area like technology, finance, insurance and so on. Use it as an illustration. In the twenty-first century, technology is widely acknowledged to be important. To avoid being eliminated by society or the market, all modern farms should use online, networked, and digitalized agricultural production factors. As a result, it is highly recommended that a feature be added to the web service for farming management that would display the information of agricultural companies in order to make it more convenient for the farmers and enable them to run a better farm.

1.3 Objectives

1.3.1 To investigate the strengths and weaknesses of existing services in farming management in order to design better applications in helping farmers gain knowledge and profit through web service features.

The market and the Internet are currently seeing the entry or emergence of numerous new web-based farming management services. A web service, no matter how good, will inevitably have flaws, it can be said. Therefore, by examining all the strengths and weaknesses of the existing web services for farming management, it can give this web project the chance to become more useful and perfect. The advantages of the other web services will be consulted. Additionally, this web project will address the web services' flaws that have been discovered. By doing this, it will be possible to guarantee that the users will have a better experience with the upcoming web service for farming management.

1.3.2 To develop a web project that enables farmers to communicate with one another and act as a conduit for dealing between them and other farmers, agricultural equipment vendor, as well as customers.

The development of a web service for farming management will serve as a platform for communication for farmers to share knowledge with one another. By doing this, it can make sure that every farmer using the web project is kept up to date and does not possess any inaccurate or out-of-date information. Simply put, they can manage their farms more effectively with the most recent information. Farmers will have the opportunity to get clarification through communication if they have any questions.

In order to increase the farmers' profitability, a web service for farming management will allow the farmers, agricultural equipment vendors as well as customers to deal directly with one another. It is acknowledged that almost every product will cost more after passing through the middlemen than it did before. Therefore, by creating this specific web project, it can stop the farmers from suffering ongoing losses. Additionally, the farmers can use the profitability they have saved to expand their operations, add new crops, and other improvements.

1.3.3 To evaluate the functionality of web project developed by using the black box technique.

Good functionalities are essential because it will provide users with a positive experience. Without a good or user-friendly functionalities, users may look elsewhere. As a result, the website project will provide the users with user-friendly interface and various functionalities. It will teach users to expect a trustworthy experience that won't waste their valuable time.

1.4 Project Scope and Direction

Throughout the project, a web service for farming management will be created to help farmers manage their farms more effectively by facilitating information exchange between farmers, agricultural equipment vendors and customers, as well as to increase profitability by facilitating direct deals between them. Consider people who would prefer to browse without creating an account, this web service expands accessibility for allowing them to access as guest. However, they may only access restricted content sections and have limited access. Hence, to access the whole array of features and information, users are encouraged to create an account and sign in. As an example, users can sign up or sign in as a farmer, an agricultural equipment vendor, or a customer in this project. Meanwhile, this project also includes the admin role to manage the system. Simply put, the web project will create distinct functionalities specific to guests, farmers, agricultural equipment vendors, customers, and admins.

The project basically will separate into 10 modules, namely Farm Management, Community, E-Commerce, Agriculture Company, Sales, FAQs, About Us, My Account, Private Messaging and System. The Farm Management module will provide users in the role of farmer the features to oversee and administer their farm location and fields through the system. For instance, the module will display the location of their farm on a map interface and enable them to manipulate the farm or fields displayed on the map interface.

For the Community module, the fact that all the posts will be properly arranged according to the categories should be emphasized. Users can choose the post categories they are interested in from a list. There will be posts specific to each category and users in the roles of farmer, agricultural equipment vendor as well as customer are permitted to interact with one another. To give an example, they can view, publish, and reply to the posts. Through this way, they can share the knowledge they have with other users thanks to this feature. Due to the fact that the web project may contain a large number of posts, they can even use a search function to find or filter the posts or categories they are interested in. However, it should be noted that within this module, users in the role of guest are only granted access to view and search the content. Admins are responsible

for the oversight and management of post categories and posts within this module. They also have the ability to engage with the users by adding or responding to the posts.

Additionally, the E-Commerce module mainly provides distinct functionalities according to the user roles. Similar to the Community module, this module allows all users to browse or filter the content, regardless of whether they have signed into the system. As an illustration, they can choose the product categories they are interested in from a list and there will be products specific to each category. Users in the roles of farmer and agricultural equipment vendor are allowed to publish their products. Conversely, target users assuming the roles of farmer and customer are granted access to various functionalities, including the ability to view the shopping cart contents, place orders for products, and review purchase histories. Meanwhile, the supervision and administration of product categories and products within this module falls under the purview of admins.

Furthermore, the Agriculture Company module provides functionalities such as enabling content browsing and filtering for all users, irrespective of their system login status. Users are able to select their preferred company categories from a list and within each category, there will be companies that are unique to that category. Additionally, they can employ a search function to locate or refine posts or categories that pique their interest. Simply put, they can gain a greater understanding of the intricacies of agriculture companies through this module. Within this module, admins are tasked with the supervision and administration of company categories and companies.

What's more, the Sales module provides sales visualization data and empowers users in the roles of farmer and agricultural equipment vendor to supervise sales activities and manage the status of received orders. Meanwhile, admins have the ability to monitor and modify every order in the system. On the other hand, the FAQs module and About Us module provide additional information regarding on this web service that can be helpful to all users, irrespective of their user roles.

Last but not least, the Private Messaging and My Account modules are restricted to registered users and admins only. As an instance, they are able to easily access and

manage their confidential information through the My Account module. On the other contrary, the Private Messaging module grants users and admins access to the system's messaging capabilities, allowing them to converse privately with other users.

Lastly, the System module is divided into three sections which are System Settings, Users and FAQs. In regard to the System Settings section, it confers the admins privilege the ability to supervise and control the intricacies of the system, including its name, logo and so on. In the interim, the Users section will provide admins with visualization data of users, allowing them to supervise and administer the information pertaining to every user in the system. The admins also have the ability to supervise and control the FAQs list.

1.5 Contributions

The farmers, agricultural equipment vendors and customers will undoubtedly benefit greatly from this project. Users will initially see a comprehensive list of categories with a variety of post types. There will be posts created by farmers, customers, and agricultural equipment vendors in each category. Users can simply browse the posts or respond to those published post within the system. With this, they are able the exchange of knowledge or information about farming with other users. Furthermore, the utilization of private messaging function grants users a significant benefit in term of engaging in-depth discussions or exchanging information with other users. Hence, user with the farmer role then can manage their farms more effectively. As a result, the issue of a lack of communication capabilities can be solved, and all farmers now have access to communication capabilities at any time and from any location.

This specific web project will also offer a channel for direct trade. Simply put, this project will enable direct interaction or communication between the farmers, agricultural equipment vendors as well as customers. Farmers and agriculture equipment vendors are permitted to advertise their products on this website project. On the other hand, farmers and customers were considered as a target users. They are permitted to view those published products and place order the products. In essence, the issue of a lack of channels for conducting direct business can be solved.

In addition, this specific web project will serve as a platform to provide the users to view the details or information of the agricultural companies. To illustrate, the companies that are related to the agricultural field will be displayed in the web project. Hence, if a user wishes to attach to a particular area, said technology, he or she can just simply use this feature to search the agricultural company that are related to the technology that are most suitable for him or her. Simply said, by having this feature, the issue which is lacking a feature to show agricultural company information can be solved. The users like farmers of this web service will undoubtedly enjoy using this specific feature.

1.6 Report Organization

In this report, the six chapters comprising the web service are delineated. The introductory chapter of the project comprises various components, including problem statement and motivation, objectives, project scope and definition, as well as contribution. The followings chapters illustrate the specifics of this study. A literature review of five existing farm-related system is presented in the Chapter 2, offering a comprehensive analysis and comparative evaluation of the systems. In the interim, the system methodology and approach are detailed in the Chapter 3, which contains the use case diagram and description, database design and data dictionary, as well as flow chart. The Chapter 4 provides an in-depth analysis of the system implementation, encompassing the software configuration procedure, system operation, and implementation issues and challenges. On the other hand, the testing setup and outcomes are included in the Chapter 5. Ultimately, the report is concluded in the Chapter 6, which comprises recommendation for prospective improvements.

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Literature Review

Farming has a significant impact on society in the modern, technologically advanced world because it supports livelihoods through food and employment, provides raw materials for goods like food and other goods, and fosters strong economies through trade. As the internet grew quickly, more and more web services for managing farms appeared in stores or online. Every one of them is constantly changing to give users a better experience. Speaking of web services, The Farming Forum (TFF) [5], Forum4Farming [6], Farming Discussions [7], FarmNest Forum [8], and Farm Forum [9] all have a place in the web services for farming management.

2.1 Similar Web Services

2.1.1 The Farming Forum (TFF)

Brief

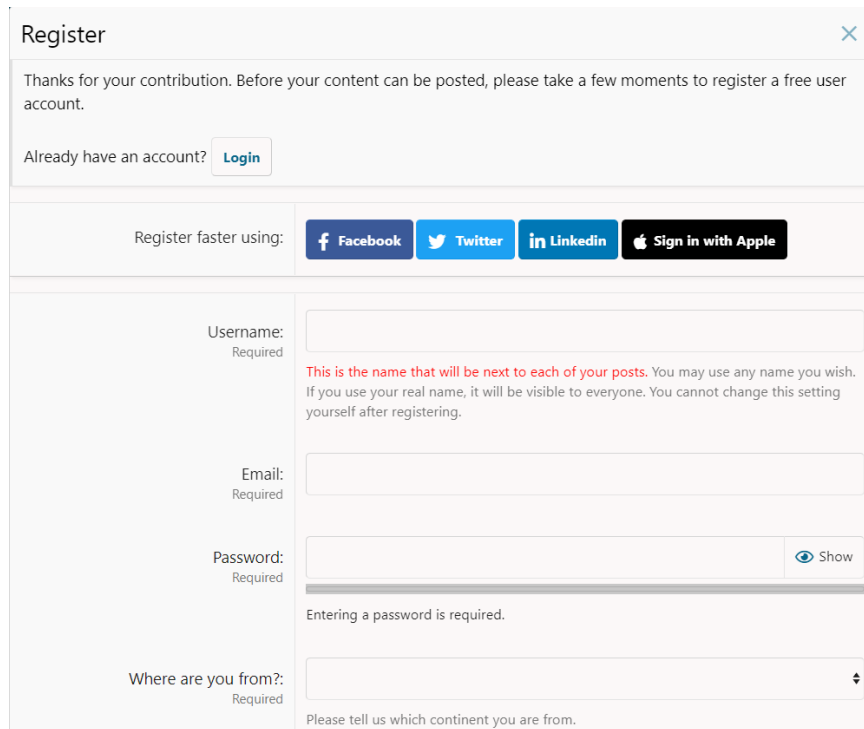
TFF [5] is a cutting-edge and interactive farming discussion forum that is entirely owned by AgriWeb Media, a business founded in 2012 by farmers to facilitate communication among farmers. It is currently the biggest agricultural website in the United Kingdom and continues to expand. It should be emphasized that the TFF [5] 's threads and resources are all thoughtfully categorized. In TFF [5], there are six different roles: administrator, member, guest, advertiser, private seller, and dealer. The admins will have the authority to manage TFF [5], including the right to review all content after it has been submitted or uploaded, remove any content that is inappropriate, and send out notifications, among other things. Members have access to a variety of threads and resources that they can read, post to, and reply to in order to stay informed or dispel myths. TFF [5] also gives members and guests access to advertisements that feature information about products they can buy. They can easily look for products of interest by using the search function.

Notwithstanding, some features or functions, such as the ability to post threads and comment on others' threads as well as check and compare prices, will be restricted for

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guests. They will first need to sign up as a member if they decide to do so. The latest news and PR can be posted on the channel by advertisers, who can manage their own advertising. Private sellers only need to advertise the goods they want to sell after registering. In addition, once a dealer registers with TFF [5], their information will be displayed or shown to members and guests.



The registration form is titled "Register" and includes a close button (X). It starts with a welcome message: "Thanks for your contribution. Before your content can be posted, please take a few moments to register a free user account." Below this is a link to "Login" for users who already have an account. The form offers social media registration options: Facebook, Twitter, LinkedIn, and Sign in with Apple. The main registration fields are: Username (Required), Email (Required), Password (Required), and Where are you from? (Required). A "Show" button is next to the password field. A note states: "This is the name that will be next to each of your posts. You may use any name you wish. If you use your real name, it will be visible to everyone. You cannot change this setting yourself after registering." A dropdown menu for "Where are you from?" is shown with the instruction: "Please tell us which continent you are from."

Figure 2.1: Registration form to become TFF's member

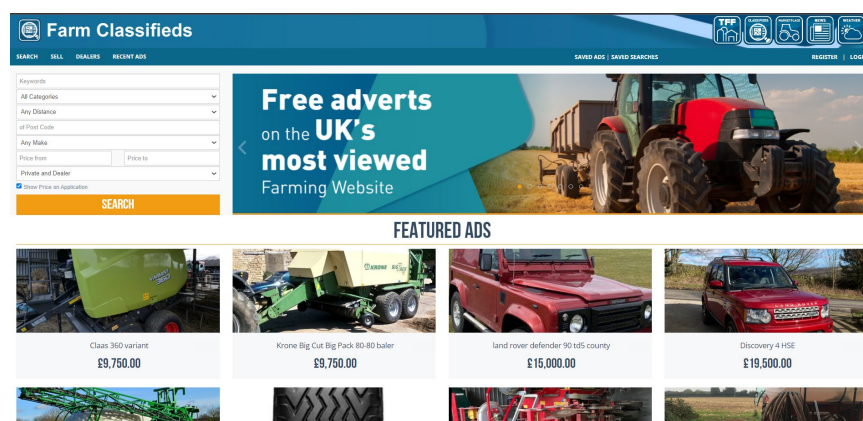


Figure 2.2: Advertisement of products in TFF for sale

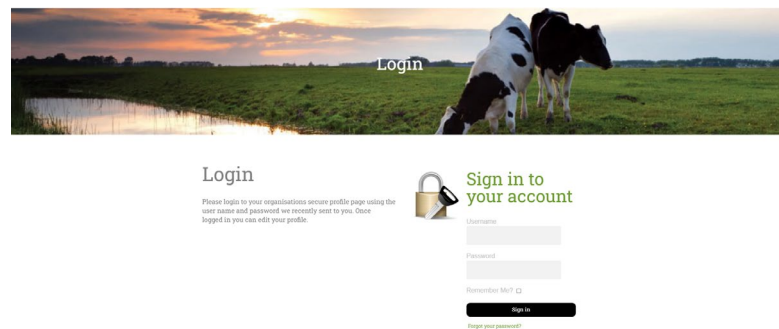


Figure 2.3: Login page of TFF for advertiser

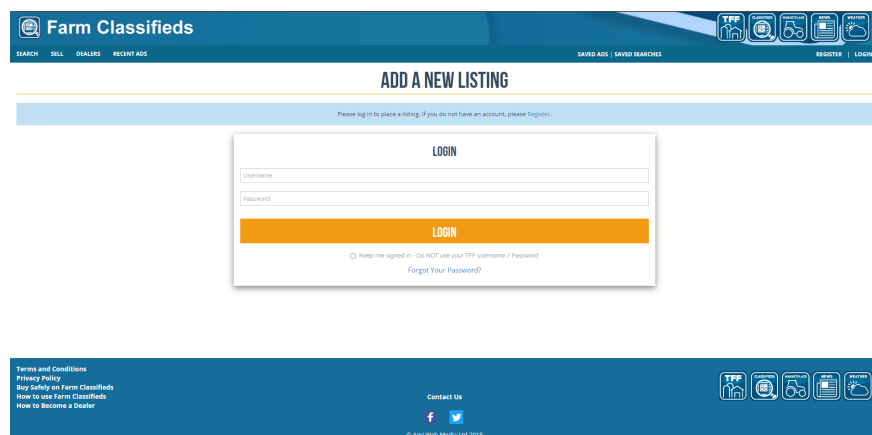


Figure 2.4: Login page of TFF for seller

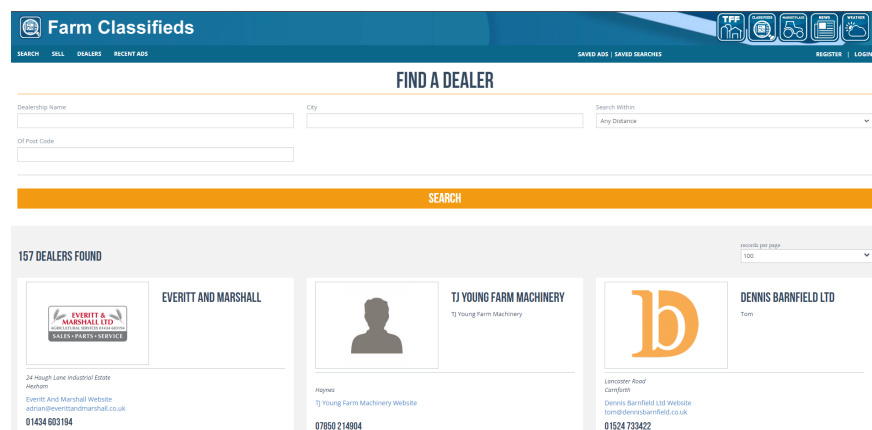


Figure 2.5: List of dealers and their details in TFF

Strength

The feature that sets TFF [5] apart from most other web services, including Forum4Farming [6], Farming Discussions [7], FarmNest Forum [8], and Farm Forum [9], is its ability to check and compare prices. For instance, it enables members to freely exchange price comparisons with other farmers. It enabled the members to discover the best places to shop and opportunities for savings. In this case, it can be avoided that the members overpay for their crop protection supplies. Additionally, TFF [5] uses 256-Bit SSL encryption to protect the users' privacy and security. As stated above, other web services do not frequently use this method.

In addition, TFF [5] has a feature that displays the most popular threads. Both guests and members can benefit from it because popular posts typically include the most recent news or information. Therefore, by displaying the trending threads, both members and guests can stay current in a timely manner as opposed to having to view all of the threads, which would be time-consuming. Additionally, TFF [5] has a platform called Farmdeals that was created by TFF [5] and is aligned with FutureFarm. Through the website and mobile app, it provides members with access to the lowest product prices. Also exclusive to TFF [5], not the majority of web services, is this digital buying group. What's more, TFF [5] currently allows members and visitors to view new threads as well as search the resources.

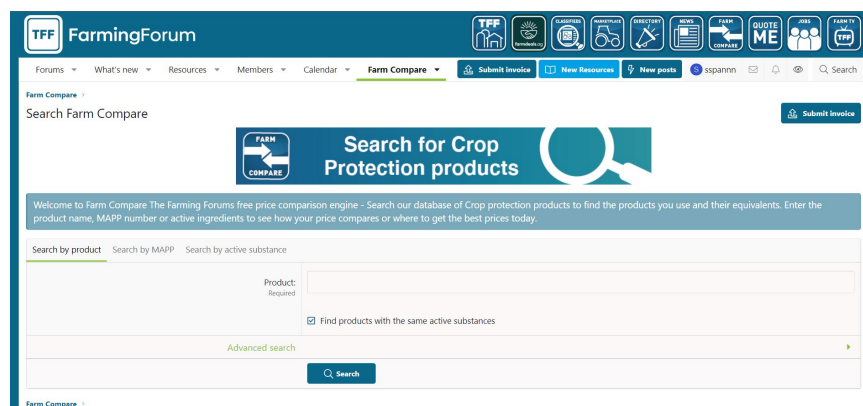


Figure 2.6: TFF's check and compare price feature

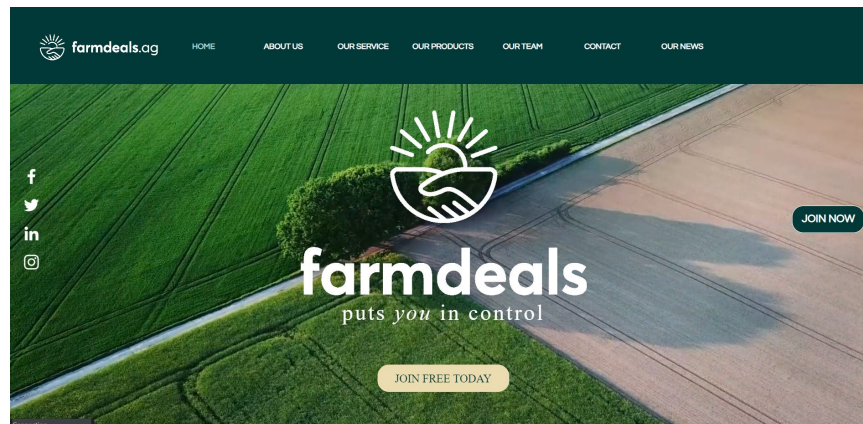


Figure 2.7: Farmdeals, a digital buying group for TFF's members

Weakness

The TFF [5]'s flaw is that guests are unable to simply reply to threads. There is a good chance that a guest clicked on the inquiry thread by chance and had just the right amount of knowledge to shed light on the poster. However, due to the restriction, he or she is only able to view the post and not reply to the specific thread. The person who started the thread will be unable to get the most recent information and resolve any confusion as a result of this circumstance.

Recommendation

It is advised to give guests access to post replies to threads. TFF [5] is only required to modify the restriction for replying, keeping the original restrictions in place. By having this feature, it is possible to ensure that all guests and members can stay current and receive the most recent information or data. It benefits both parties. Understanding the most recent information is very helpful for running the farm. Farmers will have the opportunity to improve farm management, which will benefit both the local and national economies.

2.1.2 Forum4Farming

Brief

Founded in 2016, Forum4Farming [6] is a free online community for all farming and equipment-related discussions. It has close to 11000 members from the UK and Ireland. The fact that all of the Forum4Farming [6] threads are expertly organized into various categories should be emphasized. Forum4Farming [6] members are free to discuss a wide range of non-agricultural issues and topics in addition to those related to agriculture, such as farm business and equipment. It separates all non-agricultural topics into a forum called "Extras," where users can discuss subjects like sports and hobbies while also exchanging pictures and videos.

It typically has three roles: admin, member, and guest. With TFF [5], all of the roles are merely comparable. The administrators are in charge of running the entire internet forum, including approving newly registered accounts and sending out notices. Members and guests both perform the same tasks, with the exception that guests are not permitted to reply to threads and are not permitted to access the "Introductions" category of the "Extras" forum. Before they can view that specific category, they must first register and wait for administrative approval.

Figure 2.8: Registration form to become Forum4Farming's member

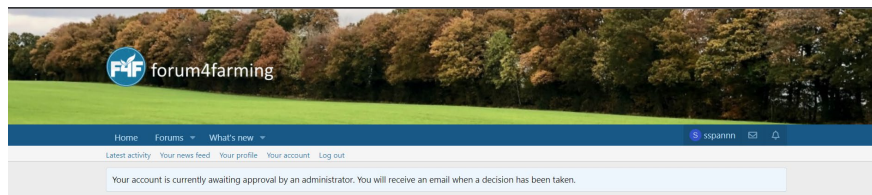


Figure 2.9: Duty of Forum4Farming's admins for approving new members who have registered

Strength

The Forum4Farming [6]'s strength is that it gives members a place to buy and sell goods, services, jobs, and other things. To give an example, if a member is looking for a specific item or product, they can simply start a thread in the "Classifieds" section of the "Advertising" forum, post, and wait for responses from other members. Simply put, this "Classifieds" section contains all of the threads for buying or selling goods at the moment. If a member wants to purchase something, they can just choose the thread that piques their interest. Additionally, Forum4Farming [6] enables users, whether they are members or guests, to view newly posted threads, ensuring that they stay informed and don't miss any new details that could be helpful for managing their farms.

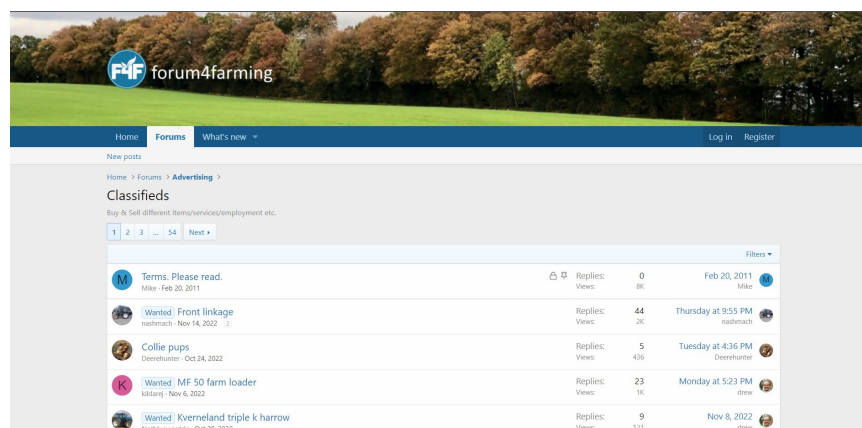


Figure 2.10: Forum4Farming provides channel for direct deal

Weakness

The lack of a search function on the Forum4Farming [6] makes it difficult for users to look for specific threads or resources. They must read through each thread to determine which one appeals to them the most because they lack this specific feature. It is well known that there are almost 20,000 threads on Forum4Farming [6]. Therefore, it is likely that not allowing members or guests to search for a particular thread will result in a waste of time. Due to this inconvenience, Forum4Farming [6] is likely to lose some of its guests or members in the end. In the interim, neither members nor guests are permitted to view the most popular threads on Forum4Farming [6].

Recommendation

The suggestion for Forum4Farming [6] is that it should integrate a search function into the entire web service to enable members or guests to quickly find threads that interest them. By having this specific feature, it can provide them with a way to get away from thousands of threads. Members and guests will spend more time on the forum rather than going somewhere else that can meet their needs because it is easier for them to navigate the entire site. In addition, it should include a feature that shows all of the popular threads to guests or members so that they can stay informed.

2.1.3 Farming Discussions

Brief

Hosted by ProBroads, Farming Discussions [7] is a welcoming and free online discussion forum for farming. In the forum, users can locate and discuss a broad range of issues pertaining to agriculture and other subjects. The threads in the farming discussion are all nicely organized. According to the various forums, threads are categorized, and each forum has threads with related topics. There are usually three roles: admin, member, and guest. Administrators are just like those of the previously mentioned Forum4Farming [6]. They will have the authority to control every aspect of the page, including users, threads, and resources.

Use it as an illustration. If a guest registers as a member, it is the administrator's responsibility to decide whether to approve the guest or not. Simply put, the guest must wait for approval after registering before they can join the Farming Discussions [7].

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Additionally, both members and guests have access to nearly the same features; the only distinction is that members can participate in the quiz while guests are restricted from doing so. To use the privilege, they must first register on the website.

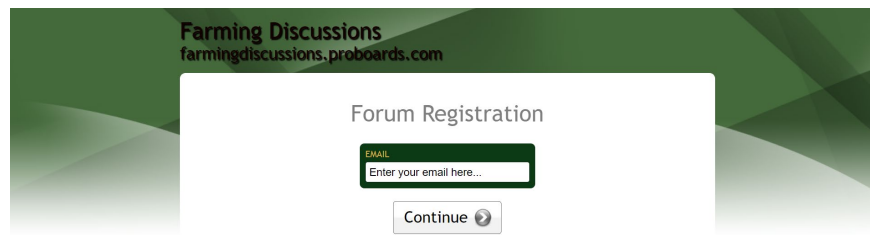
The screenshot shows the 'Farming Discussions' website header with the URL 'farmingdiscussions.proboards.com'. Below the header is a white registration box titled 'Forum Registration'. It contains an email input field with the placeholder text 'Enter your email here...' and a 'Continue' button with a right-pointing arrow.

Figure 2.11: Registration Form to become Farming Discussions's member

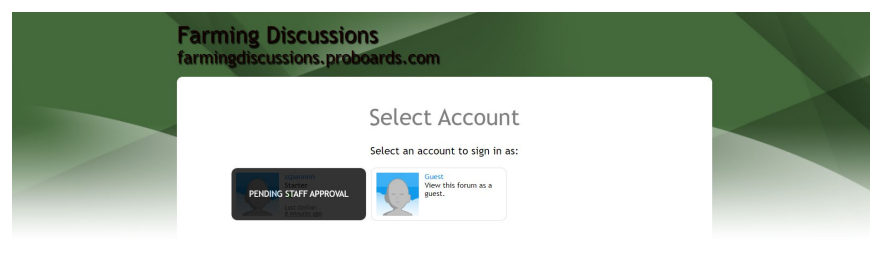
The screenshot shows the 'Farming Discussions' website header. Below the header is a white box titled 'Select Account'. It contains the text 'Select an account to sign in as:' and two buttons. The first button is dark grey with the text 'PENDING STAFF APPROVAL'. The second button is light blue with a user icon and the text 'Guest View this forum as a guest.'.

Figure 2.12: Duty of Farming Discussions's admins for approving new members who have registered

Strength

One of the advantages of the Farming Discussions [7] is that guests can start a thread or reply to one within the specify categories. This indicates that guests are no longer required to register as members of Farming Discussions [7] in order to start or reply to threads. As mentioned earlier, having this feature enables guests to impart knowledge or information to others and to gain understanding in Farming Discussions [7]. It is quite different from other web services for farming management because those other web services require them to register as members in order to use the privilege of creating or replying to threads.

In addition, Farming Discussions [7] gives members the chance to participate in quiz questions related to farming that are typically unavailable on websites like TFF [5], Forum4Farming [6], FarmNest Forum [8], and Farm Forum [9]. If a member wants to take the quiz, he or she need only select the "Daily Quiz" option from the navigation bar. The members will undoubtedly gain a thorough understanding of agriculture through the quiz. Farming Discussions [7] also have a filter function in the search panel, allowing users to quickly find the threads or resources they're looking for. Additionally,

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it has a feature that lets users—whether they are members or guests—view newly posted threads.

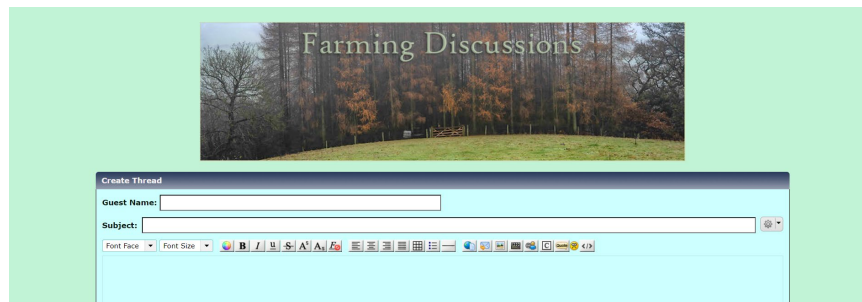


Figure 2.13: Guests of Farming Discussions are allowed to create threads for certain categories

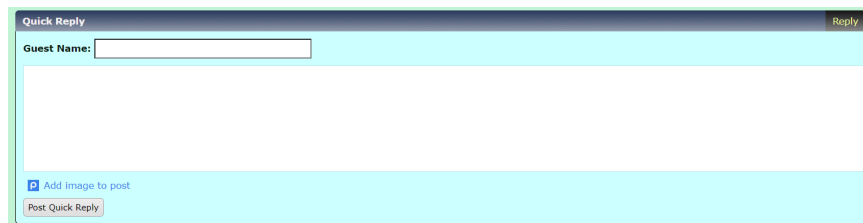


Figure 2.14: Guests of Farming Discussions are allowed to reply to the threads for certain categories

Weakness

The user interface design principle of consistency is not followed by the Farming Discussions [7], which is one of its weaknesses. Use it as an illustration. The "Daily Quiz" interface is currently different from that of the entire Farming Discussions [7]. The members will likely feel confused as they will believe they are using different web services as a result of the various design aesthetics. Due to the poor user experience, the members will eventually become frustrated and stop using the web service. They'll probably switch to other websites, like TFF [5], Forum4Farming [6], FarmNest Forum [8], and Farm Forum [9], which have consistent interface designs. Additionally, it lacks a feature that shows users the trending threads, which causes users to experience inconvenience. Additionally, Farming Discussions [7] do not serve as a channel for direct trade between farmers and suppliers, or farmers and customers.

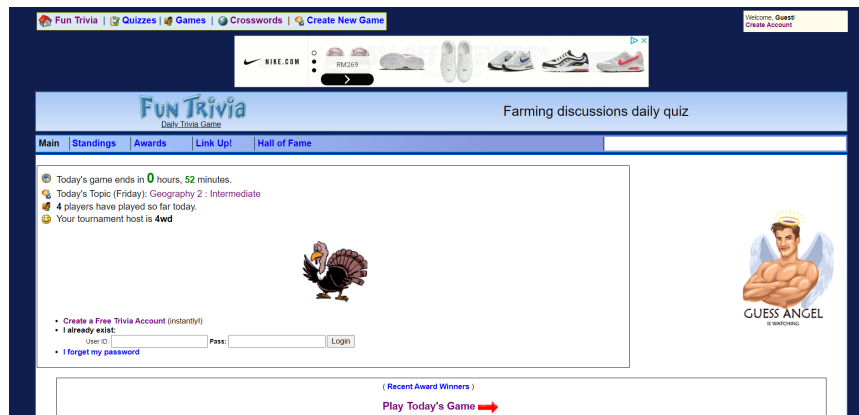


Figure 2.15: Different interface design for "Daily Quiz" in Farming Discussions

Recommendation

Redesigning the "Daily Quiz" interface is the suggestion made for Farming Discussions [7]. The entire web service's interface should actually have the same design aesthetic. It should be noted that maintaining consistency is crucial so that members can enjoy using the Farming Discussions [7]. This is the most fundamental component of creating a web service because people will prefer to use other web services with excellent interface designs if this one is subpar. In addition, it ought to include a function that shows users the trending threads. Additionally, by giving them a channel, Farming Discussions [7] should help farmers and suppliers conduct direct business.

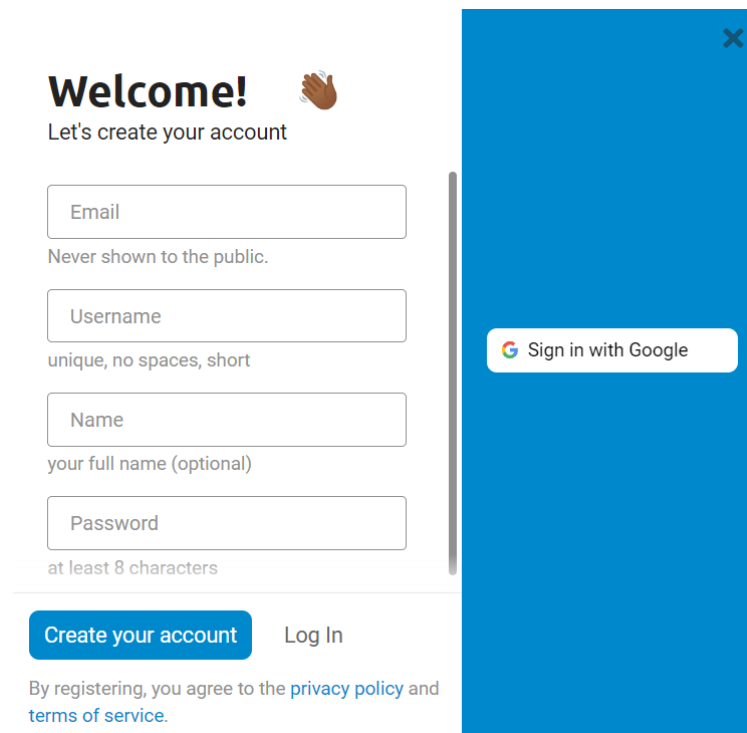
2.1.4 FarmNest Forum

Brief

Since 2010, Chandra has operated the welcoming discussion board FarmNest Forum [8], which is dedicated to modern agriculture. It is designed for three nations: India, the United Kingdom, and the United States. There are usually three roles: moderator, member, and guest. They will have additional power and oversight over the entire forum as moderators. They reserve the right to at any time and for any reason delete all content and user accounts. Members will, however, have the opportunity to read, respond to, and post the threads. Simply put, they will have the chance to share their knowledge of agriculture with others.

On the other hand, guest can only view the threads that members have posted, not create, or reply to them. Additionally, guests will constantly need to scroll through the same posts, unlike members who can simply resume where they left off after leaving

the FarmNest Forum [8]. It should be noted that the FarmNest Forum [8] has excellently organised categories for each thread. As a result, it enables both members and guests to choose the categories they wish to view. The threads related to each category are present in every category.



The image shows a registration form for FarmNest Forum. On the left, there is a white form with the heading "Welcome!" and a clapping hands emoji. Below the heading is the text "Let's create your account". The form contains four input fields: "Email" (with a note "Never shown to the public."), "Username" (with a note "unique, no spaces, short"), "Name" (with a note "your full name (optional)"), and "Password" (with a note "at least 8 characters"). Below these fields are two buttons: "Create your account" (in blue) and "Log In". At the bottom, there is a line of text: "By registering, you agree to the [privacy policy](#) and [terms of service](#)." On the right, there is a blue sidebar with a close button (X) at the top right and a "Sign in with Google" button.

Figure 2.16: Registration form to become FarmNest Forum's member

Strength

Agri Graduate, Agronomist, Farm Enthusiast, Farmer, and other groups created by farmers or experts are just a few of the groups that members of the FarmNest Forum [8] can join. Most web services, including TFF [5], Forum4Farming [6], Farming Discussions [7], and Farm Forum [9], do not offer this feature. It will give interested members the chance to request to join. This feature enables members to share information with others on a particular subject. They can explore or discuss related topics with other group members instead of doing so there since threads are likely to contain other agricultural information unrelated to the topic they are discussing. As a result, by joining the group, they can not only have a more in-depth conversation and understanding of a subject, but also make friends with others who share their interests. In addition, FarmNest Forum [8] offers a channel for direct dealing between farmers and suppliers or vice versa. Additionally, it has a search feature with filters which definitely bring the convenience towards the members or guests.

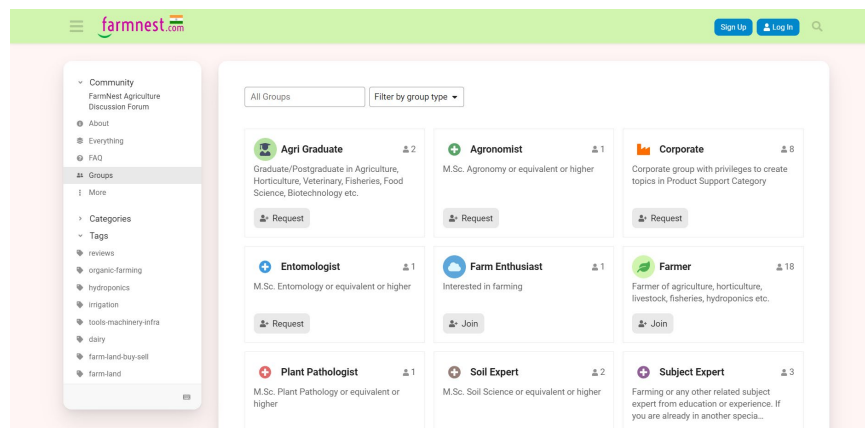


Figure 2.17: FarmNest Forum's members are allowed to join the group that interested

Weakness

The FarmNest Forum [8]'s drawback is that it only displays threads according to categories and does not allow guests or members to view new or trending threads. They are very likely to read the same threads that they have already read, which will waste their time. In another word, they must determine whether this thread has been updated recently on their own. As previously mentioned, the most recent information pertaining to agriculture will typically be found in the new and trending threads. Therefore, by forbidding users from viewing those specific threads, they risk missing out on important or new information.

Recommendation

In a simple term, it is advised that FarmNest Forum [8] show both the newest and most popular threads. For instance, it could allow users to decide whether to see those threads in the navigation bar or not, just like TFF [5] does. By having this feature, it can be said that most users won't easily miss important or new information and they can use the information that has already been received or exchanged in their farm's operations to improve both the development and the economy of the farm.

2.1.5 Farm Forum

Brief

Bayer Canada created the forum known as Farm Forum [9], which is usually for farming or agriculture. It is well known that Canada is a diverse and wealthy agricultural nation. Therefore, it aims to reshape agriculture to benefit Canadian farmers. All the agricultural news and resources are available in the Farm Forum [9], where users can view the news and resources that are all related to farming. For instance, users who are currently logged into the Farm Forum [9] can read or view the news stories that interest them. By having this, it can be ensured that the users, who are usually farmers, can stay up to date on the latest agricultural news and developments. They can only accurately judge the agricultural landscape around them and around the world by having a thorough understanding of it. Based on that assessment, they can then make the best choices for themselves and maximize their own benefits. It should be emphasized that Farm Forum [9]'s news and resources are all thoughtfully categorized.

Strength

The search panel's filter feature is Farm Forum [9]'s main strength. Simply put, it enables users to conduct news and resource searches by categorizing the results. For instance, Farm Forum [9] divides the news and resources into four groups: technology, business, production, and farm life. Make it into an illustration. If a user wishes to view news articles about farm life. They can then easily navigate to the search panel and narrow the categories to farm life. The users benefit greatly from this feature because they can quickly access that particular category rather than wasting time searching through each item individually. Money is time, as they say. The ability of any guest to view Farm Forum [9]'s content and utilize its features is also unrestricted. It does not impose guest restrictions like TFF [5], Forum4Farming [6], Farming Discussions [7], or FarmNest Forum [8] does, but rather permits everyone to browse, albeit from various geographical locations. Users of Farm Forum [9] can simultaneously view the most recent resources or articles.



Figure 2.18: Filter function in the search panel of Farm Forum

Weakness

Because it forbids communication, Farm Forum [9] has this flaw. It is obvious that Farm Forum [9] does not allow users to discuss farming-related issues. Rather, it only provides resources or news for users to view. The users of the Farm Forum [9] are unable to ask or share any questions or information related to agriculture as a result of the current situation. They'll be more likely to use other websites like TFF [5], FarmNest Forum [8], and others for a while. As a result, the Farm Forum [9] will gradually cease to exist, and its goals and objectives will no longer be met. In addition, Farm Forum [9] is not a channel for direct trade between farmers and suppliers, or vice versa.

Recommendation

To put it simply, it is strongly advised that Farm Forum [9] include a communication feature to allow users to share information and dispel myths. For instance, Farm Forum [9] can designate a channel where users can post new threads to the forum. The users can then simply reply to the relevant threads. The users will undoubtedly find this method to be convenient. Additionally, Farm Forum [9] ought to assist suppliers and farmers in conducting direct business by acting as a conduit for them.

CHAPTER 2

2.1.6 Comparison of similar web services

Web Services Features	The Farming Forum (IFF)	Forum4Farming	Farming Discussions	FarmNest Forum	FarmForum
Check / Compare Price	✓	X	X	X	X
Trending Threads	✓	X	X	X	X
Digital Buying Group	✓	X	X	X	X
256-Bit SSL Encryption	✓	X	X	X	X
Guests Reply / Create Threads	X	X	✓	X	X
Deal	✓	✓	X	✓	X
New Threads	✓	✓	✓	X	X
Search Function	✓	X	✓	✓	✓
Well-Organized Threads	✓	✓	✓	✓	✓
Play Quiz	X	X	✓	X	X
Consistency	✓	✓	X	✓	✓
Join Group	X	X	X	✓	X
FAQ Section	✓	X	X	✓	✓
Communication	✓	✓	✓	✓	X

Table 2.1: Table comparison of features in the literature review

CHAPTER 3

System Methodology/Approach

This chapter elaborates on the methodology and design of the undertaking. Additionally, the timeline for the project will also be elaborated upon in this chapter.

3.1 Design Specification

3.1.1 Methodologies and General Work Procedures

There are numerous different approaches that are appropriate for software development. Agile methodology [10] has been selected for this project. It refers to a methodology that prioritizes continuous improvement and testing throughout the software development lifecycle [14] of a project. Agile [10] is now among the most widely used methods for developing software because it is more adaptable than other system methodologies.

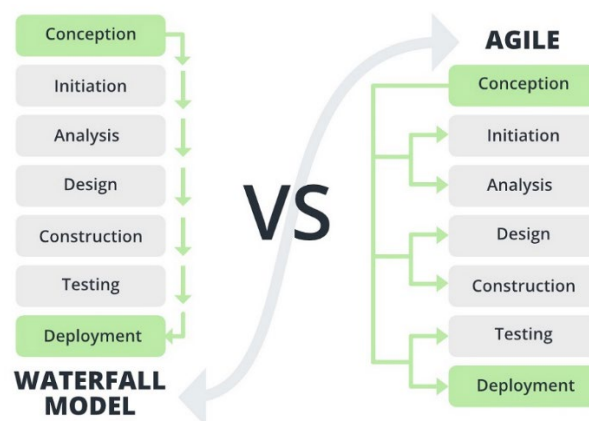


Figure 3.1 Comparison between Waterfall and Agile

Other software methodologies, such as Waterfall, are linear and sequential in nature, requiring that each phase be finished before going on to the next, making them less flexible once a project has begun. This is seen in *Figure 3.1*. However, the sprint cycle [14] is used in the development process of the Agile Methodology [10]. Since each agile [10] work is tested and reviewed after each cycle, it is transparent and encourages continual progress. This provides the web project with an opportunity to develop and

fix issues. Simply put, defects, faults, and required changes can all be addressed at any point, and evolution can also occur.

When implementing the Agile Methodology [10], it can be broken down into six phases for more clarity. The web project's scope and fundamental requirements will be determined and confirmed during the first stage, known as concept. After the notion has been described, the inception stage starts. The design process will then start. A mock-up of the user interface will also be constructed along with the project architecture. The functionality of the finished product will also be decided at this time, along with the other needs, which will also be completely developed.

Next follows the iteration phase, commonly referred to as building. This stage typically lasts the longest because it is when the bulk of the work is completed. The web project should be functionally minimal by the conclusion of the first sprint or iteration. More functionalities could be added in later editions. After the iteration phase, tests must be performed to ensure that the web project is completely operational. At its conclusion, the web project will be complete and useful.

3.2 System Design

3.2.1 Use Case Diagram

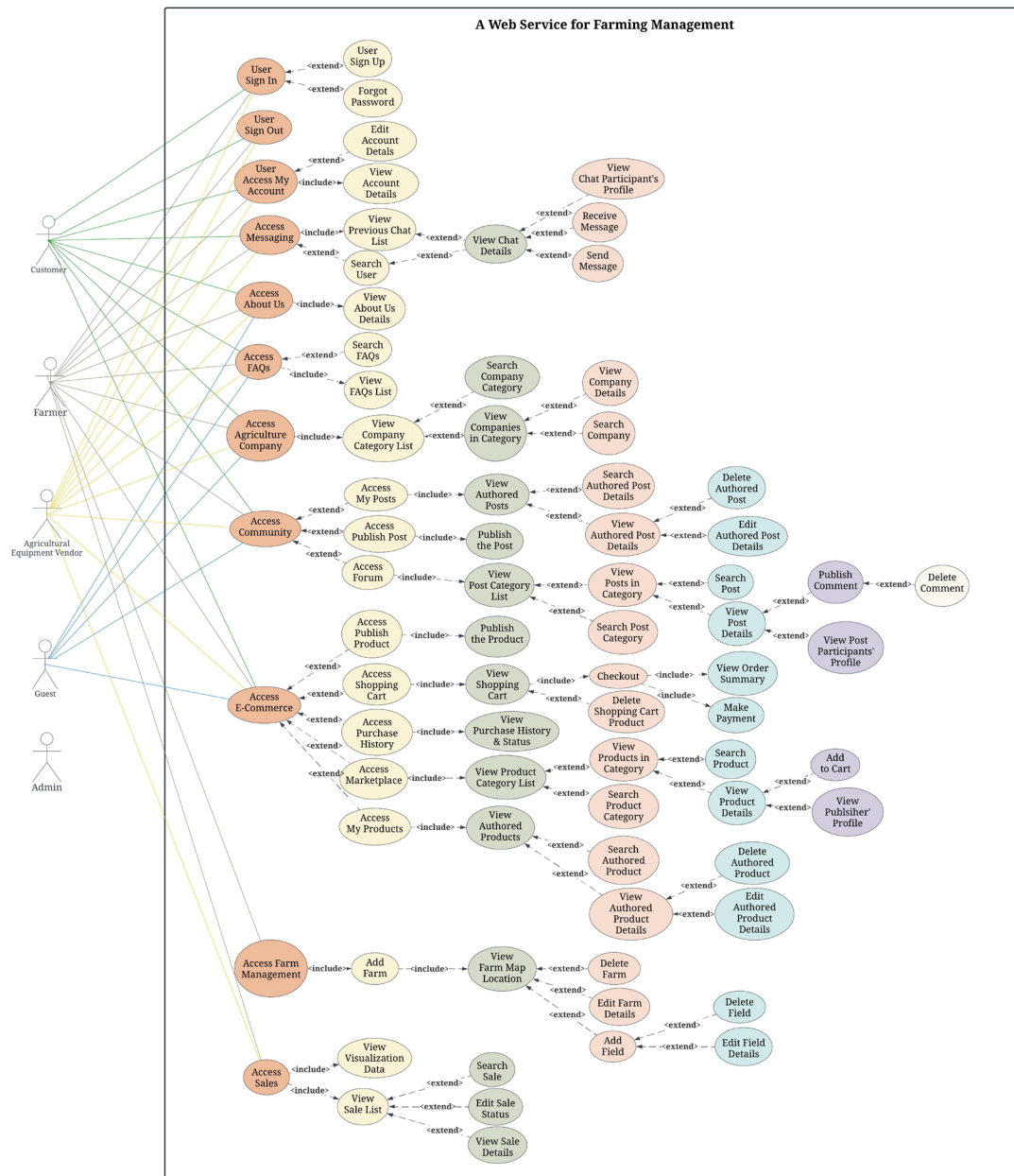


Figure 3.2 Full Use Case Diagram (Part 1)

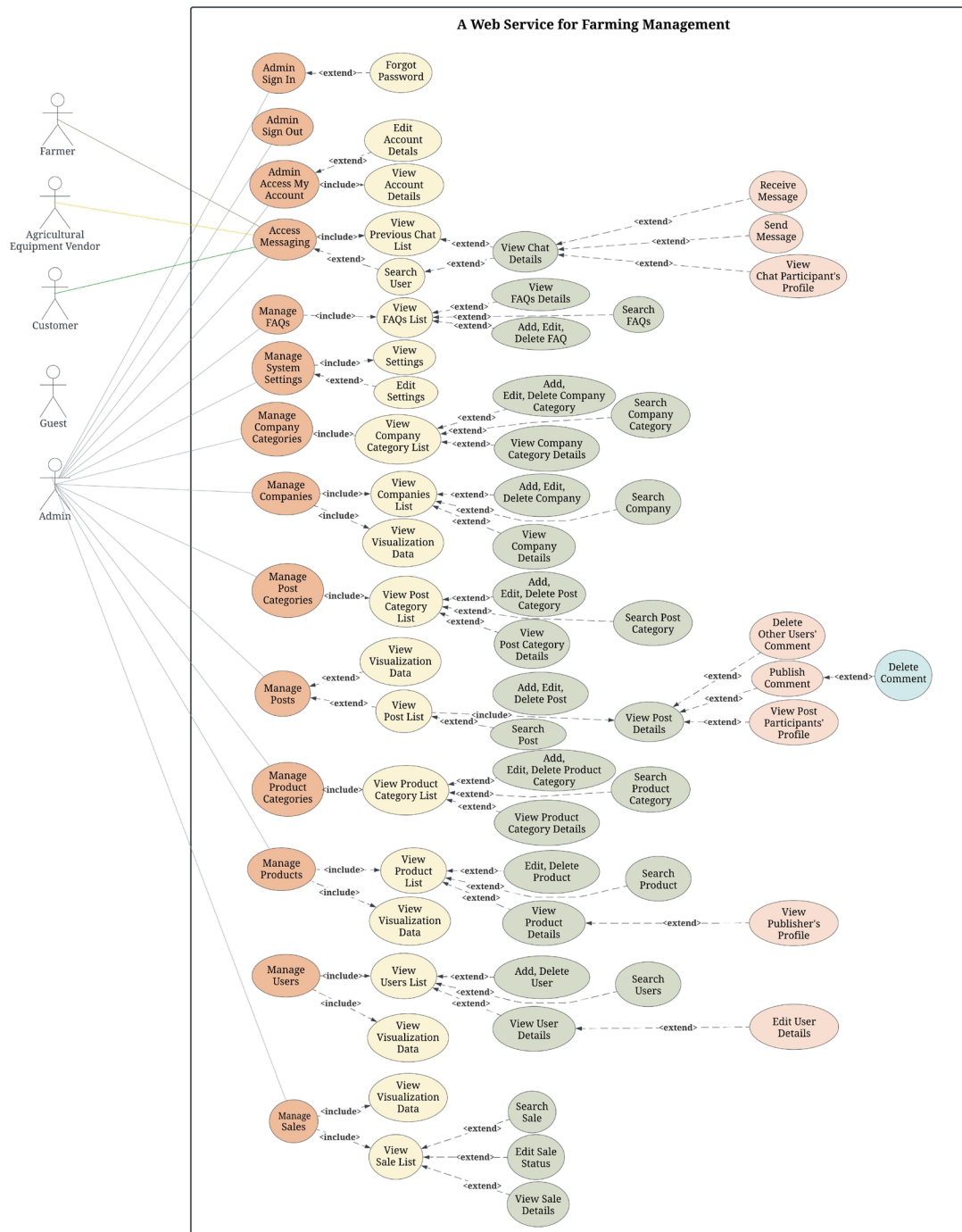


Figure 3.3 Full Use Case Diagram (Part 2)

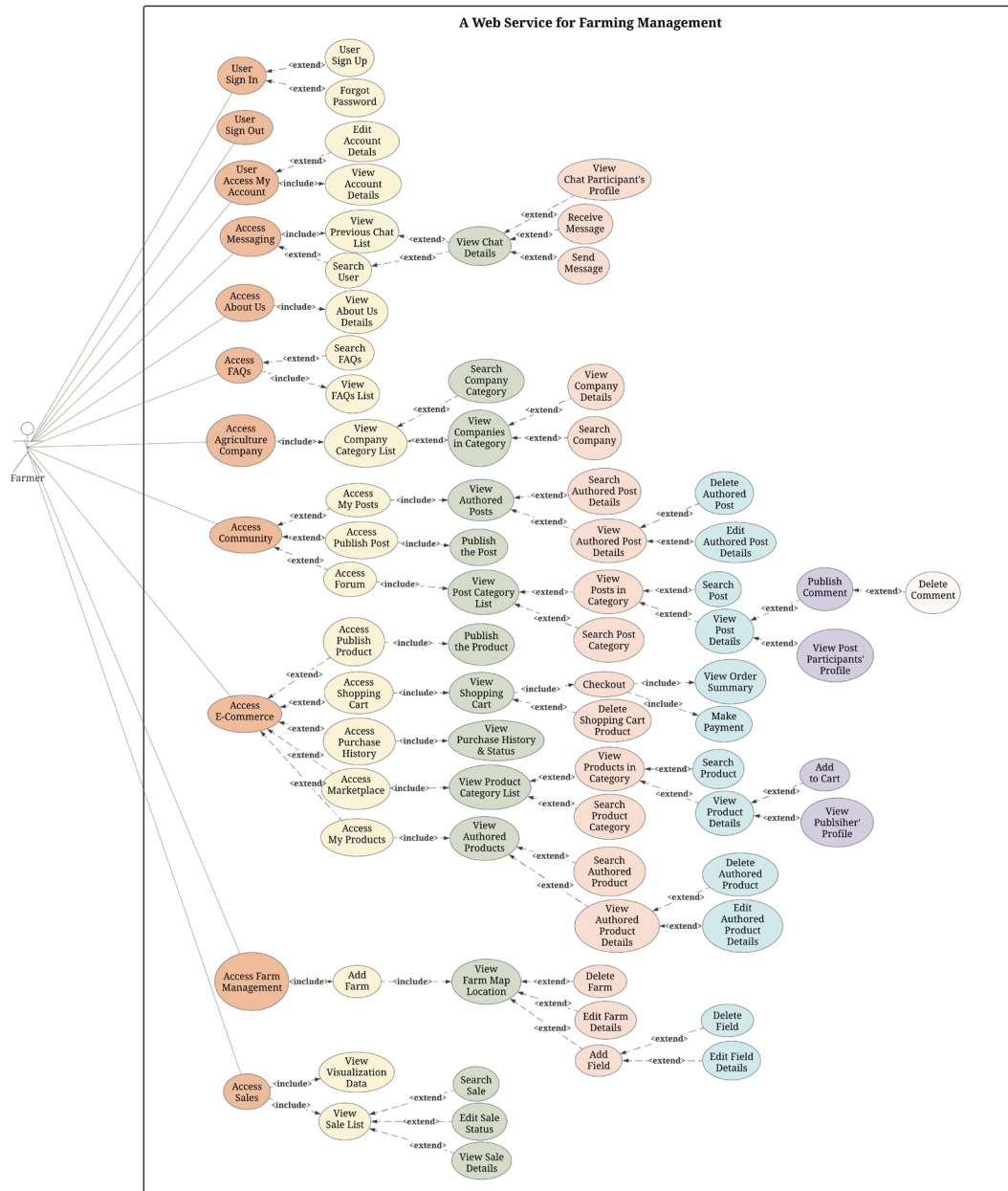


Figure 3.4 Farmer Role Use Case Diagram

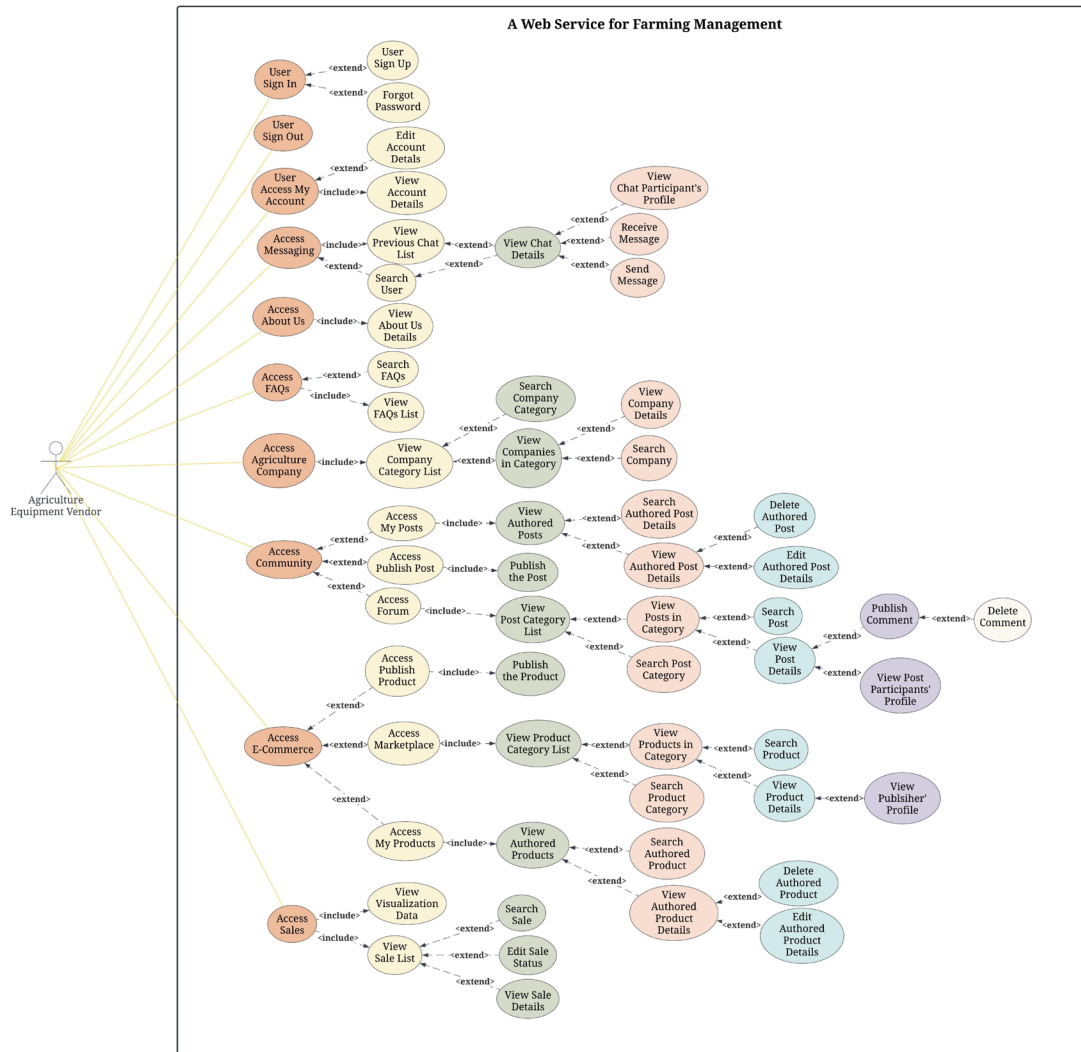


Figure 3.5 Agricultural Equipment Vendor Use Case Diagram

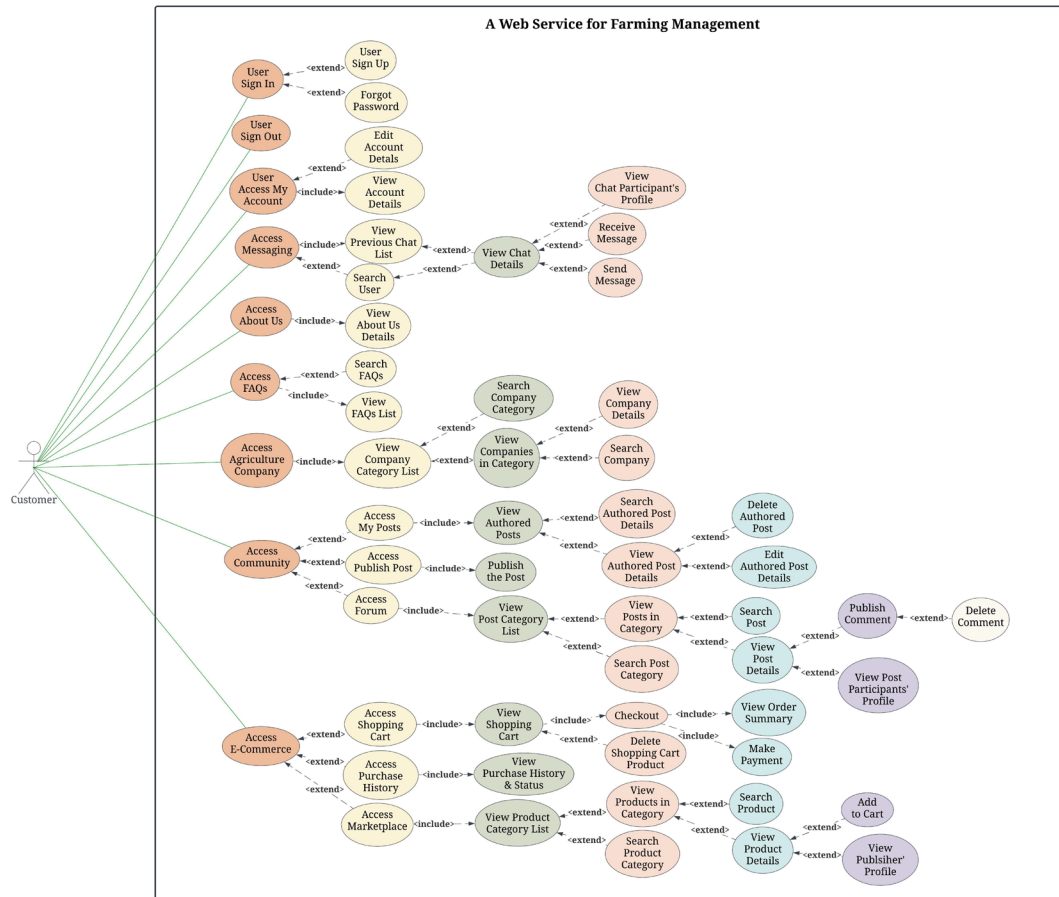


Figure 3.6 Customer Role Use Case Diagram

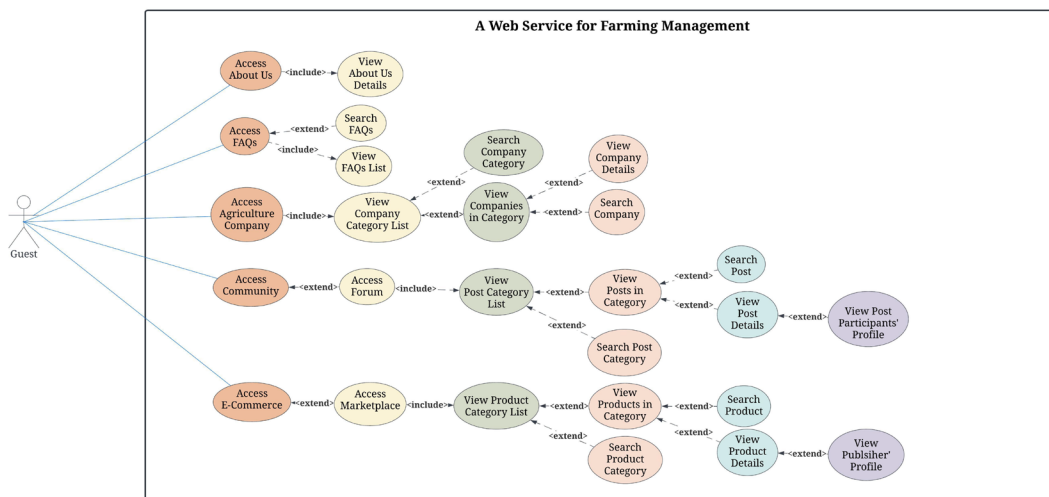


Figure 3.7 Guest Role Use Case Diagram

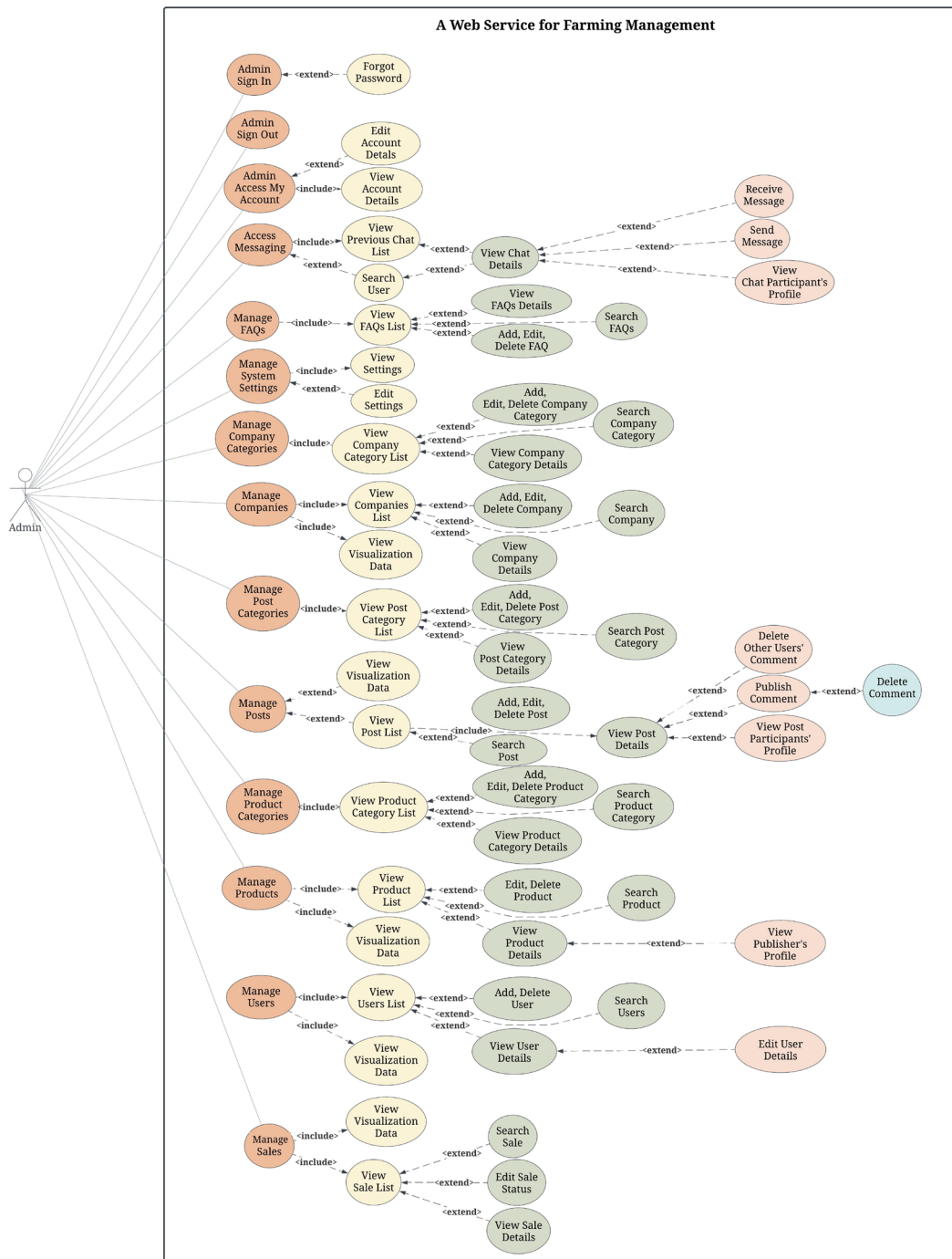


Figure 3.8 Admin Role Use Case Diagram

CHAPTER 3

The project's use case diagrams are shown in *Figure 3.2, 3.3, 3.4, 3.5, 3.6, 3.7 and 3.8* above, encompass 5 key actors which are the Farmer, the Agricultural Equipment Vendor, the Customer, the Guest, and the Admin.

The diagram illustrates various usage scenarios, revealing shared use cases among the Farmer, Agricultural Equipment Vendor, Customer, and Guest, exemplified by functionalities like Access Community, Access E-Commerce, Access Agriculture Company, Access FAQs. However, within these shared use cases, certain actions are only applicable to users with specific roles, delineating distinctions among them.

Moreover, certain functionalities, such as User Sign In, User Sign Out, and Access My Account, are exclusive to the Farmer, Agricultural Equipment Vendor, and Customer. Moreover, the Farmer and Agricultural Equipment Vendor are granted additional privileges, like Access Sales. Notably, the use case Access Farm Management is tailored solely for the Farmer.

On the other hand, Admin wield a distinct set of functionalities, including Admin Sign In, Admin Sign Out, and a spectrum of management capabilities like Manage System Settings, Manage Users, Manage FAQs, Manage Post Categories, Manage Posts, Manage Product Categories, Manage Products, Manage Sales, Manage Company Categories, as well as Manage Companies.

3.2.2 Use Case Description

The descriptions for each use case are included below.

Use Case ID	UC001
Use Case Name	User Sign In
Actor	Farmer, Agricultural Equipment Vendor, and Customer
Description	This use case is to validate the users' identity in order to let them gain access to the system.
Trigger	Users click the "SIGN IN/SIGN UP" button.
Normal Flow	1. Users click the "SIGN IN/SIGN UP" button through the top navigation bar. 2. System displays a sign-in card. 3. Users enter their credentials (username & password). 4. System verifies the accuracy of the inputs. 5. System redirects users to the home page.
Sub Flow – User Sign Up	2a.1. Users click on the "New Here? SIGN UP" text. 2a.2. System displays a sign-up card. 2a.3. Users provide registration information. 2a.4. Users successfully create account. 2a.5. System displays sign-in card to let users sign into the system.
Sub Flow – Forget Password	2b.1. Users click "Forgot Password?" text. 2b.2. System displays a forgot password card. 2b.3. Users update their credentials. 2b.4. Users successfully reset password. 2b.5. System displays sign-in card to let users sign into the system.
Alternative Flow – Invalid username or password	4a.1. Users input invalid username or password. 4a.2. System validates users' username and password. 4a.3. System displays an error message.
Alternative Flow – Empty username or password	1. Users leave the username or password field empty. 2. System validates users' username and password. 3. System displays an error message.
Alternative Flow – Webpage Load Failure	1. The webpage cannot be loaded. 2. System displays an error message.

Table 3.1 User Sign In Use Case Description

Use Case ID	UC002
Use Case Name	Users Sign Out
Actor	Farmer, Agricultural Equipment Vendor, Customer
Description	This use case is to let the users able to sign out of the system.
Trigger	Users click their avatar in the top navigation bar and select “Sign Out” from the dropdown menu.
Normal Flow	1. Users click their avatar in the top navigation bar and select “Sign Out” from the dropdown menu. 2. System signs out the users.
Sub Flow	–
Alternative Flow – Webpage Load Failure	1. The webpage cannot be loaded. 2. System displays an error message.

Table 3.2 User Sign Out Use Case Description

Use Case ID	UC002
Use Case Name	Users Access My Account
Actor	Farmer, Agricultural Equipment Vendor, and Customer
Description	This use case is to let the users in the role of Farmer, Agriculture Equipment Vendor or Customer able to view their personal information and update it. Notably, the information is organized into different tabs: Profile, Addresses, and Change Password.
Trigger	User clicks the avatar in top navigation bar and select “My Account” from the dropdown options.
Normal Flow	1. User clicks the avatar in top navigation bar and select “My Account” from the dropdown options. 2. System displays “My Account” page with the Profile tab active by default, showing users’ current profile information. 3. Users navigate between the tabs to view or modify their information.
Sub Flow – Update Profile	2a.1. Users enter the updated information in particular fields and click “Update” button. 2a.2. System validates and displays a successful message.
Sub Flow – Manage Address	3a.1. Users select the “Address” tab. 3a.2. System displays a list of user’s addresses. 3a.3. Users can perform one of the following actions: 3a.3.1. Users click the “Add Address” button, enter address details, and click the “Save” button. System validates and adds the new

	address, displaying a confirmation message. 3a.3.2. Users click the edit icon next to an address, modify the details and click “Update” button. System validates and updates the address, displaying a confirmation message. 3a.3.3. Users click the delete icon next to an address, confirm deletion. System removes the address, displaying a confirmation message.
Sub Flow – Change Password	3b.1. Users select the “Change Password” tab. 3b.2. System displays the password change fields. 3b.3. Users enter new password and confirms the new password. 3b.4. Users click the “Update” button. 3b.5. System validates and updates the password, displaying a confirmation message.
Alternative Flow – Validation Error	1. Users leave the username or password field empty. 2. System validates users’ username and password. 3. System displays an error message.
Alternative Flow – Webpage Load Failure	1. The webpage cannot be loaded. 2. System displays an error message.

Table 3.3 Access My Account Use Case Description

Use Case ID	UC004
Use Case Name	Access Farm Management
Actor	Farmer
Description	This use case enables users in the role of farmer to manage their farm and fields within the system.
Trigger	Users click the “Farm Management” option in the sidebar.
Normal Flow	1. Users click “Farm Management” option in the sidebar. 2. Users initiate the process by clicking the “Add Farm” button. 3. Users input the farm details (name and location) into the provided form and proceed by clicking the “Save” button. 4. System validates the entered details and displays a successful message. 5. System shows the farm’s location on a map.
Sub Flow –	5a.1. Users click on the “Delete Farm” button.

Delete Farm	5a.2. Users confirm deletion. 5a.3. System removes the farm and displays a success message.
Sub Flow – Edit Farm	5b.1. Users click on the “Edit Farm” button. 5b.2. Users make necessary modifications and save the changes by clicking the “Save” button. 5b.3. System validates and displays a successful message.
Sub Flow – Add Field	5c.1. Users initiate the addition of a field by clicking the “Add Field” button. 5c.2. System shows a list of tools on the map interface. 5c.3. Users utilize the tools to draw the field on the map and proceed by clicking the “Save Field” button. 5c.4. A card prompts users to input field details. 5c.5. Users input the required details and click “Save” button. 5c.6. System validates and displays a successful message. 5c.7. System shows the added field on the map interface.
Sub Flow – Edit Field	5d.1. Users select a specific field on the map. 5d.2. System displays a little popup card containing field details. 5d.3. Users initiate the process by clicking the edit icon. 5d.4. A notification informs users of their ability to edit the polygon. 5d.5. Users make necessary adjustments to the polygon and save changes by clicking the “Save Changes” button. 5d.6. A card prompts users to update the field details. 5d.7. Users input the updated details and confirm by clicking the “Save” button. 5d.8. System validates and displays a successful message. 5d.9. System shows the updated fields on the map.
Sub Flow – Delete Field	5e.1. Users select a specific field on the map. 5e.2. System displays a little popup card containing field details. 5e.3. Users proceed to deletion by clicking on the delete icon. 5e.4. System removes the field and displays a successful message.
Alternative Flow – Validation Error	1. Users input invalid format of particular information or leave the particular fields empty. 2. Systems validates updated information. 3. Systems displays an error message.

Alternative Flow – Webpage Load Failure	1. The webpage cannot be loaded. 2. System displays an error message.
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Table 3.4 Access Farm Management Use Case Description

Use Case ID	UC005
Use Case Name	Access Community
Actor	Farmer, Agricultural Equipment Vendor, Customer, Guest
Description	This use case enables users in the roles farmer, agricultural equipment vendor, or customer to actively participate in the community. The Community section presents three options: “Forum”, “My Posts”, and “Publish Post”. Users can interact by posting, commenting, and engaging with other users. Guest are permitted to view content but cannot post or comment.
Trigger	Users click the “Community” option in the sidebar.
Normal Flow	1. Users click “Community” option in the sidebar. 2. Users select “Forum” from the dropdown menu under “Community” in the sidebar. 3. System presents a list of post categories. 4. Users expand a category by selecting the '+' sign to view its correspond description, then click 'View More' to see all posts within. 5. System displays all the posts within the selected category. 6. Users select a post to view details.
Sub Flow – [Excluding users in the role of guest] View Authored Posts	1a.1. Users click “My Posts” from the dropdown menu under the “Community” in the sidebar. 1a.2. System displays all user-authored posts. 1a.3. Users choose a particular post to view the details. 1a.4. Users can perform one of the following actions: 1a.4.1. Users click the edit icon on top of the post, modify the details and click “Update” button. System validates and displays a successful message. 1a.4.2. Users click the delete icon on top of the card and confirm deletion. System removes the selected post and displays a successful message.
Sub Flow – [Excluding Guest] Publish Post	1b.1. Users click “Publish Post” from the dropdown menu under the “Community” in the side bar. 1b.2. System displays a form for entering post details. 1b.3. Users provide details and click the “Save” button.

Sub Flow – Search Category	3a.1. Users input a keyword into the search bar to search for post categories. 3a.2. System exhibits the categories that occur in the keyword match.
Sub Flow – Search Post	5a.1. Users input a keyword into the search bar to search for posts. 5a.2. System exhibits the posts that occur in the keyword match.
Sub Flow – View Post Participants' Profile	6a.1. Users view the profile of post participants by clicking their avatar or username. 6a.2. System displays the selected user profile.
Sub Flow – [Excluding users in the role of guest] Publish Comments	6b.1. Users enter text in the input box and click the “Save” button. 6b.2. System publishes the comment under particular post.
Alternative Flow – Webpage Load Failure	1. The webpage cannot be loaded. 2. System displays an error message.

Table 3.5 Access Community Use Case Description

Use Case ID	UC006
Use Case Name	Access E-Commerce
Actor	Farmer, Agricultural Equipment Vendor, Customer, Guest
Description	This use case enables users in the roles of farmer, agricultural equipment vendor, customer, or guest to access the E-Commerce section of the system. While all users can view content, farmers and agricultural equipment vendors have privileges to publish products. Furthermore, farmers and customers can access features such as viewing shopping carts and purchase history. Guest are restricted to viewing content only.
Trigger	Users click the “E-Commerce” option in the sidebar.
Normal Flow	1. Users click “E-Commerce” option in the sidebar. 2. Users select “Marketplace” from the dropdown menu under “E-Commerce” in the sidebar. 3. System presents a list of product categories. 4. Users expand a category by selecting the “+” sign to view its corresponding description, then click “View More” button to see all products within.

	5. System displays all the products within the selected category. 6. Users select a product to view details.
Sub Flow – [Excluding users in the roles of customer or guest] View Authored Products	1a.1. Users click “My Products” from the dropdown menu under the “E-Commerce” in the sidebar. 1a.2. System shows all user-authored products. 1a.3. Users choose a particular product to view the details. 1a.4. Users can edit or delete their products.
Sub Flow – [Excluding users in the roles of customer or guest] Publish Product	1b.1. Users select “Publish Product” from the dropdown options under “E-Commerce” in the sidebar. 1b.2. System displays a form for entering product details. 1b.3. Users provide details and click the “Save” button.
Sub Flow – [Excluding users in the roles of agriculture equipment vendor or guest] View Shopping Cart	1c.1. Users select “Shopping Cart” from the dropdown menu under “E-Commerce” in the sidebar. 1c.2. System displays the items that are presently in the shopping cart. 1c.3. Users can perform one of the following actions: 1c.3.1. Users can adjust the quantity of each item by clicking the “+” and “–” sign in the quantity selector. System validates the changes and displays a successful message. 1c.3.2. Users can remove an item by clicking the delete icon beside it and confirming deletion. System removes the item and displays a successful message. 1c.3.3. Users can proceed to checkout by selecting desired items and click “Checkout” button. System presents order summary, and users need to choose a payment method to complete transaction.
Sub Flow – [Excluding users in the roles of agriculture equipment vendor or guest] View Purchase History	1d.1. Users click “Purchase History” from the dropdown menu under the “E-Commerce” in the sidebar. 1d.2. System presents users’ purchase history details.
Sub Flow – Search Category	3a.1. Users input a keyword into the search bar to search for product categories.

	3a.2. System exhibits the categories that occur in the keyword match.
Sub Flow – Search Product	5a.1. Users input a keyword into the search bar to search for products. 5a.2. System exhibits the products that occur in the keyword match.
Sub Flow – View Publisher’s Profile	6a.1. Users view the profile of product publisher by clicking their avatar or username. 6a.2. System displays the selected user profile.
Sub Flow – [Excluding users in the roles of agriculture equipment vendor or guest] Add Product to Cart	6b.1. Users utilize the quantity selector to indicate the quantity they wish to purchase. 6b.2. Users click “Add to Cart” button to add the product to their shopping cart.
Alternative Flow – Webpage Load Failure	1. The webpage cannot be loaded. 2. System displays an error message.

Table 3.6 Access E-Commerce Use Case Description

Use Case ID	UC007
Use Case Name	Access Sales
Actor	Admin
Description	This use case enables users in the roles of farmer or agricultural equipment vendor to oversee the sales and control the status of received order within the system.
Trigger	Users click the “Sales” in the sidebar
Normal Flow	1. Users click the “Sales” in the sidebar. 2. System shows visualization data in the form of charts alongside the order list displayed in a table format.
Sub Flow – Search Order	2a.1. Users input a keyword into the search bar to search for received orders. 2a.2. System exhibits the received ordered that occur in the keyword match.
Sub Flow – View Order	2b.1. Users select the “View” option from the dropdown menu adjacent to each order. 2b.2. System displays the details of the selected order.
Sub Flow – Edit Order Status	2c.1. Users select the “Edit” option from the dropdown menu adjacent to each order. 2c.2. System displays the details of the selected order.

	2c.3. Users select the current status of the order from the dropdown list and click the “Save Changes” button.
	2c.4. System validates and displays successful message.
Alternative Flow – Webpage Load Failure	1. The webpage cannot be loaded. 2. System displays an error message.

Table 3.7 Access Sales Use Case Description

Use Case ID	UC008
Use Case Name	Access Agriculture Company
Actor	Farmer, Agriculture Equipment Vendor, Customer, Guest
Description	This use case enables users in the role of farmer, agricultural equipment vendor, and customer to access information pertaining to agriculture companies.
Trigger	Users click the “Agriculture Company” option in the sidebar.
Normal Flow	1. Users click “Agriculture Company” in the sidebar. 2. System presents a list of company categories. 3. Users expand a category by selecting the “+” sign to view its corresponding description, then click “View More” button to see all companies within. 4. Users select a company to view details.
Sub Flow – Search Category	2a.1. Users input a keyword into the search bar to search for company categories. 2a.2. System exhibits the categories that occur in the keyword match.
Sub Flow – Search Company	2b.1. Users input a keyword into the search bar to search for companies. 2b.2. Users click “Save Changes” after selecting the order’s current status from the dropdown menu.
Alternative Flow – Webpage Load Failure	1. The webpage cannot be loaded. 2. System displays an error message.

Table 3.8 Access Agriculture Company Use Case Description

Use Case ID	UC009
Use Case Name	Access FAQs
Actor	Farmer, Agriculture Equipment Vendor, Customer, Guest
Description	This use case enables users in the roles of farmer, agricultural equipment vendor, and customer to view the frequently asked questions.
Trigger	Users click “FAQs” option in the sidebar.
Normal Flow	1. Users click “FAQs” in the sidebar. 2. System presents a list of the questions accompanied by their corresponding answer. 3. Users expand a question by selecting the “+” sign to view its corresponding answer.
Sub Flow – Search Question	3a.1. Users input a keyword into the search bar to search for questions. 3a.2. System exhibits the questions that occur in the keyword match.
Alternative Flow – Webpage Load Failure	1. The webpage cannot be loaded. 2. System displays an error message.

Table 3.9 Access FAQs Use Case Description

Use Case ID	UC010
Use Case Name	Access About Us
Actor	Farmer, Agriculture Equipment Vendor, Customer, Guest
Description	This use case enables users in the roles of farmer, agricultural equipment vendor, and customers to access the system’s additional information.
Trigger	Users click “About Us” option in the sidebar.
Normal Flow	1. Users click “About Us” in the sidebar. 2. System presents the system’s additional information.
Alternative Flow – Webpage Load Failure	1. The webpage cannot be loaded. 2. System displays an error message.

Table 3.10 Access About Us Use Case Description

Use Case ID	UC011
Use Case Name	Access Messaging
Actor	Admin, Farmer, Agriculture Equipment Vendor, Customer
Description	This use case enables users in the role Admin, Farmer, Agriculture Equipment Vendor, or Customer to access messaging functionality within the system.
Trigger	Users or admins click the envelope button at the right bottom corner of the system.
Normal Flow	1. Users and admins click the envelope button at the right bottom corner of the system. 2. System displays the chat box and show a list of previous chat. 3. Users and admins click on a chat to view chat details. 4. Users and admins send message by utilizing the message input box and either select the “Enter” key on keyboard or click the “Send” button. 5. Users or admins receive messages in real-time.
Sub Flow – Search User	2a.1. Users and admins input a keyword into the search bar to search for other users. 2a.2. System displays the users matching the keyword.
Sub Flow – View Chat Participant’s Profile	3a.1. Users and admins view the profile of chat participant by clicking on his/her avatar or username. 3a.2. System displays the particular user profile.
Alternative Flow – Webpage Load Failure	1. The webpage cannot be loaded. 2. System displays an error message.

Table 3.11 Access Messaging Use Case Description

Use Case ID	UC012
Use Case Name	Admin Sign In
Actor	Admin
Description	This use case is to validate the admins' identity in order to let them gain access to the system.
Trigger	Admins enter the system's URL in the web browser.
Normal Flow	1. Admins enter the system's URL in the web browser. 2. System automatically directs the admin to the sign-in card. 3. Admins enter their credentials (username & password). 4. System verifies the accuracy of the inputs. 5. System redirects admins to the home page.
Alternative Flow – Invalid username or password	3a.1. Admins input invalid username or password. 3a.2. System validates admins' username and password. 3a.3. System displays an error message.
Alternative Flow – Empty username or password	3b.1. Admins leave the username or password field empty. 3b.2. System validates admins' username and password. 3b.3. System displays an error message.
Alternative Flow – Webpage Load Failure	1. The webpage cannot be loaded. 2. System displays an error message.

Table 3.12 Admin Sign In Use Case Description

Use Case ID	UC013
Use Case Name	Admin Sign Out
Actor	Admin
Description	This use case is to let the admins able to sign out of the system.
Trigger	Admins click their avatar in the top navigation bar and select "Sign Out" from the dropdown menu.
Normal Flow	3. Admins click their avatar in the top navigation bar and select "Sign Out" from the dropdown menu. 4. System signs out the admins.
Sub Flow	—
Alternative Flow – Webpage Load Failure	3. The webpage cannot be loaded. 4. System displays an error message.

Table 3.13 Admin Sign Out Use Case Description

Use Case ID	UC0014
Use Case Name	Admin Access My Account
Actor	Admin
Description	This use case enables admins to observe and modify their own personal information. Significantly, the info is structured into distinct sections, namely “Profile” and “Change Password”.
Trigger	Admins click the avatar in top navigation bar and select “My Account” from the dropdown options.
Normal Flow	1. Admins click the avatar in top navigation bar and select “My Account” from the dropdown menu. 2. System displays a page with the Profile tab active by default, showing admins’ current profile information. 3. Admins navigate between the tabs to view or modify their information.
Sub Flow – Update Profile	2a.1. Admins enter the updated information in particular fields and click “Update” button. 2a.2. System validates and displays a successful message.
Sub Flow – Change Password	3a.1. Admins select the “Change Password” tab. 3a.2. System displays the password change fields. 3a.3. Admins select “Update” after entering and confirm the new password. 3a.4. System validates and displays a successful message.
Alternative Flow – Webpage Load Failure	1. The webpage cannot be loaded. 2. System displays an error message.

Table 3.14 Admin Access My Account Use Case Description

Use Case ID	UC0015
Use Case Name	Manage System Settings
Actor	Admin
Description	This use case empowers admins to supervise and control the settings of the system.
Trigger	Admins select “System Settings” from the dropdown menu under “System” in the sidebar.
Normal Flow	1. Admins select “System Settings” from the dropdown menu under “System” in the sidebar. 2. System displays the settings details.
Sub Flow – Edit Setting	2a.1. Admins enter the updated information in particular fields and click “Update” button.

	2a.2. System validates and saves the updated information, displaying a successful message.
Alternate Flow	1. The webpage cannot be loaded. 2. System displays an error message.

Table 3.15 Manage System Settings Use Case Description

Use Case ID	UC0016
Use Case Name	Manage Users
Actor	Admin
Description	This use case empowers admins to supervise and control the users contained within the system.
Trigger	Admins select “Users” from the dropdown menu under “System” in the sidebar.
Normal Flow	1. Admins select “Users” from the dropdown menu under “System” in the sidebar. 2. System presents visualization data in the form of charts in addition to a table-formatted list of users.
Sub Flow – Edit User	2a.1. Admins select the “Edit” option from the dropdown menu adjacent to each user. 2a.2. System displays the details of the selected user by organizing it into different tabs: “Profile”, “Addresses”, and “Change Password”. 2a.3. Admins navigate between the tabs to view or modify their details. 2a.4. Admins provide the updated details of the user and click “Save User Details” button. 2a.5. System displays a successful message.
Sub Flow – Delete User	2b.1. Admins select the “Delete” option from the dropdown menu adjacent to each user. 2b.2. Admins confirm deletion. 2b.3. System removes the selected user and displays a successful message.
Alternative Flow – Webpage Load Failure	1. The webpage cannot be loaded. 2. System displays an error message.

Table 3.16 Manage Users Use Case Description

Use Case ID	UC0017
Use Case Name	Manage FAQs
Actor	Admin
Description	This use case empowers admins to supervise and control the frequently asked questions contained within the system.
Trigger	Admins select the “FAQs” from the dropdown menu under “System” in the sidebar.
Normal Flow	- Admins select “FAQs” from the dropdown menu under “System” in the sidebar. - System presents a table-formatted list of questions.
Sub Flow – Search FAQ	- Admins input a keyword into the search bar to search for questions. - System exhibits the questions that occur in the keyword match.
Sub Flow – View FAQ Details	- Admins select the “View” option from the dropdown menu adjacent to each question. - System displays the details of the selected question.
Sub Flow – Edit FAQ	- Admins select the “Edit” option from the dropdown menu adjacent to each question. - System displays the details of the selected question. - Admins modify the details and click the “Save Changes” button. - System validates and displays a successful message.
Sub Flow – Add FAQ	- Admins select the “Create New” button. - System displays a form for entering FAQ details. - Admins provide details and click “Save” button. - System validates and displays a successful message.
Sub Flow – Delete FAQ	- Admins select the “Delete” option from the dropdown menu adjacent to each question. - Admins confirm deletion. - System removes the selected question and displays a successful message.
Alternative Flow – Webpage Load Failure	- The webpage cannot be loaded. - System displays an error message.

Table 3.17 Manage FAQs Use Case Description

Use Case ID	UC0018
Use Case Name	Manage Post Categories
Actor	Admin
Description	This use case empowers admins to supervise and control the post categories contained within the system.
Trigger	Admins select the “Post Categories” from the dropdown options under “Community” in the sidebar.
Normal Flow	- Admins select “Post Categories” from the dropdown options under “Community” in the sidebar. - System presents visualization data in the form of charts in addition to a table-formatted list of post categories.
Sub Flow – Search Category	- Admins input a keyword into the search bar to search for post categories. - System exhibits the categories that occur in the keyword match.
Sub Flow – View Post Category Details	- Admins select the “View” option from the dropdown menu adjacent to each post category. - System displays the details of the selected category.
Sub Flow – Edit Post Category	- Admins select the “Edit” option from the dropdown menu adjacent to each category. - System displays the details of the selected category. - Admins modify the details and click the “Save Changes” button. - System validates and displays a successful message.
Sub Flow – Add Post Category	- Admins select the “Create New” option. - System displays a form for entering category details. - Admins provide details and click “Save” button. - System validates and displays a successful message.
Sub Flow – Delete Post Category	- Admins select the “Delete” option from the dropdown menu adjacent to each category. - Admins confirm deletion. - System removes the selected category and displays a successful message.
Alternative Flow – Webpage Load Failure	- The webpage cannot be loaded. - System displays an error message.

Table 3.18 Manage Post Categories Use Case Description

Use Case ID	UC0019
Use Case Name	Manage Posts
Actor	Admin
Description	This use case empowers admins to supervise and control the posts contained within the system.
Trigger	Admins select the “Posts” from the dropdown menu under “Community” in the sidebar.
Normal Flow	- Admins select “Posts” from the dropdown menu under “Community” in the sidebar. - System presents visualization data in the form of charts in addition to a table-formatted list of posts.
Sub Flow – Search Post	- Admins input a keyword into the search bar to search for posts. - System exhibits the posts that occur in the keyword match.
Sub Flow – View Post Details	- Admins select the “View” option from the dropdown menu adjacent to each post. - System displays the details of the selected post. - Two operations: - Admins view the profiles of post participants by selecting their avatar or username, at which point the system displays the profile. - Admins select “Save” after entering text in the input box to publish a comment beneath a post.
Sub Flow – Edit Post	- Admins select the “Edit” option from the dropdown menu adjacent to each post. - System displays the details of the selected post. - Admins modify the details and click the “Save Changes” button. - System validates and displays successful message.
Sub Flow – Add Post	- Admins select the “Create New” option. - System displays a form for entering post details. - Admins provide details and click “Save” button. - System validates and displays a successful message.
Sub Flow – Delete Post	- Admins select the “Delete” option from the dropdown menu adjacent to each post. - Admins confirm deletion. - System removes the selected post and displays a successful message.
Alternative Flow –	The webpage cannot be loaded.

Webpage Load Failure	2. System displays an error message.
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Table 3.19 Manage Posts Use Case Description

Use Case ID	UC0020
Use Case Name	Manage Product Categories
Actor	Admin
Description	This use case empowers admins to supervise and control the product categories contained within the system.
Trigger	Admins select the “Product Categories” from the dropdown menu under “E-Commerce” in the sidebar.
Normal Flow	- Admins select “Product Categories” from the dropdown menu under “E-Commerce” in the sidebar. - System presents visualization data in the form of charts in addition to a table-formatted list of product categories.
Sub Flow – Search Category	- Admins input a keyword into the search bar to search for product categories. - System exhibits the categories that occur in the keyword match.
Sub Flow – View Product Category Details	- Admins select the “View” option from the dropdown menu adjacent to each category. - System displays the details of the selected category.
Sub Flow – Edit Product Category	- Admins select the “Edit” option from the dropdown menu adjacent to each category. - System displays the details of the selected category. - Admins modify the details and click the “Save Changes” button. - System validates and displays a successful message.
Sub Flow – Add Product Category	- Admins click on the “Create New” button. - System displays a form for entering category details. - Admins provide details and click “Save” button. - System validates and displays a successful message.
Sub Flow – Delete Product Category	- Admins select the “Delete” option from the dropdown menu adjacent to each category. - Admins confirm deletion. - System removes the selected category and displays a successful message.
Alternative Flow –	- The webpage cannot be loaded. - System displays an error message.

Webpage Load Failure	
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Table 3.2- Manage Product Categories Use Case Description

Use Case ID	UC0021
Use Case Name	Manage Products
Actor	Admin
Description	This use case empowers admins to supervise and control the products contained within the system.
Trigger	Admins select the “Products” from the dropdown menu under “E-Commerce” in the sidebar.
Normal Flow	- Admins select “Products” from the dropdown menu under “Agriculture Company” in the sidebar. - System presents visualization data in the form of charts in addition to a table-formatted list of products.
Sub Flow – Search Product	- Admins input a keyword into the search bar to search for products. - System exhibits the products that occur in the keyword match.
Sub Flow – View Product Details	- Admins select the “View” option from the dropdown menu adjacent to each product. - System displays the details of the selected product.
Sub Flow – Edit Product	- Admins select the “Edit” option from the dropdown menu adjacent to each product. - System displays the details of the selected product. - Admins modify the details and click the “Save Changes” button. - System validates and displays a successful message.
Sub Flow – Delete Product	- Admins select the “Delete” option from the dropdown menu adjacent to each product. - Admins confirm deletion. - System removes the selected product and displays a successful message.
Alternative Flow – Webpage Load Failure	- The webpage cannot be loaded. - System displays an error message.

Table 3.21 Manage Products Use Case Description

Use Case ID	UC0022
Use Case Name	Manage Sales
Actor	Admin
Description	This use case empowers admins to supervise and control the status of all orders within the system.
Trigger	Admins select the “Sales” in the sidebar.
Normal Flow	- Admins select the “Sales” in the sidebar. - System presents visualization data in the form of charts in addition to a table-formatted list of orders.
Sub Flow – Search Order	- Admins input a keyword into the search bar to search for orders. - System exhibits the orders that occur in the keyword match.
Sub Flow – View Order Details	- Admins select the “View” option from the dropdown menu adjacent to each order. - System displays the details of the selected order.
Sub Flow – Edit Order Status	- Admins select the “Edit” option from the dropdown menu adjacent to each order. - System displays the details of the selected order. - Admins click “Save Changes” after selecting the order’s current status from the dropdown menu. - System validates and displays a successful message.
Alternative Flow – Webpage Load Failure	- The webpage cannot be loaded. - System displays an error message.

Table 3.22 Manage Sales Use Case Description

Use Case ID	UC0023
Use Case Name	Manage Company Categories
Actor	Admin
Description	This use case empowers admins to supervise and control the company categories contained within the system.
Trigger	Admins select the “Company Categories” from the dropdown menu under “Agriculture Company” in the sidebar.
Normal Flow	- Admins select “Company Categories” from the dropdown menu under “Agriculture Company” in the sidebar. - System presents visualization data in the form of charts in addition to a table-formatted list of company categories.
Sub Flow – Search Category	- Admins input a keyword into the search bar to search for company categories. - System exhibits the categories that occur in the keyword match.
Sub Flow – View Company Category Details	- Admins select the “View” option from the dropdown menu adjacent to each category. - System displays the details of the selected category.
Sub Flow – Edit Company Category	- Admins select the “Edit” option from the dropdown menu adjacent to each category. - System displays the details of the selected category. - Admins modify the details and click the “Save Changes” button. - System validates and displays a successful message.
Sub Flow – Add Company Category	- Admins click on the “Create New” button. - System displays a form for entering category details. - Admins provide details and click “Save” button. - System validates and displays a successful message.
Sub Flow – Delete Company Category	- Admins select the “Delete” option from the dropdown menu adjacent to each category. - Admins confirm deletion. - System removes the selected category and displays a successful message.
Alternative Flow – Webpage Load Failure	- The webpage cannot be loaded. - System displays an error message.

Table 3.23 Manage Company Categories Use Case Description

Use Case ID	UC0024
Use Case Name	Manage Companies
Actor	Admin
Description	This use case empowers admins to supervise and control the companies contained within the system.
Trigger	Admins select the “Companies” from the dropdown menu under “Agriculture Company” in the sidebar.
Normal Flow	- Admins select “Companies” from the dropdown menu under “Agriculture Company”. - System presents visualization data in the form of charts in addition to a table-formatted list of companies.
Sub Flow – Search Company	- Admins input a keyword into the search bar to search for companies. - System exhibits the companies that occur in the keyword match.
Sub Flow – View Company Details	- Admins select the “View” option from the dropdown menu adjacent to each company. - System displays the details of the selected company.
Sub Flow – Edit Company	- Admins select the “Edit” option from the dropdown menu adjacent to each company. - System presents the details of the selected company. - Admins modify the details and click the “Save Changes” button. - System validates and displays a successful message.
Sub Flow – Add Company	- Admins click on the “Create New” button. - System displays a form for entering company details. - Admins provide details and click “Save” button. - System validates and displays a successful message.
Sub Flow – Delete Company	- Admins select the “Delete” option from the dropdown menu adjacent to each company. - Admins confirm deletion. - System removes the selected company and displays a successful message.
Alternative Flow – Webpage Load Failure	- The webpage cannot be loaded. - System displays an error message.

Table 3.24 Manage Companies Use Case Description

3.2.3 Entity Relationship Diagram (ERD)

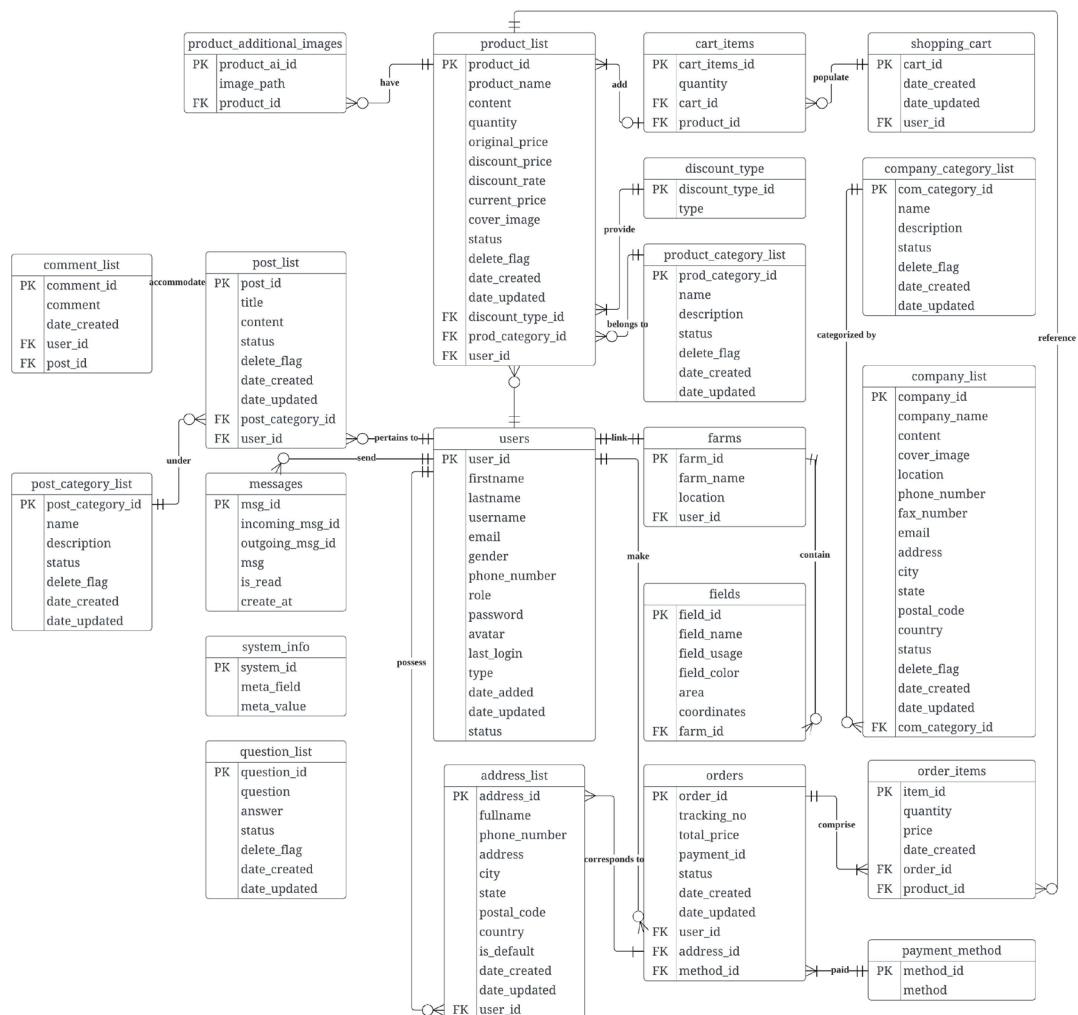


Figure 3.9 ERD Diagram

3.2.4 Data Dictionary

The descriptions for the Entity Relationship Diagram (ERD) are included below.

Entity: users				
Property	Entity Description	Data Type	PK/FK	Null
user_id	Unique identifier for user	int	PK	No
firstname	User's first name	varchar	–	No
lastname	User's last name	varcha	–	No
username	User's username	varchar	–	No
email	User's email	varchar	–	No
gender	User's gender	varchar	–	No
phone_number	User's phone number	varchar	–	No
role	User's sign-up role	varchar	–	No
password	User's password	text	–	No
avatar	User's avatar	text	–	Yes
last_login	User's last login timestamp	datetime	–	Yes
type	User's categories	tinyint	–	No
date_added	User's sign-up timestamp	datetime	–	No
date_updated	User's update timestamp	datetime	–	No
status	User's online presence	varchar	–	Yes

Table 3.25 Data Dictionary for users Entity

Entity: address_list				
Property	Entity Description	Data Type	PK/FK	Null
address_id	Unique identifier for address	int	PK	No
fullname	User full name	varchar	–	No
phone_number	User phone number	varchar	–	No
address	User address	varchar	–	No
city	User city	varchar	–	No
state	User state	varchar	–	No
postal_code	User postal code	varchar	–	No
country	User country	varchar	–	No
is_default	Address default status	tinyint	–	No
date_created	Address addition timestamp	datetime	–	No
date_updated	Address edit timestamp	datetime	–	No
user_id	Unique identifier for user	int	FK	No

Table 3.26 Data Dictionary for address_list Entity

Entity: messages				
Property	Entity Description	Data Type	PK/FK	Null
msg_id	Unique identifier for message	int	PK	No
incoming_msg_id	Unique identifier for message receiver	int	FK	No
outgoing_msg_id	Unique identifier for message sender	int	FK	No
msg	Message content	text	–	No
is_read	Message read status	tinyint	–	No
created_at	Message sent timestamp	datetime	–	No

Table 3.27 Data Dictionary of messages Entity

Entity: post_category_list				
Property	Entity Description	Data Type	PK/FK	Null
post_category_id	Unique identifier for post category	int	PK	No
name	Post category name	text	–	No
description	Post category description	text	–	No
status	Post category active status	tinyint	–	No
delete_flag	Posts category deletion status	tinyint	–	No
date_created	Post category addition timestamp	datetime	–	No
date_updated	Post category edit timestamp	datetime	–	No

Table 3.28 Data Dictionary of post_category_list Entity

Entity: post_list				
Property	Entity Description	Data Type	PK/FK	Null
post_id	Unique identifier for post	int	PK	No
title	Post title	text	–	No
content	Post content	text	–	No
status	Post publication status	tinyint	–	No
delete_flag	Post deletion status	tinyint	–	No
date_created	Post addition timestamp	datetime	–	No
date_updated	Post edit timestamp	datetime	–	No
post_category_id	Unique identifier for post category	int	FK	No
user_id	Unique identifier for user	int	FK	No

Table 3.29 Data Dictionary of post_list Entity

Entity: comment_list				
Property	Entity Description	Data Type	PK/FK	Null
comment_id	Unique identifier for comment	int	PK	No
comment	Comment content	text	–	No
date_created	Comment addition timestamp	timestamp	–	No
user_id	Unique identifier for user	int	FK	No
post_id	Unique identifier for post	int	FK	No

Table 3.30 Data Dictionary of comment_list Entity

Entity: product_category_list				
Property	Entity Description	Data Type	PK/FK	Null
prod_category_id	Unique identifier for product category	int	PK	No
name	Product category name	text	–	No
description	Product category description	text	–	No
status	Product category active status	tinyint	–	No
delete_flag	Product category deletion status	tinyint	–	No
date_created	Product category addition timestamp	datetime	–	No
date_updated	Product category edit timestamp	datetime	–	No

Table 3.31 Data Dictionary of product_category_list Entity

Entity: discount_type				
Property	Entity Description	Data Type	PK/FK	Null
discount_type_id	Unique identifier for discount type	int	PK	No
type	Discount type	text	—	No

Table 3.32 Data Dictionary of discount_type Entity

Entity: product_list				
Property	Entity Description	Data Type	PK/FK	Null
product_id	Unique identifier for product	int	PK	No
product_name	Product name	text	—	No
content	Product content	text	—	No
quantity	Product available quantity	int	—	No
original_price	Product original price	decimal	—	No
discount_price	Product discount price	decimal	—	No
discount_rate	Product discount rate	decimal	—	No
current_price	Product current price	decimal	—	No
cover_image	Product cover image	text	—	No
status	Product publication status	tinyint	—	No
delete_flag	Product deletion status	tinyint	—	No
date_created	Product addition timestamp	datetime	—	No
date_updated	Product edit timestamp	datetime	—	No
discount_type_id	Unique identifier for discount type	int	FK	No
prod_category_id	Unique identifier for product category	int	FK	No
user_id	Unique identifier for user	int	FK	No

Table 3.33 Data Dictionary of product_list Entity

Entity: product_additional_images				
Property	Entity Description	Data Type	PK/FK	Null
product_ai_id	Unique identifier for product additional image	int	PK	No
image_path	Product additional image path	text	–	No
product_id	Unique identifier for product	int	FK	No

Table 3.34 Data Dictionary of product_additional_images Entity

Entity: shopping_cart				
Property	Entity Description	Data Type	PK/FK	Null
cart_id	Unique identifier for shopping cart	int	PK	No
date_created	Shopping cart addition timestamp	datetime	–	No
date_updated	Shopping cart edit timestamp	datetime	–	No
user_id	Unique identifier for user	int	FK	No

Table 3.35 Data Dictionary of shopping_cart Entity

Entity: cart_items				
Property	Entity Description	Data Type	PK/FK	Null
cart_items_id	Unique identifier for shopping cart item	int	PK	No
quantity	Item quantity	int	–	No
cart_id	Unique identifier for shopping cart	int	FK	No
product_id	Unique identifier for product	int	FK	No

Table 3.36 Data Dictionary of cart_items Entity

Entity: payment_method				
Property	Entity Description	Data Type	PK/FK	Null
method_id	Unique identifier for payment method	int	PK	No
method	Payment method	text	—	No

Table 3.37 Data Dictionary of payment_method Entity

Entity: orders				
Property	Entity Description	Data Type	PK/FK	Null
order_id	Unique identifier for order	int	PK	No
tracking_no	Order tracking number	varchar	—	No
total_price	Order total price	decimal	—	No
payment_id	Order payment id	varchar	—	Yes
status	Order status	tinyint	—	No
date_created	Order addition timestamp	datetime	—	No
date_updated	Order edit timestamp	datetime	—	No
user_id	Unique identifier for user	int	FK	No
address_id	Unique identifier for address	int	FK	No
method_id	Unique identifier for payment method	int	FK	No

Table 3.38 Data Dictionary of orders Entity

Entity: order_items				
Property	Entity Description	Data Type	PK/FK	Null
item_id	Unique identifier for order item	int	PK	No
quantity	Item quantity	int	–	No
price	Item price	decimal	–	No
date_created	Item being ordered timestamp	datetime	–	No
order_id	Unique identifier for order	int	FK	No
product_id	Unique identifier for product	int	FK	No

Table 3.39 Data Dictionary of order_items Entity

Entity: farms				
Property	Entity Description	Data Type	PK/FK	Null
farm_id	Unique identifier for farm	int	PK	No
farm_name	Farm name	varchar	–	No
location	Farm location	geometry	–	No
user_id	Unique identifier for user	int	FK	No

Table 3.40 Data Dictionary of farms Entity

Entity: fields				
Property	Entity Description	Data Type	PK/FK	Null
field_id	Unique identifier for field	int	PK	No
field_name	Field name	varchar	–	No
field_usage	Field usage	varchar	–	No
field_color	Field color	varchar	–	No
area	Field area	float	–	No
coordinates	Field location	geometry	–	No
farm_id	Unique identifier for farm	int	FK	No

Table 3.41 Data Dictionary of fields Entity

Entity: company_category_list				
Property	Entity Description	Data Type	PK/FK	Null
com_category_id	Unique identifier for company category	int	PK	No
name	Company category name	text	–	No
description	Company category description	text	–	No
status	Company category active status	tinyint	–	No
delete_flag	Company category deletion status	tinyint	–	No
date_created	Company category addition timestamp	datetime	–	No
date_updated	Company category edit timestamp	datetime	–	No

Table 3.42 Data Dictionary of company_category_list Entity

Entity: company_list				
Property	Entity Description	Data Type	PK/FK	Null
company_id	Unique identifier for company	int	PK	No
company_name	Company name	text	–	No
content	Company content	text	–	No
cover_image	Company cover image	text	–	No
location	Company location	geometry	–	No
phone_number	Company phone number	varchar	–	No
fax_number	Company fax number	varchar	–	No
email	Company email	varchar	–	No
address	Company address	varchar	–	No
city	Company city	varchar	–	No
state	Company state	varchar	–	No
postal_code	Company postal code	varchar	–	No
country	Company country	varchar	–	No
status	Company publication status	tinyint	–	No

delete_flag	Company deletion status	tinyint	–	No
date_created	Company addition timestamp	datetime	–	No
date_updated	Company edit timestamp	datetime	–	No
com_category_id	Unique identifier for company category	int	FK	No

Table 3.43 Data Dictionary of company_list Entity

Entity: question_list				
Property	Entity Description	Data Type	PK/FK	Null
question_id	Unique identifier for question	int	PK	No
question	Question name	text	–	No
answer	Question answer	text	–	No
status	Question active status	tinyint	–	No
delete_flag	Question deletion status	tinyint	–	No
date_created	Question addition status	datetime	–	No
date_updated	Question edit status	datetime	–	No

Table 3.44 Data Dictionary of question_list Entity

Entity: system_info				
Property	Entity Description	Data Type	PK/FK	Null
system_id	Unique identifier for system	int	PK	No
meta_field	System meta field	text	–	No
mate_value	System meta value	text	–	No

Table 3.45 Data Dictionary of system_info Entity

3.2.5 Flow Chart

The figures below illustrate two discrete flowcharts for the undertaking. The flowcharts are classified into two scenarios. For instance, one depicts the flowchart from the users' perspective of the entire system, and the other provides the flowchart from the admins' perspective of the entire system. This segregation facilitates a distinct distinction between the processes and interactions that users encounter and those that are under the control of administrators operating the system.

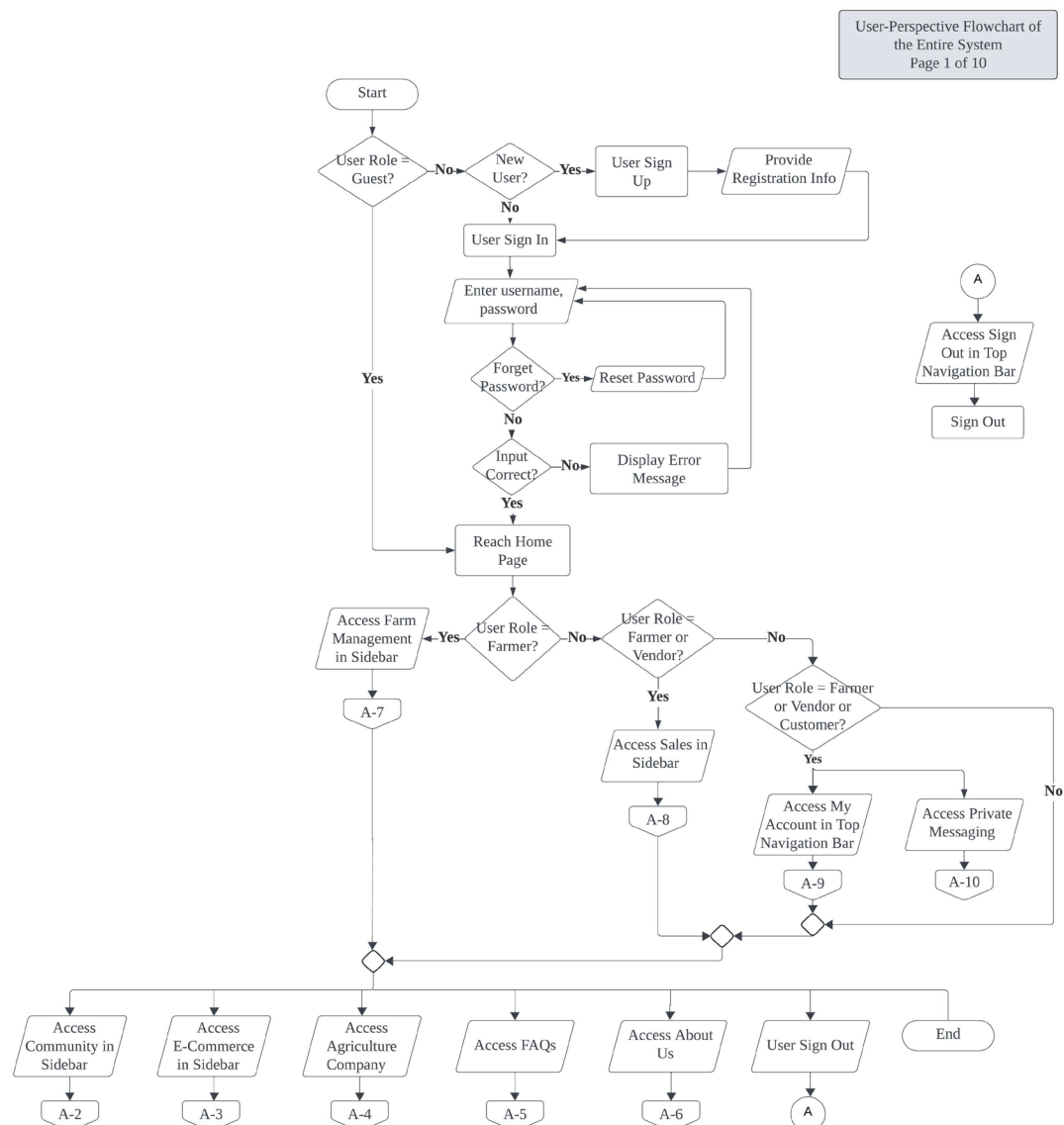


Figure 3.10: User Perspective Flowchart of the Entire System (Page 1 of 10)

As previously stated, this web service accommodates individuals who prefer to browse without registering and increases accessibility by granting them guest role on the system. However, their access is restricted to restricted content sections only.

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Individuals who would rather peruse the site without creating an account but still have access to the entire collection of features and data can do so by entering their credentials. Users who have forgotten their old passwords have the option to reset them and enroll into the system using the new ones. Those who are completely unfamiliar with the system, on the other hand, can register by providing the required personal information. Once the registration is complete, they can log in using the username and password they generated during the registration process. Those who pass the system's validation process will be redirected to the homepage. In the interim, those with the guest role, however, will be redirected directly to the homepage. The system authenticates users for their designated positions and grants them access to an assortment of navigation options for the website's content.

Users who are assigned the duty of a farmer, for instance, are provided with an additional option to access "Farm Management" in the sidebar in order to effectively administer their property. Users assuming the roles of farmers or vendors of agricultural equipment are provided with supplementary options that grant them access to the "Sales" section in the auxiliary. This enables them to monitor their sales activities and the orders they have received. Conversely, users assuming the positions of agricultural equipment vendor, consumer, and farmer are provided with the ability to access "My Account" and "Private Message" via the sidebar. Notably, the sidebar provides access to the following sections for all users, regardless of their user roles: Community, E-Commerce, Agriculture Company, FAQs, and About Us. However, the system will also offer features that are contingent upon the user roles, which will be elaborated upon in the following section. As shown inside the image, all registered users are given an option to sign out themselves.

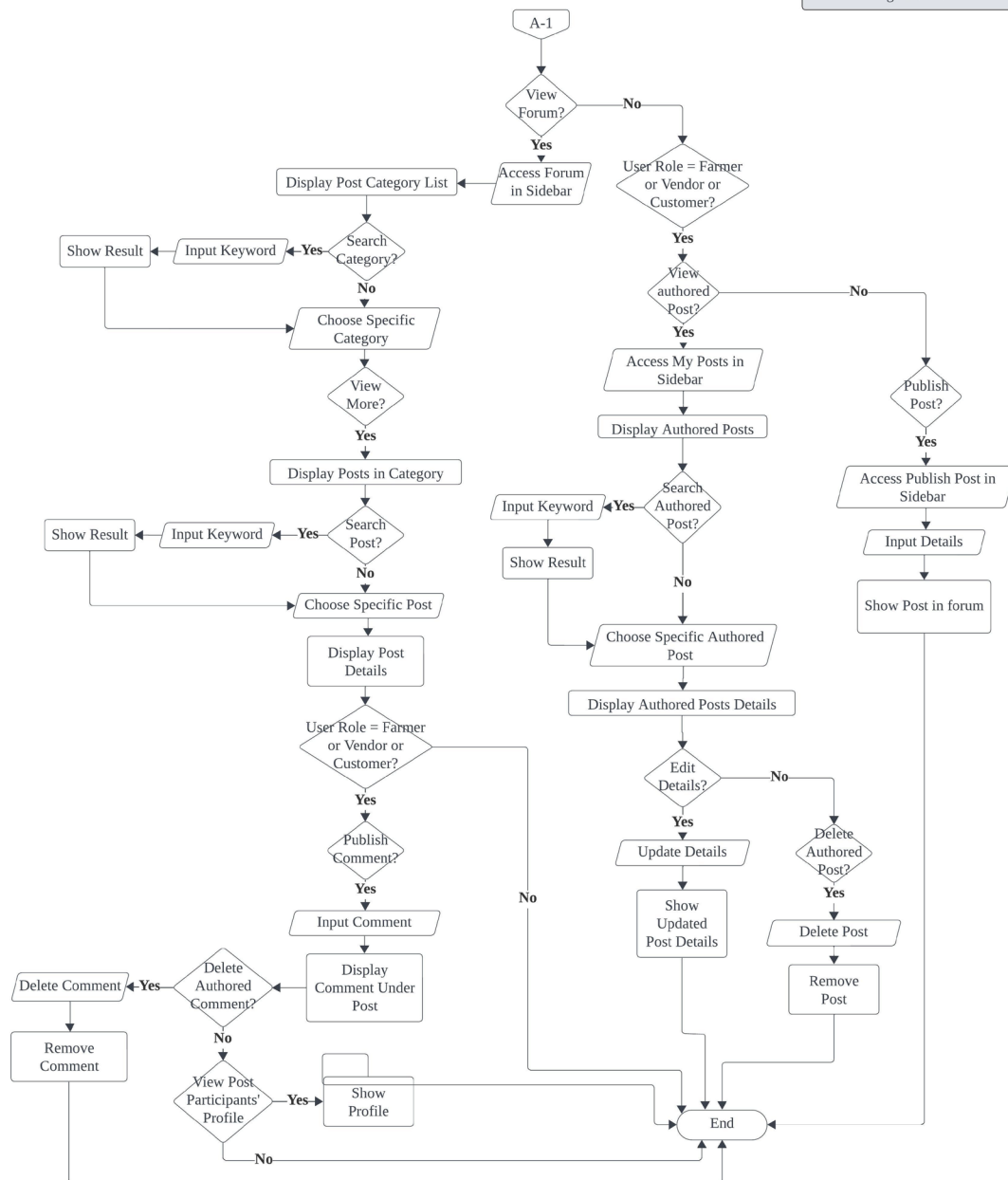


Figure 3.11: User Perspective Flowchart of the Entire System (Page 2 of 10)

When users select the “Community” option from the sidebar, there are generally three possible outcomes. In the initial scenario, the forum is accessible to all users, regardless of their user responsibilities, by selecting "Forum" from the selection menu located beneath "Community" in the sidebar. The system will initially present them with the categories of the posts. Individuals have the ability to peruse the posts of other users in

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accordance with the post categories or search outcomes by inputting a keyword into the post categories.

Additionally, all users have the option to examine the profiles of the post participants. Registered users are provided with the choice of whether or not to provide a comment beneath a specific post. After publishing a remark, the user is provided with the option to remove their own comment.

If, in the second scenario, the users are registered users holding the positions of farmer, agricultural equipment vendor, or customer, they are able to publish and view their own posts by selecting "Publish Post" from the "Community" navigation menu. By navigating to "Community" and selecting "My Posts" from the drop-down menu, users are able to administer and supervise their own content by searching, amending, or removing it.

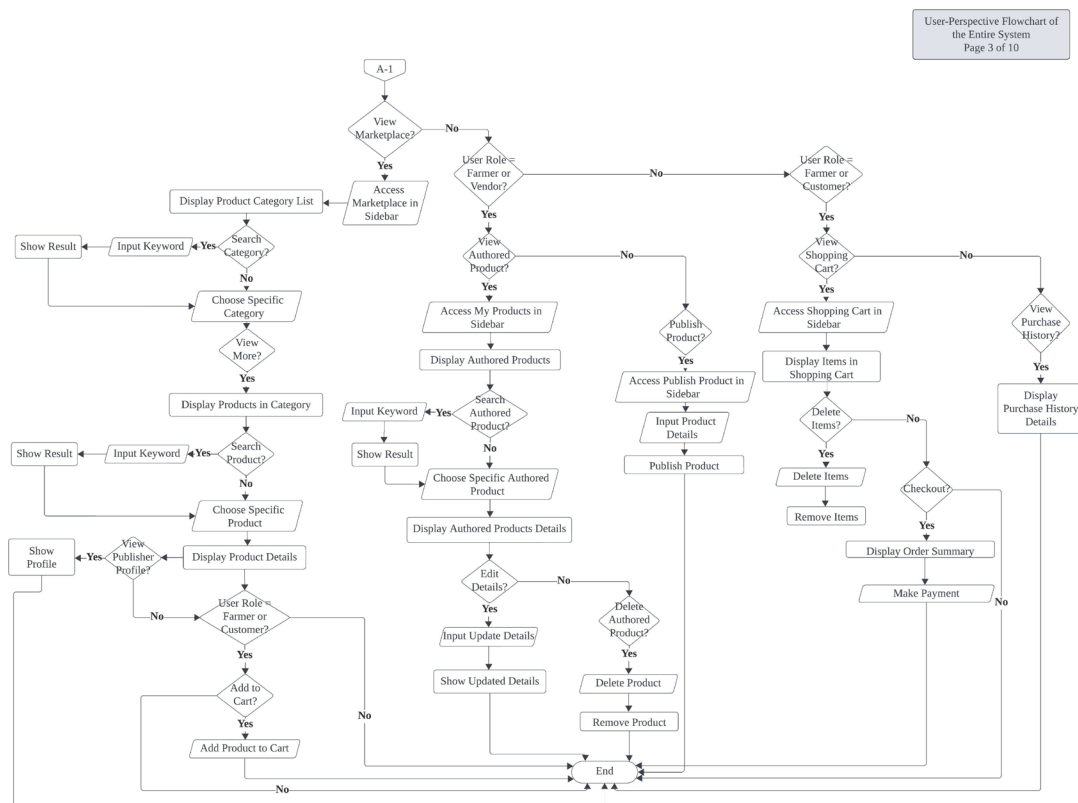


Figure 3.12: User Perspective Flowchart of the Entire System (Page 3 of 10)

When users select the E-Commerce option from the sidebar, there are generally three possible outcomes. In the initial circumstance, the marketplace is accessible to all users, regardless of their user responsibilities. They are then able to select "Marketplace" from the selection menu located beneath "E-Commerce" in the sidebar. The system will initially present the users with an overview of the product categories. By inserting a keyword into the product categories or product search field, users are able to peruse all available products in the marketplace. An option for all users to access the publisher's profile is also provided.

In a second hypothetical situation, users assuming the roles of agricultural equipment vendors or farmers can publish their own products by selecting "Publish Product" from the dropdown menu under "E-Commerce" in the sidebar. To manage and supervise their authored products, click "My Products" from the same menu. By searching, editing, or removing their own products, they are able to supervise and manage them.

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In the third scenario, users are assigned the roles of a farmer or a customer and are provided with the ability to add products to their purchasing order. Users may easily navigate to the "Shopping Cart" option via the navigation menu located beneath "E-Commerce" in the sidebar. They have the option of removing the products from their purchasing cart or proceeding directly to the purchase page with the desired items selected. They will then be presented with an order summary by the system, and payment is required to finalize the transaction. The user can then select "Purchase History" from the drop-down menu under "E-Commerce" in order to access their purchase history and monitor the status of their orders.

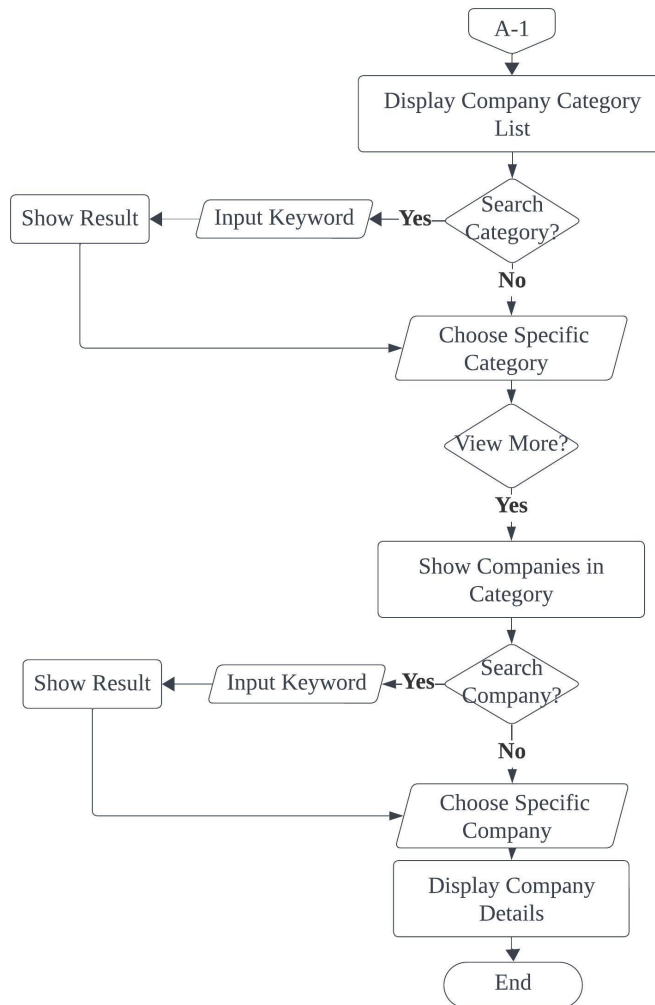


Figure 3.13: User Perspective Flowchart of the Entire System (Page 4 of 10)

As illustrated in the preceding figure, when users select the “Agriculture Company” from the sidebar, the system will present them with all company categories, regardless of their respective responsibilities. They were then provided with the option to conduct a keyword search for company categories or companies. Additionally, users are able to peruse all companies based on the company categories.

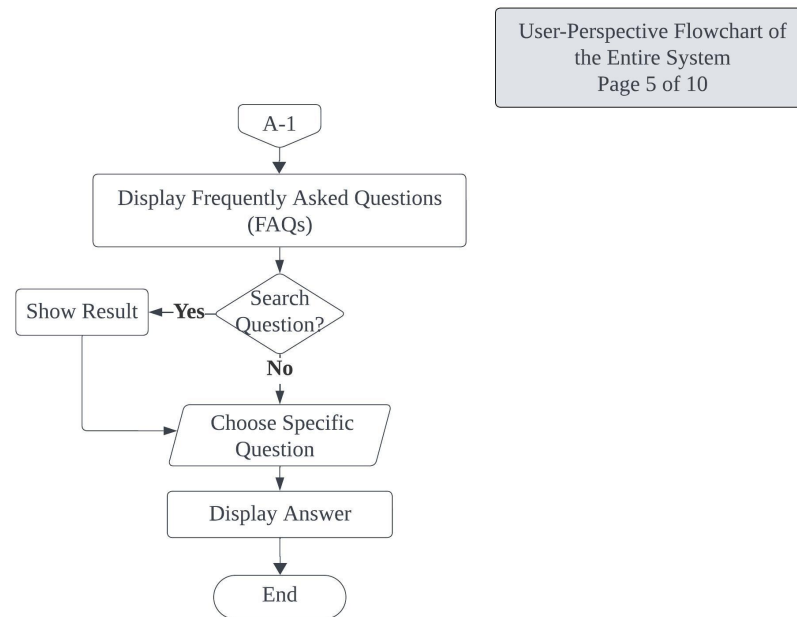


Figure 3.14: User Perspective Flowchart of the Entire System (Page 5 of 10)

When users access the “FAQs” via the sidebar, the system will present them with a comprehensive list of all frequently inquired questions (FAQs) pertaining to the system, regardless of their role. They are additionally provided with the option to conduct a keyword search for the queries via the search bar. They are then able to select specific queries and review the responses.

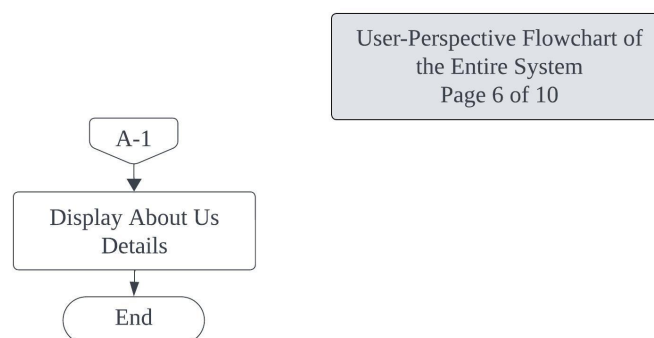


Figure 3.15: User Perspective Flowchart of the Entire System (Page 6 of 10)

Upon accessing the “About Us” section via the sidebar, the system will present all supplementary information regarding the web service, irrespective of the user's role. There, they are able to gain the additional information through this section.

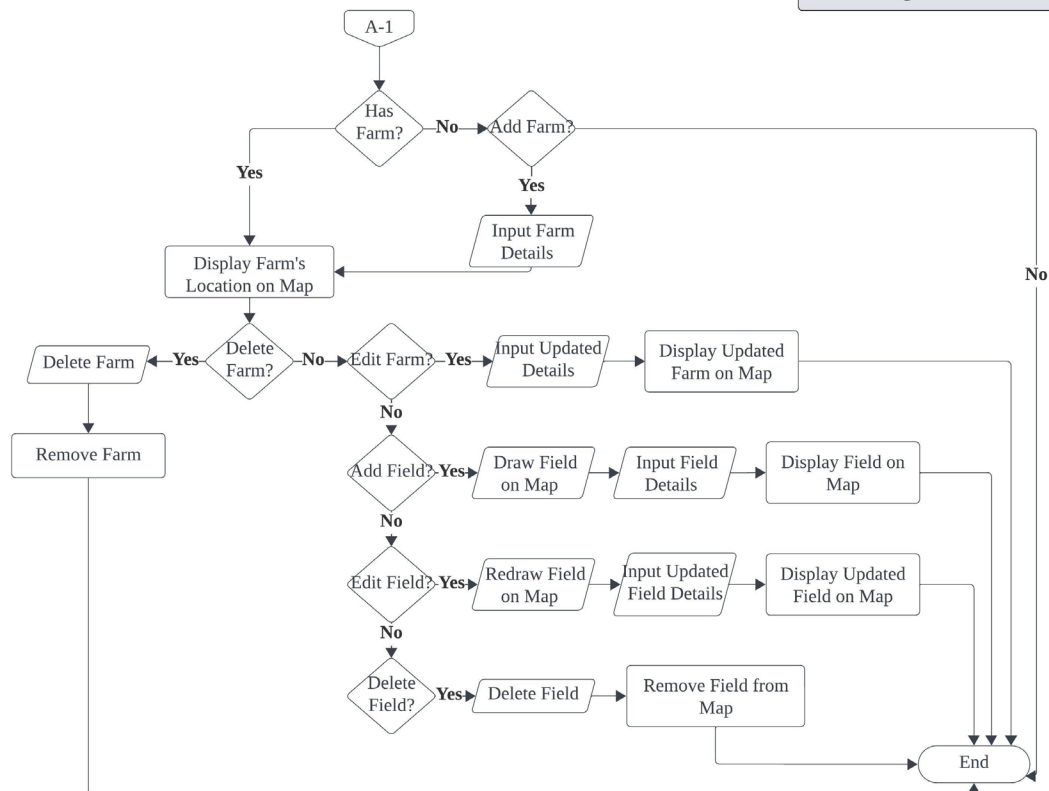


Figure 3.16: User Perspective Flowchart of the Entire System (Page 7 of 10)

Upon user in the role of farmer access the “Farm Management” sidebar, the system will initially verify whether the user has added the farm to the system. If this condition is met, the user's farm location will be displayed on a map interface. Alternatively, they are provided with the choice to incorporate their farm. They have the option of modifying the farm information provided during the addition procedure or removing the farm. In the interim, they may also utilize the provided tools to add the field to the map interface and then outline it on the map. They can easily modify the field's information or remove it after adding it.

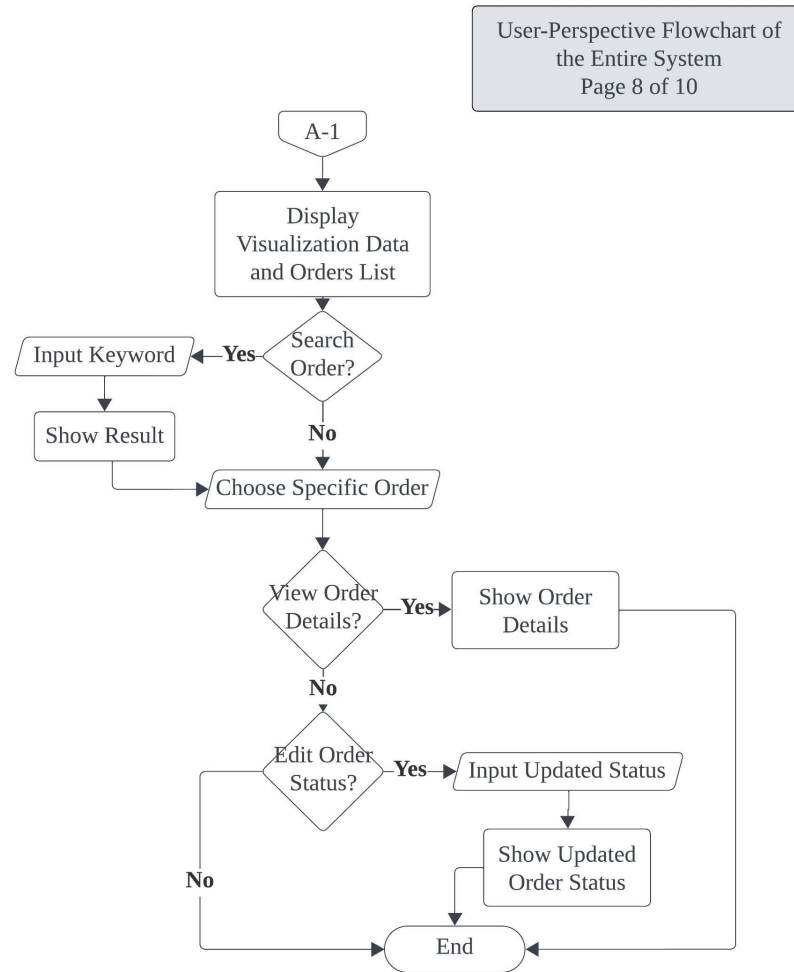


Figure 3.17: User Perspective Flowchart of the Entire System (Page 8 of 10)

The sales visualization data and received orders list will be made available to users in the roles of farmer or agricultural equipment vendor when they access the “Sales” section in the sidebar. By searching for and editing the orders, they are able to easily monitor and modify the status of the received orders.

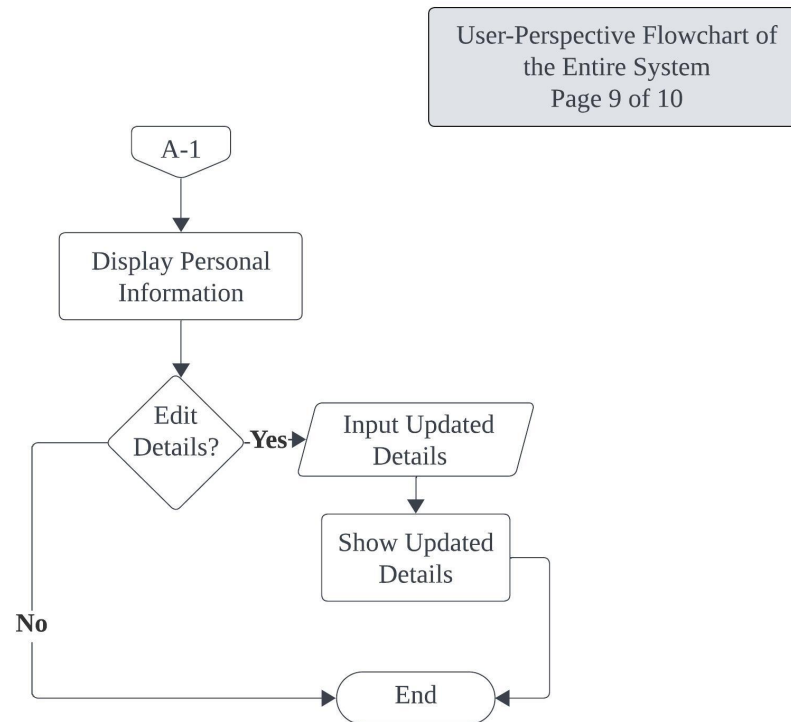


Figure 3.18: User Perspective Flowchart of the Entire System (Page 9 of 10)

Upon accessing My Account via the top navigation bar, the system will present all personal information belonging to registered users. They are then presented with the option to update their personal information or not.

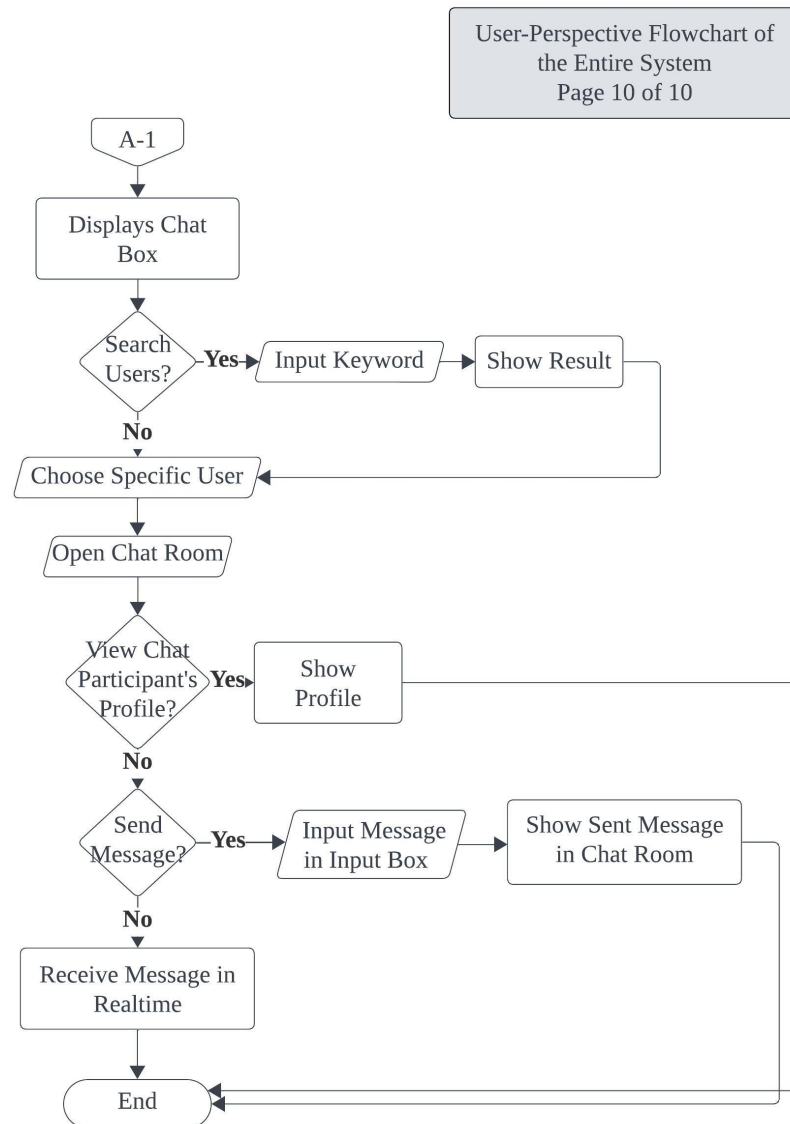


Figure 3.19: User Perspective Flowchart of the Entire System (Page 10 of 10)

Upon accessing the Private Messaging feature, registered users can initiate a conversation with a specific user by opening the chat box. Subsequently, they are presented with two alternatives: either conduct a search for the desired user and then select that user's chat room, or they can open the chat room by selecting it from the previous chat list. Users are presented with the option to observe the profile of a conversation participant upon opening it. Alternatively, they have the option of transmitting the message and receiving it in real time.

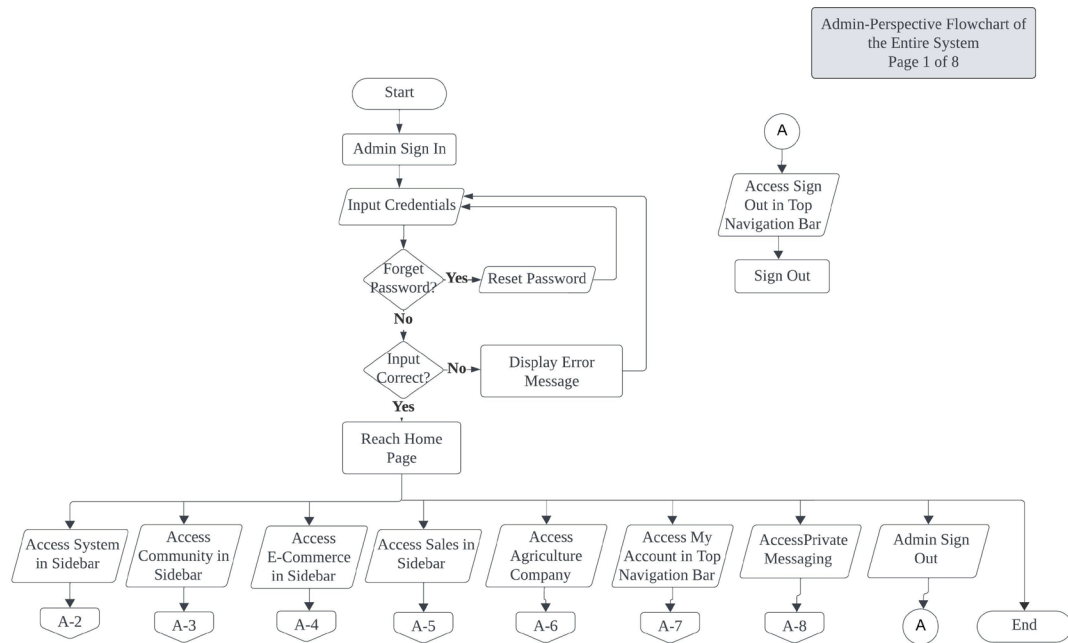


Figure 3.20: Admin-Perspective Flowchart of the Entire System (Page 1 of 8)

Administrators are required to authenticate into the system by entering their credentials. In the event that they neglect their old passwords, they are provided with the opportunity to reset them and then use the new ones to access the system. Admins who pass the system's validation process will be redirected to the home page. Additionally, a variety of options for perusing the website's content are provided.

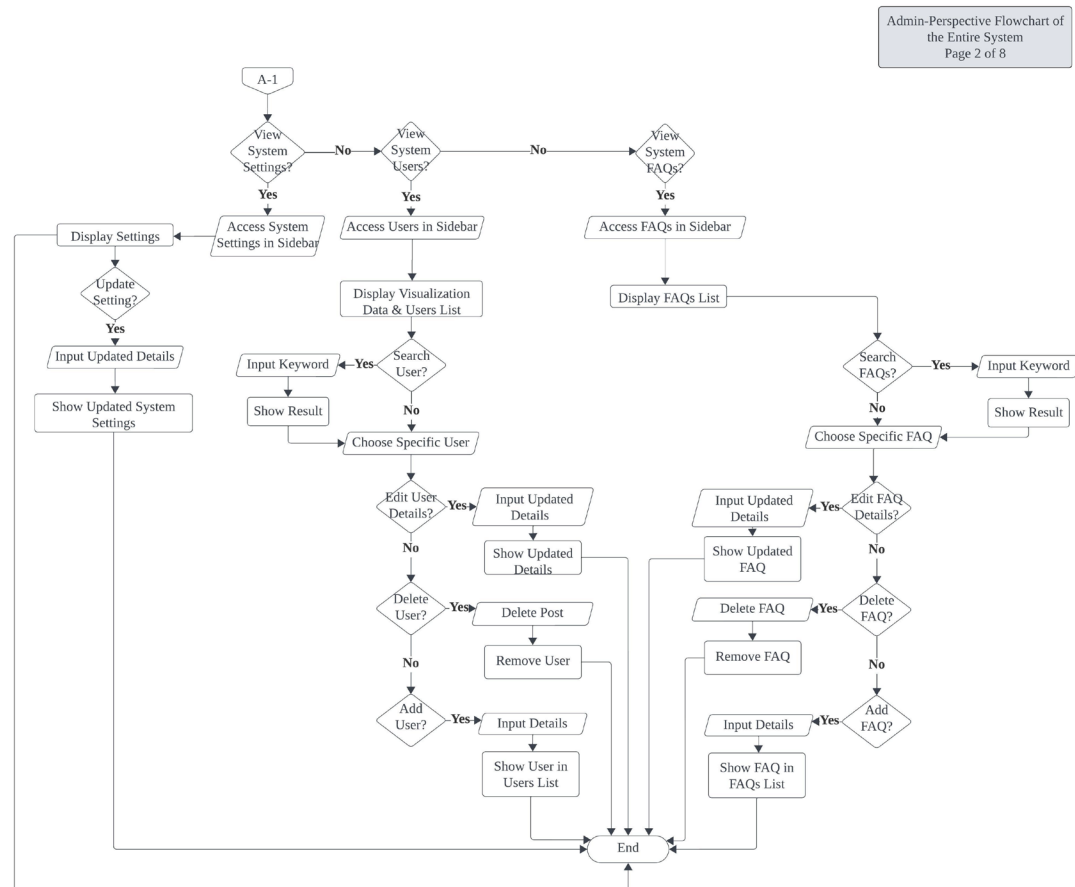


Figure 3.21: Admin-Perspective Flowchart of the Entire System (Page 2 of 8)

When admins utilize the sidebar to access the system, a total of three scenarios can occur. Initially, admins are granted access to the System Settings page. They are then able to select “System Settings” from the drop-down menu located beneath “System” in the sidebar. They are granted access to the system's configuration and the ability to modify those configurations if they so choose. In the second possible outcome, they would like to visit the “Users” page. They are then able to select “Users” from the selection menu located beneath “System” in the sidebar. The system will then present administrators with a list of users and visualization data pertaining to users. Administrators are granted access to five options: search, view, add, edit, and delete. In the third possible scenario, administrators desire to access the “FAQs” page. To do so, they may navigate to the “System” pane and select “FAQs” from the navigation menu. They will have the capability to access and modify the system's frequently inquired inquiries at that location. Admins are granted access to five options: search, view, add, amend, and delete.

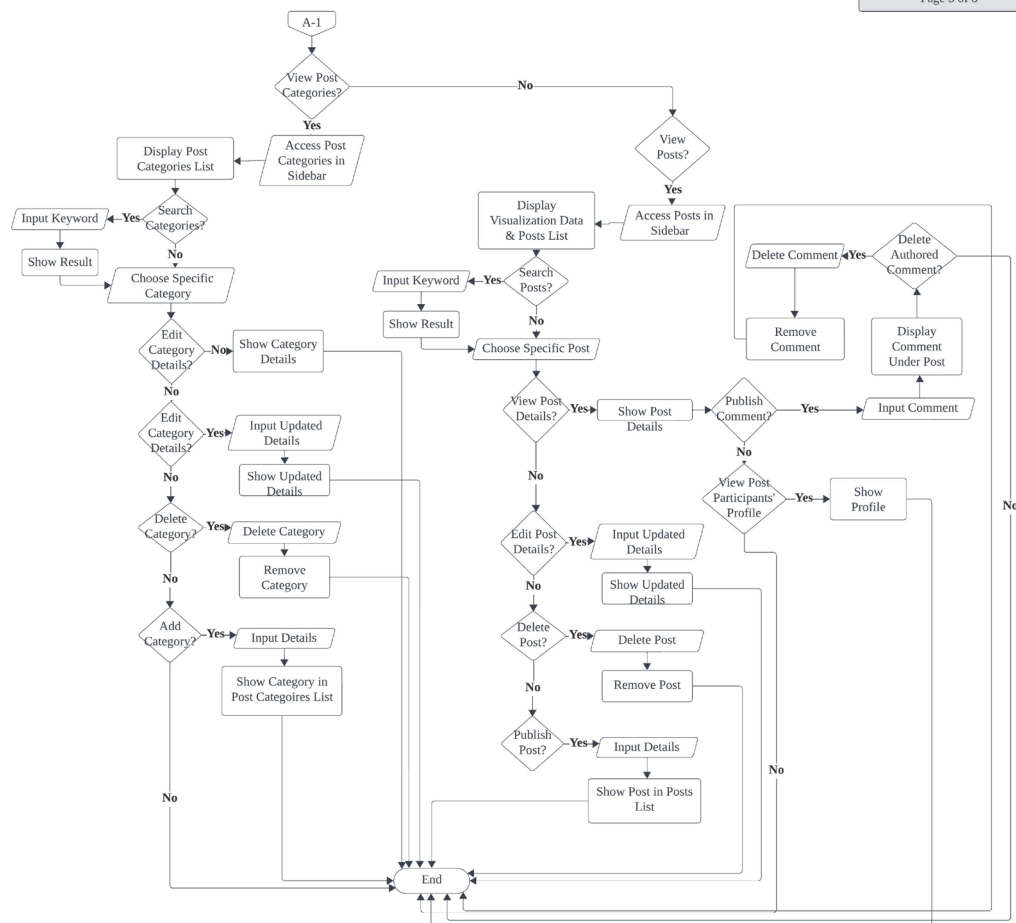


Figure 3.22: Admin-Perspective Flowchart of the Entire System (Page 3 of 8)

When admins access the Community through the sidebar, a total of two scenarios occur. In the initial circumstance, administrators are able to visit the “Post Categories” page. Following that, admins are able to select "Post Categories" from the selection menu located beneath "Community" in the sidebar. They will then have access to every post category and will be presented with the following five options: search, view, add, amend, and delete. They may also desire access to the “Posts” page in the second scenario. They are then able to select "Posts" from the selection menu located beneath "Community" in the sidebar. The system will then present administrators with a list of posts and visualization data pertaining to posts. Administrators are granted access to five options: search, view, add, amend, and delete. While viewing the details of a specific post, administrators may also contemplate whether to access the profile of the post's participants or simply leave a comment beneath it. After publishing a remark, the admin is provided with the option to remove their own comment.

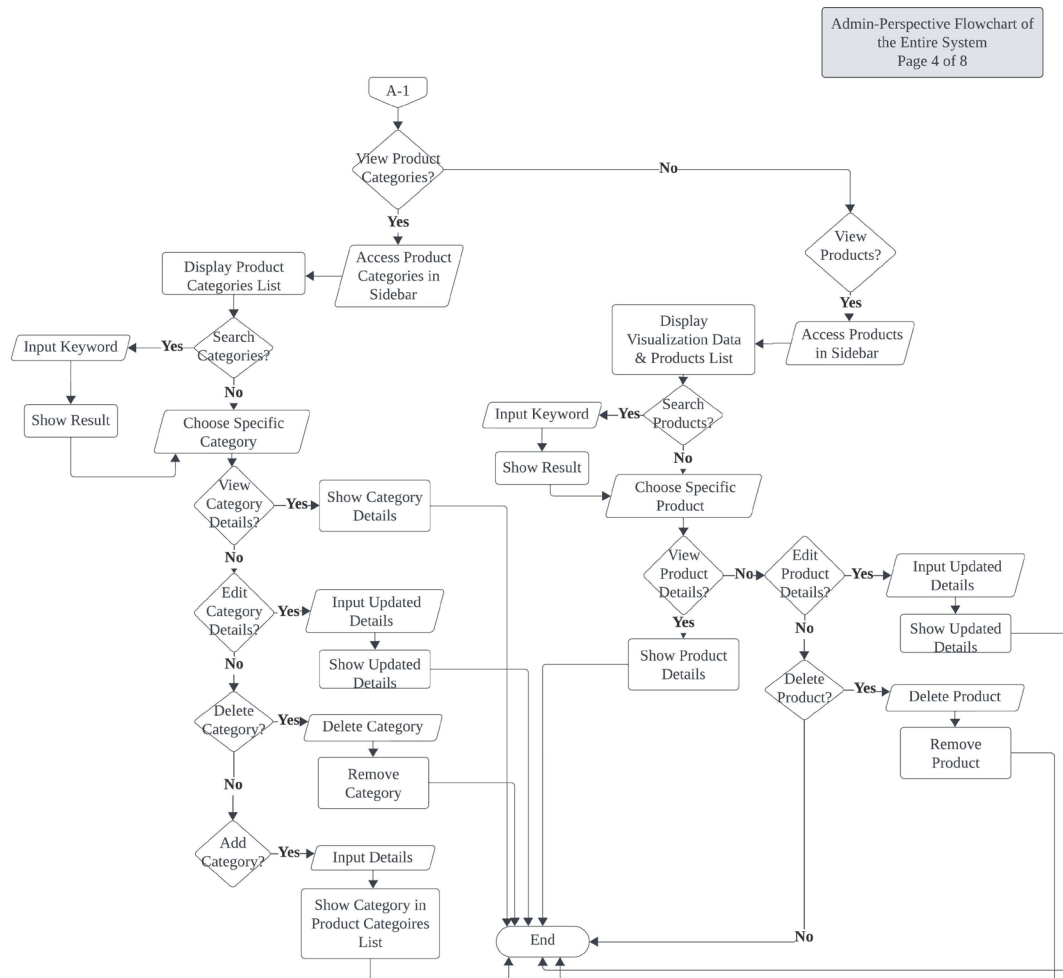


Figure 3.23: Admin-Perspective Flowchart of the Entire System (Page 4 of 8)

When admins utilize the sidebar to access the E-Commerce, a total of two scenarios can occur. In the initial circumstance, admins are able to visit the “Product Categories” page. They are then able to select "Product Categories" from the selection menu located beneath "E-Commerce" in the sidebar. They will then have access to every product category and will be presented with the following five options: search, view, add, edit, and delete. In the second possible outcome, they would like to visit the “Products” page. They are then able to select "Products" from the selection menu located beneath "E-Commerce" in the sidebar. There, the system will provide administrators with a list of products and data visualizations. Admins are granted access to four options: search, view, edit, and delete. While perusing the product details, admins may also deliberate on whether or not to access the profile of the publisher.

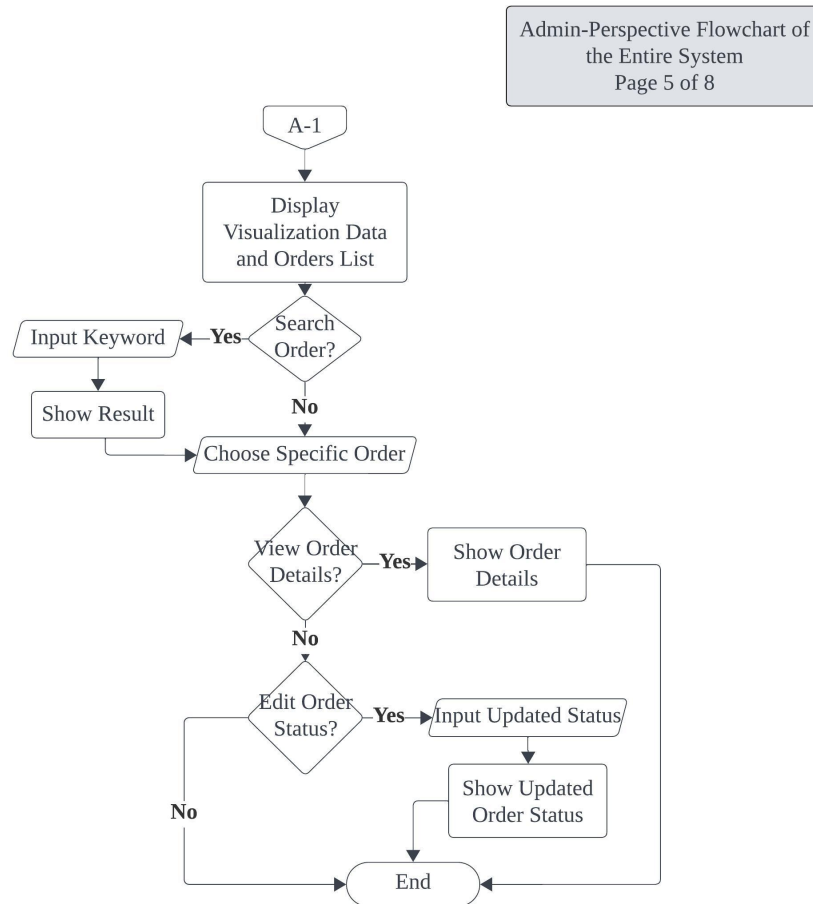


Figure 3.24: Admin-Perspective Flowchart of the Entire System (Page 5 of 8)

When admins access the “Sales” from the sidebar, the system will provide the sales visualization data and all orders list within the system for them. At there, they can simply oversee and manipulate the received orders’ status by searching and editing the orders.

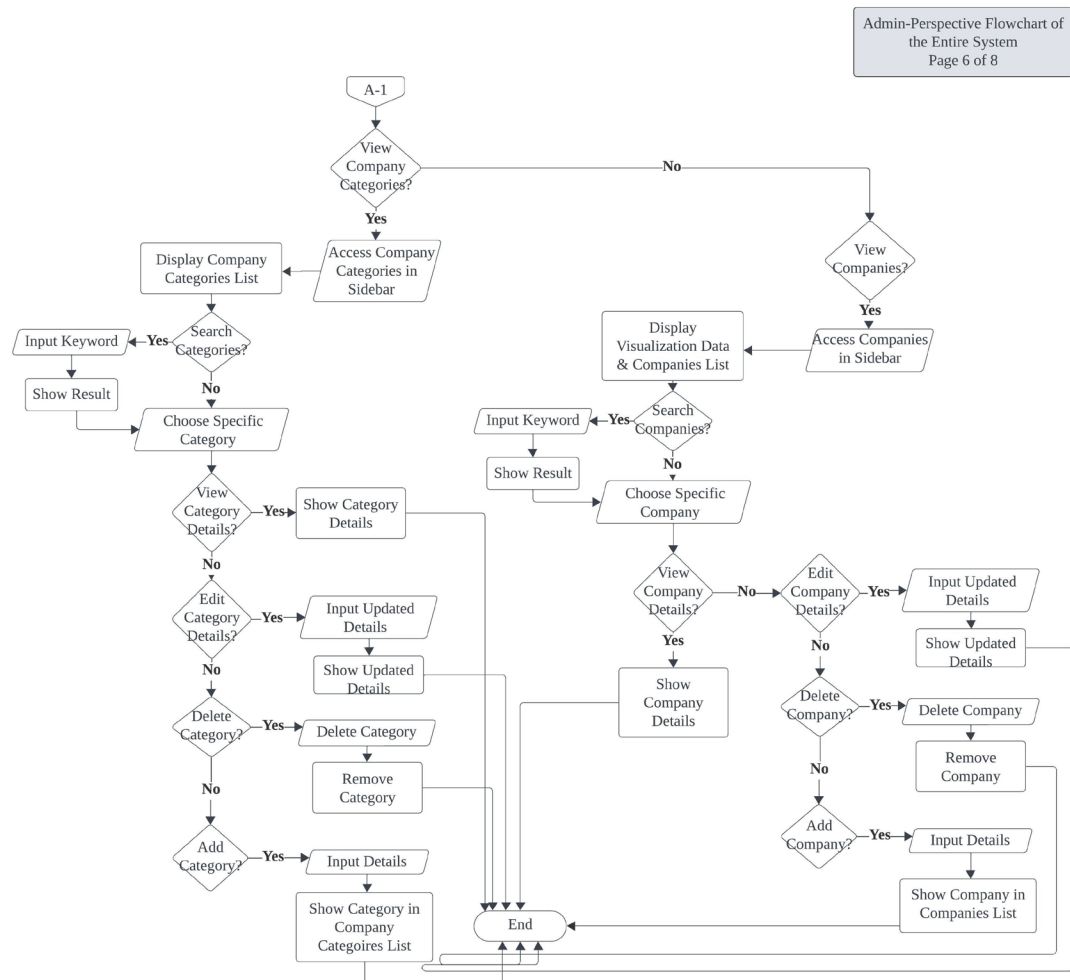


Figure 3.25: Admin-Perspective Flowchart of the Entire System (Page 6 of 8)

When admins utilize the sidebar to access the Agriculture Company, a total of two scenarios ensue. In the initial scenario, admins are granted access to the Company Categories page. Following that, they are able to select "Company Categories" from the selection menu located beneath "Agriculture Company" in the sidebar. They will then have the ability to view all company categories and will be presented with five options: search, view, add, modify, and delete. In the second possible outcome, they would like to visit the Companies page. They are then able to select "Companies" from the selection menu located beneath "E-Commerce" in the sidebar. The system will then present administrators with a list of companies and visualization data pertaining to them. Administrators are granted access to five options: search, view, add, amend, and delete.

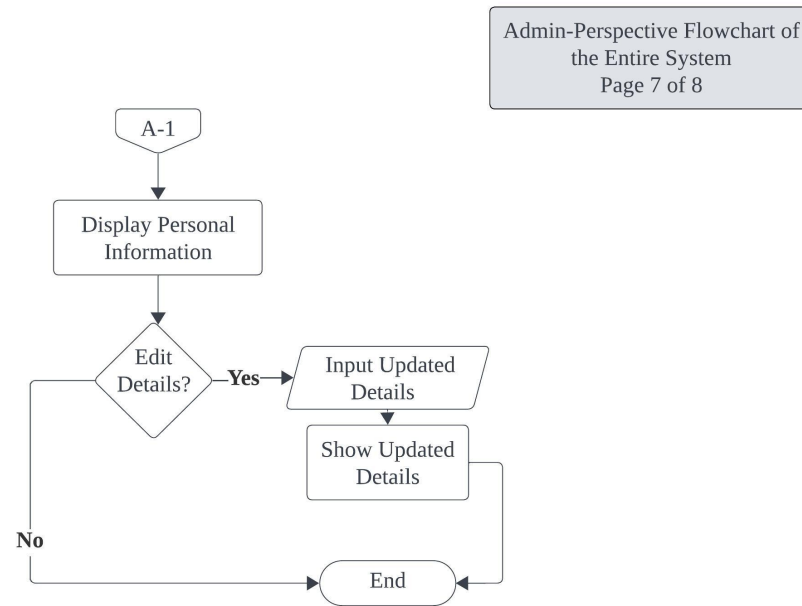


Figure 3.26: Admin-Perspective Flowchart of the Entire System (Page 7 of 8)

When admins access to My Account in the top navigation bar, then the system will show all of their personal information. At there, they can then decide whether or not to update their personal information.

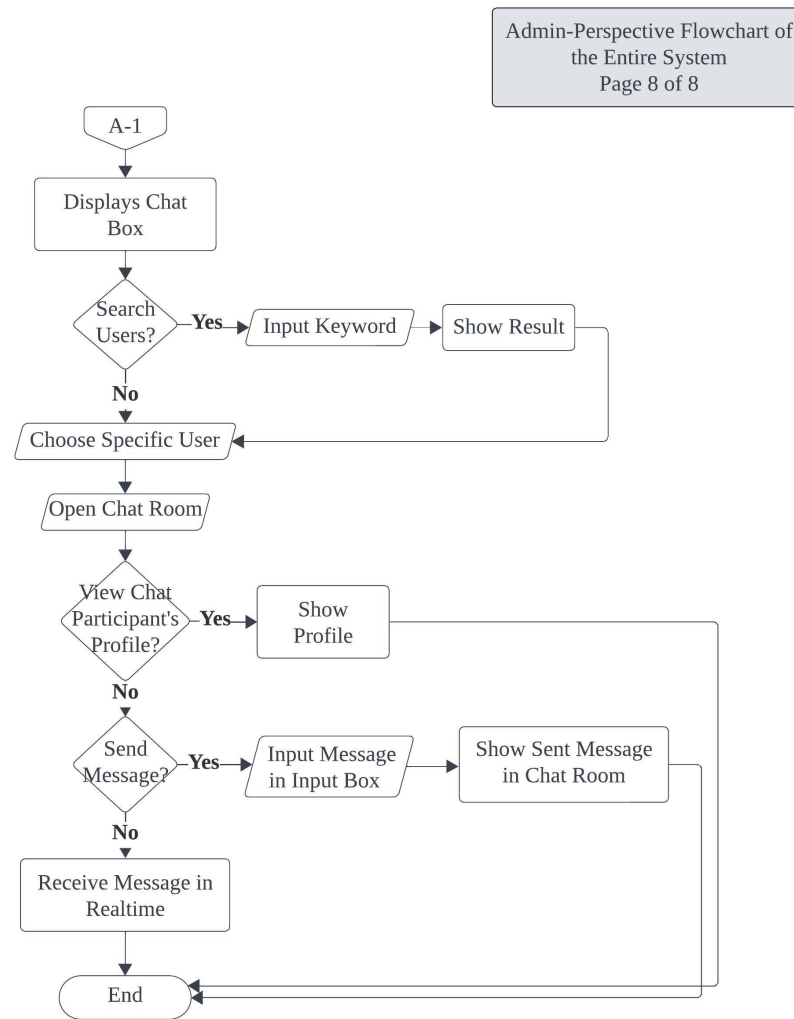


Figure 3.27: Admin-Perspective Flowchart of the Entire System (Page 8 of 8)

Upon accessing the Private Messaging feature, admins can initiate a dialogue with a specific user by launching the chat box. Subsequently, they are presented with two alternatives: either conduct a search for the user and select that user's chat room, or they can open the chat room by selecting it from the previous chat list. Users are presented with the option to observe the profile of a conversation participant upon opening. Alternatively, they have the option of transmitting the message and receiving it in real time.

3.3 Timeline

The project as a whole depends heavily on the timeline. A solid schedule can guarantee that the project will go off without a hitch. The project's timeline is therefore planned to use the technique, which comprises of Project Planning and Analysis, Design, Implementation Part I, and Implementation Part II. It should be noted that the timeline typically can separate into three sessions. They are shown in the pictures below.

Gantt Chart

ACTIVITY	WEEK START	DURATION (WEEK)	IIPSPW								
			1	2	3	4	5	6	7	8	9
PROJECT PLANNING AND ANALYSIS											
Project Title	1	2									
Research for Existing Systems	3	1									
Identify Project Background	4	1									
Identify Problem Statement	4	1									
Literature Review	5	2									
Identify Project Scope	6	1									
Identify Project Objectives	6	1									
Review IIPSPW Proposal of Project	10	1									
Optimize Problem Statement	10	1									
Optimize Project Scope	10	1									
Optimize Project Objectives	10	1									
Identify Project Timeline	10	1									
DESIGN											
Identify methodologies used in the project	10	1									
Design Diagram (Use Case, Flow Chart, ERD)	11	1									
Designing Prototype	11	1									
IMPLEMENTATION PART I											
System Coding Part I	12	7									
System Testing Part I	12	7									
System Deployment Part I	19	2									
Documentation Part I	20	2									
IMPLEMENTATION PART II											
System Coding Part II	24	9									
System Testing Part II	24	9									
System Deployment Part I	33	2									
Documentation Part II	34	2									

Figure 3.28 Project Timeline (Part 1)

Gantt Chart

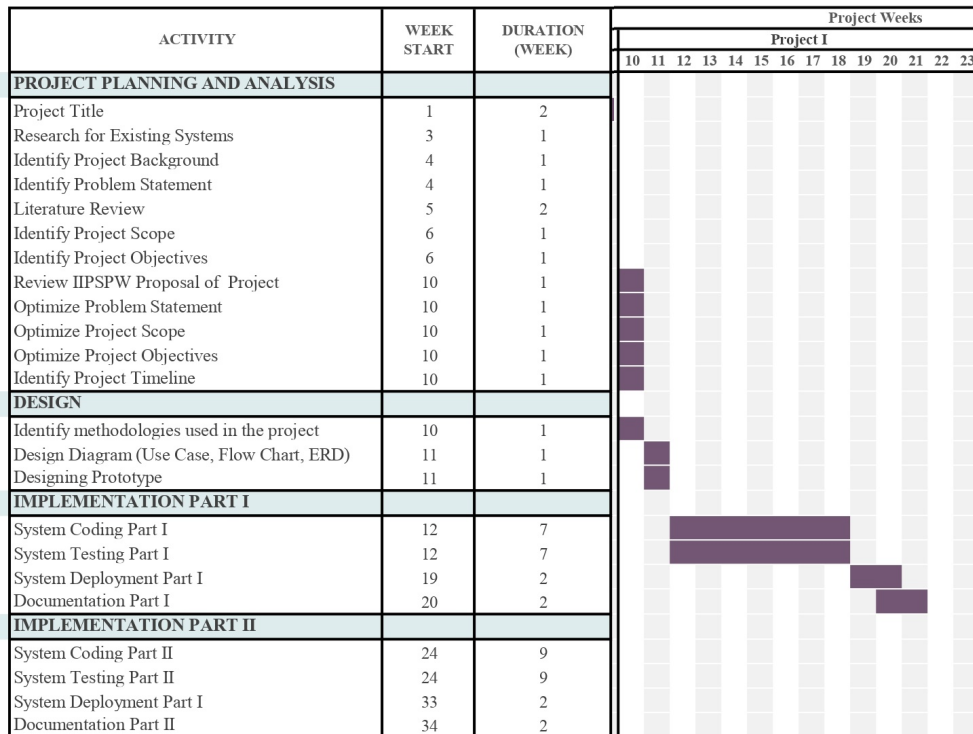


Figure 3.29 Project Timeline (Part 2)

Gantt Chart

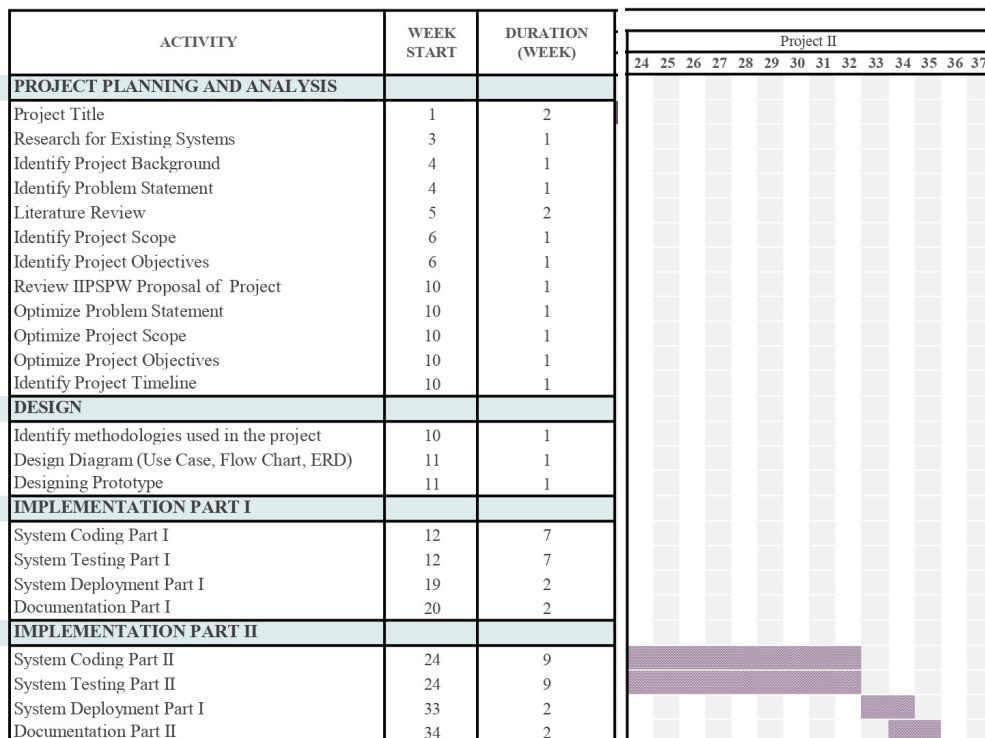


Figure 3.30 Project Timeline (Part 3)

Gantt Chart

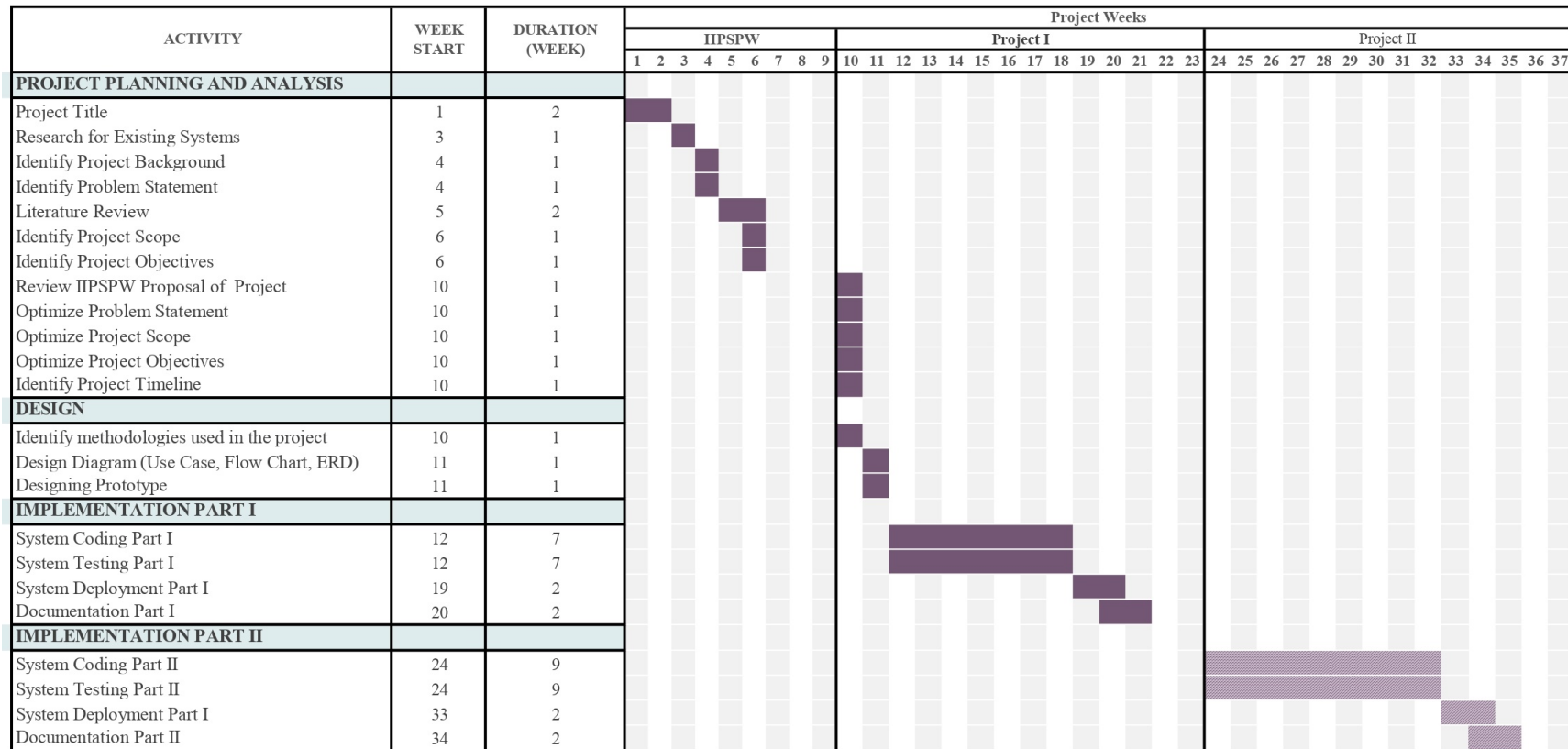


Figure 3.31 Full Project Timeline

CHAPTER 4

System Implementation

This chapter provides an overview of the system implementation, encompassing the setting of hardware and software, setup and configuration, the operation of the system (accompanied by screenshots), and the implementation challenges that raised during development process.

4.1 Hardware Setup

Windows 11 laptop will be the equipment used in the development of the entire web project. The laptop must be used to complete the project's concept, analysis, design, code and develop tasks. The specification of the laptop is shown in the table below:

Description	Specifications
Model	HUAWEI MateBook D 15
Processor	AMD Ryzen 7 3700U with Radeon Vega Mobile Gfx 2.30 GHz
Operating System	Windows 11
Graphic	Intel® Iris® Xe Graphics
Memory	8GB RAM
Storage	512GB

Table 4.1 Specification of Laptop

4.2 Software Setup

In the project, there are total 2 main software will be used. The tools of choice for this example will be Visual Studio Code [12], and Hosting Account (XAMPP) [13].

4.2.1 Visual Studio Code

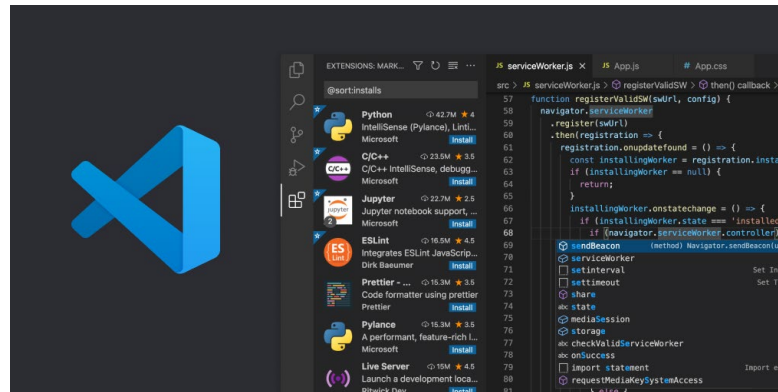


Figure 4.1 Visual Studio Code Interface

This web project will use Visual Studio Code [12] as the primary development tool to write and execute the program. Using the Electron Framework, Microsoft developed a free, powerful source code editor for Windows, Linux, and macOS. It supports functions like code refactoring, snippets, syntax highlighting, intelligent code completion, and embedded Git. The most important feature is the auto save feature, which eliminates the need for users to manually save files. Additionally, it offers excellent source code formatting support, which is crucial for the project's development. The development of the web project will be greatly facilitated by all Visual Studio Code's [12] features.

CHAPTER 4

4.2.2 XAMPP

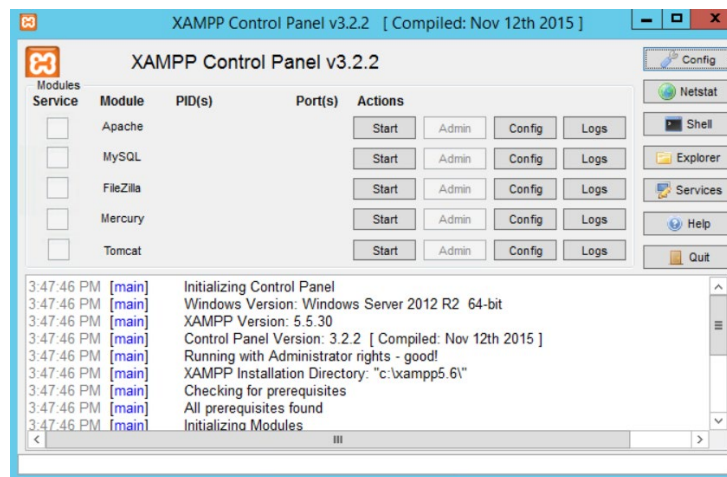


Figure 4.2 XAMPP Control Panel

In the development of the project, XAMPP [13] is choose for the local host web server. It is a free and open-source cross-platform web server stack package that was developed by Apache Friends. The Apache HTTP Server, MariaDB, and script interpreters for PHP and Perl make up most of it. There is no doubt that the web project will require a significant amount of data storage. Therefore, using XAMPP [13] to store the data that will be needed later in the web project is a wise choice.

4.3 Setting and Configuration

The development process commenced with the installation and download of XAMPP [13], which was utilized to create a local environment for the web server. After the installation was complete, the XAMPP Control Panel was accessed in order to verify that the Apache and MySQL services were operational. After navigating to the web browser, PhpMyAdmin will be visited via the address *http://localhost/phpmyadmin* in order to establish a new database for the purpose of storing data.

Following that, Visual Studio Code [12] was employed as the principal code editor, during which the project configuration and framework were adjusted to align with project's requirements, thereby guaranteeing compatibility with PHP and MySQL. After the installation process was finished, the browser was utilized to access this web service via the URL *http://localhost/AgroSphere/* in order to commence testing and utilizing its functionalities. Additionally, administrative access could be gained by visiting *http://localhost/AgroSphere/admin*.

In short, the effective establishment of the foundation for this web project development in the local environment was achieved by following these sequential steps.

4.4 System Operation (with Screenshot)

4.4.1 User's View

- **Home Page for Users with the Guest Role**



Figure 4.3 Home Page for Guest Browsing

The image depicts the system's initial landing page, which provides users with the choice to proceed with the sign-in process or not. To enter or register, users should navigate to the top navigation bar and select the "SIGN IN/SIGN UP" button. If not, it indicates that the user wishes to access the content of the system using the guest role.

- **Users Sign-In Card**

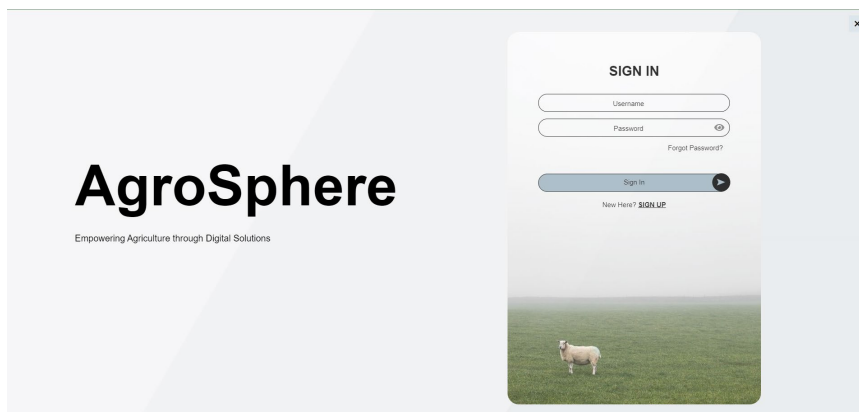


Figure 4.4 User Sign-In Card

Upon users selecting the "SIGN IN/SIGN UP" button, the system will present them with a sign-in card. Users are required to input their credentials, consisting of a username and password, to access the system. An additional notification will be prompted to users in the event that they input inaccurate credentials. Individuals who have forgotten their password can easily retrieve it by clicking the "Forgot Password"

text. However, individuals who are not acquainted with the system can establish an account by merely clicking the "New Here? SIGN UP" text.

- **Users Forgot Password Card**

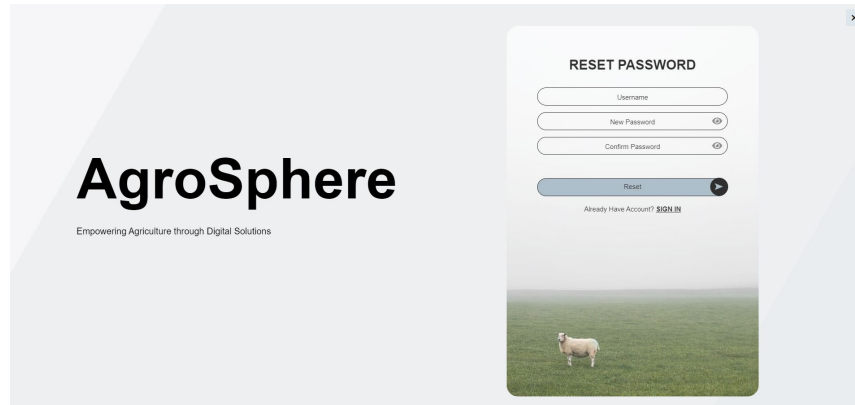
The image shows a mobile application interface for the 'AgroSphere' app. On the left, the app's logo 'AgroSphere' is displayed with the tagline 'Empowering Agriculture through Digital Solutions' below it. On the right, a 'RESET PASSWORD' card is shown. The card has a title 'RESET PASSWORD' and three input fields: 'Username', 'New Password', and 'Confirm Password'. Below these fields is a 'Reset' button with a right-pointing arrow. At the bottom of the card, there is a link that says 'Already Have Account? SIGN IN'. The background of the card features a photograph of a sheep in a green field.

Figure 4.5 User Forgot Password Card

The system will display a forgotten password card (as depicted in *Figure 4.5*) to users when accessing the "Forgot Password" page, allowing them to reset their password. On this screen, users must enter their login, new password, and confirmation password. If users don't comply, a notice will be shown.

- **Users Sign-Up Card**

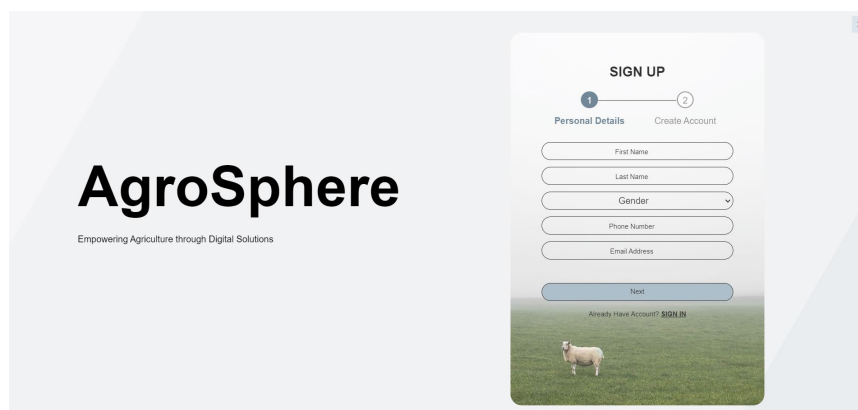
The image shows a mobile application interface for the 'AgroSphere' app. On the left, the app's logo 'AgroSphere' is displayed with the tagline 'Empowering Agriculture through Digital Solutions' below it. On the right, a 'SIGN UP' card is shown. The card has a title 'SIGN UP' and a progress indicator with two steps: '1 Personal Details' and '2 Create Account'. Below the progress indicator are five input fields: 'First Name', 'Last Name', 'Gender' (with a dropdown arrow), 'Phone Number', and 'Email Address'. Below these fields is a 'Next' button. At the bottom of the card, there is a link that says 'Already Have Account? SIGN IN'. The background of the card features a photograph of a sheep in a green field.

Figure 4.6 User Sign-Up Card

The image shows a mobile app sign-up card for AgroSphere. The card is titled "SIGN UP" and has two steps: 1. Personal Details and 2. Create Account. The "Create Account" step is active. It contains the following fields: Username, Sign Up As? (a dropdown menu), Avatar (with a "Browse" button), Password, and Confirm Password. At the bottom, there are "Previous" and "Create Account" buttons. A small "x" icon is in the top right corner of the card. The background of the card shows a cow in a field.

Figure 4.7 User Sign-Up Card (cont.)

Figure 4.7 is the sign-up card for those new to the system. It is important to note that the sign-up process is divided into two sections, namely "Personal Details" and "Create Account." Users must enter the required registration information in order to create an account and gain access to the system. It is especially important for users to select their role correctly, as each role has different features within the system. Users who fail to upload an avatar will have a system default avatar used. The most intriguing aspect is that the password is stored in a hashed function.

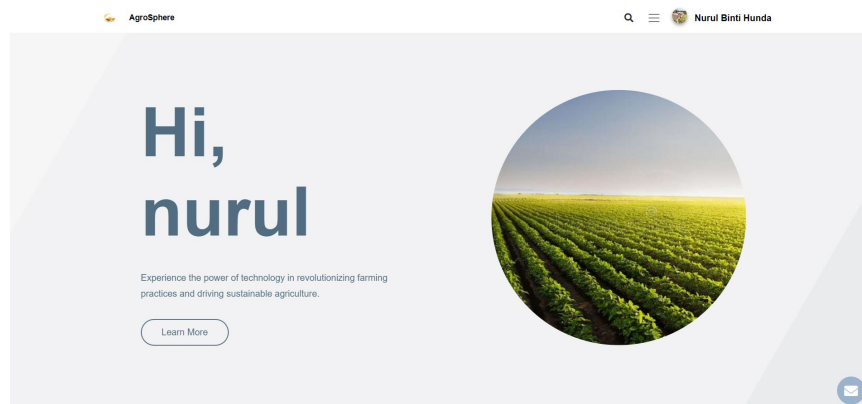


Figure 4.8 Registered User Home Page

The picture above shows the home page for those who have registered. Upon logging in, they'll see that the welcome message and top navigation bar have changed. By clicking on the hamburger symbol in the top navigation bar, users may easily access the side bar. Additionally, there is an envelope button on the webpage in the lower right corner.

- **Private Messaging Module**

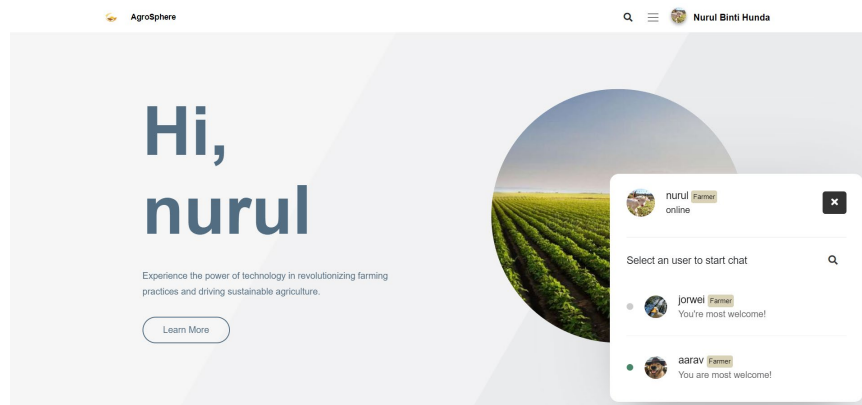


Figure 4.9 Chat Box

A chat box will open as soon as registered users touch on the envelope button. That chat box will have a history of conversations with that specific individual in it. In the meantime, it will also display the system users' current status, indicating whether they are online (green dots) or offline (grey dots).

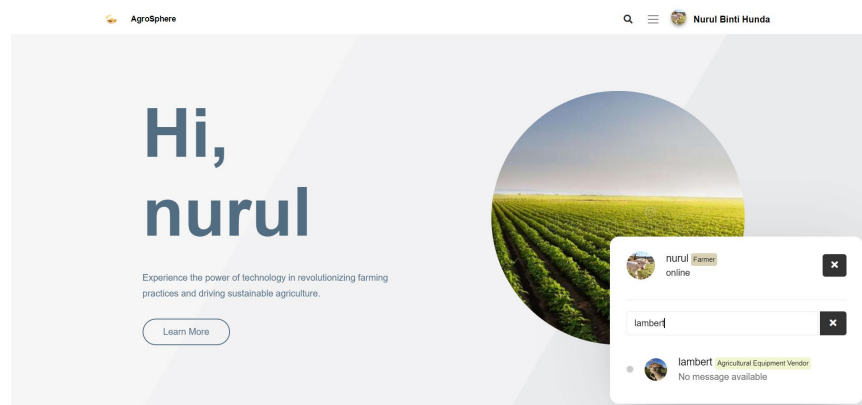


Figure 4.10 Search User Inside Chat Box

By typing a term into a search field, users may also look up a specific individual. The people who match the term will then be shown by the system. The message "No user found related to your search term" will appear on the screen if there are no users that match the keyword.

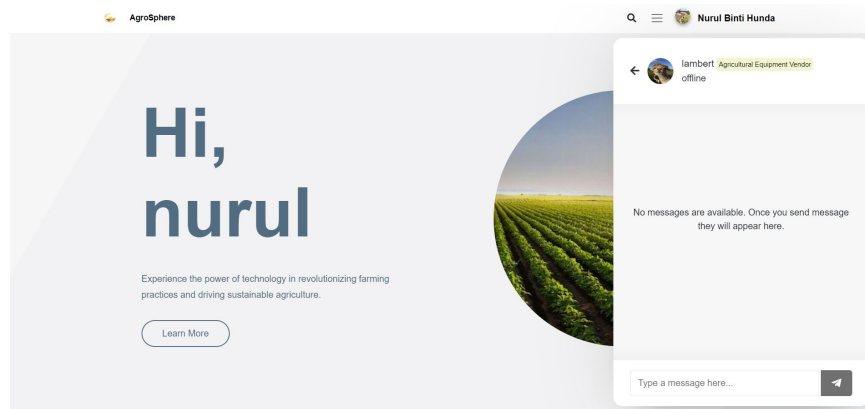


Figure 4.11 Chat Room with User that Haven't Chat Before

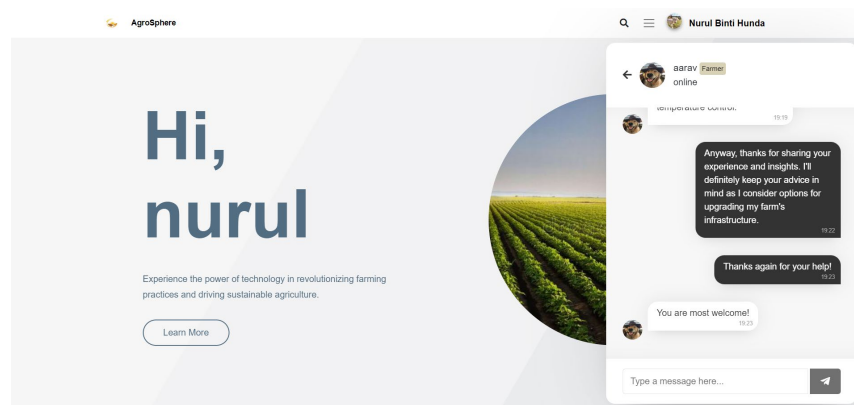


Figure 4.12 Chat Room with Previously Chatted User

After that, users may easily choose a prior conversation list or search for a certain user's chat. When people click on it, a chat room will open right away. There are two possible outcomes: in the chat room, users' past conversations with that person won't be shown if they are chatting for the first time (as shown in *Figure 4.11*). In the event that they want to converse with a person with whom they have already had a conversation, they will be able to see their prior exchanges inside the chat room (as shown in *Figure 4.12*).

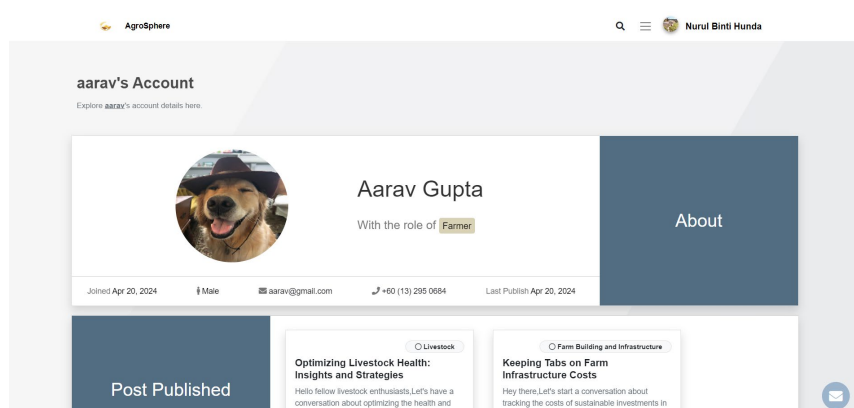


Figure 4.13 Chat Participant's Profile

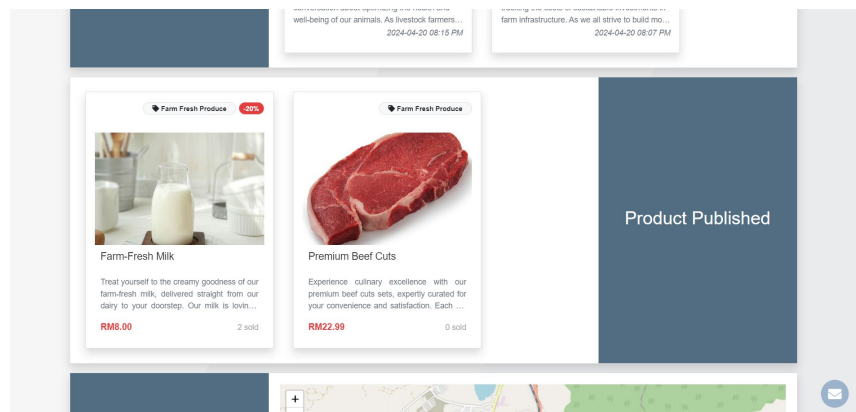


Figure 4.14 Chat Participant's Profile (cont.)

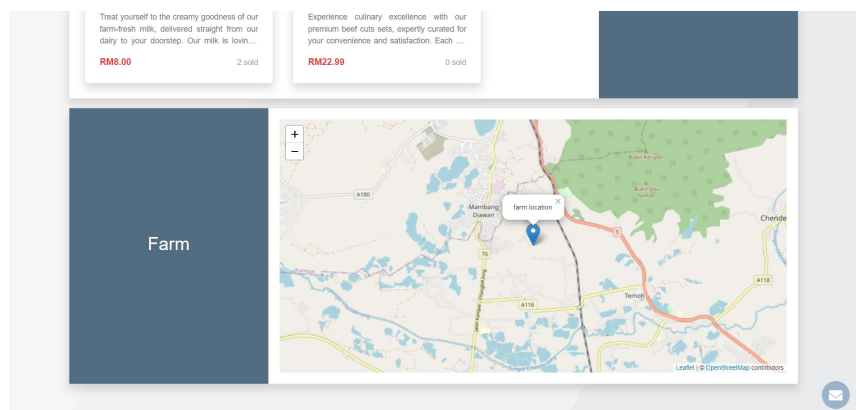


Figure 4.15 Chat Participant's Profile (cont.)

Users are given option to view the profile of the specific individual with whom they are presently conversing. They just need to click on his/her username or avatar at the top of the chat room to access it. Then, they will be redirected to the page as shown in *Figure 4.13*, *4.14*, and *4.15*.

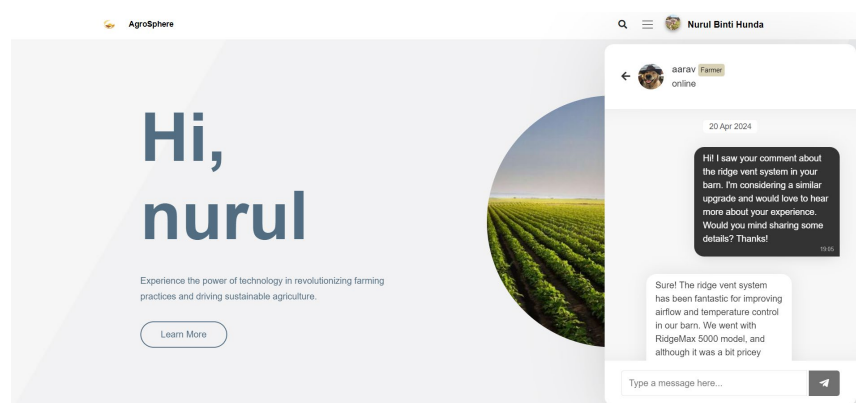


Figure 4.16 Scroll Up to View Previous Chat Histories

Users may scroll up to see the prior conversation record, as shown in the picture above.

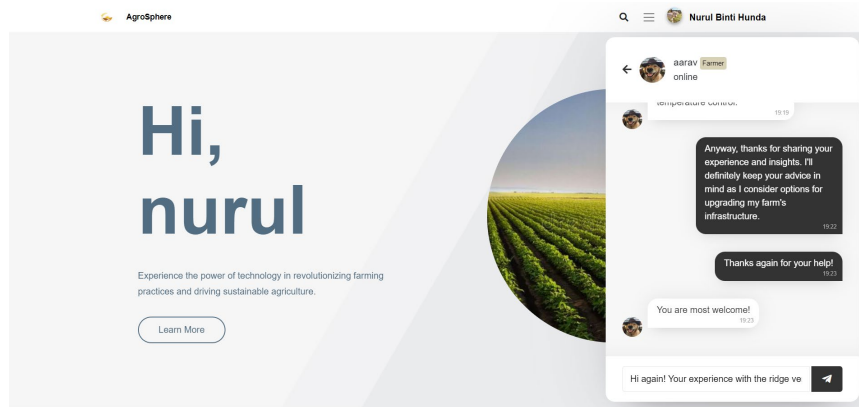


Figure 4.17 Send Message

If not, they may enter the message by simply typing it into the input area, as depicted in the *Figure 4.17*. Following that, they have the option of using the keyboard's "Enter" button or hitting the transmit button next to the input area.

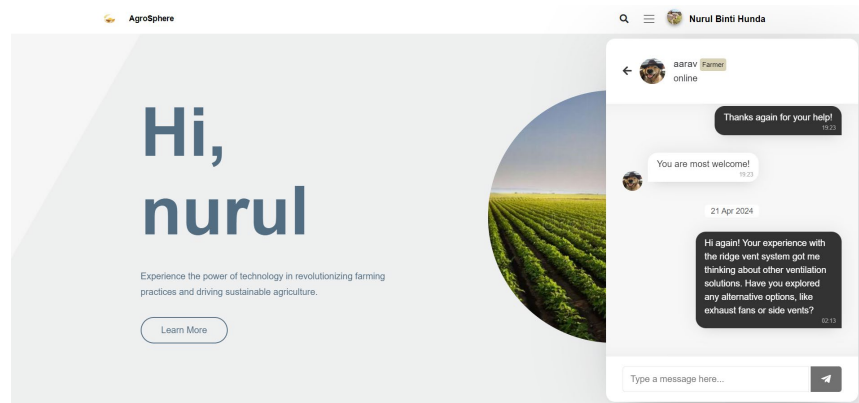


Figure 4.18 Message Successfully Sent Out

The message has been sent out successfully, as shown in the picture above.

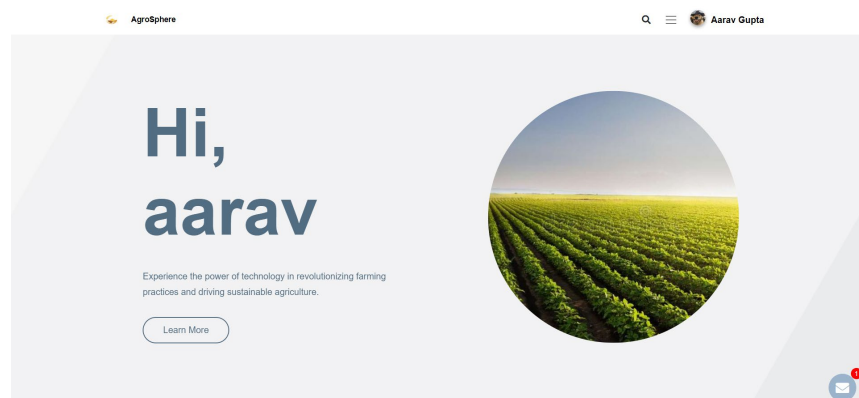


Figure 4.19 Receiver Point of View – Receive Message

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Go now to the recipient site. Upon successful transmission of the message, the recipient will be notified right away. The total number of unread messages is shown by the number within the red circle.

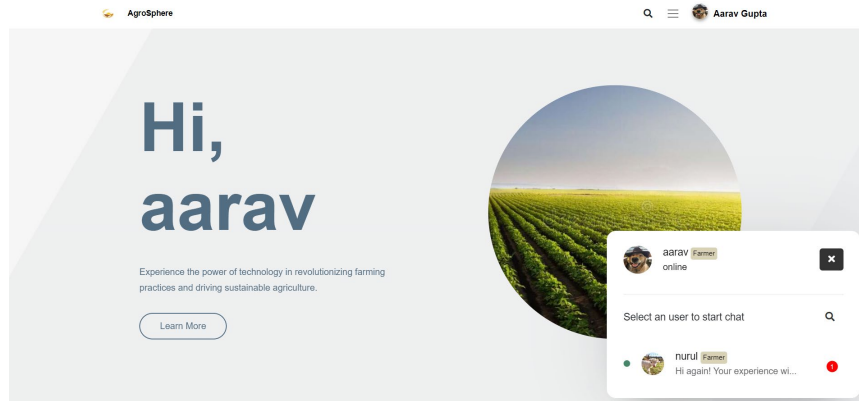


Figure 4.20 Receiver Point of View – Receive Message (cont.)

In the event that users get messages from other users and have not yet read those messages, the number of unread messages they have received will be shown by a red circle next to the person who sent the message to them.

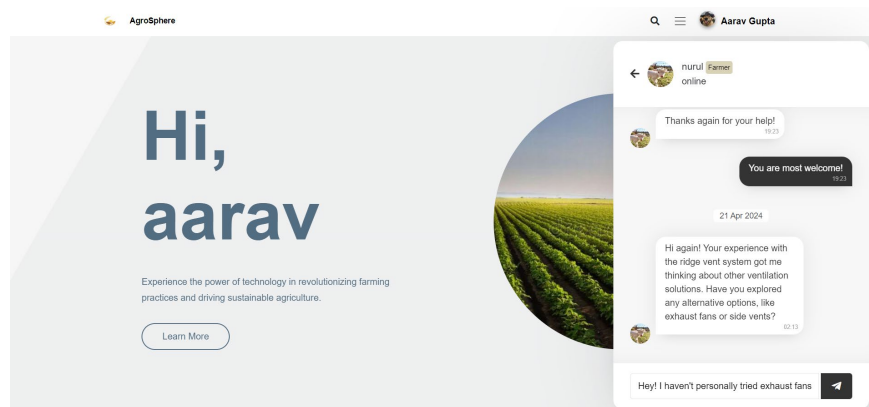


Figure 4.21 Receiver Point of View – Reply Message

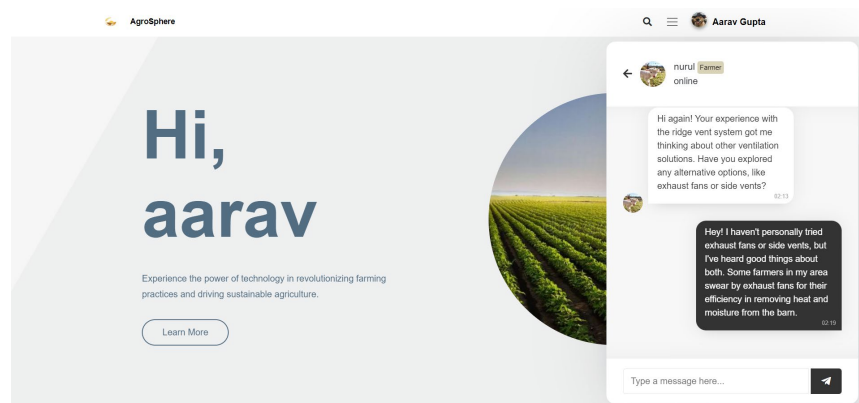


Figure 4.22 Receiver Point of View – Reply Message (cont.)

Then, what they can do is access the information by opening the chat with that person. They may then respond to the message after that.

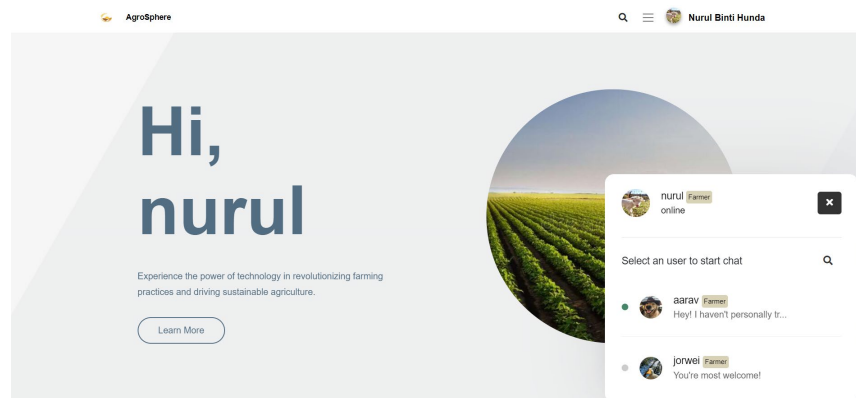


Figure 4.23 Sequence of the Chat in Previous Chat List

To emphasize this, the conversation that a user has last accessed (i.e., sent or received a message) will always be shown first in the list of previous chats.

- **Farm Management Module**

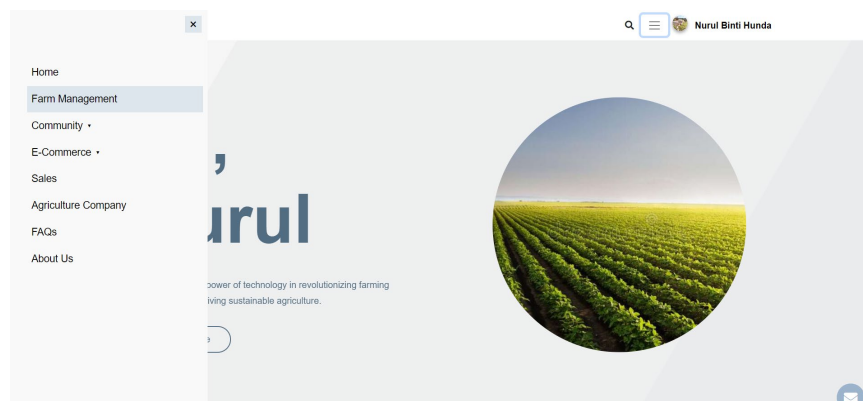


Figure 4.24 Sidebar of Users with Farmer Role – Access Farm Management Module

Recall that, in contrast to other user roles, farmers have access to a special function that allows them to manage their farm and fields inside the system. To experience the feature, they just need to click on the "Farm Management" option on the sidebar.

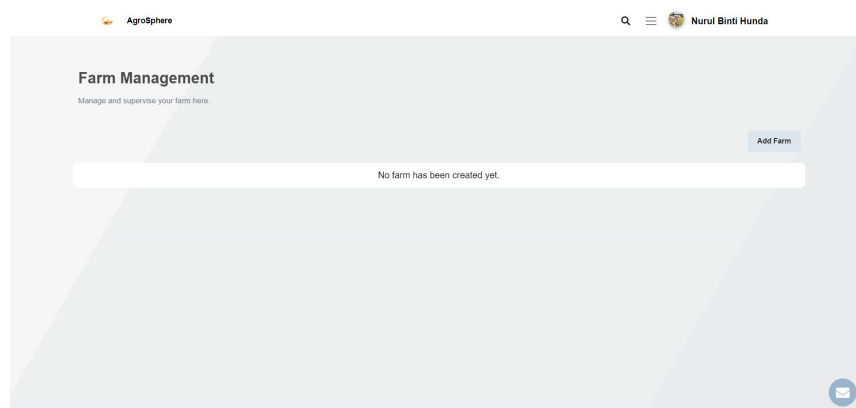


Figure 4.25 Farm Management Page

The system will check to see whether the users has already uploaded their farm when they reach the "Farm Management" page. If so, the system will instantly display a users' farm on a map interface as soon as they access this page. If not, they might choose to add their farm, as seen in the above image.

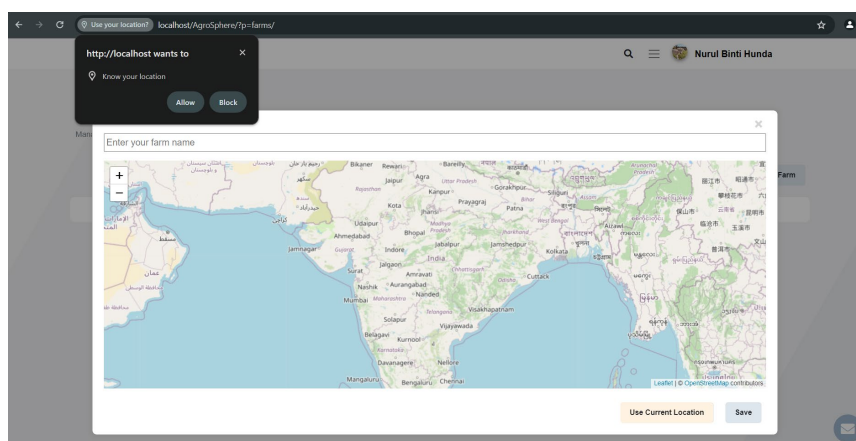


Figure 4.26 Add Farm - Enable Location

In order to use the current location feature, users must first activate the location, as shown by the prompt that appears after selecting the "Add Farm" button. If not, they will have to manually mark the location of their farm on the map.

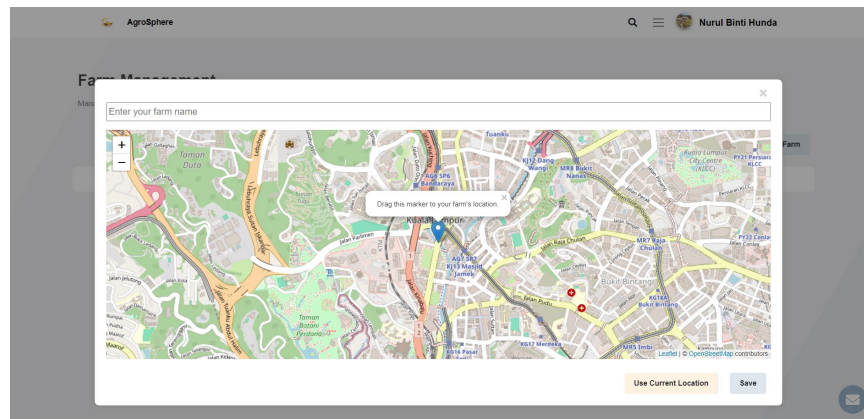


Figure 4.27 Add Farm - Enable Location (cont.)

Users may instantly see their current position on a map if they activate location sharing, as seen in the above picture. Users then must drag the marker to the actual location of their farm and enter the name of their farm.

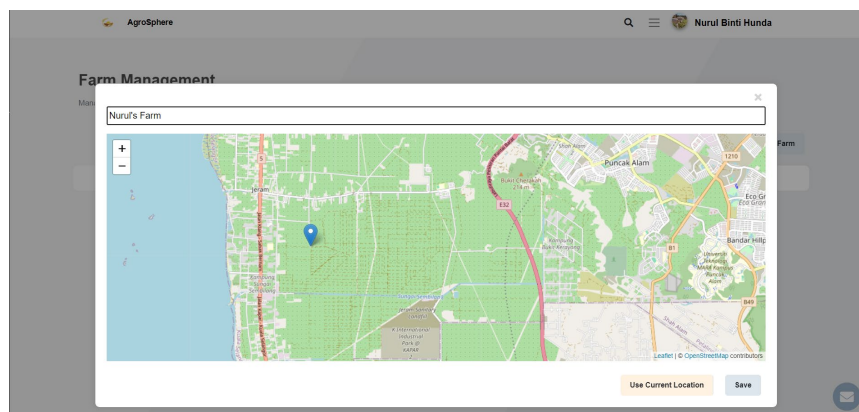


Figure 4.28 Add Farm

They just need to choose the "Save" button located at the bottom of the card after entering all the required farm information.

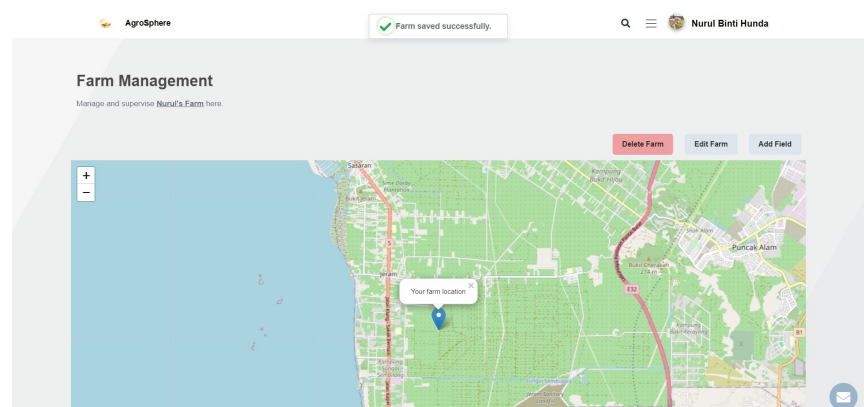


Figure 4.29 Farm Added Successfully Message

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The name and location of the farm that the users just given are shown on the "Farm Management" page, along with a success message, after the system has verified the submitted data.

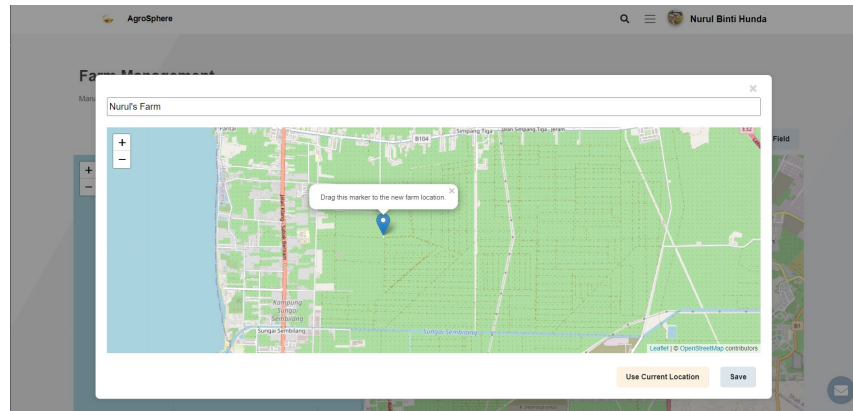


Figure 4.29 Edit Farm

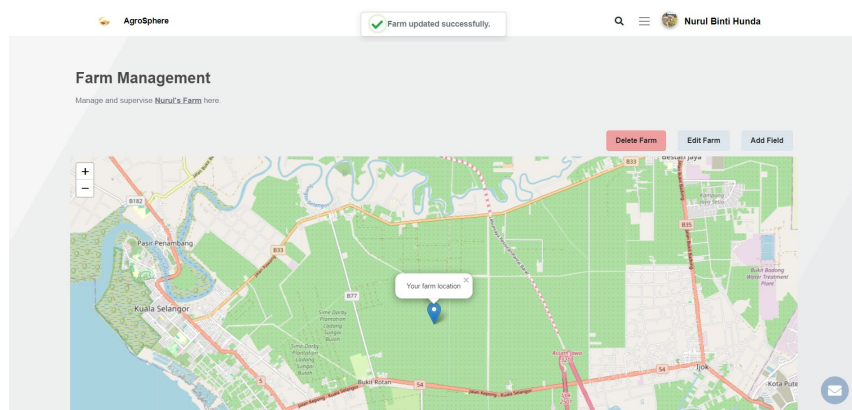


Figure 4.30 Farm Edited Successfully Message

As depicted in *Figure 4.29*, users just need to click the "Edit Farm" button on top of the map interface to bring up a card with their farm's data. They just need to make the required adjustments before selecting the "Save" button. The system will then show a successful message after validating and updating the data, as shown in *Figure 4.30*.

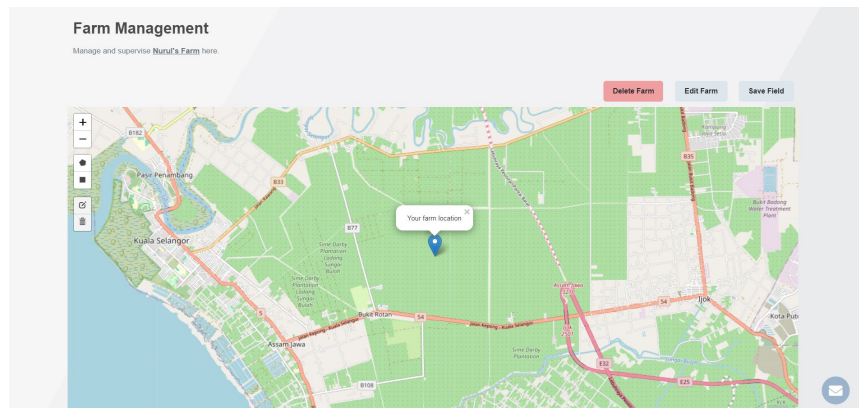


Figure 4.31 Add Field

By pressing the "Add Field" button, users may start the process of adding a field, as seen in the above picture. Next, the map interface's left side will display a list of tools shown by the system. Observe that the "Add Field" button has already been replaced with the "Save Field" button.

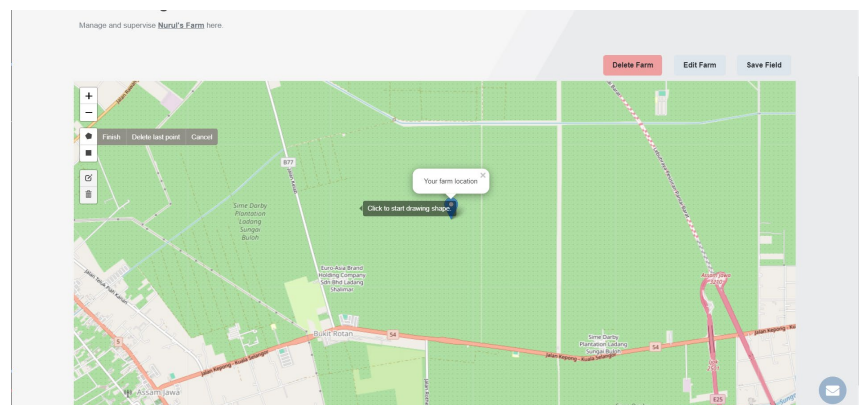


Figure 4.32 Draw Field

The field may then be drawn on the map by users using the available tools. After drawing, they can proceed by clicking the "Save Field" button. Once they are finished sketching, they may click "Save Field."

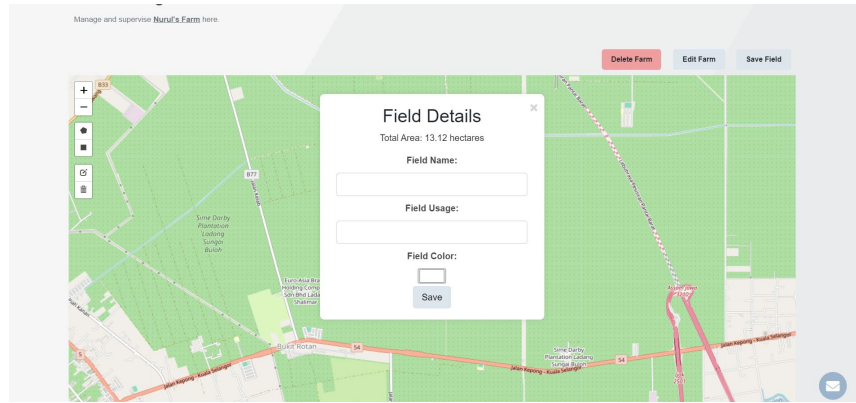


Figure 4.33 Add Field (cont.)

After that, a card asking users to enter the field's data will appear. They will see that the field color gives users the choice of what color the field should eventually be shown on the map. They just need to complete the required fields and click the "Save" button.

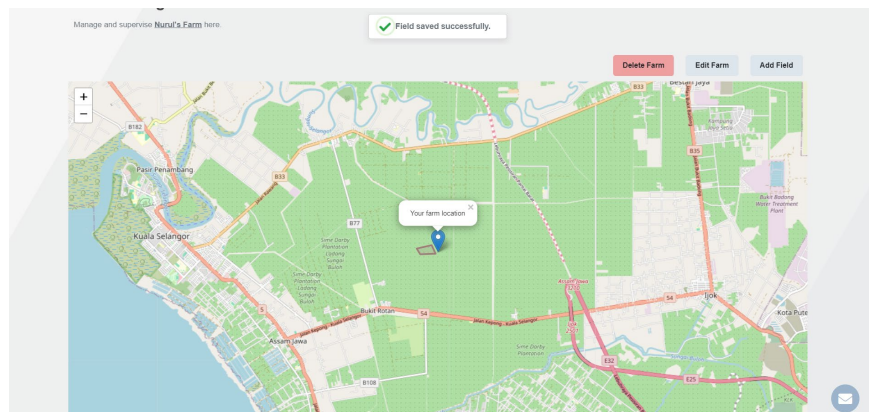


Figure 4.34 Field Added Successfully Message

The system will then verify the field, store it, and show a success message. As shown in the above figure, it will also display the newly added field on the map interface.

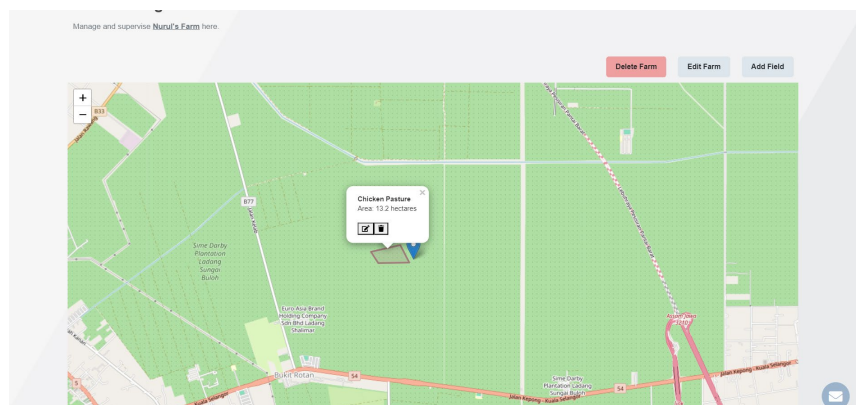


Figure 4.35 Field Data in A Little Popup Card

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Users may then choose a particular field on the map by simply selecting it. The field data will appear as a little popup card on the screen.

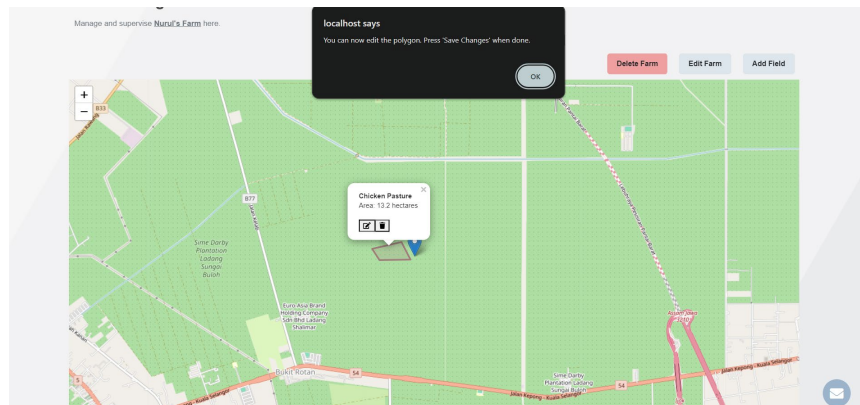


Figure 4.36 Edit Field

Users just need to click on the edit icon to make changes to the field. After that, a message alerting them to this feature will then appear.

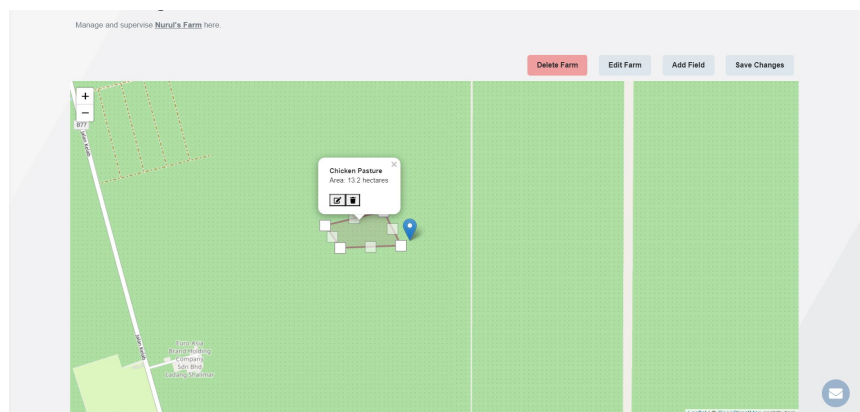


Figure 4.37 Edit Field – Resize Polygon

After that, users may modify the polygon as needed. Observe that the "Save Changes" button has replaced the "Add Field" button. Once the polygon has been resized, users just need to click the "Save Changes" button.

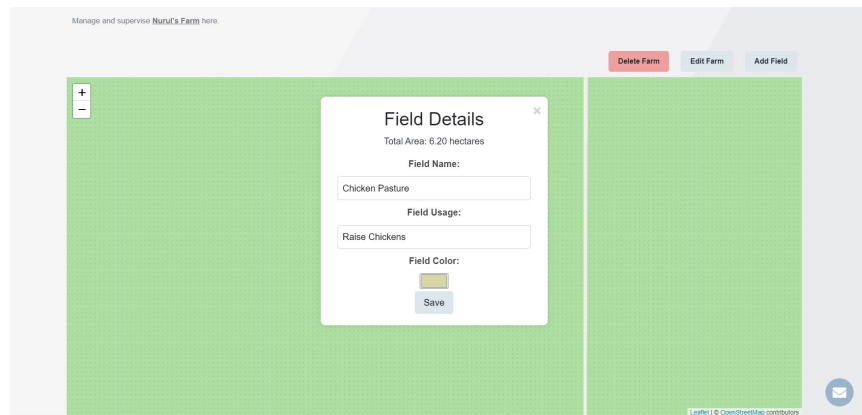


Figure 4.38 Edit Field – Field Details

Users may easily enter the new field data here and confirm by clicking the "Save" button once a card with the field details prompts out.

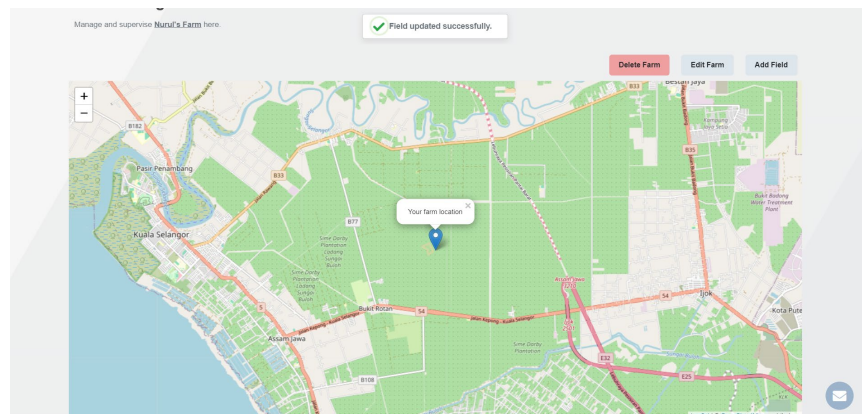


Figure 4.39 Field Edited Successfully Message

The system will show the modified fields on the map and provide a successful message after the field has been validated and updated.

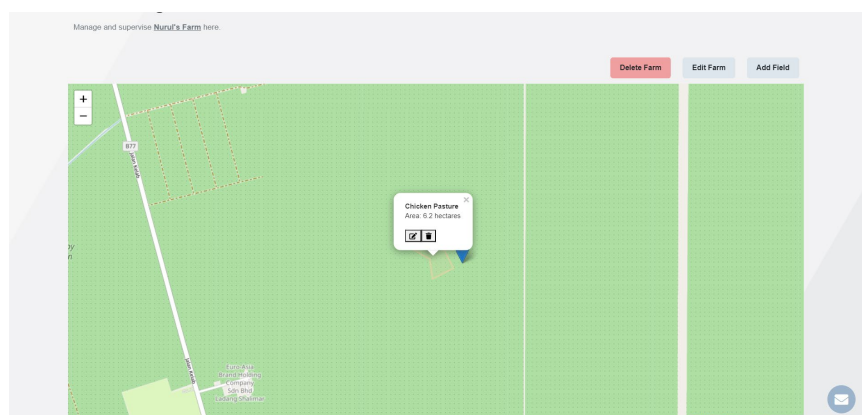


Figure 4.40 Delete Field

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Alternatively, users may simply click on the field they want to remove and choose the delete symbol from the little popup card that appears after clicking on the desired field.

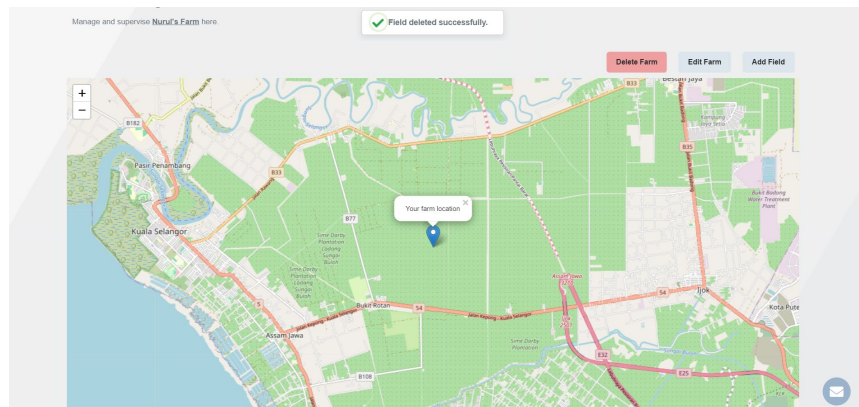


Figure 4.41 Field Deleted Message

The specific field will be deleted and the system will provide a successful message after the user confirms deletion.

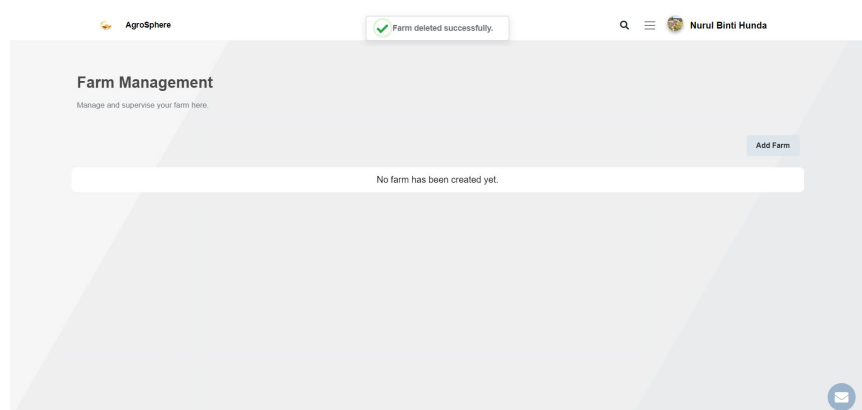


Figure 4.42 Farm Deleted Message

They just need to click the "Delete Farm" option on top of the map interface if they want to remove a farm. The system deletes the farm and shows a success message after verifying the deletion.

- **Community Module**

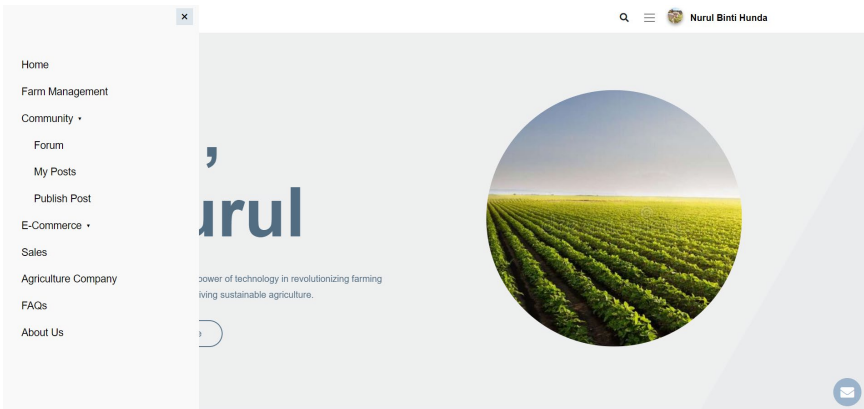


Figure 4.43 Sidebar of Registered Users – Access Community Module

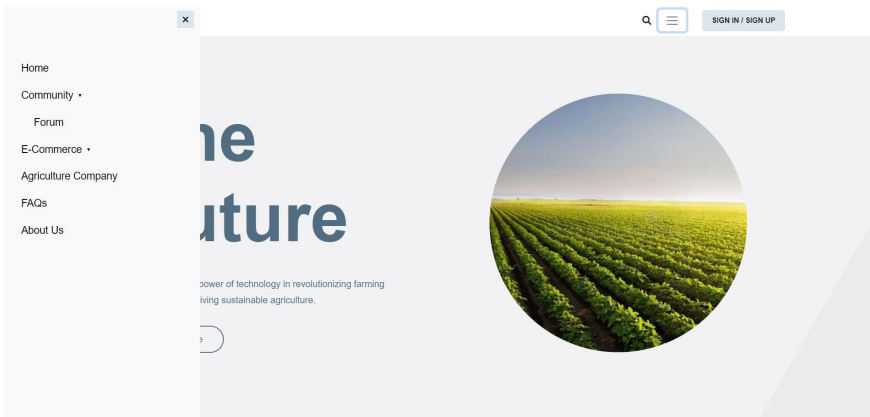


Figure 4.44 Sidebar of Users with Guest Role – Access Community Module

As shown in *Figure 4.43* and *4.44*, the sidebar makes it clear that users in the guest role have a distinct "Community" area than registered users do.

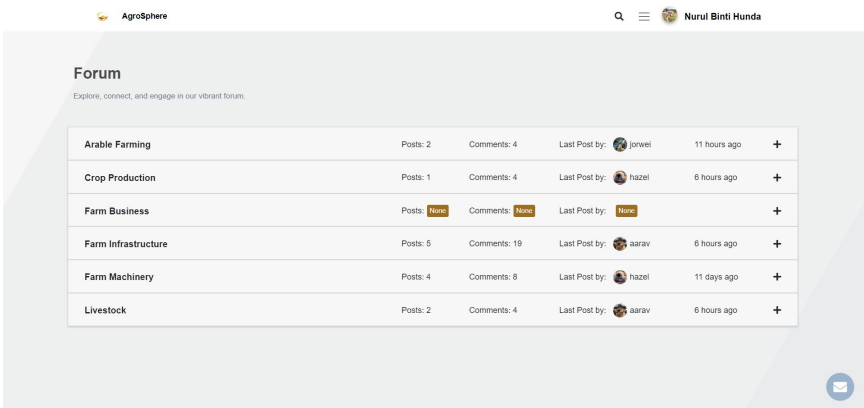


Figure 4.45 Forum Page

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Any user may access the forum by simply choosing “Forum” from the dropdown menu under “Community” in the sidebar, regardless of their user role. They may browse the list of post categories and see the posts for each category there.

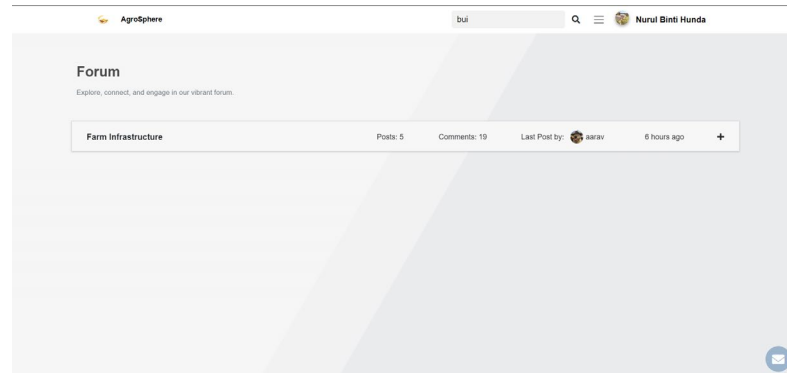


Figure 4.46 Search Post Categories

Users may click the search icon on the top navigation bar and type a term into the search field, as shown in the above picture. The system is then showing the post categories that match the keyword.

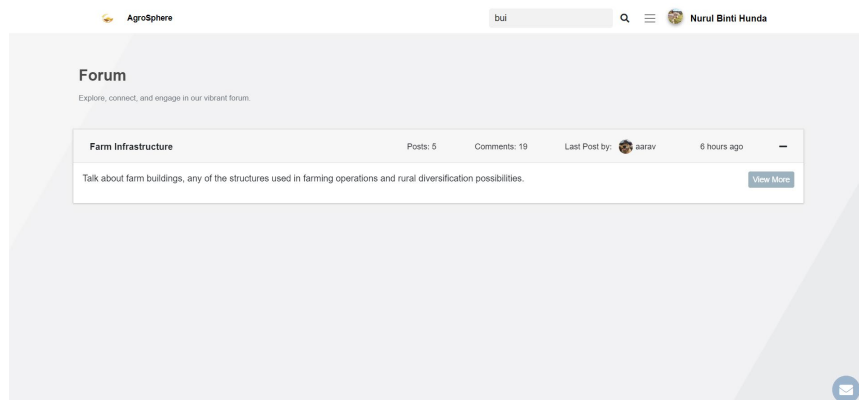


Figure 4.47 Expand Post Category

In order to view the description of the category, users can simply expand it by clicking “+” sign. After that, the description in conjunction with the “View More” button will be displayed.

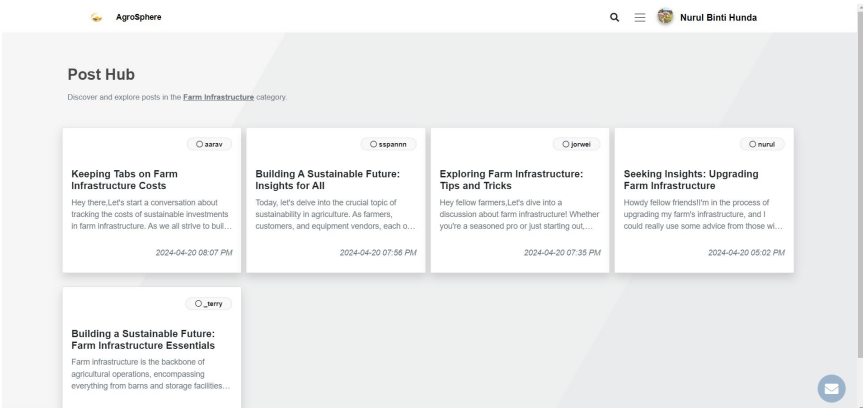


Figure 4.48 View Posts Within Selected Category

After clicking the “View More” button, users will be redirected to the “Post Hub” page where they are able to view all the posts that fall under the specified category. They can simply choose a post to view the details.

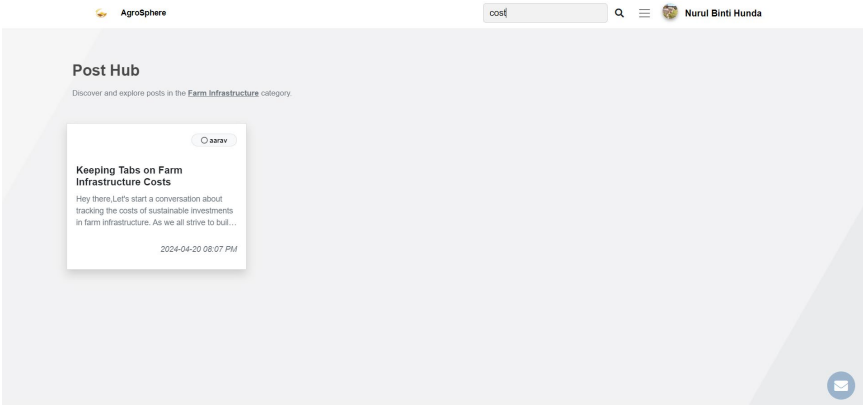


Figure 4.49 Search Posts

Users may click the search icon on the top navigation bar and type a term into the search field, as shown in the above picture. The system is then showing the posts that match the keyword.

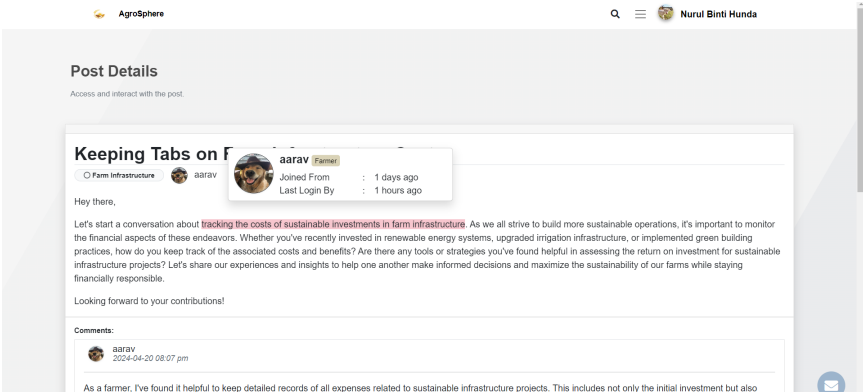


Figure 4.50 View Post Details

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Following selection, the specific post's information will be shown to them. To see additional information, they just need to scroll down. Users may now mouse over the username of a post participant to see a little user activity card display. Additionally, the system will display the chosen user's profile when they click on the avatar or username of that person.

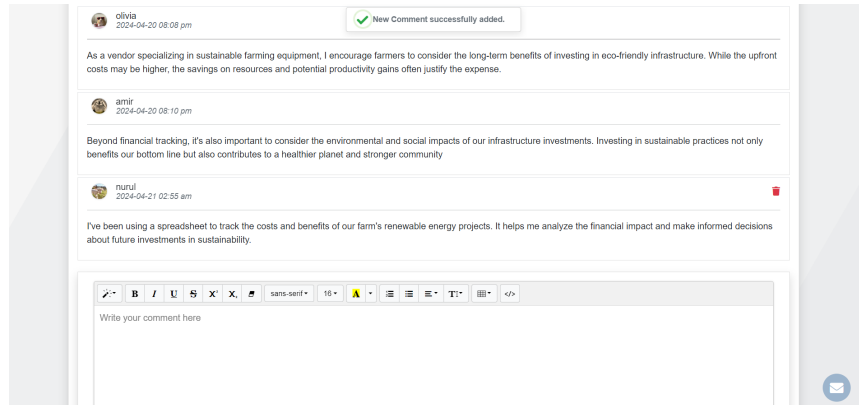


Figure 4.51 Registered Users' Point of View – Publish Comment

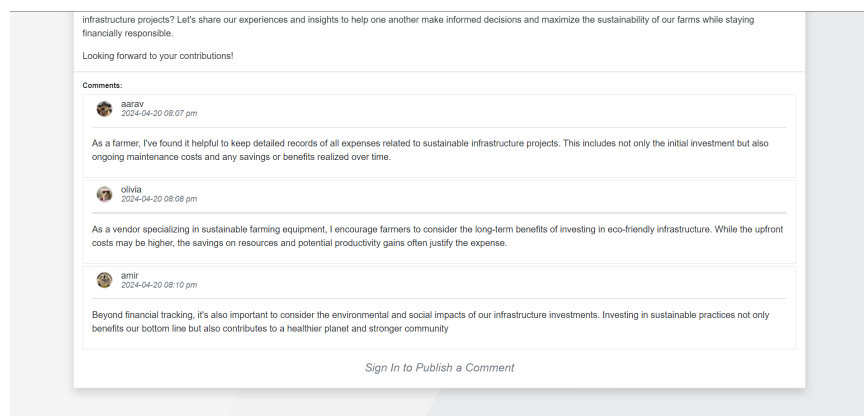


Figure 4.52 Users with Guest Role's Point of View – Publish Comment

It should be emphasized that, as *Figure 4.51* illustrates, comments may only be published beneath posts by registered users. All they have to do is type text into the input field and choose "Save." After that, the system will publish the remark underneath the post and provide a successful message.

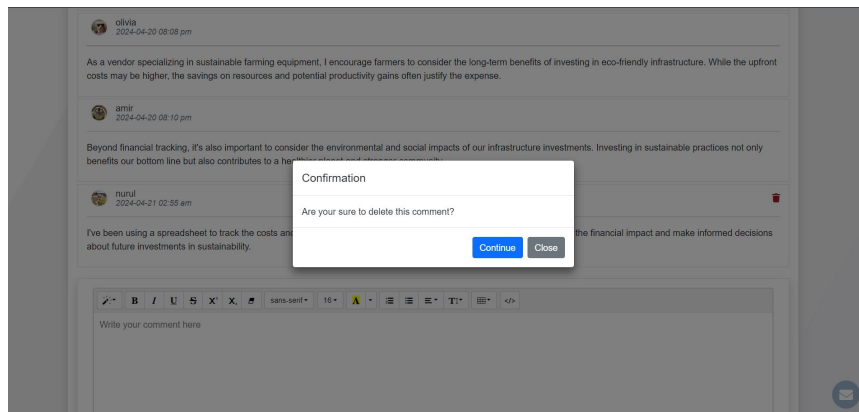


Figure 4.53 Delete Own Publish Comment

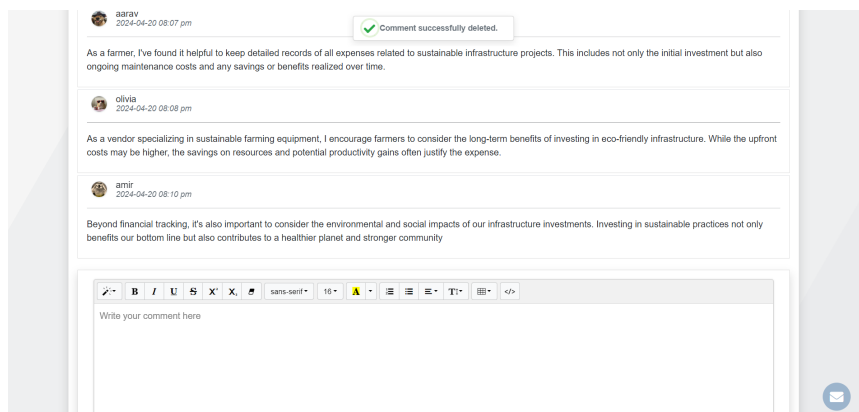


Figure 4.54 Comment Deleted Successfully Message

Registered users also can delete their own comment. After clicking on the trash icon, two messages are shown: one asking for confirmation (as shown in *Figure 4.53*) and the other after the comment has been successfully deleted (as depicted in *Figure 4.54*).

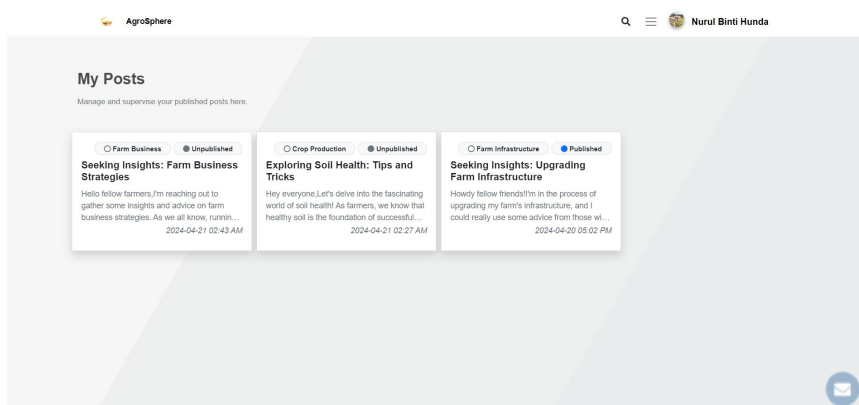


Figure 4.55 My Posts Page

For registered users, they can select the “My Posts” option from the dropdown menu located under the “Community” section in the side bar. After that, a redirect will take them to the page where their own posts are located.

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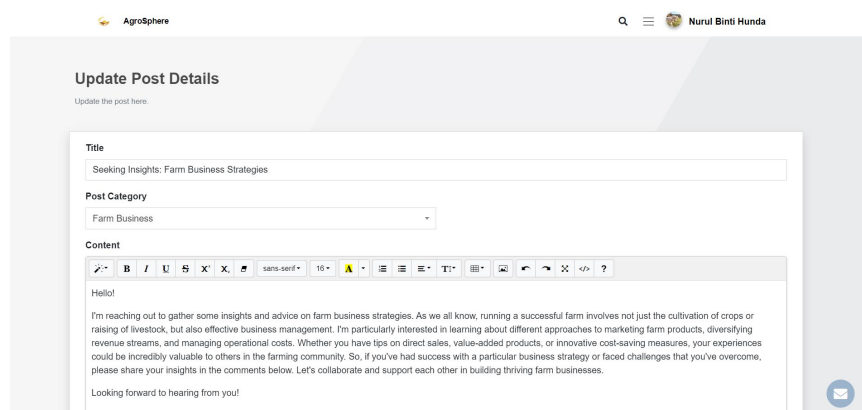


Figure 4.56 Edit Post Details

By using the “Edit Post” button situated at the top of the post, users may modify the information as needed. Putting the post unpublished, for instance. They may then choose the "Save" option.

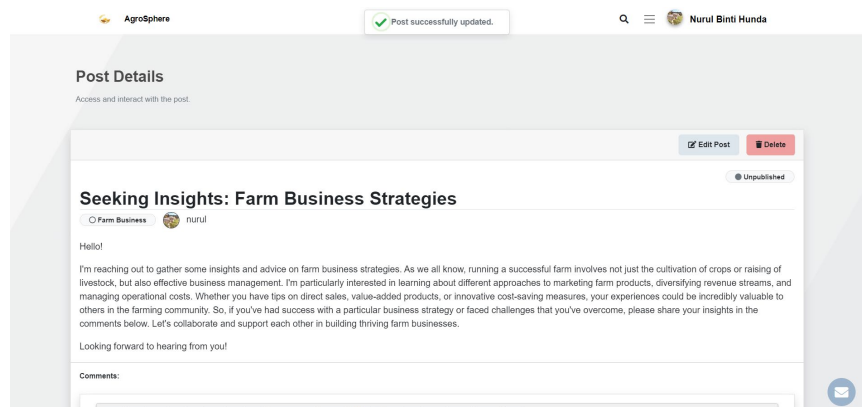


Figure 4.57 Post Edited Successfully Message

After clicking the "Save" button, the system will validate and edit the information as shown in the above picture, presenting a successful message and the modified post data.

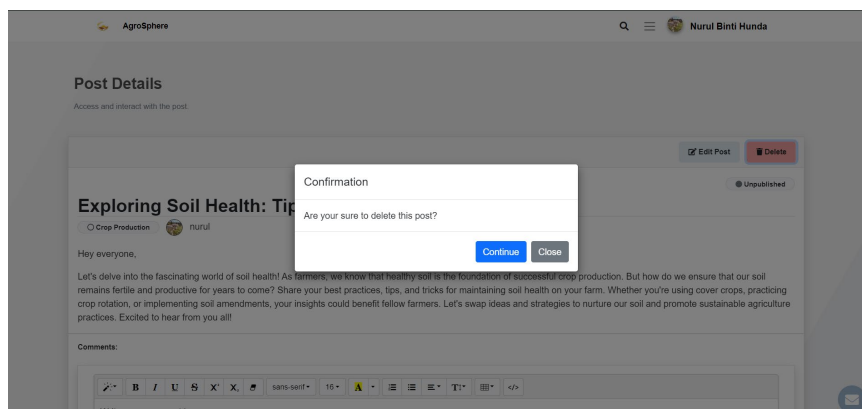


Figure 4.58 Delete Post

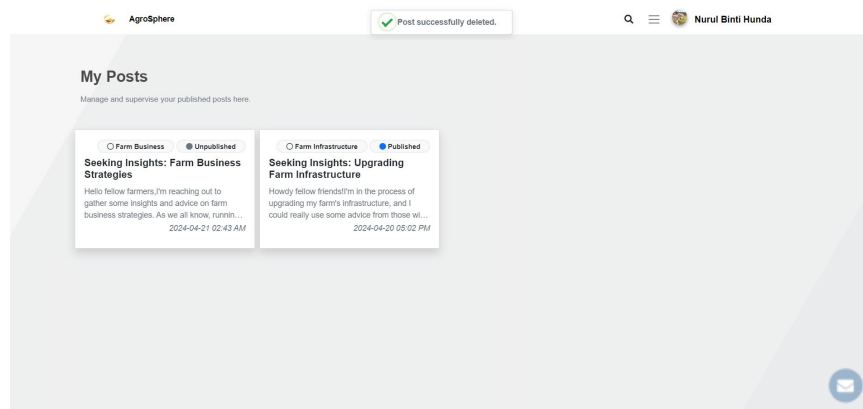


Figure 4.59 Post Deleted Successfully Message

Users may confirm deletion by clicking the "Delete" button at the top of the post. The system will then remove the user-confirmed post and display a successful message.

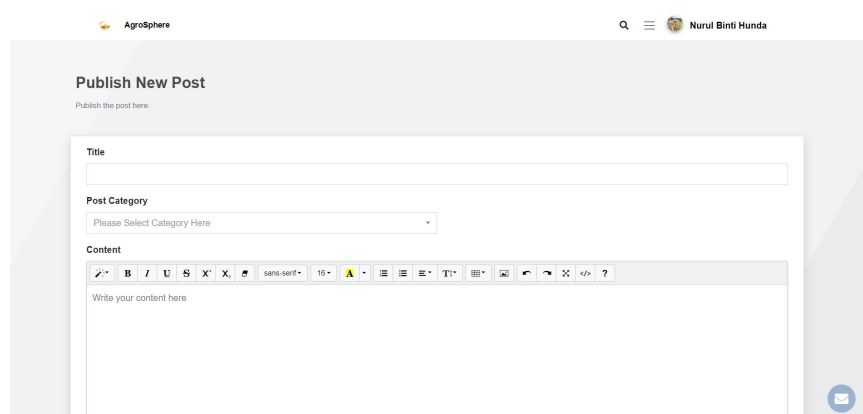


Figure 4.60 Publish Post

For registered users, in order to publish a post in the forum, they can select the “Publish Post” option from the dropdown menu located under the “Community” section in the sidebar. Then, users are redirected to the page where they can publish the post.



Figure 4.61 Publish Post (cont.)

Users may then contribute the post's information. They should choose the "Publish" option if they want to publish the message to the forum. Otherwise, users should uncheck the "Published" option if they want to save the article as a draft first. Next, choose the "Save" option from the form's button that the system has provided.

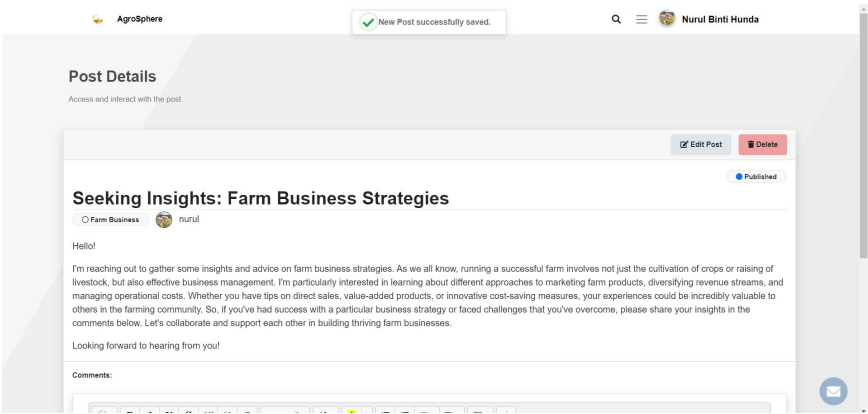


Figure 4.62 Post Published Successfully Message

The system will validate and save the data, as seen in the above figure, and then display a successful message.

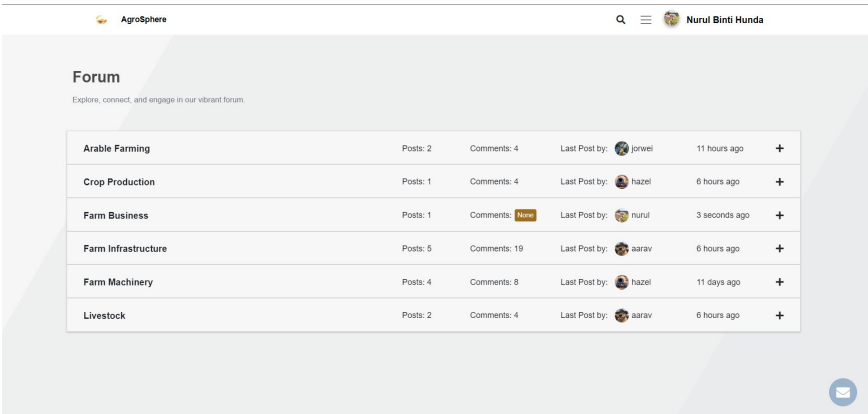


Figure 4.63 Evident that Post Was Properly Published

Additionally, the forum makes it evident that the post was properly published.

- **E-Commerce Module**

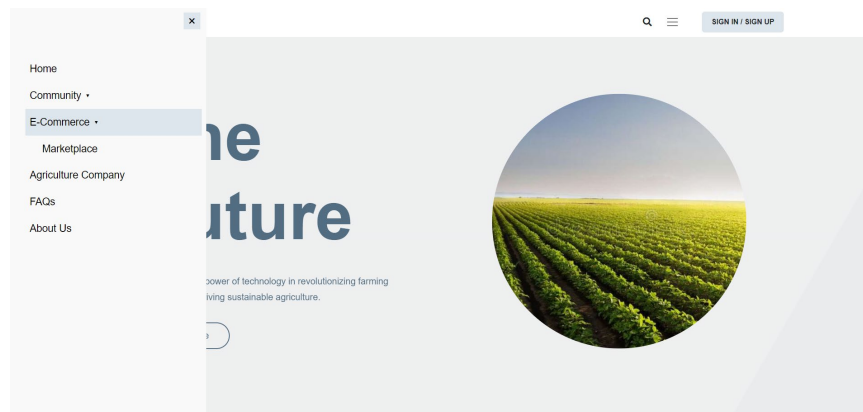


Figure 4.64 Sidebar of Users with Guest Role – Access E-Commerce Module

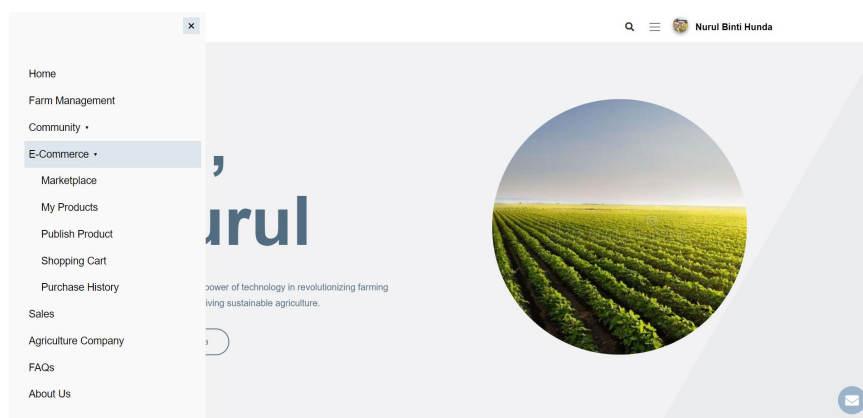


Figure 4.65 Sidebar of Users with Farmer Role – Access E-Commerce Module

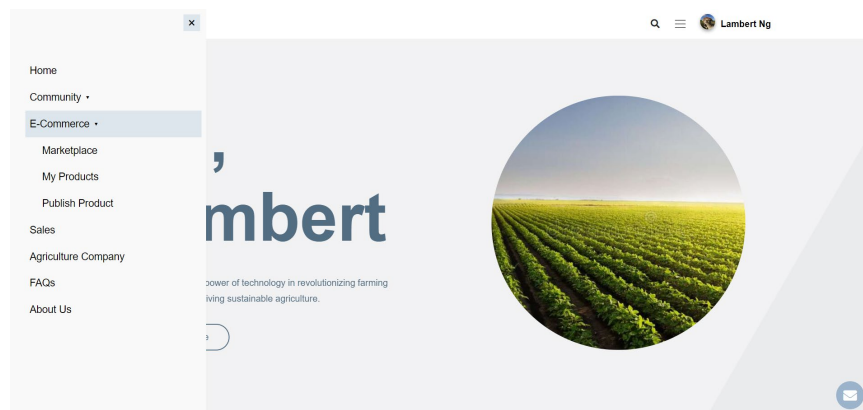


Figure 4.66 Sidebar of Users with Vendor Role – Access E-Commerce Module



Figure 4.67 Sidebar of Users with Customer Role – Access E-Commerce Module

As shown in *Figure 4.64*, *4.65*, *4.66*, and *4.67*, the sidebar makes it clear that users in roles of farmer, agricultural equipment vendor, customer, and guest have a distinct "E-Commerce" area.

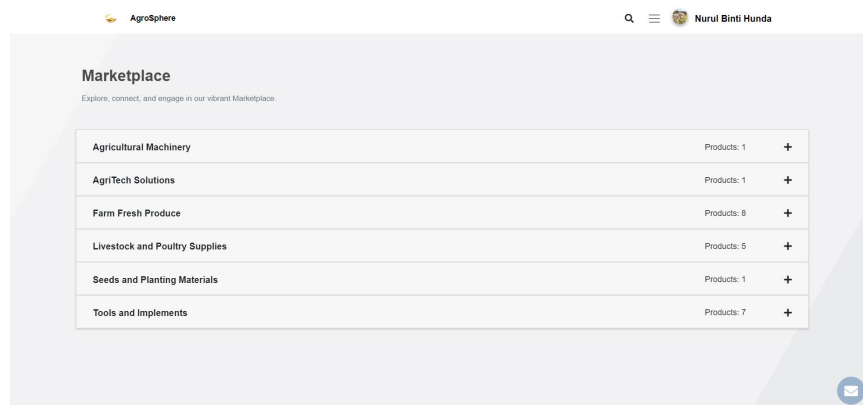


Figure 4.68 Marketplace Page

Any user may access the forum by simply choosing “Marketplace” from the dropdown menu under “E-Commerce” in the sidebar, regardless of their user role. They may browse the list of product categories and see the products for each category there.

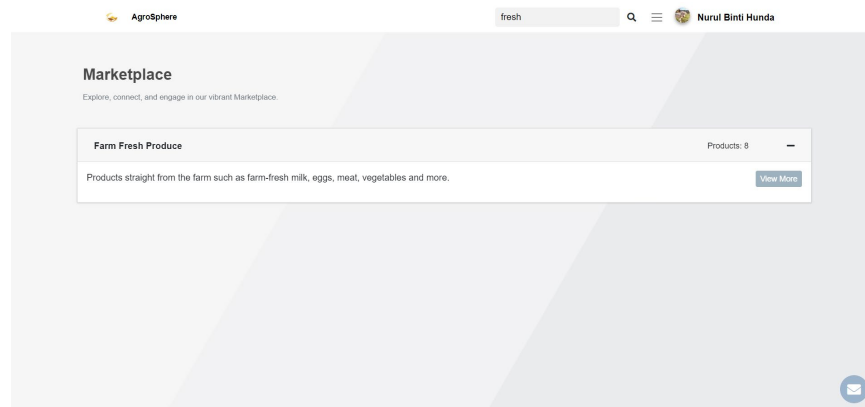


Figure 4.69 Search and Expand Product Categories

Users may click the search icon on the top navigation bar and type a term into the search field, as shown in the above picture. The system is then showing the product categories that match the keyword. Additionally, users can simply expand it by clicking “+” sign to view the description of the category. After that, the description in conjunction with the “View More” button will be displayed.

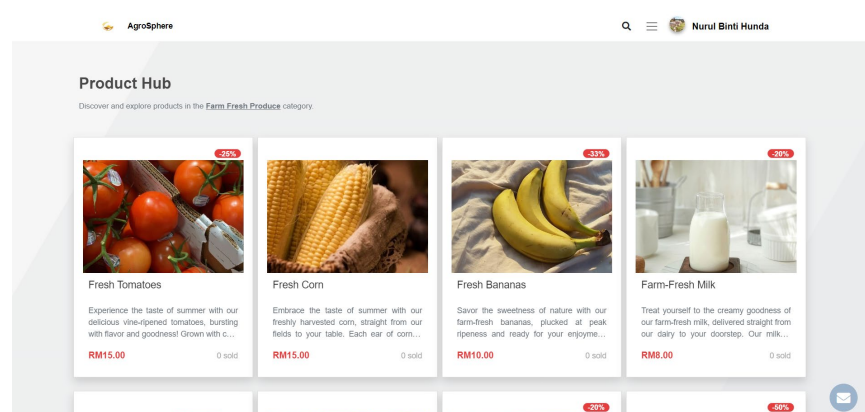


Figure 4.70 View Products Within Selected Category

Users are sent to the "Product Hub" page after selecting the button, where they may see all items that fit into the designated category. The picture, name, content, price, and quantity of any goods offered within this category are all readily visible to users.

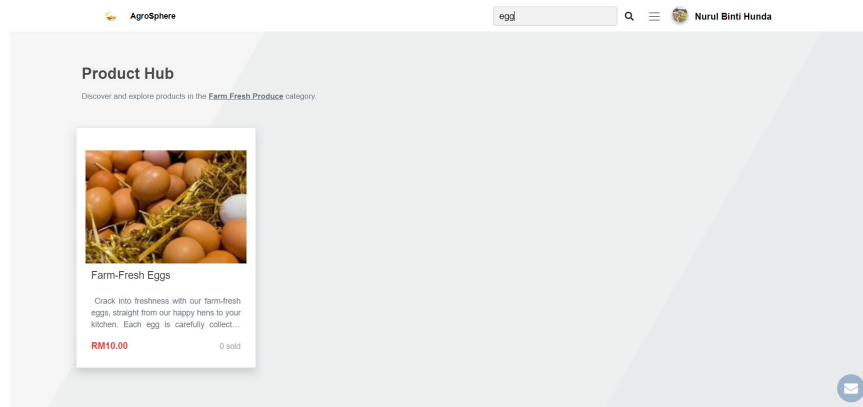


Figure 4.71 Search Products

Users can search a products by entering keyword in the search bar through the top navigation bar. After that, the products that correspond to the keyword are displayed to the users.

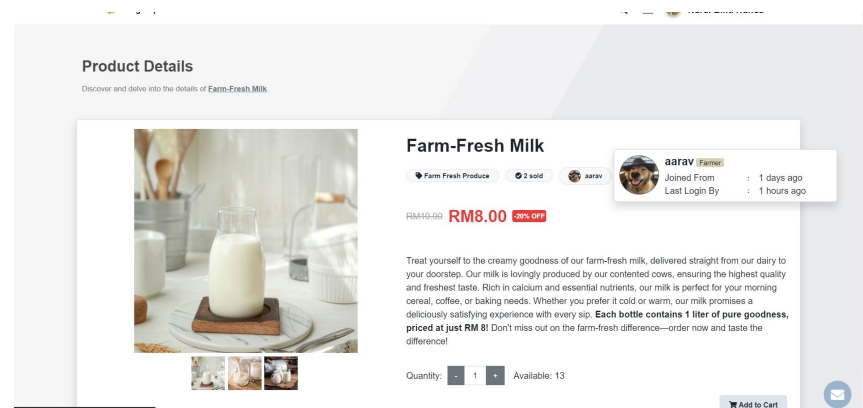


Figure 4.72 Users with Farmer/Customer Role – View Products Details

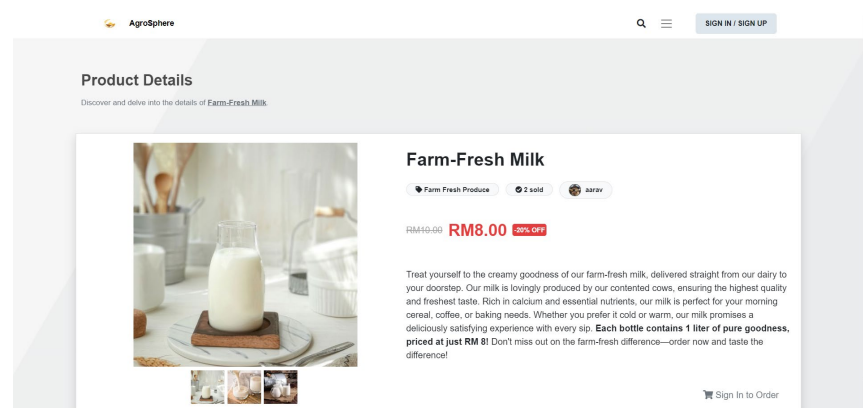


Figure 4.73 Users with Guest Role – View Products Details

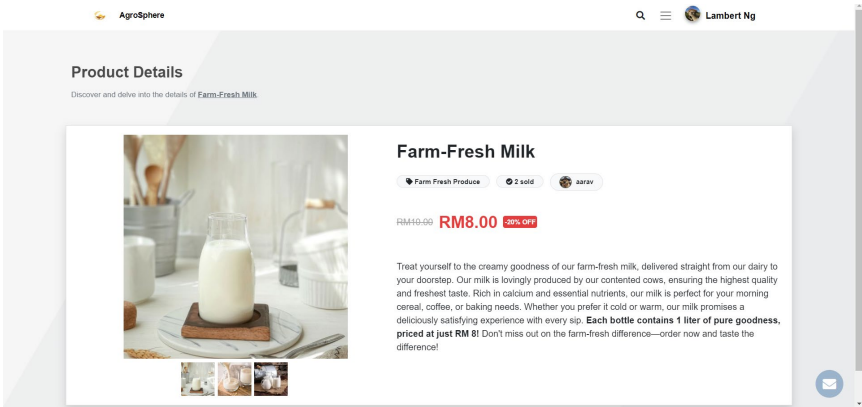


Figure 4.74 Users with Vendor Role – View Products Details

Users may examine the details of any product they have chosen by clicking on it. Users may now mouse over the username of a post participant to see a little user activity card display. Additionally, the system will display the chosen user's profile when they click on the avatar or username of that person. The fact that only users assuming the roles of farmer and customer are allowed to add products to their shopping carts is of particular significance based on the figures above (Figure 4.72 4.73, and 4.74).

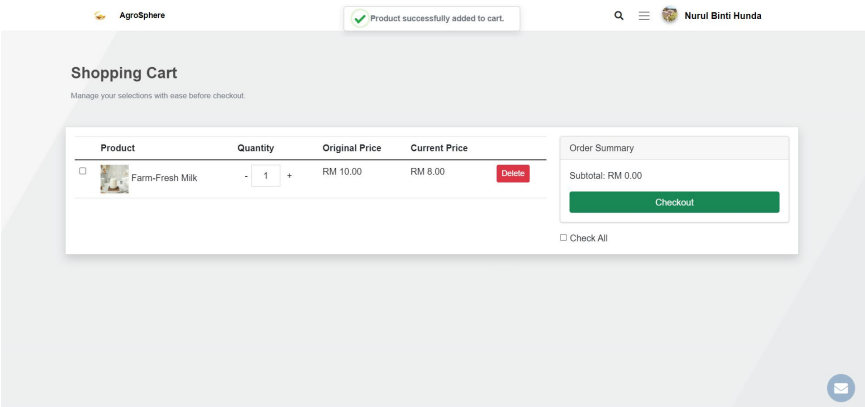


Figure 4.75 Add Products to Cart

After a product is placed to their basket, individuals with the farmer or customer role may see every item that is presently in their cart on the "Shopping Cart" page.

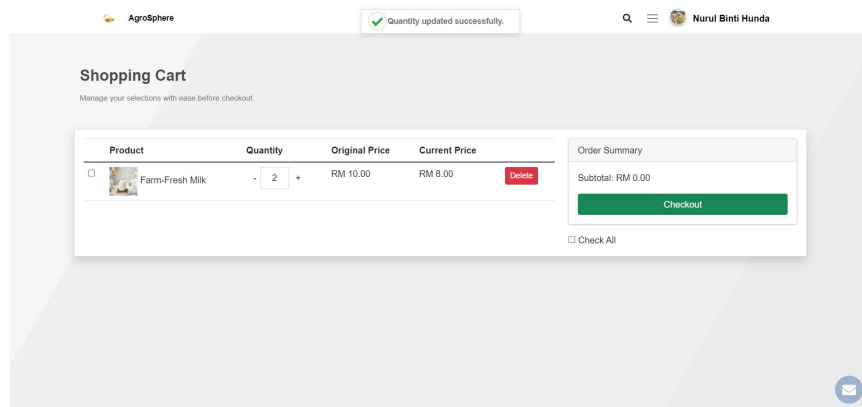


Figure 4.76 Adjust Product's Quantity in Cart

They can simply adjust the quantity by clicking on the “+” sign or “-” sign in the quantity selector. Once they update, a successful message will be displayed.

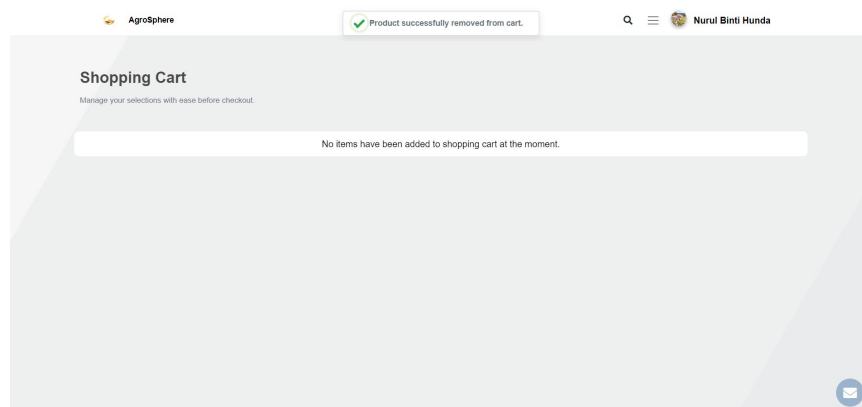


Figure 4.77 Delete Product in Cart

Furthermore, they can delete a particular items by clicking the delete icon beside the selected product. After that, system will present a successful message towards them.

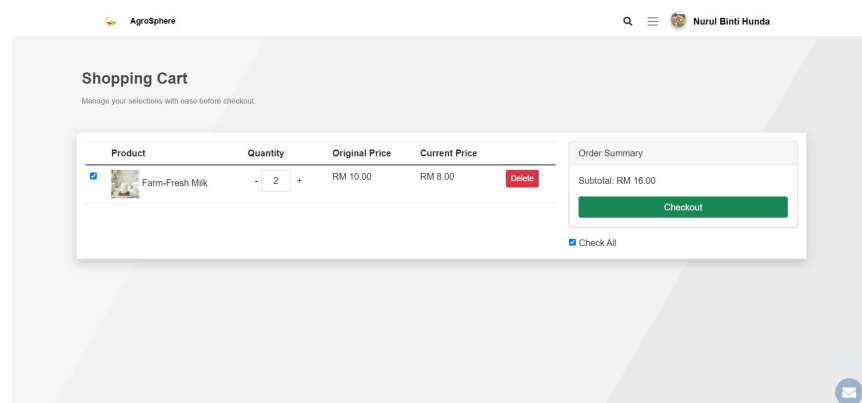
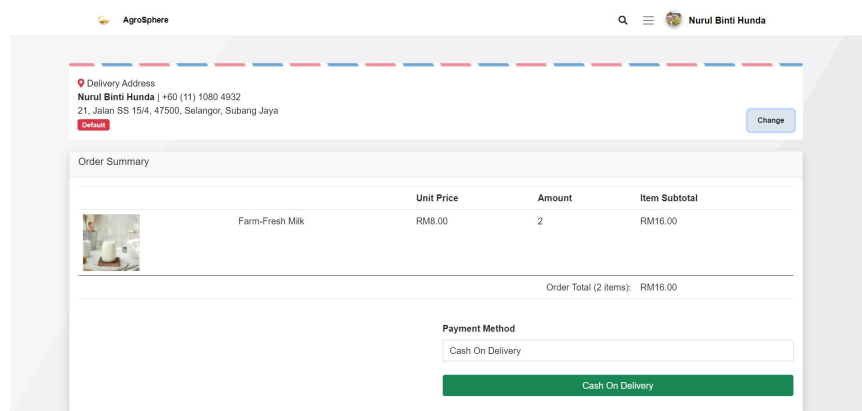


Figure 4.78 Checkout

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Otherwise, in order to make a purchase, users with the farmer or customer role must choose the things they want and click the "Checkout" button. It is noticeable that a little subtotal summary appears inside the box.



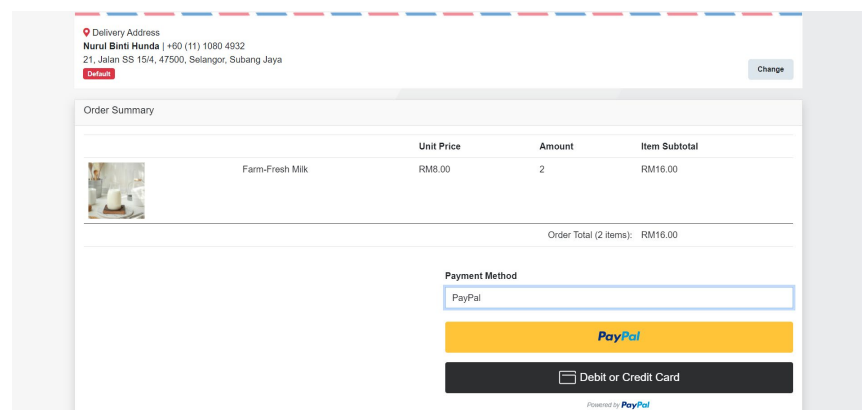
The screenshot shows the checkout page of the AgroSphere application. At the top, the delivery address is listed as "Nurul Binti Hunda" with a phone number and location. Below this is an "Order Summary" section containing a table with the following data:

	Unit Price	Amount	Item Subtotal
Farm-Fresh Milk	RM8.00	2	RM16.00

The order total is RM16.00. The payment method is set to "Cash On Delivery".

Figure 4.79 Checkout (cont.)

The user will then see the order summary on the "Checkout" page when the system has redirected them there. As depicted in Figure 4.79, they may choose their delivery address at the top, and the system will display their default address by default. They just need to click the "Change" button if they want to make a change. In order to finish the purchase, consumers must also choose a payment option. They may choose between either PayPal or Cash on Delivery (COD).



This screenshot shows the same checkout page as Figure 4.79, but with the payment method changed to "PayPal". The "PayPal" option is highlighted in yellow, and the "Debit or Credit Card" option is shown below it. The order summary and delivery address remain the same.

Figure 4.80 Checkout (cont.)

Users only need to choose the PayPal option in the payment method section if they want to finish their purchase by making a PayPal payment.

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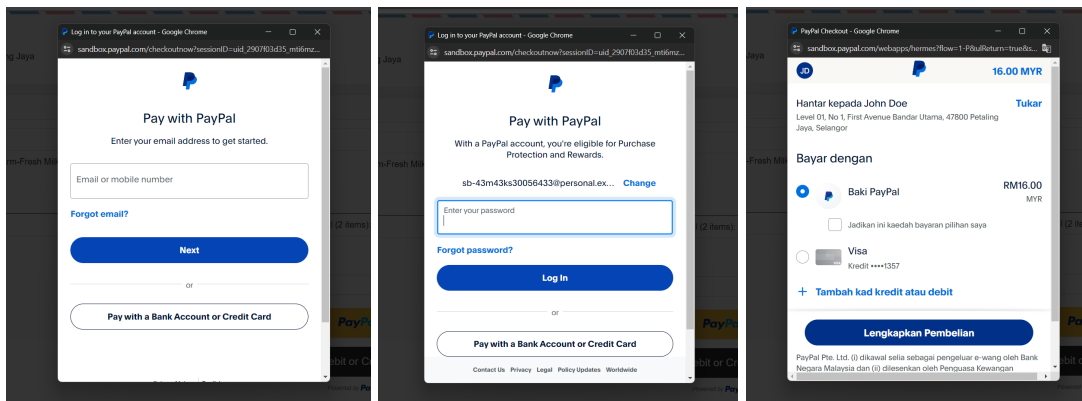


Figure 4.81 PayPal Payment Process

Following that, users must enter their PayPal credentials and click "Lengkapkan Pembelian" to finish the payment.

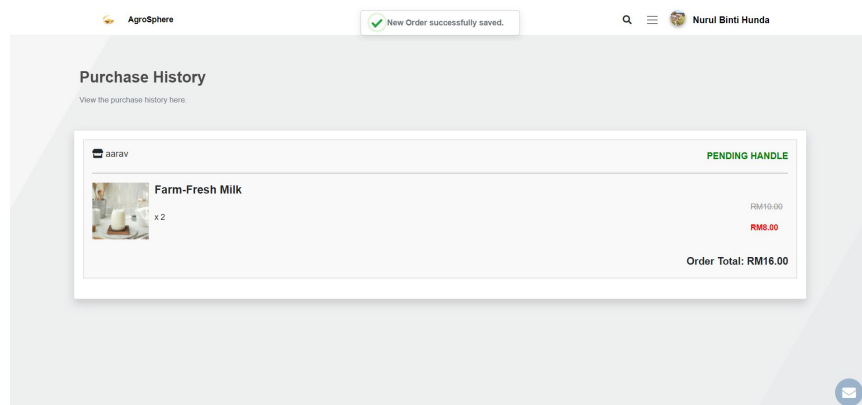


Figure 4.82 Purchase History Page

Upon successful payment completion, they will get a notice and be led to the "Purchase History" page. They may see their past purchases made inside the system there.

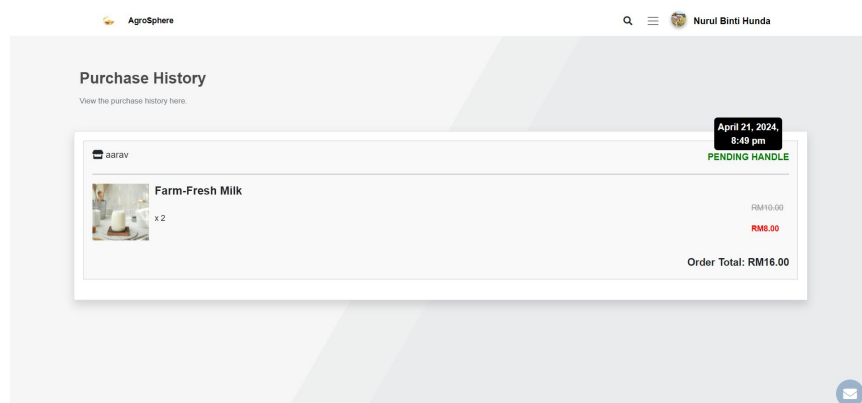


Figure 4.83 Order Status

There are often four different status types: pending handle, accept, decline, and completed. The order is received by the seller and is awaiting their acceptance, indicated by the pending handle. Accept indicates that the seller has received the order and is getting ready to provide the products to the buyer. The order was declined by the seller for a specific reason when it was declined. The completed status indicates that the buyer has received the merchandise from the seller. As shown in the picture above, users may easily hover over the order status to get the most recent update date and time.

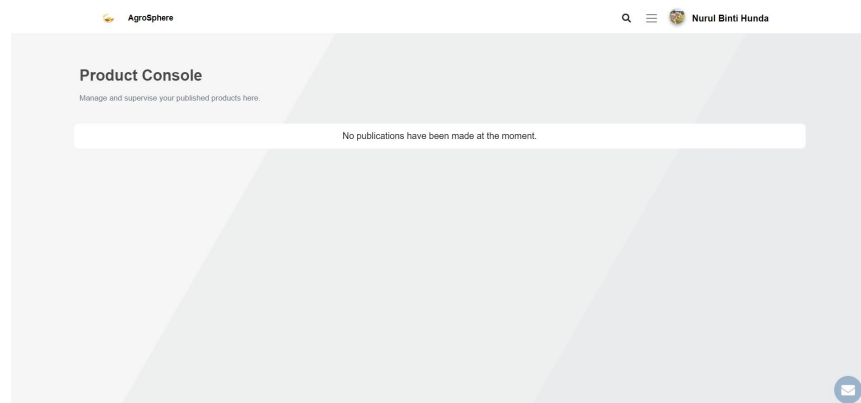


Figure 4.84 My Products Page

Users may choose the "My Products" option from the dropdown menu under the "E-Commerce" part of the sidebar if they are a farmer or an agricultural equipment vendor. After that, a redirect will take them to the page where their own items are available. If they haven't published any products yet, a notice will be shown to them. To publish a product, they only need to pick the "Publish Product" option from the dropdown menu under the "E-Commerce" area of the sidebar.

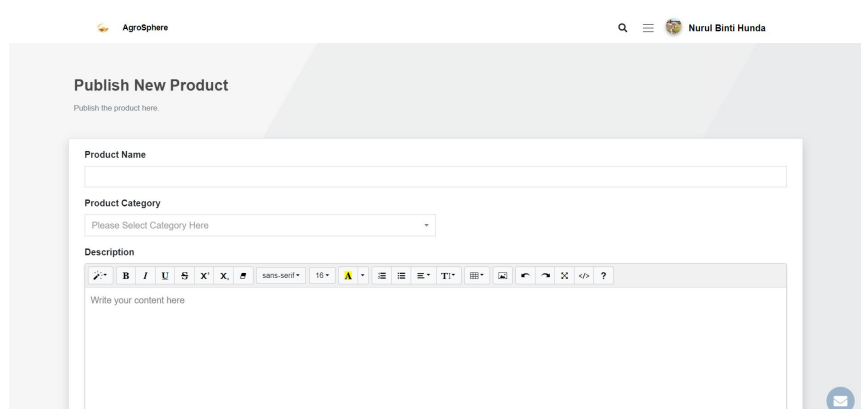


Figure 4.85 Publish Product

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Following their selection, a form will appear, which they must complete with all the relevant information. Additionally, they are presented with two choices: either publish the product in the marketplace or store it as a draft. This process is like to publishing a post in a forum as discussed earlier. Then, they may click the "Save" button to continue.

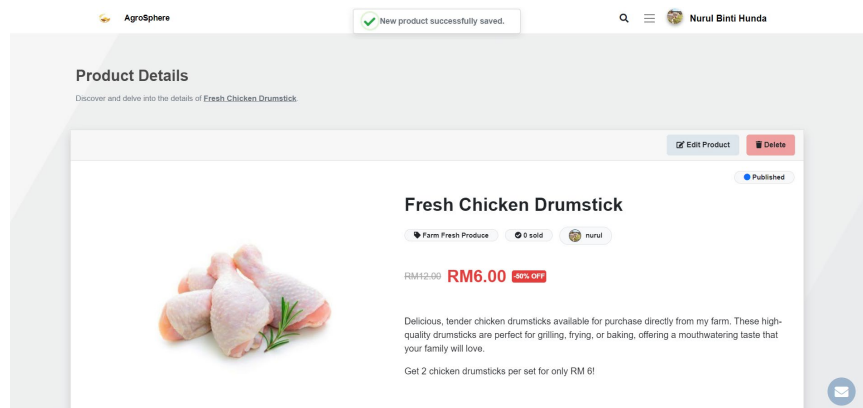


Figure 4.86 Product Published Successfully Message

Following the click, the system verifies and saves the data before displaying a successful message. Users just need to click the "Edit Product" button in order to edit the product information.

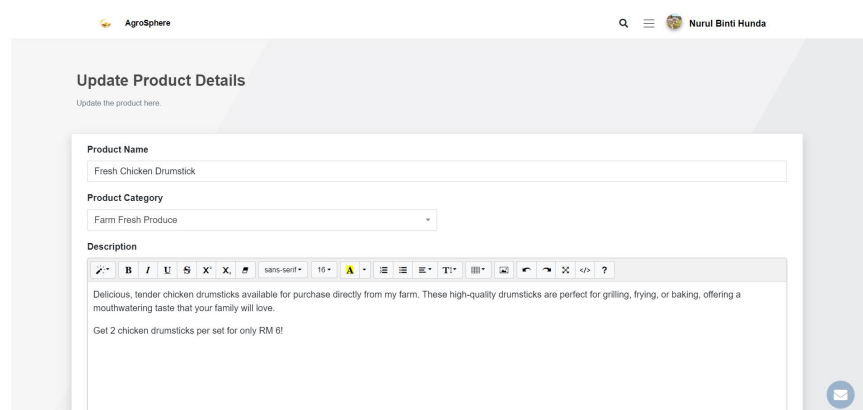


Figure 4.87 Edit Product Details

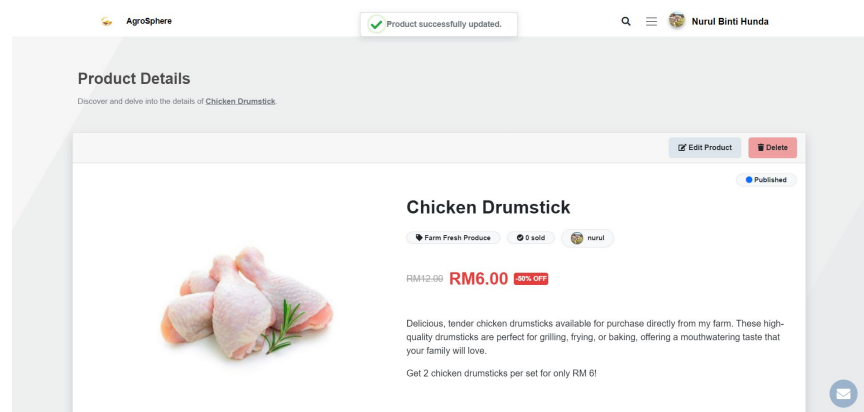


Figure 4.88 Product Edited Successfully Message

Following the click, a form with the product's data will appear (as displays in *Figure 4.87*). Users may edit the form as needed, click "Update," and then proceed. Subsequently, the system updates the product information, presents a successful message, and checks and updates the details (as presented in *Figure 4.88*).

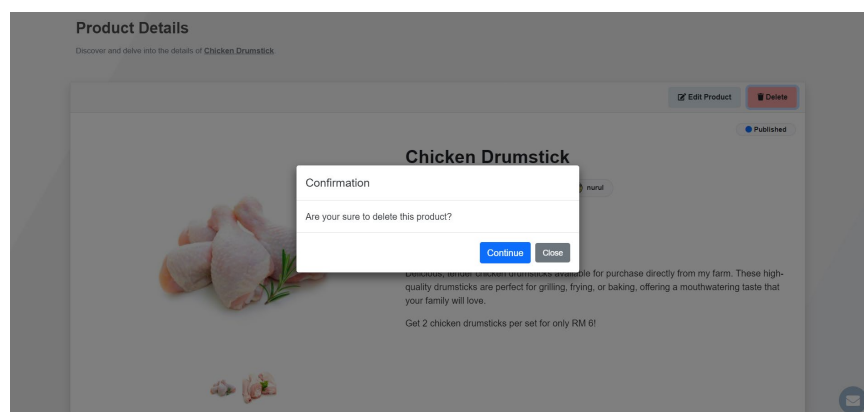


Figure 4.89 Delete Product

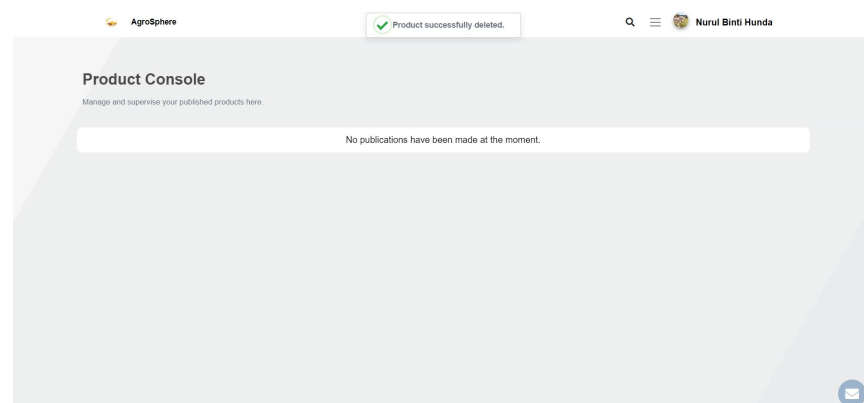


Figure 4.90 Product Deleted Successfully Message

According to the *Figure 4.89* and *4.90*, users may confirm deletion by clicking the "Delete" button at the top of the post. The system will then remove the user-confirmed post and display a successful message.

- **Sales Module**

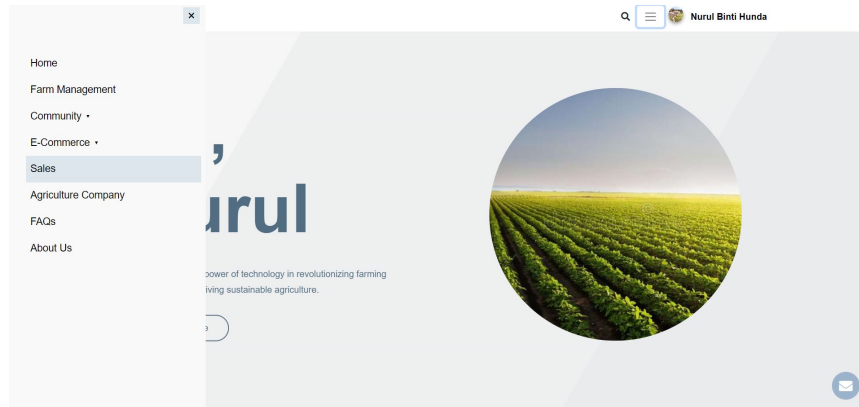


Figure 4.91 Sidebar of Users with Farmer/Vendor Role: Access Sales Module

In order to access the “Sales” page, users in the roles of farmer or agricultural equipment vendor can select the “Sales” option in the side bar.

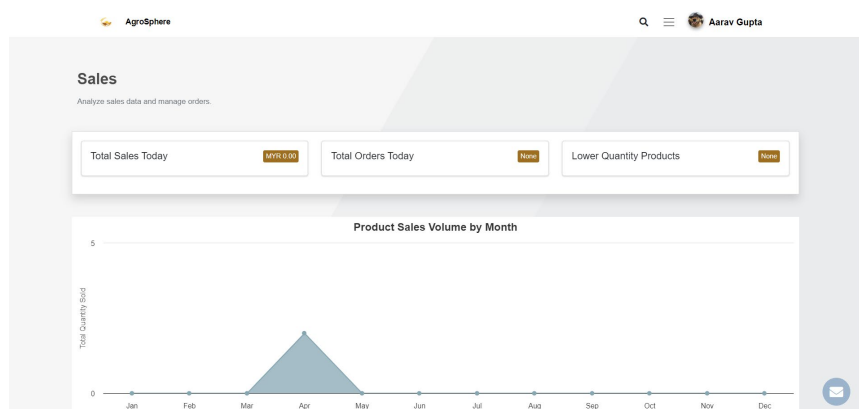


Figure 4.92 Sales Page

The system will then take them to a page that contains sales visualization data and a listing all of the orders they have received.

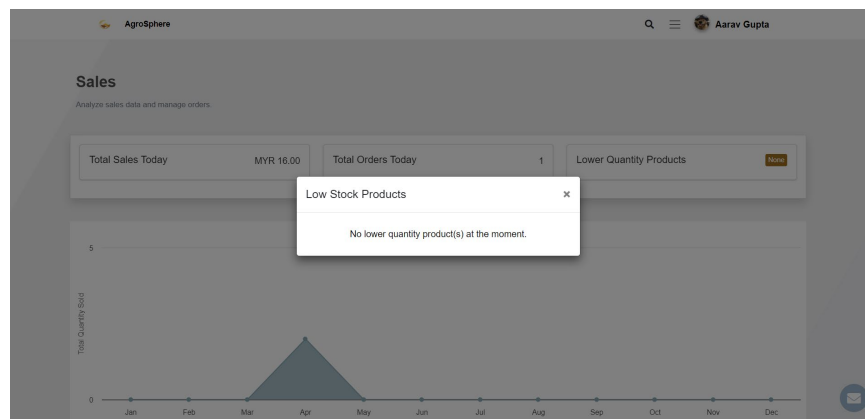


Figure 4.93 Sales Page (cont.)

The overall sales and orders for today, together with the users' smaller quantity goods (less than ten), will be shown at the top of the page. Users may view additional data, including which items are now running lower quantity, by typing on the lower quantity products.

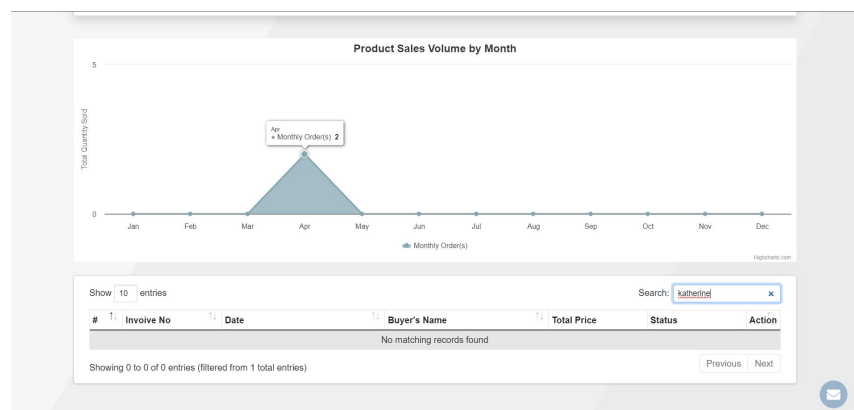


Figure 4.94 Sales Visualization Data Details and Search Order

Users may inspect the details by moving their mouse pointer over the spot inside the sales visualization data. In the interim, they can enter a keyword in the search bar to search the received orders. The system is then showing the received orders that match the keyword.

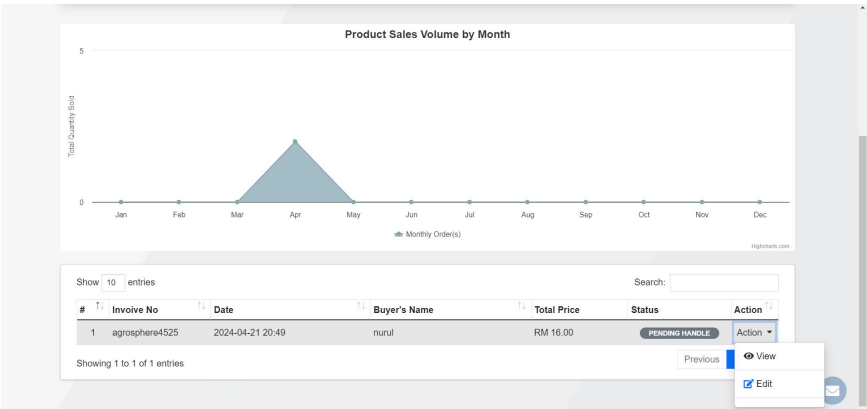


Figure 4.95 Actions Available in Sales Page

According to the figure above, they will see that each order has an "Action" column next to it. It includes the tasks that users are able to do. In this instance, users have the ability to “View”, and “Edit” for each order.

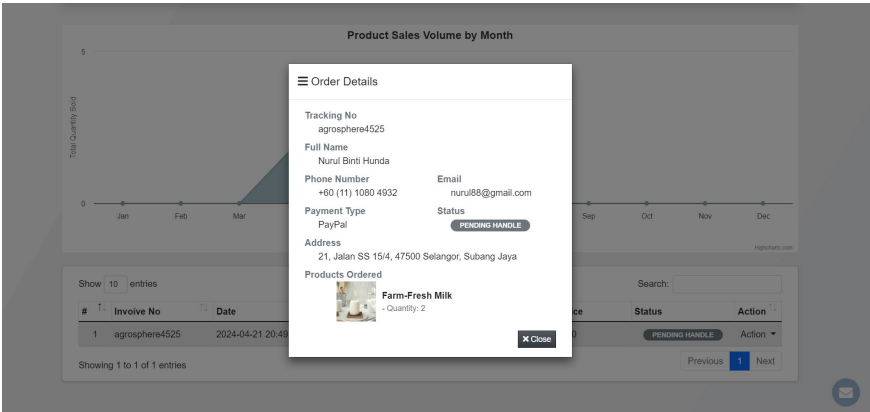


Figure 4.96 View Received Order Details

They can view the order details by selecting the “View” option from the dropdown menu adjacent to each order.

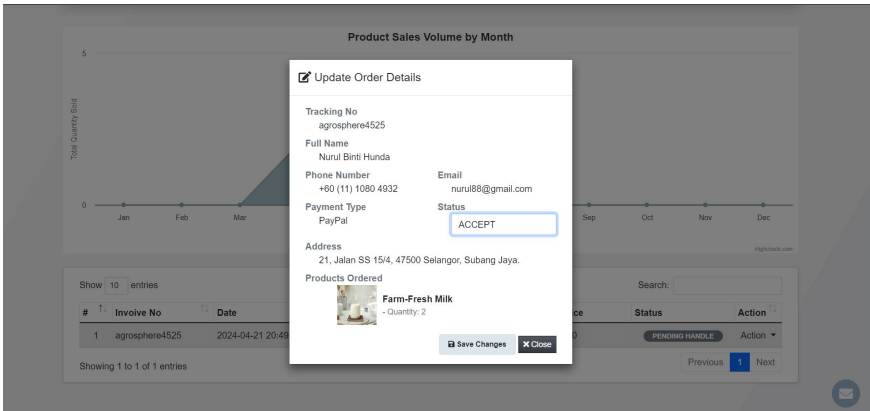


Figure 4.97 Edit Received Order Status

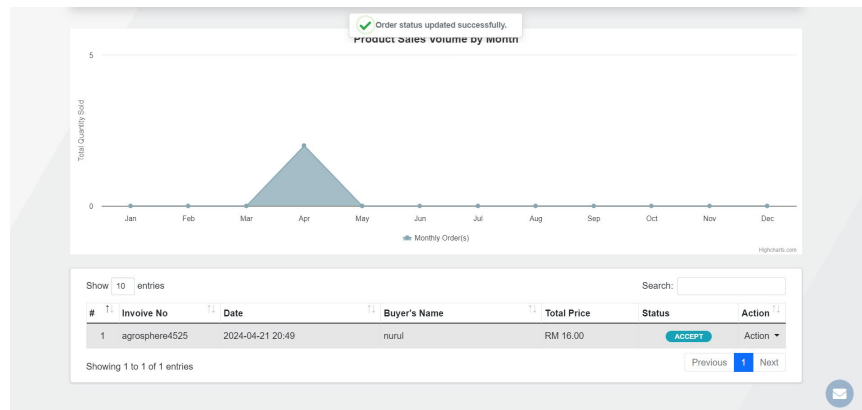


Figure 4.98 Received Order Edited Successfully Message

They can also edit an order's status by selecting the "Edit" option from the dropdown menu adjacent to each order. Then, admins can simply update the status by clicking the "Save Changes" button. After that, system will verify and modifies the status. Then, it displays a successful message and shows the updated order status.

- **Agriculture Company Module**

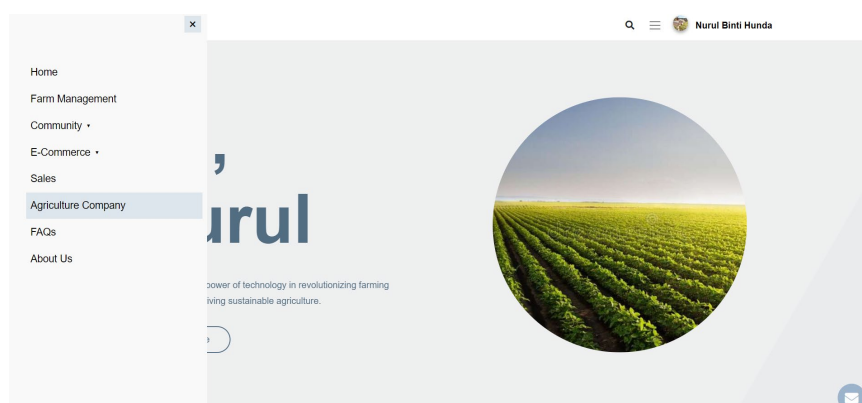


Figure 4.99 Sidebar of Registered Users – Access Agriculture Company Module

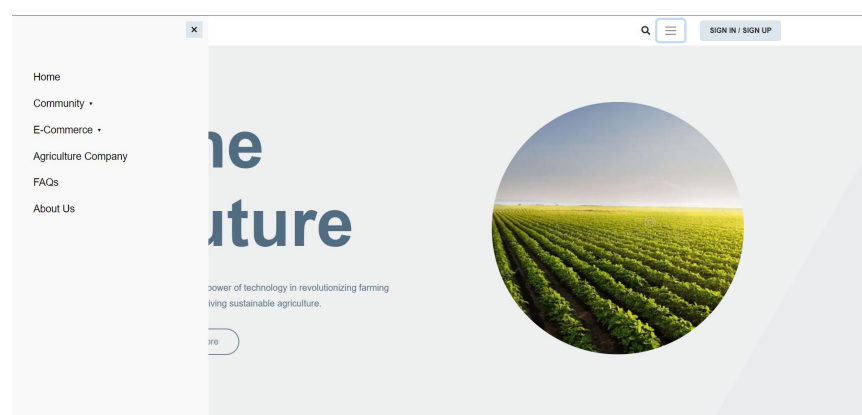


Figure 4.100 Sidebar of Users of Guest Role – Access Agriculture Company Module

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As shown in *Figure 4.99* and *4.100* the sidebar makes it clear that users irrespective of the roles can access the Agriculture Company section.

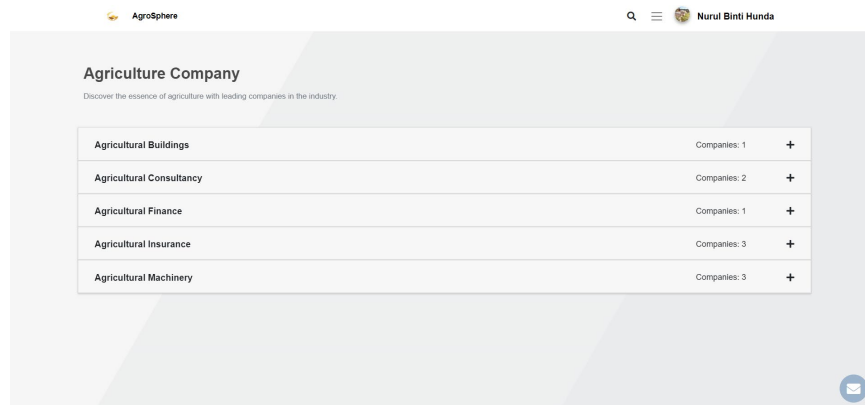


Figure 4.101 Agriculture Company Page

Any user may access the agriculture company page by simply choosing “Agriculture Company” in the sidebar, regardless of their user role. They may browse the list of company categories and see the companies for each category there.

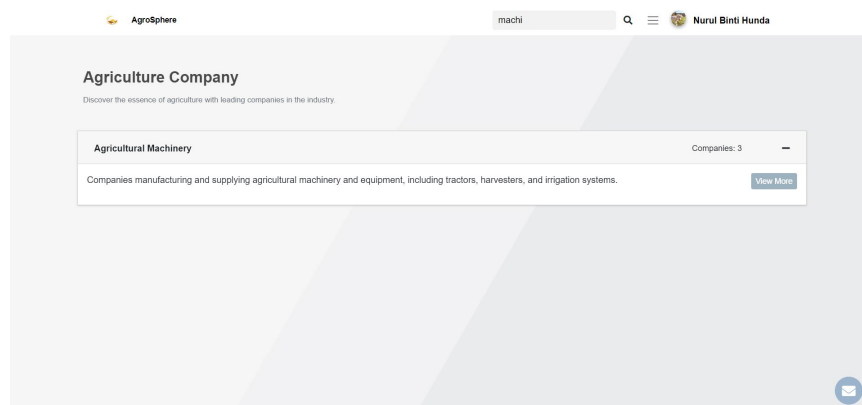


Figure 4.102 Search and Expand Company Categories

Users may click the search icon on the top navigation bar and type a term into the search field, as shown in the above picture. The system is then showing the company categories that match the keyword. Additionally, users can simply expand it by clicking “+” sign to view the description of the category. After that, the description in conjunction with the “View More” button will be displayed.

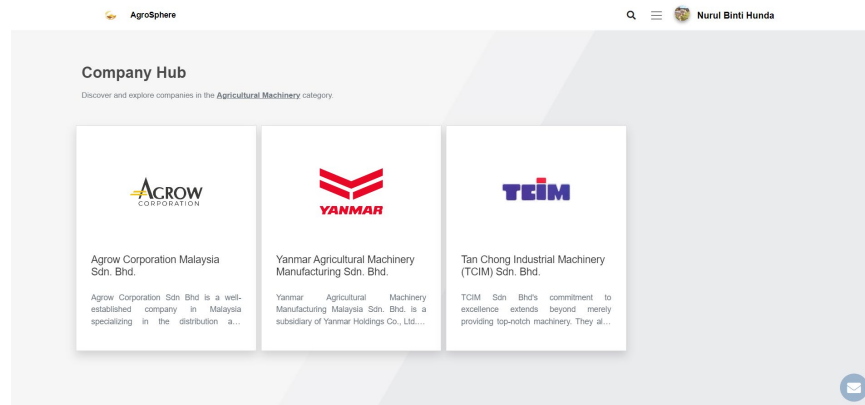


Figure 4.103 Views Companies Within Selected Category

After clicking the “View More” button, users will be redirected to the “Company Hub” page where they are able to view all the companies that fall under the specified category. They can simply choose a company to view the details.

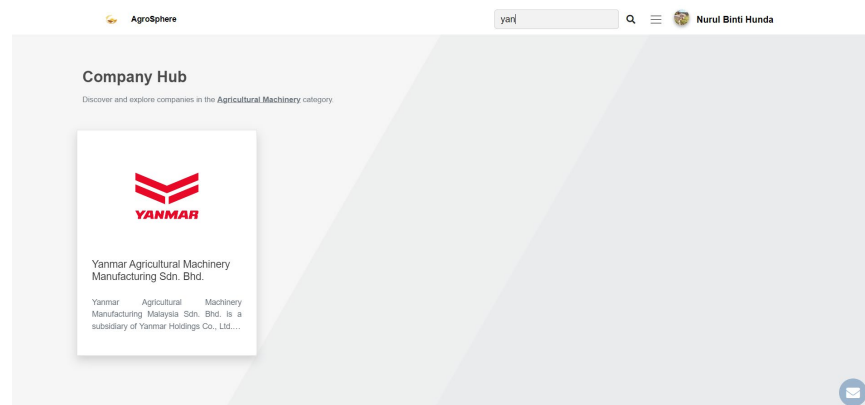


Figure 4.104 Search Company

Users may click the search icon on the top navigation bar and type a term into the search field, as shown in the above picture. The system is then showing the companies that match the keyword.

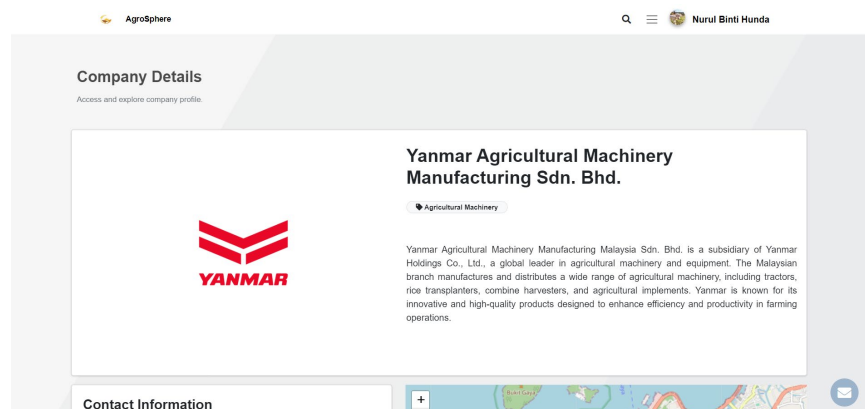


Figure 4.105 View Company Details

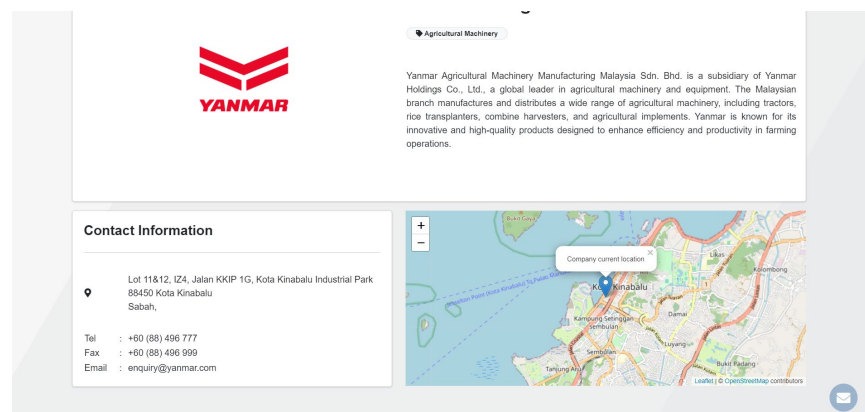


Figure 4.106 View Company Details (cont.)

Following selection, the specific company's information will be shown to them. To see additional information, they just need to scroll down.

- **FAQs Module**

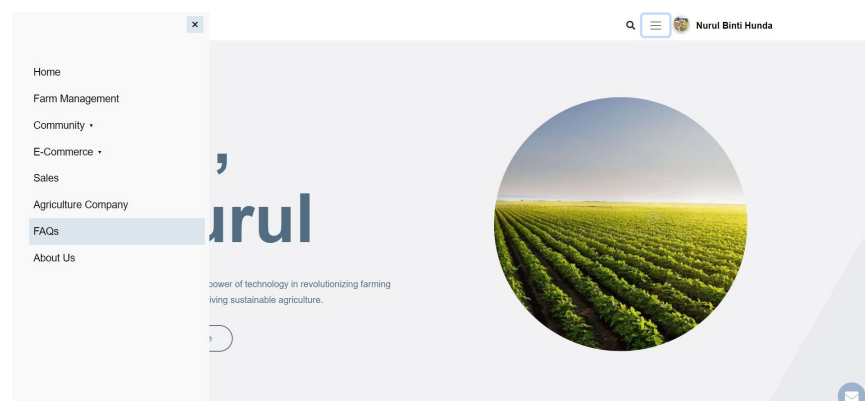


Figure 4.107 Sidebar of Registered Users – Access FAQs Module

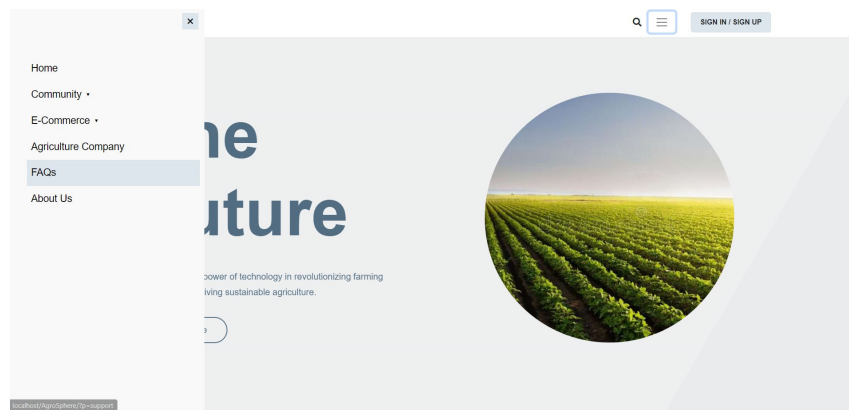


Figure 4.108 Sidebar of Users with Guest Role – Access FAQs Module

As shown in *Figure 4.107* and *4.108*, the sidebar makes it clear that users irrespective of the roles can access the FAQs section.

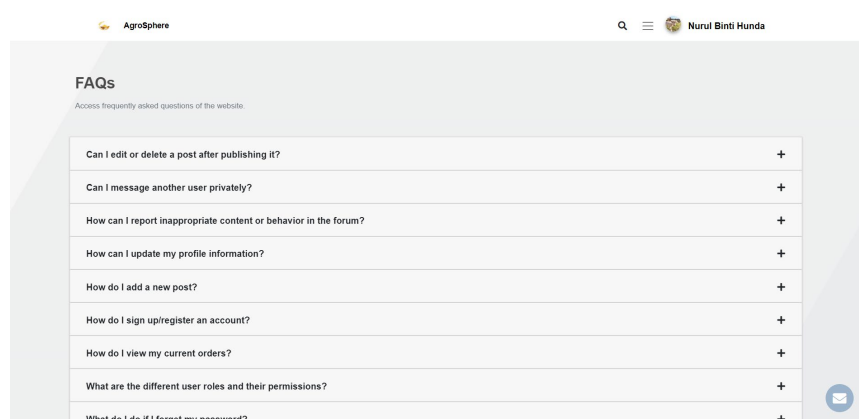


Figure 4.109 FAQs Page

Any user may access the FAQs page by simply choosing “FAQs” in the sidebar, regardless of their user role. They may browse the list of frequently asked questions and see the answer for each question there.

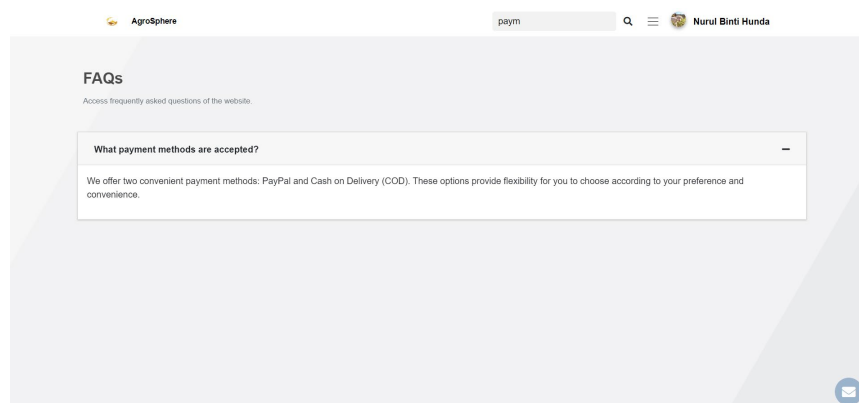


Figure 4.110 Search and Expand FAQs

Users may click the search icon on the top navigation bar and type a term into the search field, as shown in the above picture. The system is then showing the questions or answers that match the keyword. Additionally, users can simply expand it by clicking “+” sign to view the answer of the question.

- **About Us Module**

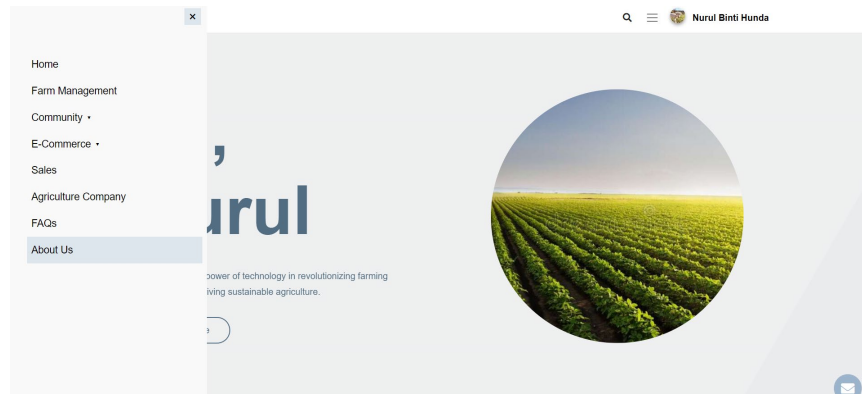


Figure 4.111 Sidebar of Registered Users – Access About Us Module

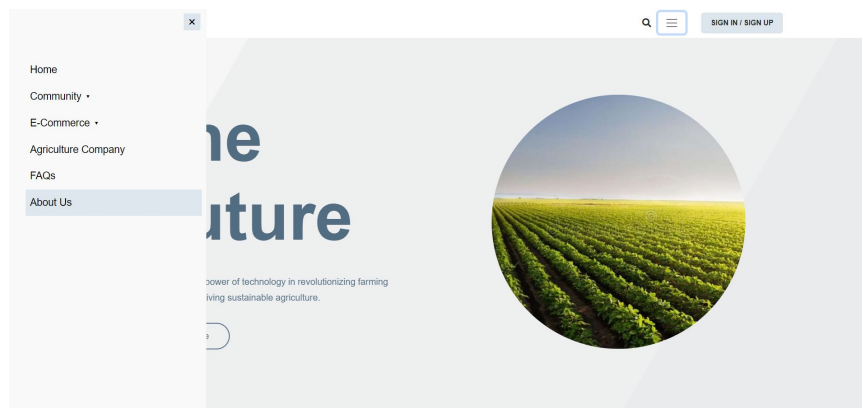


Figure 4.112 Sidebar of Users with Guest Role – Access About Us Module

As shown in *Figure 4.111* and *4.112*, the sidebar makes it clear that users irrespective of the roles can access the About Us section.

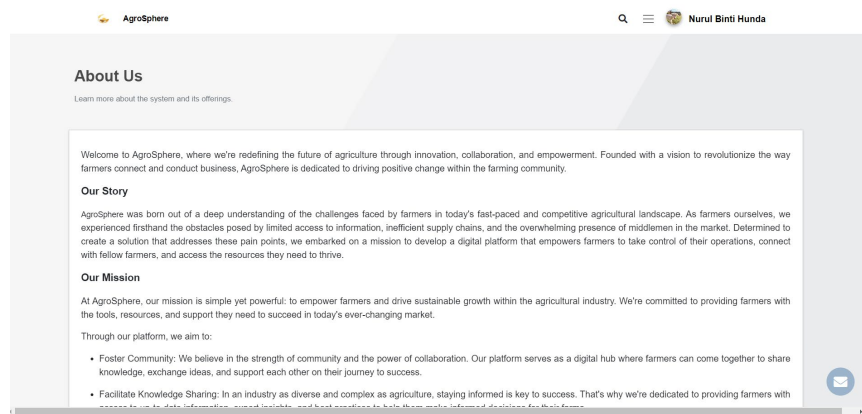


Figure 4.113 About Us Page

Any user may access the About Us page by simply choosing “About Us” in the sidebar, regardless of their user role. They may browse the additional information regarding this web service there.

- **My Account Module**

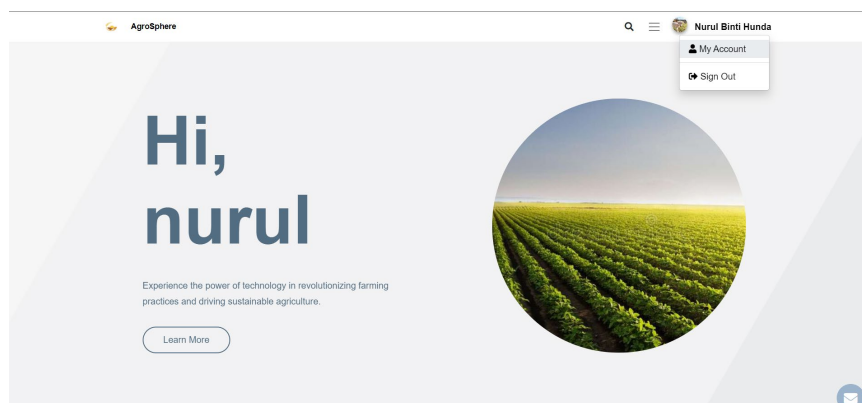


Figure 4.114 Top Navigation Bar of Registered Users

For registered users, they can simply access “My Account” page by simply click the avatar and choose “My Account” option from the dropdown-menu at the top of the navigation bar.

AgroSphere

User Details has been updated successfully

Nurul Binti Hunda

My Account

Manage and supervise your account details.

Profile

Addresses

Change Password

First Name: Nurul

Last Name: binti Hunda

Username: nurul

Role: Farmer

Gender: Female

Avatar: Choose file (Browse)

Phone Number: +60 (11) 1080 4932

Email: nurul88@gmail.com

Update

Figure 4.115 My Account Page – Profile Tab

Then, they will then be sent to a page where their information is divided into three tabs: “Profile”, “Addresses”, and “Change Password”. Registered users may easily change a single user's personal information by entering the revised data in the relevant areas and clicking the "Update" button on the "Profile" tab. Subsequently, the system will validate and adjust the information, presenting a successful message and the revised profile data (as shown in *Figure 4.115*).

AgroSphere

Nurul Binti Hunda

My Account

Manage and supervise your account details.

Profile

Addresses

Change Password

No addresses have been added at the moment.

Add Address

Figure 4.116 My Account Page – Addresses Tab

As depicted in *Figure 4.116*, a specific user's address list will often be saved under the “Addresses” page. Users can simply click the “Add Address” button in order to add a new address.

The screenshot shows the 'Add New Address' modal form. The form has the following fields and controls:

- Address:** A single-line text input field.
- Full Name:** A single-line text input field.
- Phone Number:** A single-line text input field.
- City:** A single-line text input field.
- State:** A single-line text input field.
- Postal Code:** A single-line text input field.
- Country:** A dropdown menu with the placeholder text 'Select Your Country'.
- Default Address:** A checkbox labeled 'Default Address'.
- Buttons:** 'Close' (grey) and 'Add' (blue) buttons at the bottom right.

Figure 4.117 Add Default Address

Following the click, a card will appear (as shown in *Figure 4.117*), requiring users to fill out all the necessary information before clicking the "Add" button. They will see that the "Default Address" checkbox is present. If users click it, it indicates that this address is the default and that this address will always be selected first if address information is needed.

The screenshot shows the 'My Account' page with a success message at the top: 'Address successfully saved.' The profile form contains the following information:

- First Name:** Nurul
- Last Name:** binti Hunda
- Username:** nurul
- Role:** Farmer
- Gender:** Female
- Avatar:** Choose file (with a 'Browse' button)
- Phone Number:** +60 (11) 1080 4932
- Email:** nurul88@gmail.com
- Buttons:** 'Update' (blue) button at the bottom.

Figure 4.118 Address Added Successfully Message

Following completion, the address is saved and verified by the system. After that, a successful message appears.

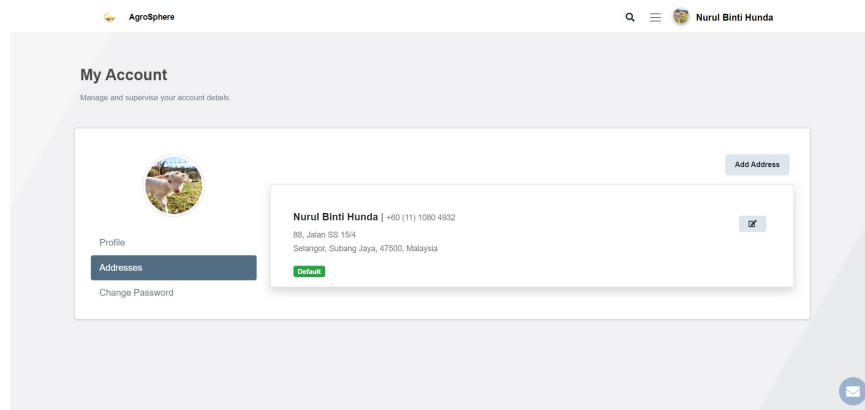


Figure 4.119 Show Added Default Address

Clearly, if the users ticked the "Default Address" button, they would be able to see the added address with the "Default" tag.

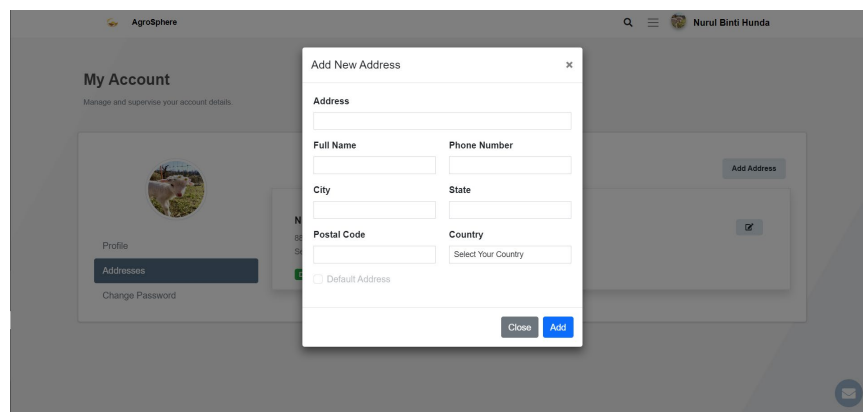


Figure 4.120 Add Non-Default Address

Additionally, it is evident that since the current users have already supplied a default address, the "Default Address" option is now disabled, making it impossible for them to add another default address.

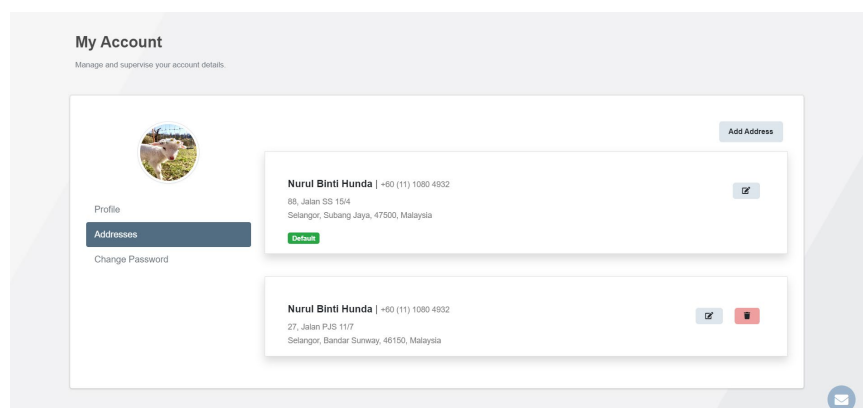


Figure 4.121 Show Added Non-Default Address

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It is evident after adding a second non-default address, it can be clearly seen that the default address has an edit option with a "Default" tag, while the non-default address has both an edit and a delete option.

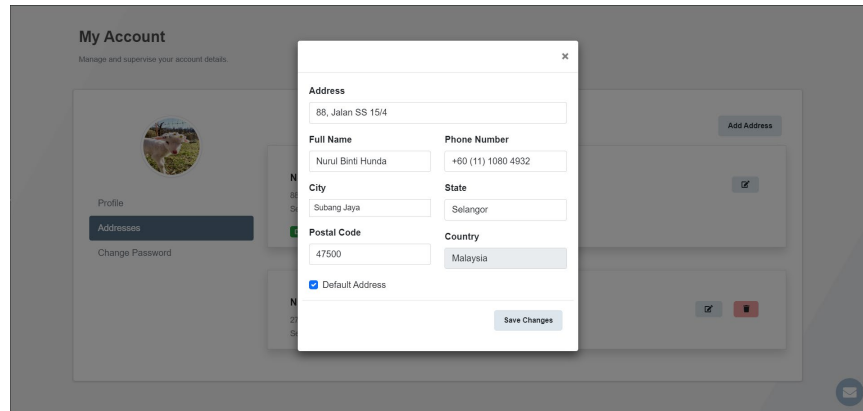


Figure 4.122 Edit Default Address

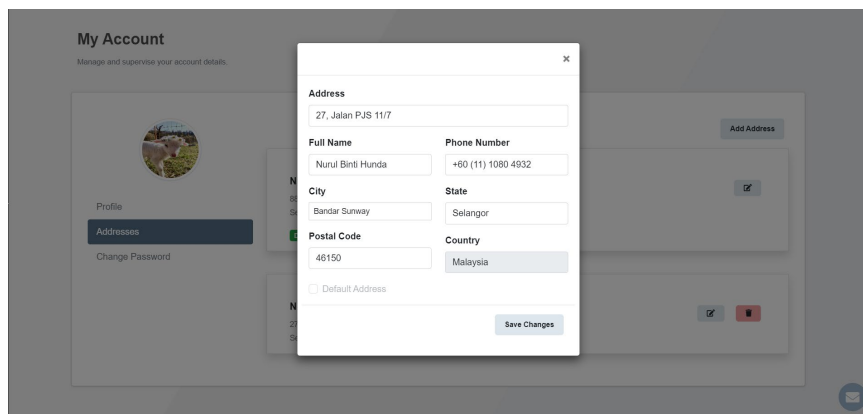


Figure 4.123 Edit Default Address

By selecting the edit button next to each address and entering the new information, users may easily amend the specific address data. According to *Figure 4.123*, they will see that the "Default Address" checkbox cannot be checked for non-default addresses since the user already has a default address. Users should uncheck the default address's option to make it non-default if they want to alter to designate this address as their default address.

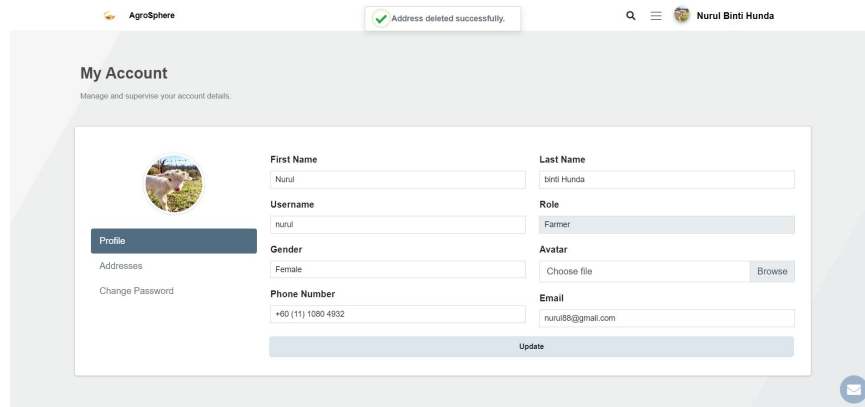


Figure 4.124 Address Deleted Successfully Message

By selecting the delete symbol next to each non-default address, users may even remove them. The system will then verify and remove the addresses and notify users of their success.

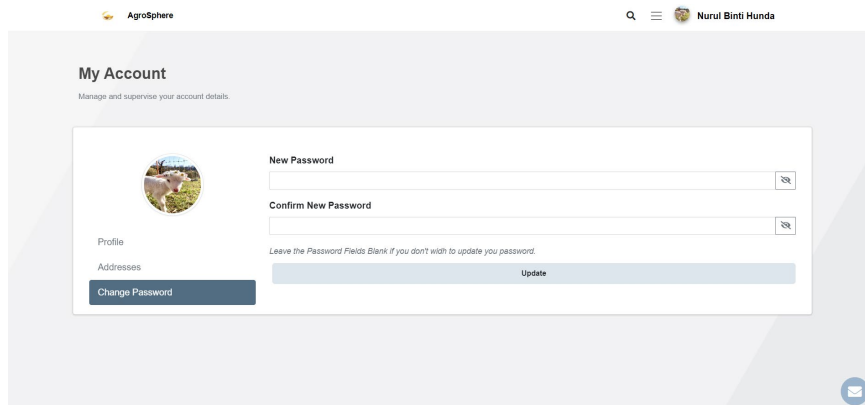


Figure 4.125 My Account Page – Change Password Tab

Registered users just need to go to the “Change Password” tab, input a new password, confirm it, and click "Update" if they want to change their password.

- **Users Sign Out**

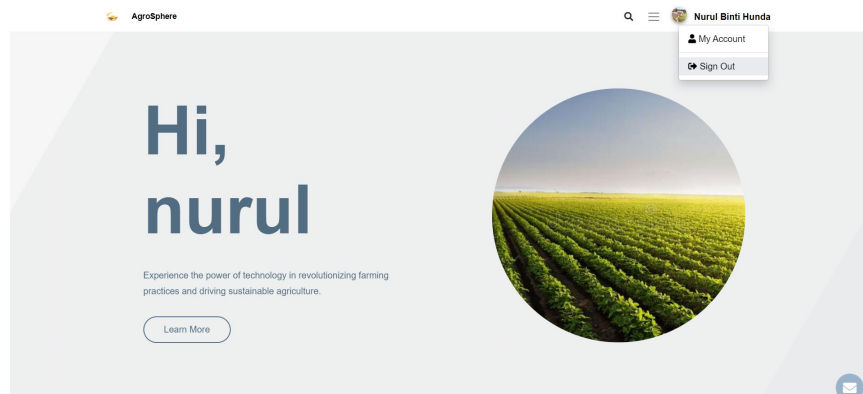


Figure 4.126 Registered User Sign Out

For registered users, they can simply click the avatar and choose “Sign Out” option from the dropdown-menu at the top of the navigation bar in order to sign them out the system.

4.4.2 Admin’s View

- **Admins Sign In**

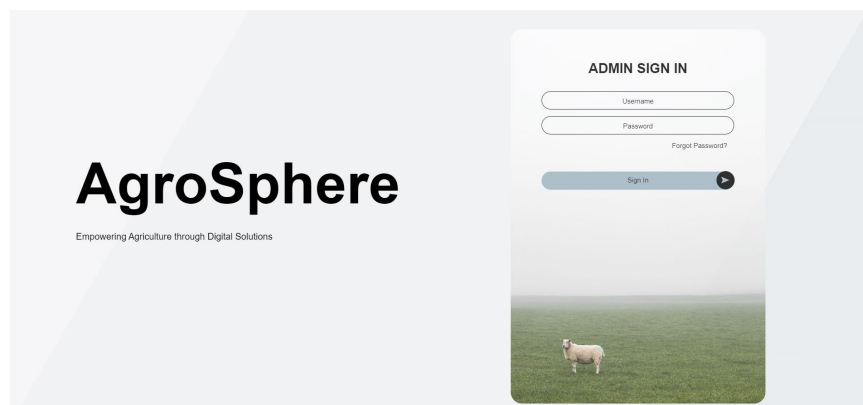


Figure 4.127 Admins Sign-In Card

Admins are required to input their credentials, consisting of a username and password, to access the system. An additional notification will be prompted to admins in the event that they input inaccurate credentials. Individuals who have forgotten their password can easily retrieve it by clicking the "Forgot Password" text.

- **Admins Forgot Password**

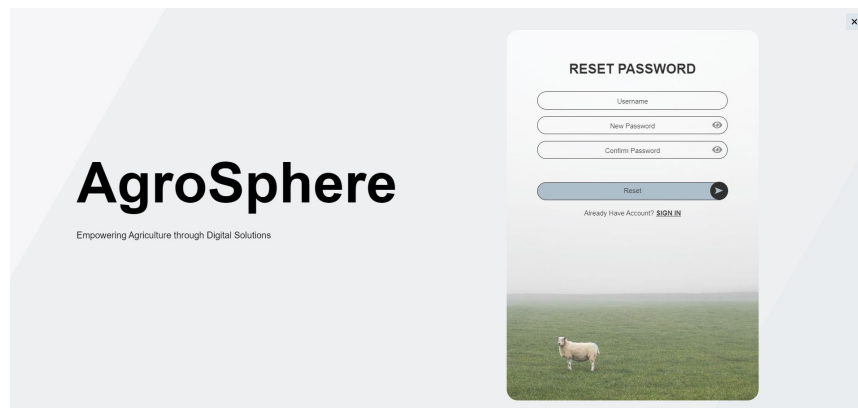


Figure 4.128 Admins Forgot Password Card

The system will display a forgotten password card (as depicted in *Figure 4.128*) to admins when accessing the "Forgot Password" page, allowing them to reset their password. On this screen, admins must enter their username, new password, and confirmation password. If admins don't comply, a notice will be shown.

- **Admin Home Page**



Figure 4.129 Admins Home Page

The picture above shows the home page for admins. By clicking on the hamburger symbol in the top navigation bar, admins may easily access the side bar. Observe that the home page has an envelope button in the bottom right corner, accompanied by a notice stating that the admins have one unread letter.

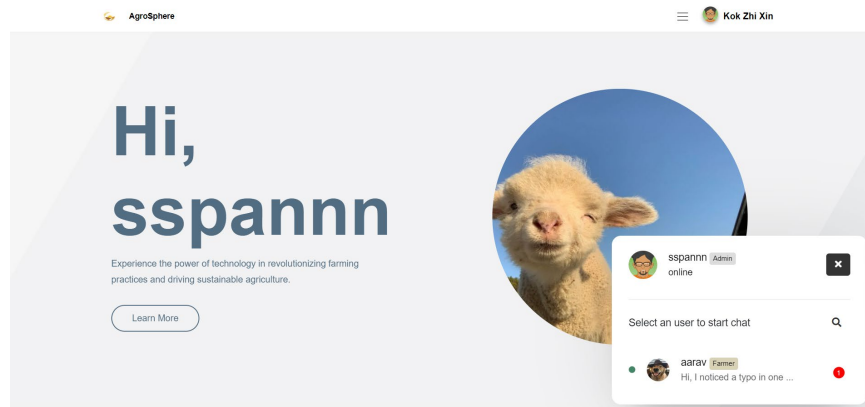


Figure 4.130 [Admin Site]: Chat Box

Admins may tap the envelope button to open a conversation box, same as on the user's site (see 4.4.1 *User's View*). There will be a history of chats with that particular person in that chat box. It will also show the present state of system users in the interim, showing whether they are online (green dots) or offline (grey dots). A red circle next to the user who submitted the message to the admins serve as a notification, indicating the number of unread messages the admins has received and have not yet read them.

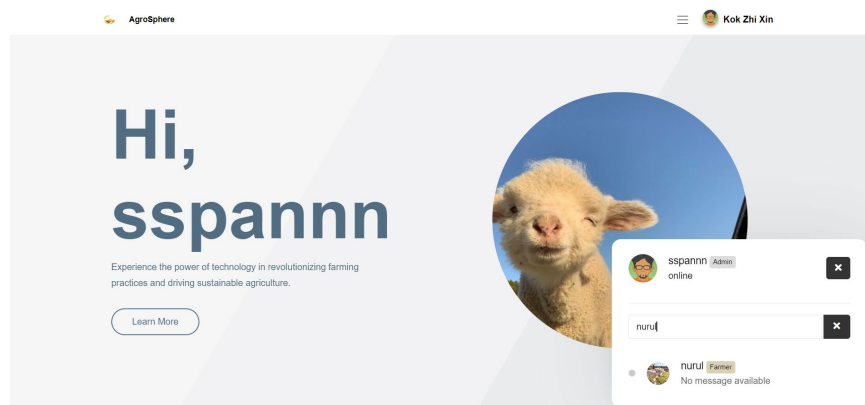


Figure 4.131 [Admin Site]: Search User Inside Chat Box

By typing a term into a search field, admins may also look up a specific individual. The people who match the term will then be shown by the system. The message "No user found related to your search term" will appear on the screen if there are no users that match the keyword.

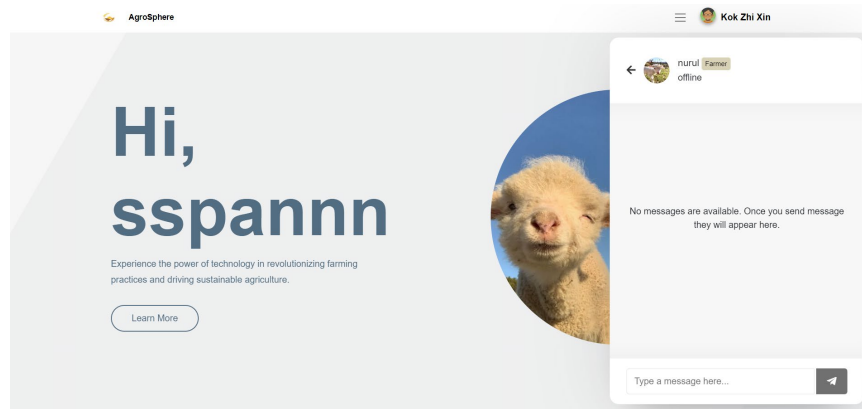


Figure 4.132 [Admin Site]: Chat Room with User that Haven't Chat Before

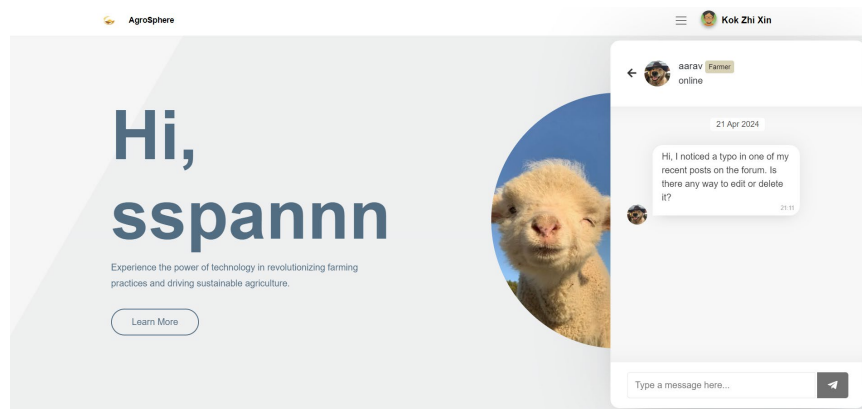


Figure 4.133 [Admin Site]: Chat Room with Previously Chatted User

After that, admins may easily choose a chat frame from prior conversation list or search for a certain user's chat frame. When admin click on it, a chat room will open right away. There are two possible outcomes: in the chat room, admins' past conversations with that person won't be shown if they are chatting for the first time (as shown in *Figure 4.132*). In the event that they want to converse with a person with whom they have already had a conversation, they will be able to see their prior exchanges inside the chat room (as shown in *Figure 4.133*).

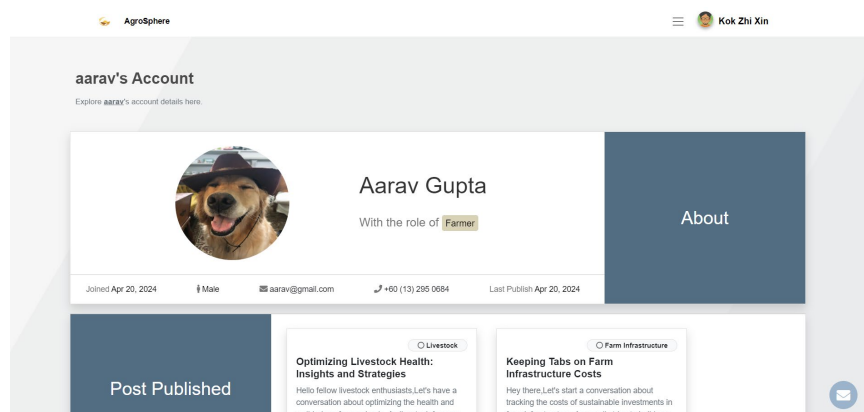


Figure 4.134 [Admin Site]: View Chat Participant's Profile

Similar to the user's site (see 4.4.1 User's View), admins are given option to view the profile of the specific individual with whom they are presently conversing. They just need to click on his/her username or avatar at the top of the chat room to access it. Then, they will be redirected to the page as shown in *Figure 4.134*.

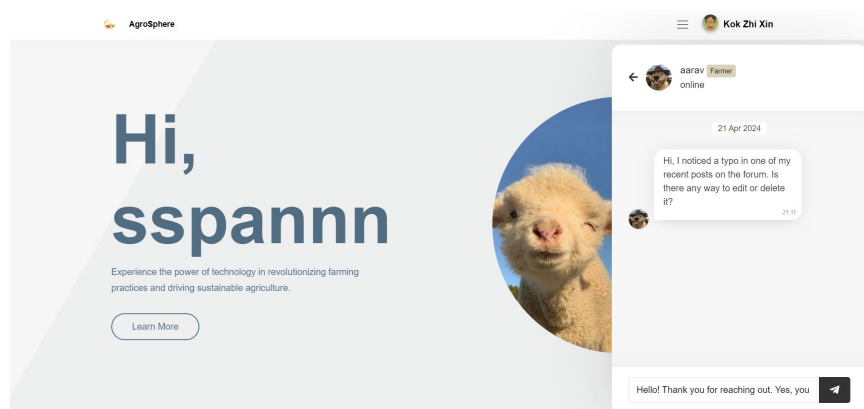


Figure 4.135 [Admin Site]: Send Message

If not, they may enter the message by simply typing it into the input area, as depicted in the *Figure 4.135*. Following that, they have the option of using the keyboard's "Enter" button or hitting the transmit button next to the input area.

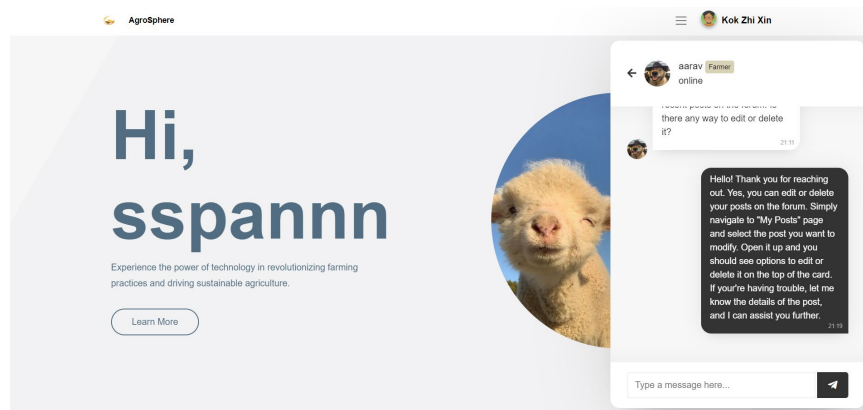


Figure 4.136 [Admin Site]: Message Successfully Sent Out

The message has been sent out successfully, as shown in the picture above.

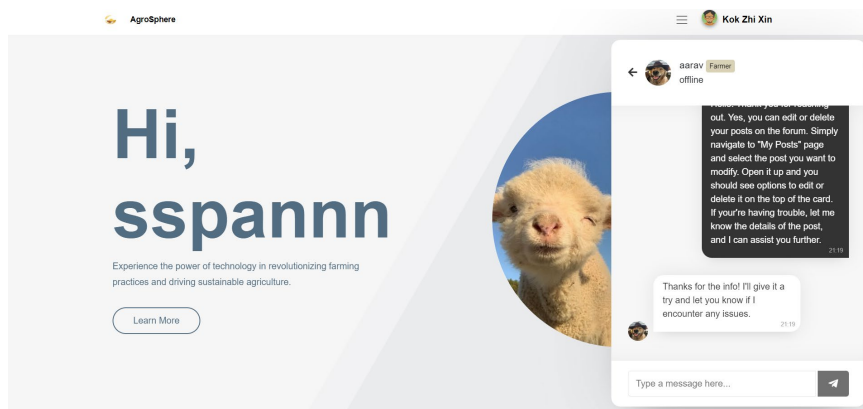


Figure 4.137 [Admin Site]: Receive Message in Real Time

Real-time messages from users will reach the admins.

- **System Module**

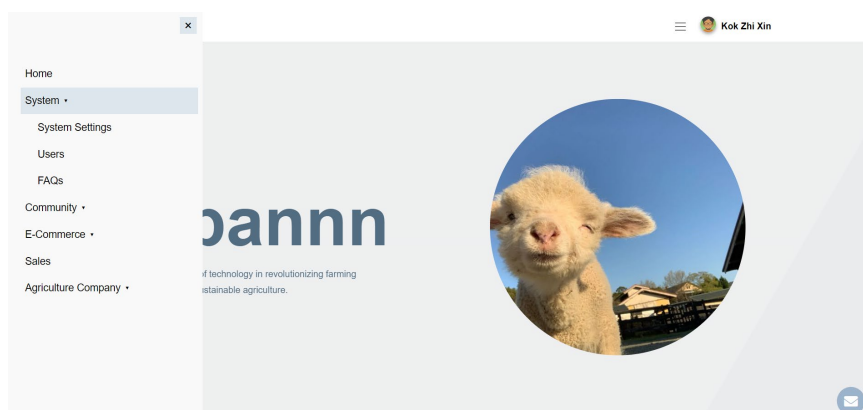


Figure 4.138 [Admin Site]: Access System Module

It is evident from the side bar that the “System” section has three options: “System Settings”, “Users”, and “FAQs”.

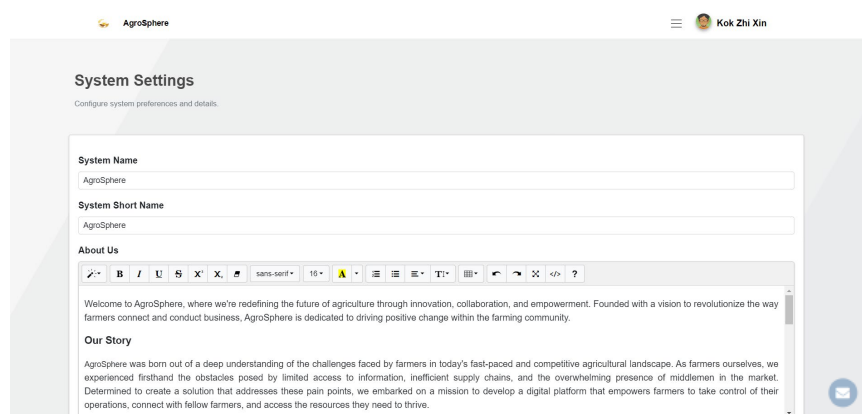


Figure 4.139 [Admin Site]: System Settings Page

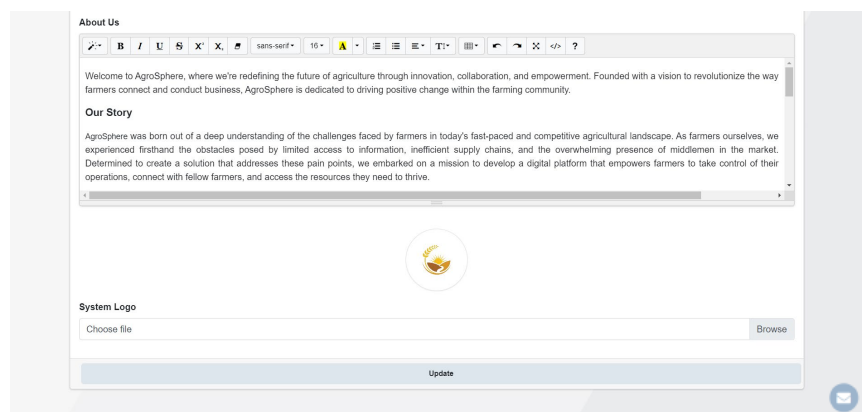


Figure 4.140 [Admin Site]: System Settings Page (cont.)

Admins can select the “System Settings” option from the dropdown menu located under the “System” section in the sidebar if they wish to view and manage system settings. Then, admins will be redirected to the page containing all the settings of the system.

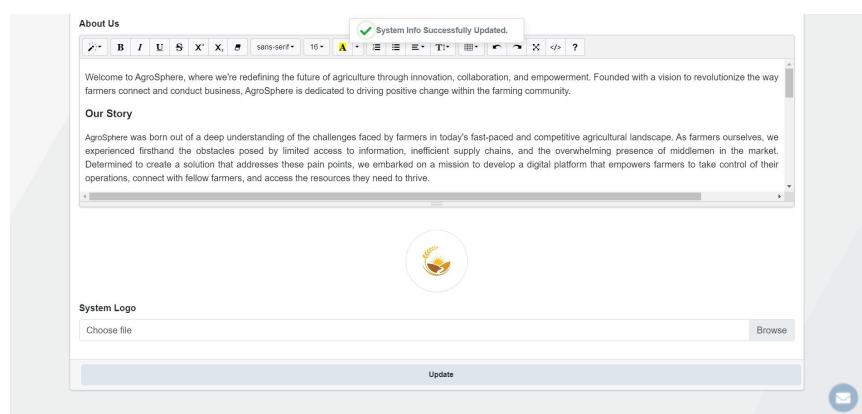


Figure 4.141 [Admin Site]: Update Settings

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By immediately entering the revised data in the relevant areas and clicking the "Update" button, admins may make changes to the settings. The system will then check and update the information. It then shows the modified settings and a successful message.

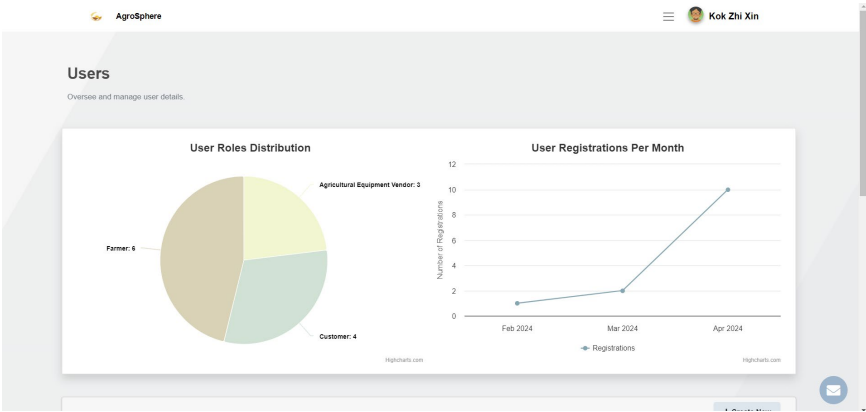


Figure 4.142 [Admin Site]: Users Page

The screenshot shows a table of user entries with columns for #, Date Updated, Avatar, Name, Username, Type, Role, and Action. The table lists 10 users, including administrators and registered users with various roles like Farmer, Customer, and Agricultural Equipment Vendor. The table is paginated, showing 1 to 10 of 15 entries.

#	Date Updated	Avatar	Name	Username	Type	Role	Action
1	2024-04-21 21:10		Aarav Gupta	aarav	Registered User	Farmer	Action
2	2024-04-12 16:41		Admin admin	admin	Administrator	Admin	Action
3	2024-04-12 16:41		Administrator Admin	admintry	Administrator	Admin	Action
4	2024-04-20 20:35		Amir bin Ibrahim	amir	Registered User	Farmer	Action
5	2024-04-20 21:49		Hazel Ooi	hazel	Registered User	Farmer	Action
6	2024-04-20 20:18		Jesslyn Khor	jesslyn	Registered User	Customer	Action
7	2024-04-20 20:01		Katherine Kok	katherine	Registered User	Customer	Action
8	2024-04-21 18:58		Lambert Ng	lambert	Registered User	Agricultural Equipment Vendor	Action
9	2024-04-21 18:44		Liew Jor Wei	jonwei	Registered User	Farmer	Action
10	2024-04-21 18:49		Ma Li Ao	mallao	Registered User	Agricultural Equipment Vendor	Action

Figure 4.143 [Admin Site]: Users Page (cont.)

To examine and control the list of users in the system, admins may choose the "Users" option from the dropdown menu under the "System" section in the sidebar. Admins will then be sent to a page that displays users list and system users visualization data.

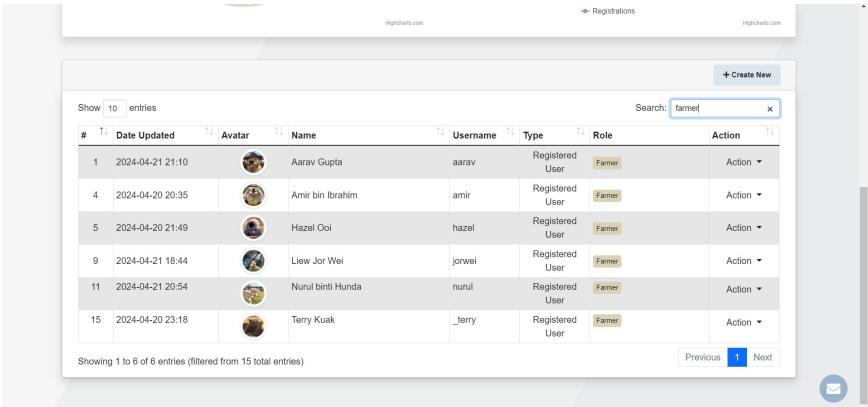


Figure 4.144 [Admin Site]: Search Users

To search users inside the system, admins may type a term into the search field. The users that correspond to the keyword input in the search bar are displayed to the admin.

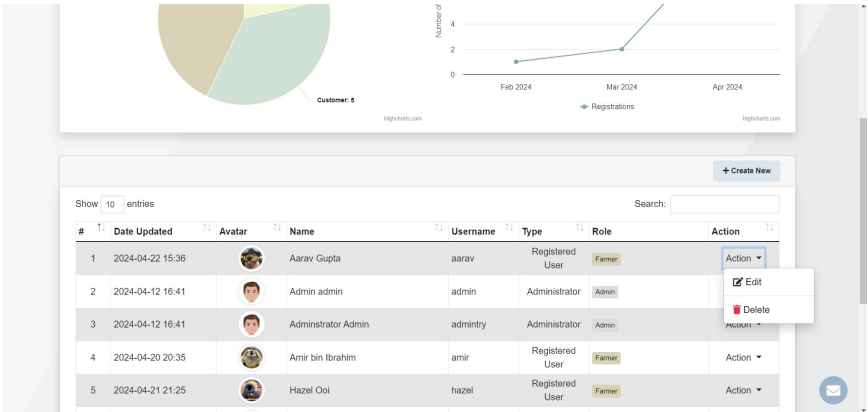


Figure 4.145 [Admin Site]: Actions Available in Users Page

Each user has an "Action" column next to them. It includes the actions that admins are able to do. In this instance, admins have the ability to “Edit”, and “Delete” for each user.

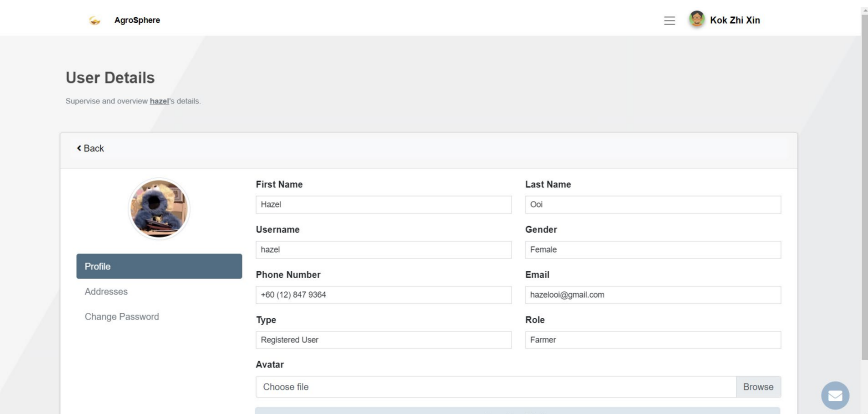


Figure 4.146 [Admin Site]: View and Edit User's Details – Profile Tab

By choosing the "Edit" option from the dropdown menu next to each user, admins may view and change a particular user's data. They will then be sent to a page where user's information is divided into three tabs: "Profile", "Addresses", and "Change Password". Admins may easily change a single user's personal information by entering the revised data in the relevant areas and clicking the "Save User Details" button on the "Profile" page. Subsequently, the system will validate and adjust the information, presenting a successful message and the revised profile data.

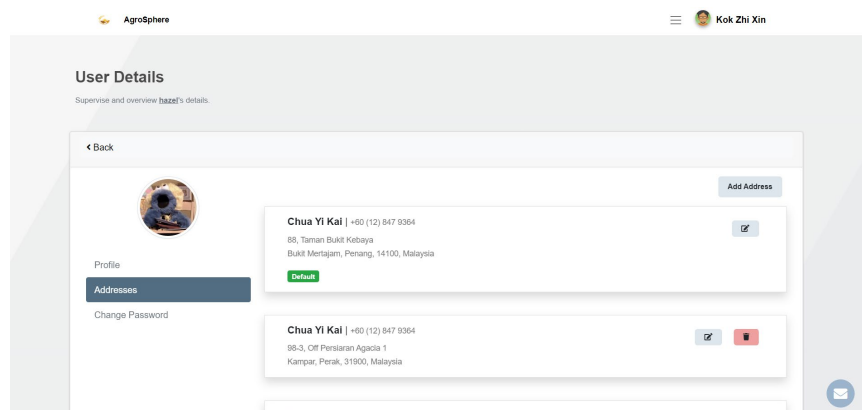


Figure 4.147 [Admin Site]: View and Edit User's Details – Addresses Tab

A specific user's address list will often be saved under the "Addresses" page. Every function, such as adding, editing, and deleting addresses, is comparable to what was previously discussed in the 4.4.1 User's View.

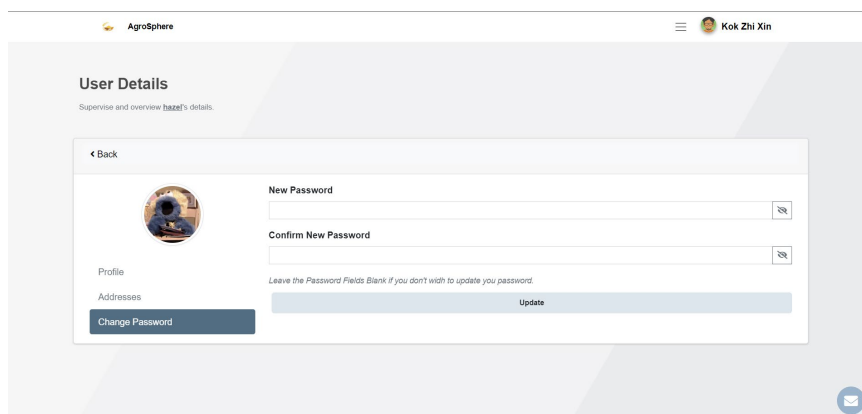


Figure 4.148 [Admin Site]: View and Edit User's Details – Change Password Tab

Admins just need to go to the "Change Password" page, input a new password, confirm it, and click "Update" if they want to assist a specific user in changing his/her password.

Figure 4.149 [Admin Site]: Add User/Admin

Figure 4.150 [Admin Site]: Add User/Admin (cont.)

To add a user or admin, administrators may also click the "Create New" button at the top of the users list. Admins will then be sent to a page where they can see that the registration process has been divided into two parts (as shown in Figure 4.149 and 5.150). Admins must fill in the necessary information on the card that the system displays. Admins may then just click "Save" after that.

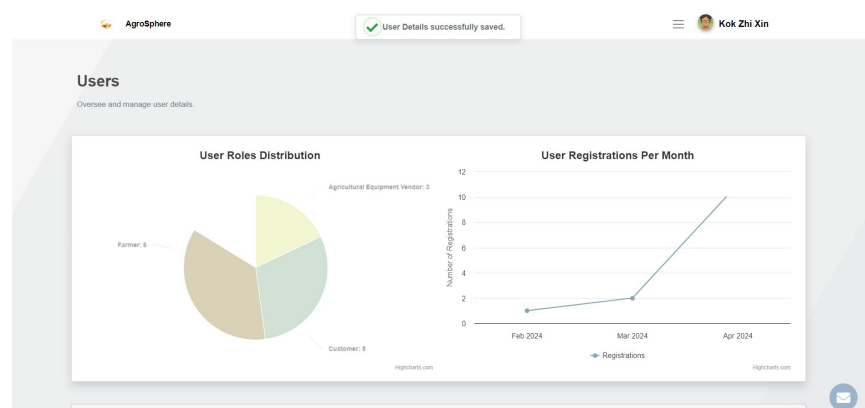


Figure 4.151 [Admin Site]: User Added Successfully Message

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The system will then confirm and save the information. After that, a successful notification is shown, and the information of the newly added user are shown in the users list.

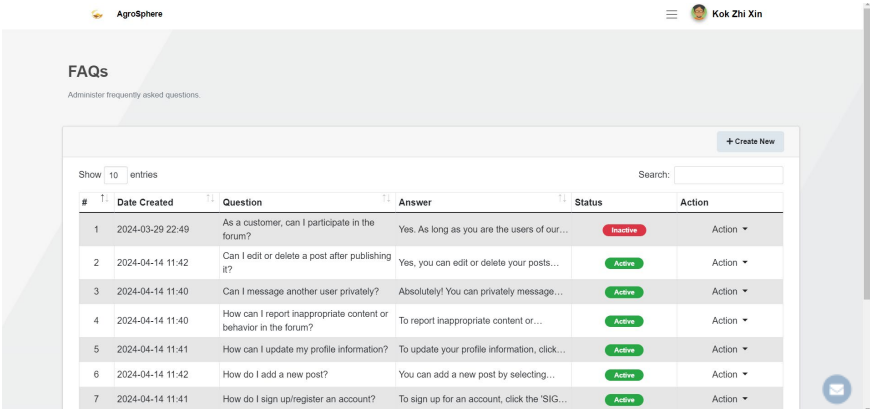


Figure 4.152 [Admin Site]: FAQs Page

To examine and modify the list of frequently asked questions inside the system, admins may choose the "FAQs" option from the dropdown menu under the "System" section in the sidebar. Admins will then be sent to a website with a collection of often asked questions.

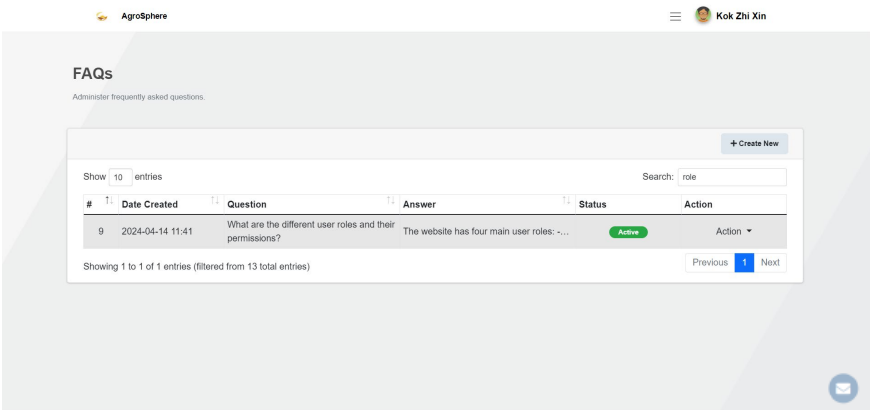


Figure 4.153 [Admin Site]: Search Questions

To search the questions in the system, admins may type a term into the search field. The admins will see the queries that match the keywords they typed.

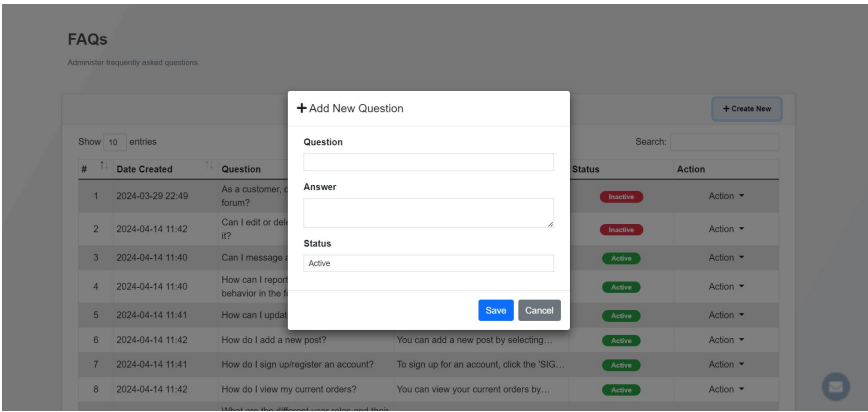


Figure 4.154 [Admin Site]: Add Questions

Admins may add a question by clicking the "Create New" button. Admins must then input the necessary information onto the card that is shown by the system. They may choose between the following two status choices. Admins may select the "Inactive" option in the status box if they want to add questions that are only accessible to them and indicate that they are drafts. In the absence of this, both admins and users will be able to see the question with the "Active" option. Then, admins may just click "Save" after that. The system will then confirm and save the information. After that, a successful message is shown, along with the specifics of the additional inquiry.

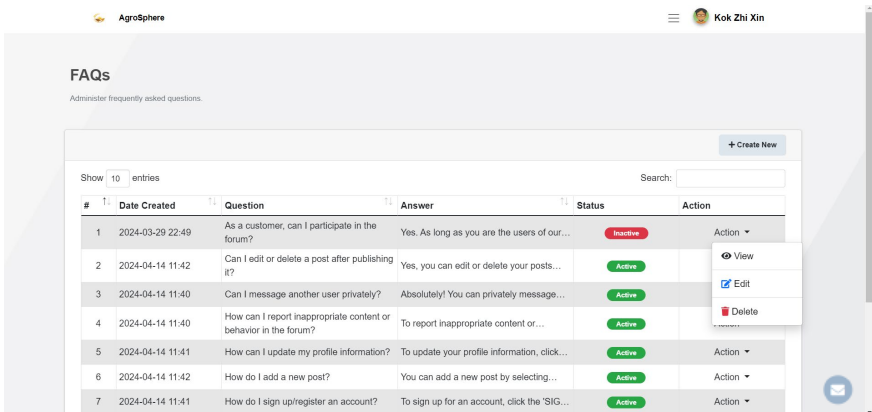


Figure 4.155 [Admin Site]: Actions Available in FAQs Page

Admins will see that each question has an "Action" column next to it. It includes the tasks that they are able to do. In this instance, admins have the ability to “View”, “Edit”, and “Delete” for each question.

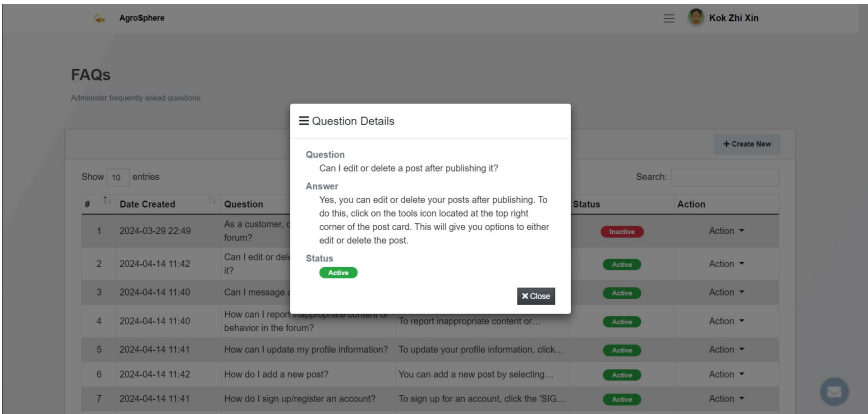


Figure 4.156 [Admin Site]: View FAQ Details

By choosing the “View” option from the dropdown menu next to each question, administrators may examine the question's information.

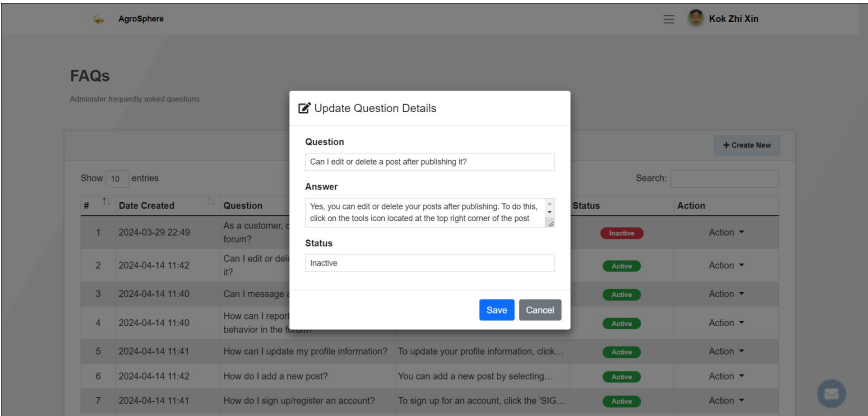


Figure 4.157 [Admin Site]: Edit FAQ Details

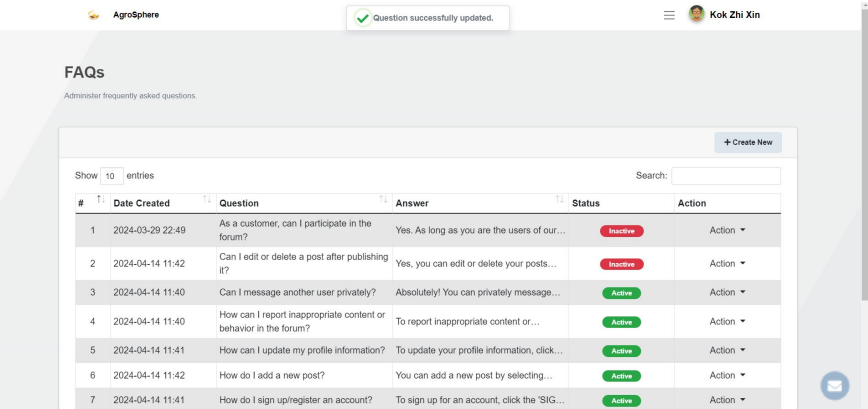


Figure 4.158 [Admin Site]: FAQ Updated Successfully Message

By using the "Edit" option from the dropdown menu next to each question, admins may also change the specifics of a question (as shown in Figure 4.154). Admins may then easily change the information and "Save" button. The system will then check and update

the information. After that, it presents the revised question data along with a successful message (as depicted in *Figure 4.158*).

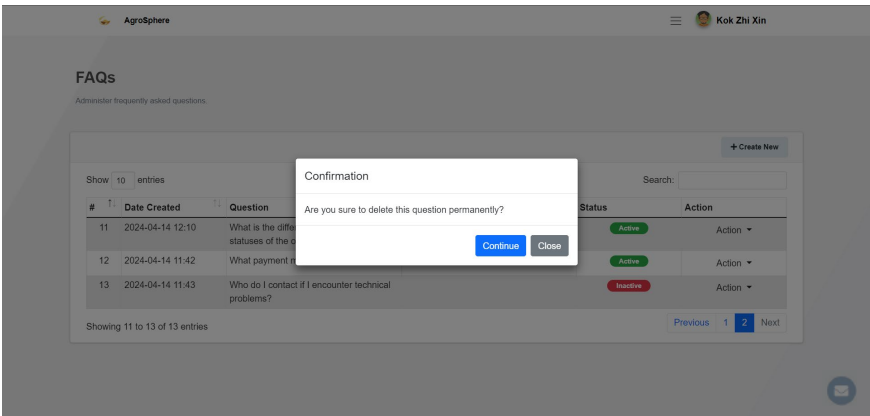


Figure 4.159 [Admin Site]: Delete FAQ

If not, admins may confirm the deletion by selecting "Delete" from the dropdown menu next to each category. After that, the system will confirm, delete the question, and provide a success message.

- **Community Module**

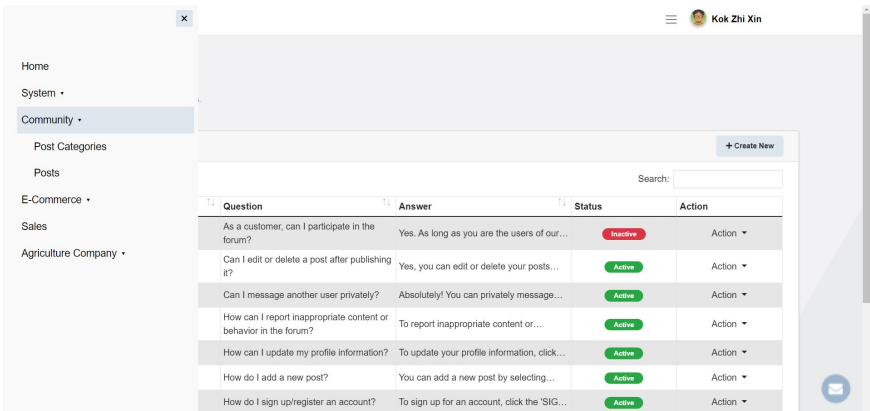


Figure 4.160 [Admin Site]: Access Community Module

It is evident from the side bar that the “Community” section has two options: “Post Categories”, and “Posts”.

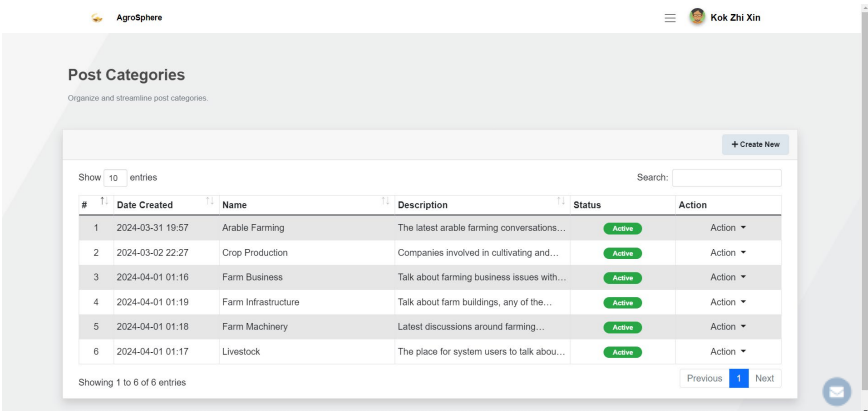


Figure 4.161 [Admin Site]: Post Categories Page

Admins can select the “Post Categories” option from the dropdown menu located under the “Community” section in the sidebar if they wish to view and manage the list of post categories within the system. Then, admins will be redirected to the page containing a list of post categories.

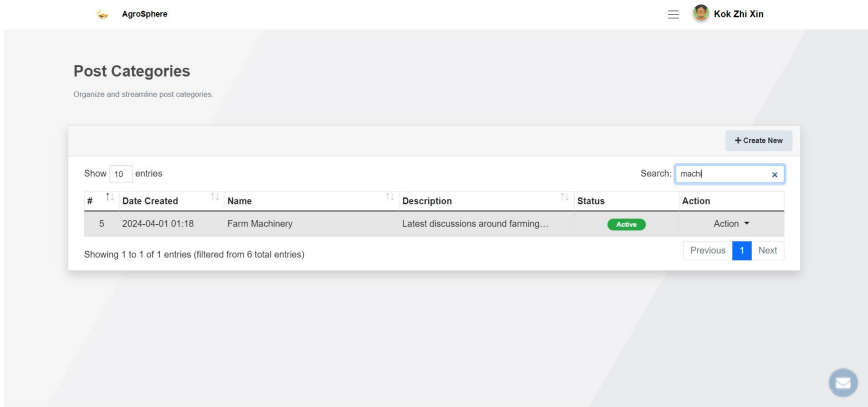


Figure 4.162 [Admin Site]: Search Post Categories

Admins can enter a keyword in the search bar in order to search the post categories within the system. The categories that correspond to the keyword input in the search bar are displayed to the admins.

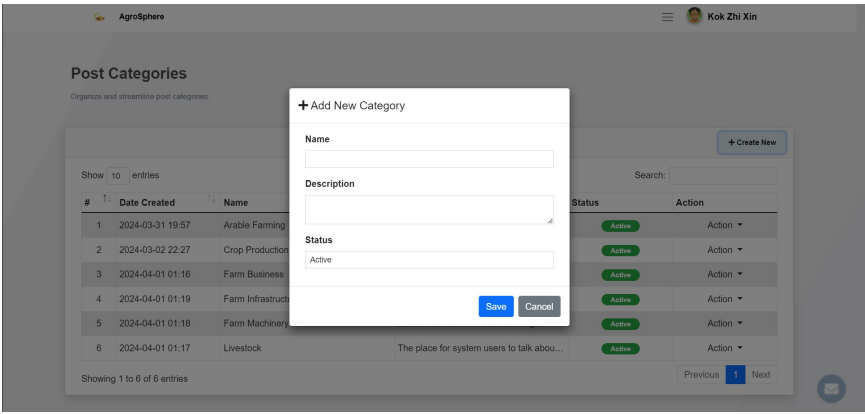


Figure 4.163 [Admin Site]: Add Post Category

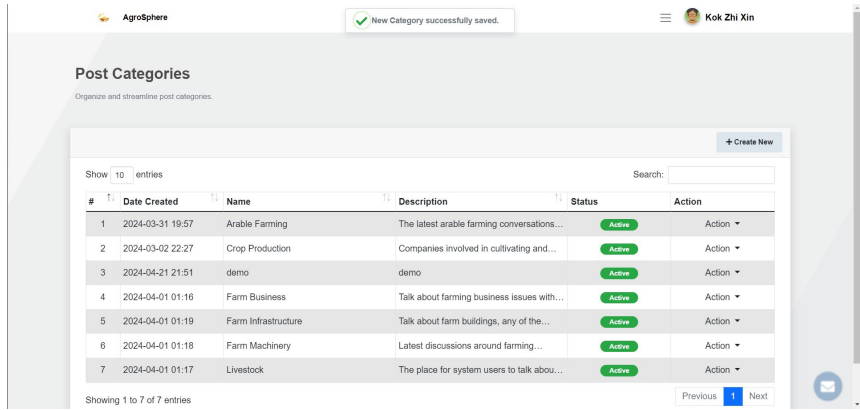


Figure 5.164 [Admin Site]: Post Category Added Successfully

As depicted in *Figure 4.163*, admins may add a category by clicking the "Create New" button. Admins must then input the necessary information onto the card that is shown by the system. They may choose between the following two status choices. Admins may select the "Inactive" option in the status box if they want to add category that is only accessible to them and indicate that it is draft. In the absence of this, both admins and users will be able to see the category with the "Active" option. Then, admins may just click "Save" after that. The system will then confirm and save the information. After that, a successful message is shown, along with the specifics of the additional category (as shown in *Figure 4.164*).

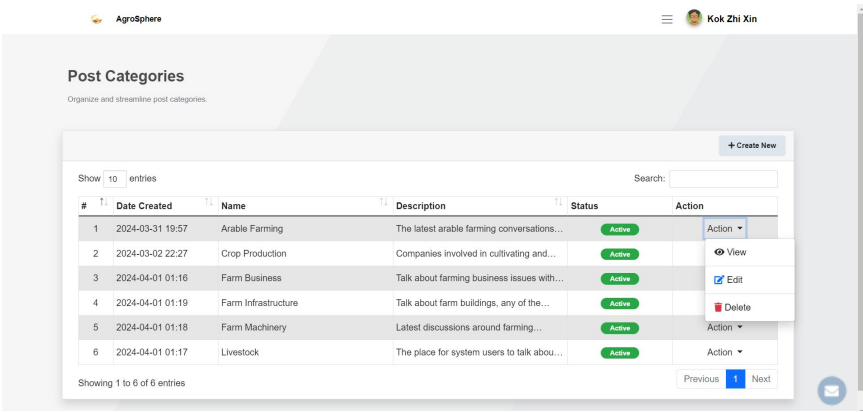


Figure 4.165 [Admin Site]: Actions Available in Post Categories Page

Admins will see that each category has an "Action" column next to it. It includes the tasks that they are able to do. In this instance, admins have the ability to “View”, “Edit”, and “Delete” for each category.

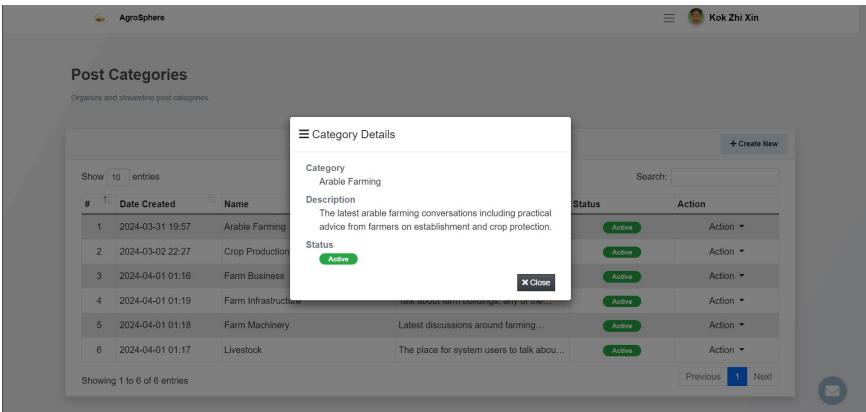


Figure 4.166 [Admin Site]: View Post Category Details

By choosing the “View” option from the dropdown menu next to each category, admins may examine the category’s information.

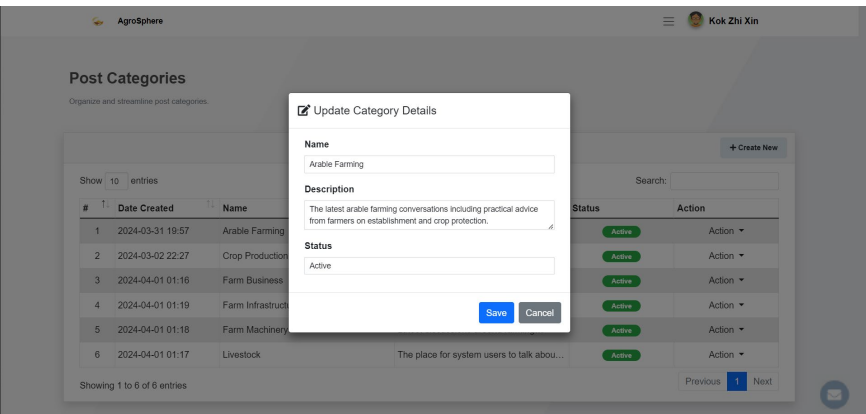


Figure 4.167 [Admin Site]: Edit Post Category Details

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By using the "Edit" option from the dropdown menu next to each category, admins may also change the specifics of a category (as shown in *Figure 4.167*). Admins may then easily change the information and "Save" button. The system will then check and update the information. After that, it presents the revised question data along with a successful message.

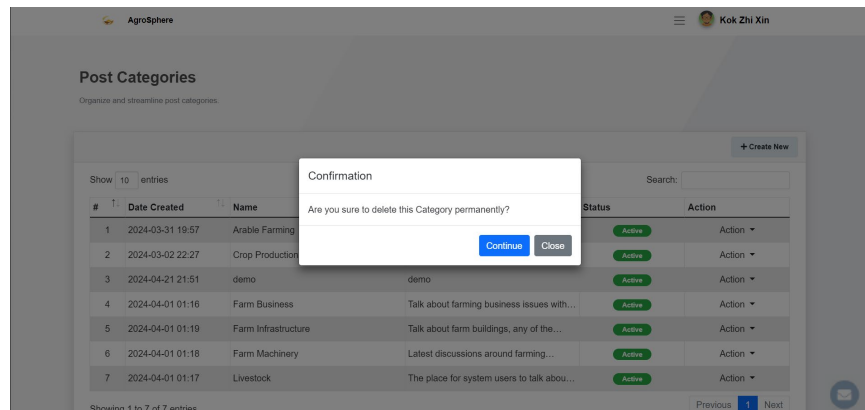


Figure 4.168 [Admin Site]: Delete Post Category

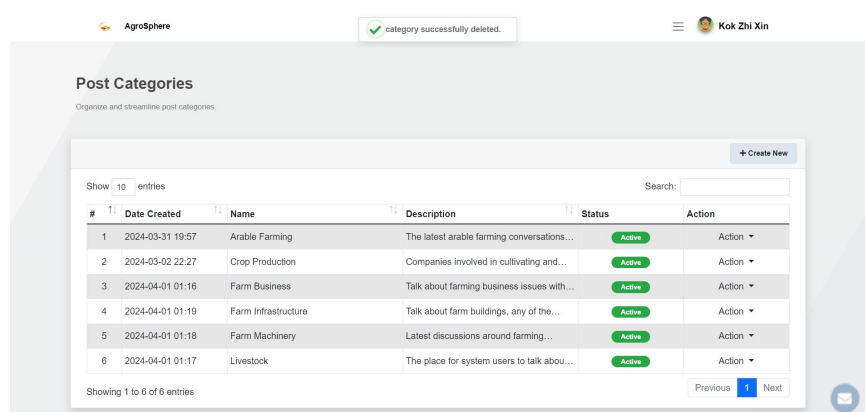


Figure 4.169 [Admin Site]: Post Category Deleted Successfully Message

If not, admins may confirm the deletion by selecting "Delete" from the dropdown menu next to each category. After that, the system will confirm, delete the category, and provide a success message.

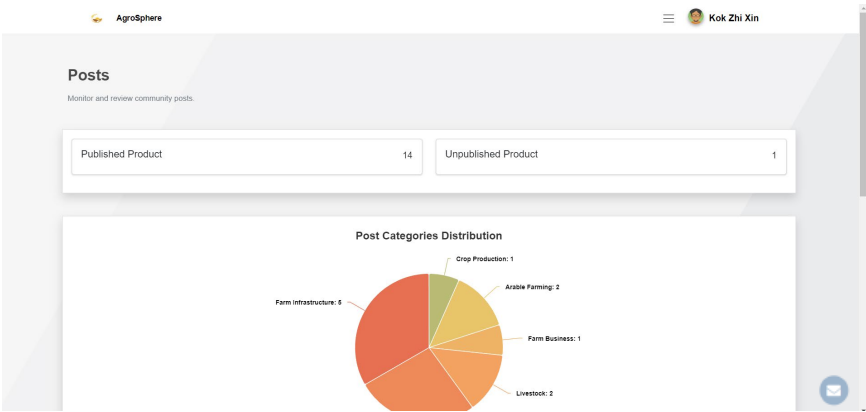


Figure 4.170 [Admin Site]: Posts Page

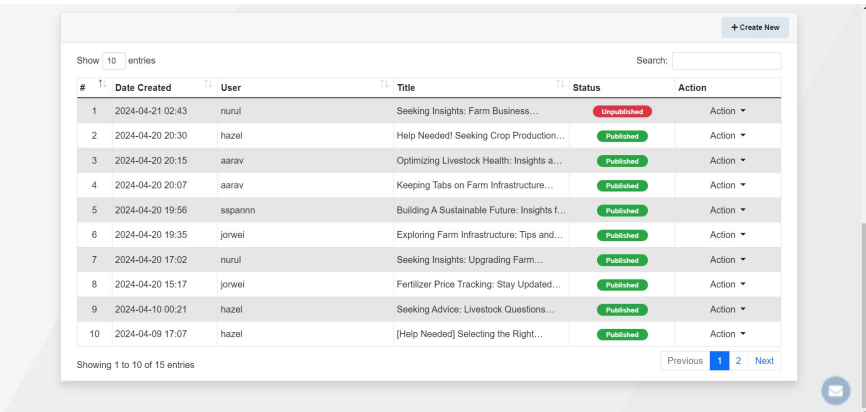


Figure 4.171 [Admin Site]: Posts Page (cont.)

To examine and control the list of posts in the system, admins may choose the "Posts" option from the dropdown menu under the "Community" section in the sidebar. Admins will then be sent to a page that displays posts list and posts visualization data.

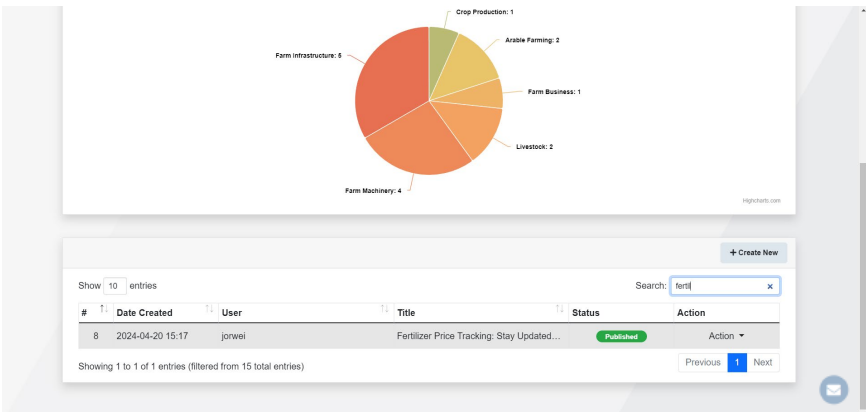


Figure 4.172 [Admin Site]: Search Posts

To search posts inside the system, admins may type a term into the search field. The users that correspond to the keyword input in the search bar are displayed to the admin.

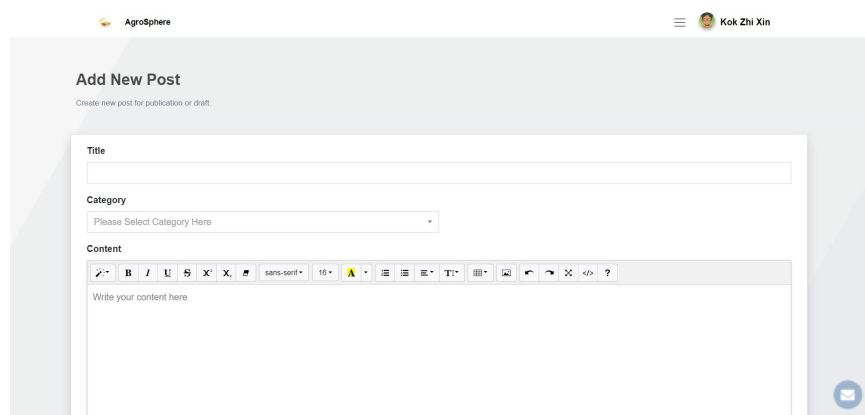


Figure 4.173 [Admin Site]: Publish Post

In order to publish a post in the forum, they can access the “Publish Post” page by clicking the “Create New” button on top of the posts list.



Figure 4.174 [Admin Site]: Publish Post (cont.)

Admins may then contribute the post's information. They should choose the "Publish" option if they want to publish the post to the forum. Otherwise, users should uncheck the "Published" option if they want to save the article as a draft first. Next, choose the "Save" option from the form's button that the system has provided.

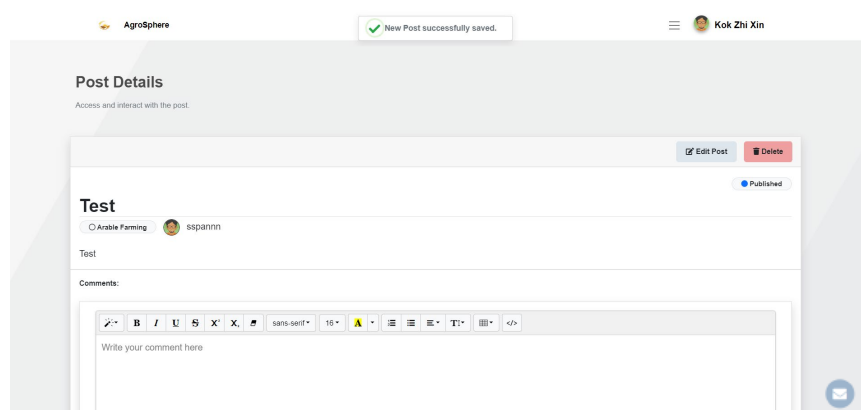


Figure 4.175 [Admin Site]: Post Created Successfully Message

The system will validate and save the data, as seen in the above figure, and then display a successful message.

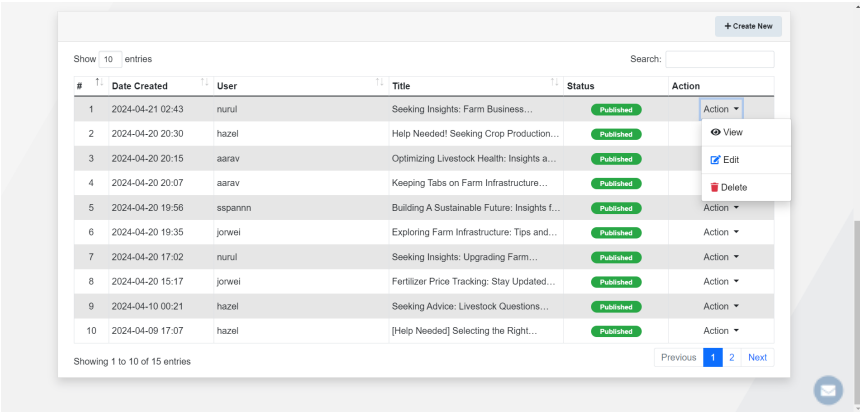


Figure 4.176 [Admin Site]: Actions Available in Posts Page

Admins will see that each post has an "Action" column next to it. It includes the tasks that they are able to do. In this instance, admins have the ability to “View”, “Edit”, and “Delete” for each post.

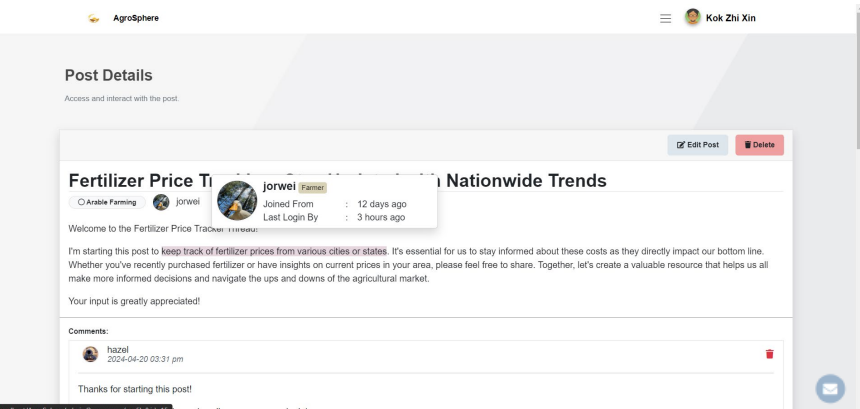


Figure 4.177 [Admin Site]: View Post Details

Following selection, the specific post's information will be shown to them. To see additional information, they just need to scroll down. Admins may now mouse over the username of a post participant to see a little user activity card display. Additionally, the system will display the chosen user's profile when they click on the avatar or username of that person.

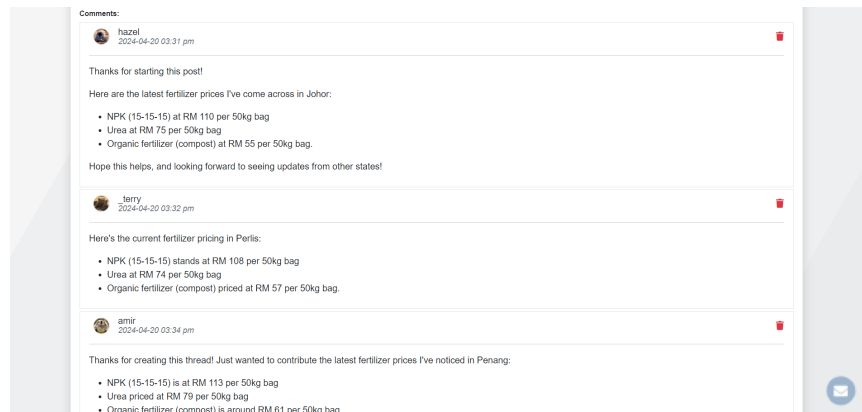


Figure 4.178 [Admin Site]: View Post Details (cont.)

According to *Figure 4.178*, admins have the authority to remove user comments from beneath a post.

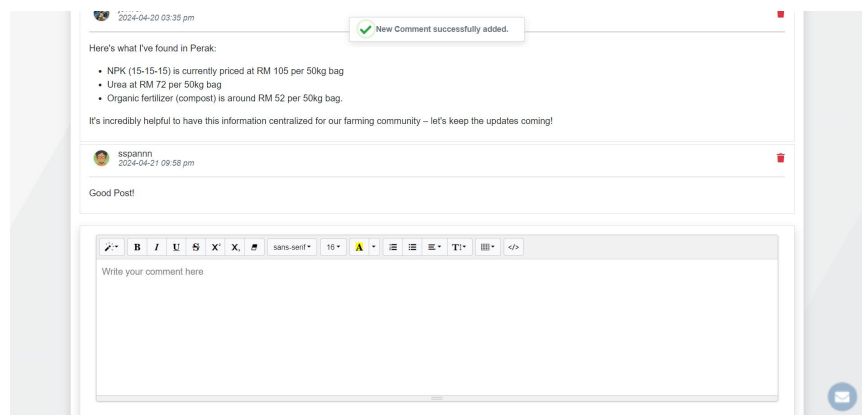


Figure 4.179 [Admin Site]: Publish Comment

As *Figure 4.179* illustrates, comments may also be published beneath posts by admins. All they have to do is type text into the input field and choose “Save” button. After that, the system will publish the comment underneath the post and provide a successful message.

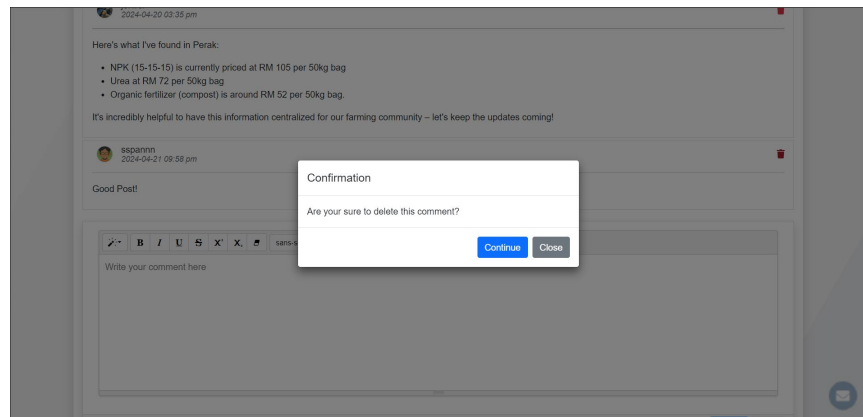


Figure 4.180 [Admin Site]: Delete Own Published Comment

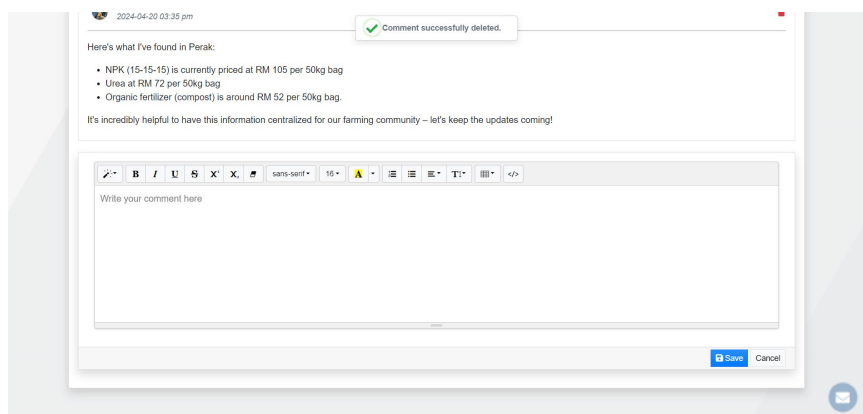


Figure 4.181 [Admin Site]: Comment Deleted Successfully Message

Admins also can delete their own published comment. After clicking on the trash icon, two messages are shown: one asking for confirmation (as depicted in *Figure 4.180*) and the other after the comment has been successfully deleted (as illustrated in *Figure 4.181*).

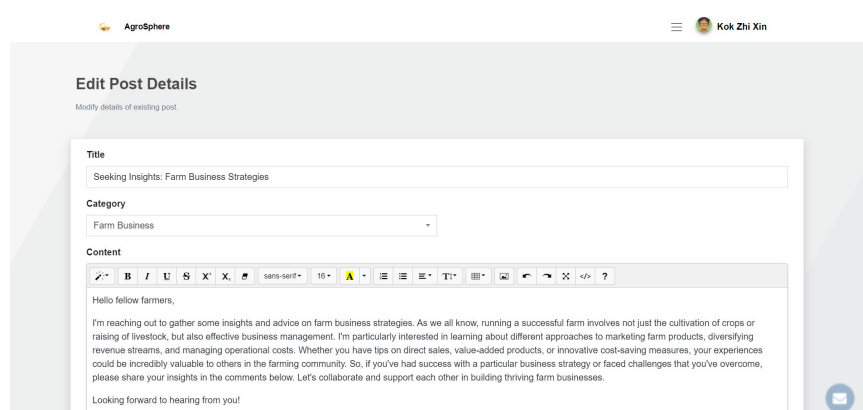


Figure 4.182 [Admin Site]: Edit Post Details

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By using the “Edit” option from the dropdown menu adjacent to each post, admins may modify the information as needed. They may then choose the "Save" option to proceed.

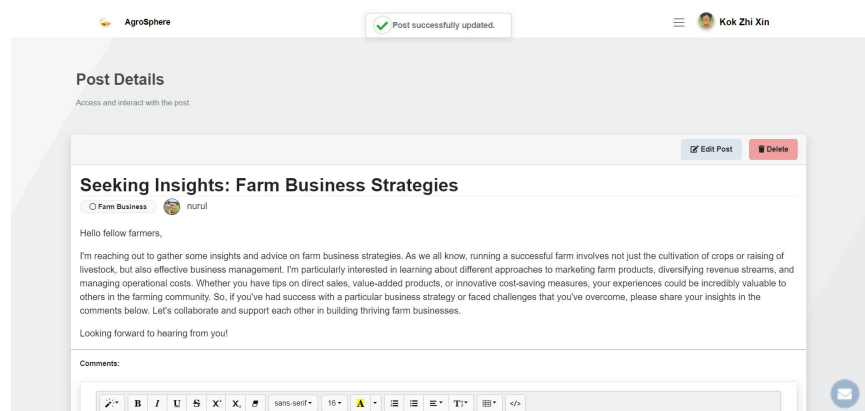


Figure 4.183 [Admin Site]: Post Edited Successfully Message

After clicking the "Save" button, the system will validate and edit the information as shown in the above picture, presenting a successful message and the modified post data.

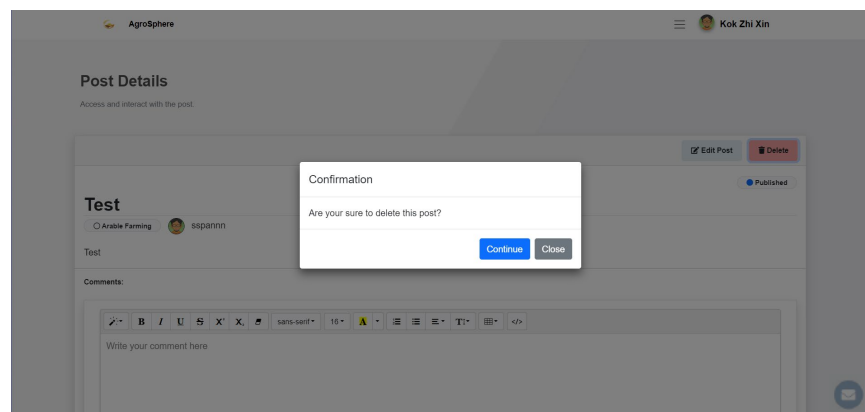


Figure 4.184 [Admin Site]: Delete Post

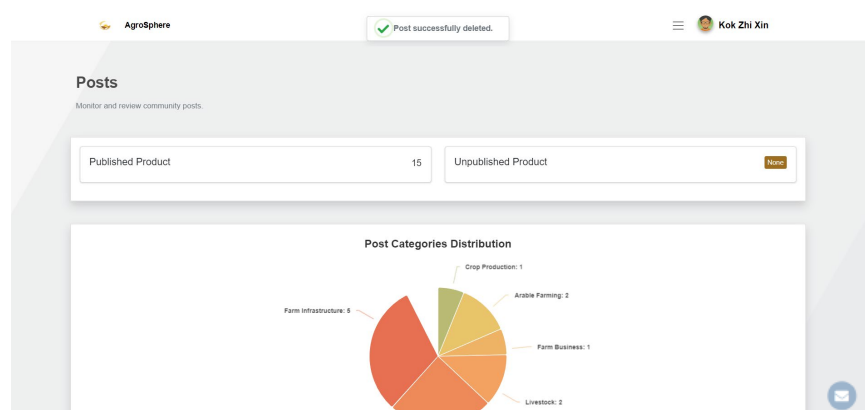


Figure 4.185 [Admin Site]: Post Deleted Successfully Message

By using the “Delete” option from the dropdown menu adjacent to each post, admins may delete the particular post. The system will then remove the admin-confirmed post and display a successful message (as depicted in *Figure 4.185*).

- **E-Commerce Module**



Figure 4.186 [Admin Site]: Access E-Commerce Module

It is evident from the side bar that the “E-Commerce” section has two options: “Product Categories”, and “Products”.

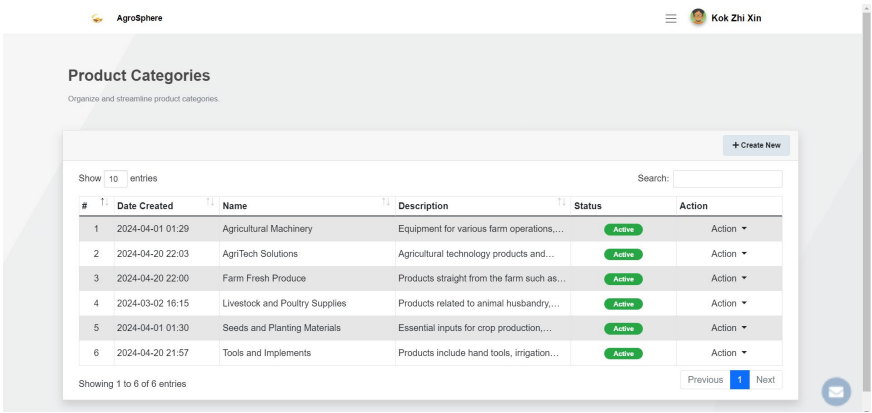


Figure 4.187 [Admin Site]: Product Categories Page

Admins can select the “Product Categories” option from the dropdown menu located under the “E-Commerce” section in the sidebar if they wish to view and manage the list of product categories within the system. Then, they will be redirected to the page containing a list of products categories.

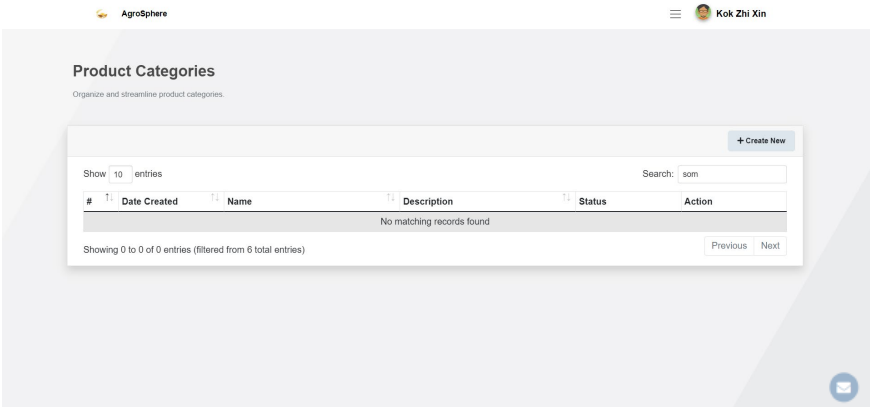


Figure 4.188 [Admin Site]: Search Product Category

Admins can enter a keyword in the search bar in order to search the product categories within the system. The categories that correspond to the keyword input in the search bar are displayed to the admins.

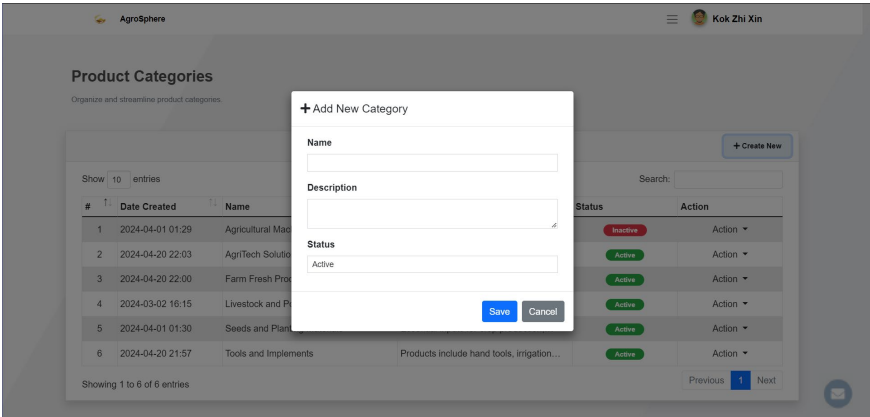


Figure 4.189 [Admin Site]: Add Product Category

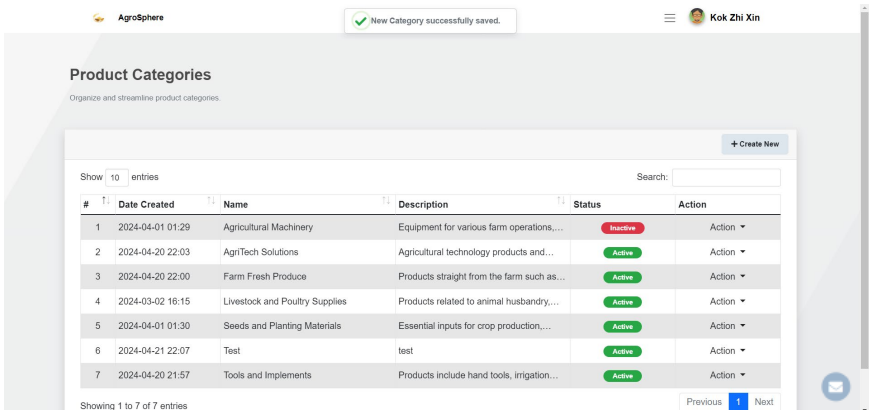


Figure 4.190 [Admin Site]: Product Category Added Successfully Message

As depicted in Figure 4.186, admins may add a category by clicking the "Create New" button. Admins must then input the necessary information onto the card that is shown

by the system. They may choose between the following two status choices. Admins may select the "Inactive" option in the status box if they want to add category that is only accessible to them and indicate that it is draft. In the absence of this, both admins and users will be able to see the category with the "Active" option. Then, admins may just click "Save" after that. The system will then confirm and save the information. After that, a successful message is shown, along with the specifics of the additional category (as shown in *Figure 4.190*).

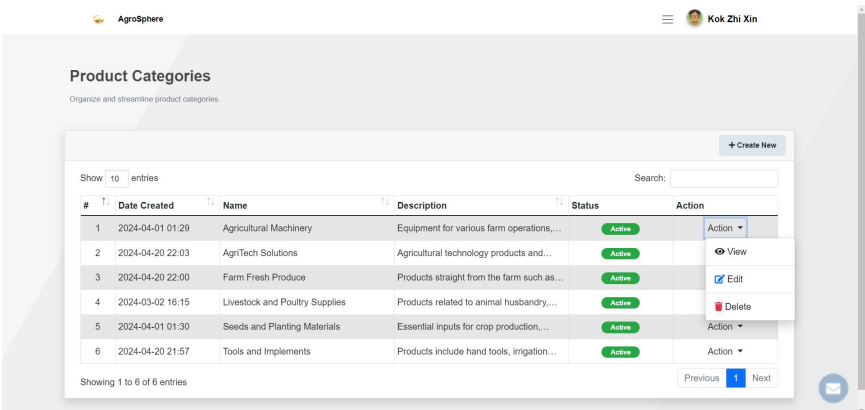


Figure 4.191 [Admin Site]: Actions Available in Product Categories Page

Admins will see that each category has an "Action" column next to it. It includes the tasks that they are able to do. In this instance, admins have the ability to “View”, “Edit”, and “Delete” for each category.

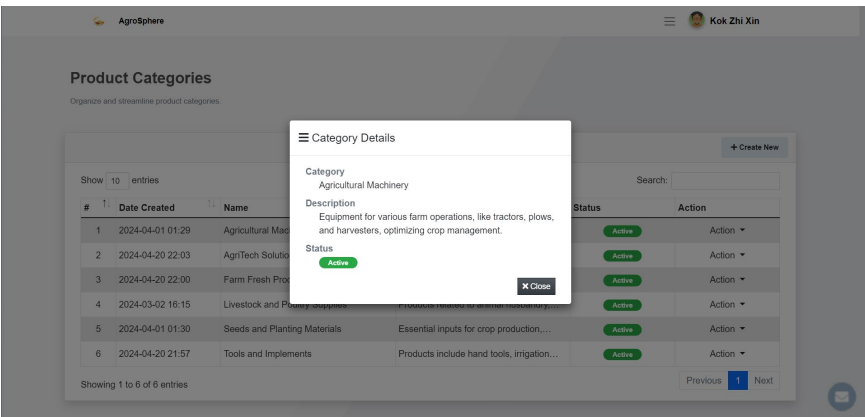


Figure 4.192 [Admin Site]: View Product Category Details

By choosing the “View” option from the dropdown menu next to each category, admins may examine the category’s information.

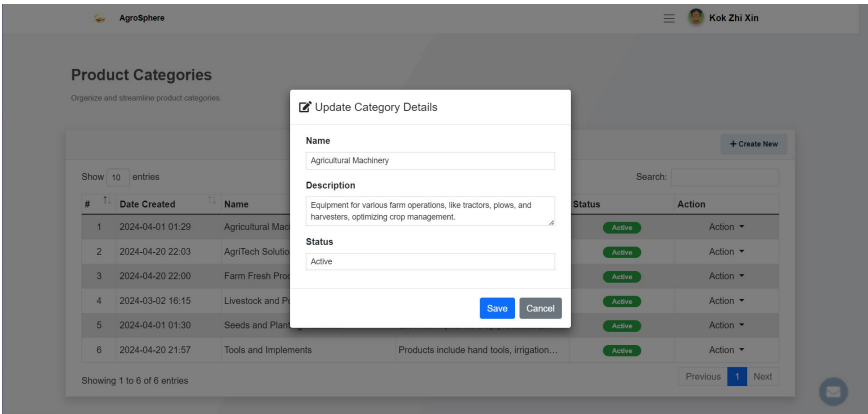


Figure 4.193 [Admin Site]: Edit Product Category Details

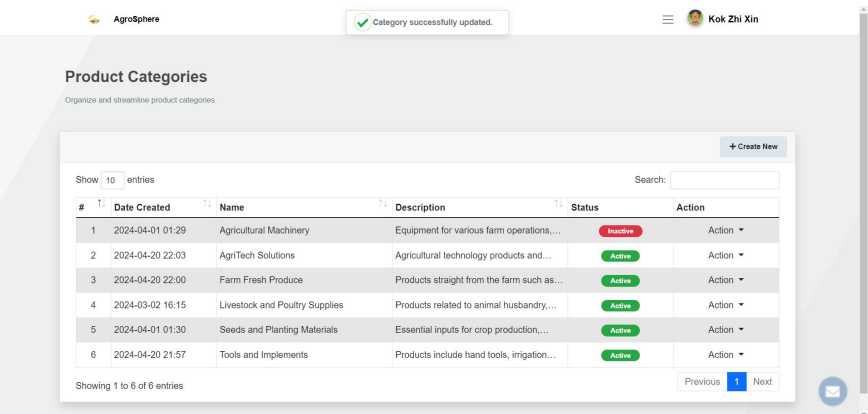


Figure 4.194 [Admin Site]: Product Category Edited Successfully Message

By using the "Edit" option from the dropdown menu next to each category, admins may also change the specifics of a category (as shown in *Figure 4.193*). Admins may then easily change the information and "Save" button. The system will then check and update the information. After that, it presents the revised question data along with a successful message (as displayed in *Figure 4.194*).

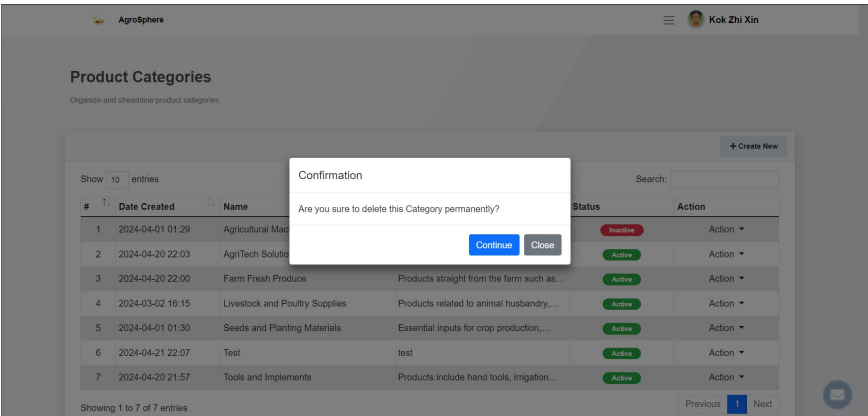


Figure 4.195 [Admin Site]: Delete Product Category

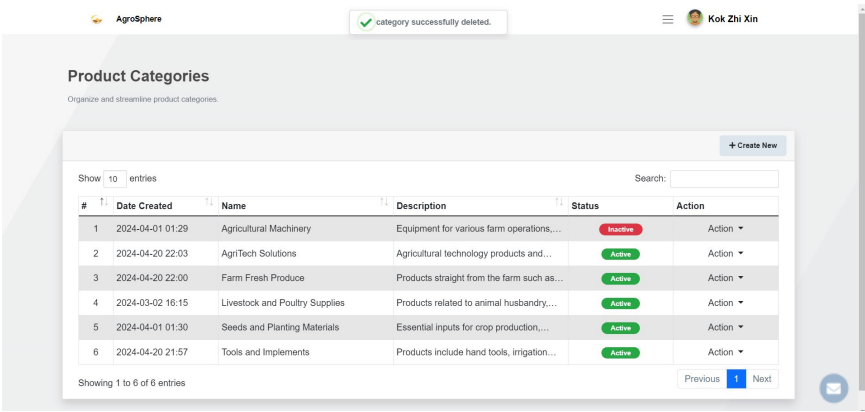


Figure 4.196 [Admin Site]: Product Category Deleted Successfully Message

If not, admins may confirm the deletion by selecting "Delete" from the dropdown menu next to each category. After that, the system will confirm, delete the category, and provide a success message (as depicted in Figure 4.196).

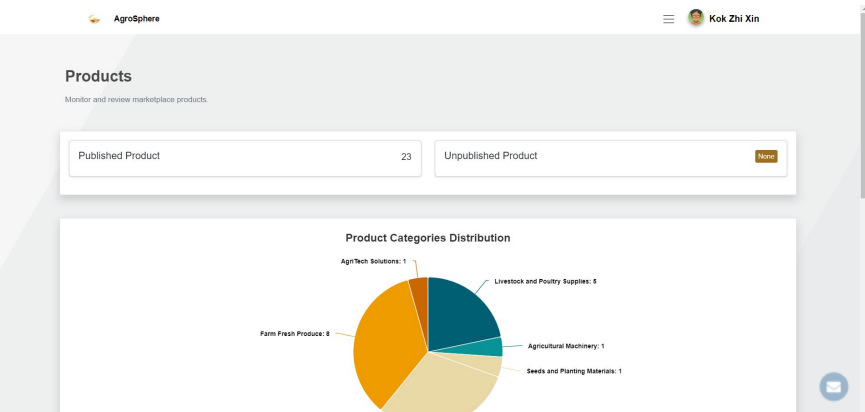


Figure 4.197 [Admin Site]: Products Page

AgroSphere

Kok Zhi Xin

Products

Monitor and review marketplace products.

Show 10 entries

Search:

#	Date Created	User	Product Name	Status	Action
1	2024-04-21 18:52	lambert	Wire Fencing	Published	Action
2	2024-04-21 18:49	maliao	Wire Crimpers	Published	Action
3	2024-04-21 18:48	maliao	Wheelbarrow	Published	Action
4	2024-04-21 18:46	maliao	Yellow Watering Can	Published	Action
5	2024-04-21 18:44	jonwei	Fresh Tomatoes	Published	Action
6	2024-04-21 18:41	maliao	Chicken Shelter	Published	Action
7	2024-04-21 18:35	maliao	Premium Poultry Feed	Published	Action
8	2024-04-21 18:31	maliao	Feeding Trough	Published	Action
9	2024-04-21 18:29	lambert	Garden Rake	Published	Action
10	2024-04-21 18:27	lambert	Shovel	Published	Action

Showing 1 to 10 of 23 entries

Previous 1 2 3 Next

Figure 4.198 [Admin Site]: Products Page (cont.)

To examine and control the list of products in the system, admins may choose the "Products" option from the dropdown menu under the "E-Commerce" section in the

sidebar. Admins will then be sent to a page that displays products list and products visualization data.

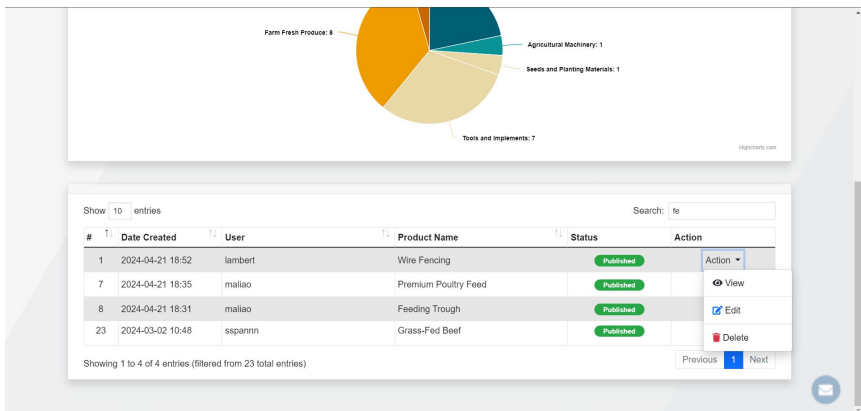


Figure 4.199 [Admin Site]: Search Products and Available Actions in Products Page

To search products inside the system, admins may type a term into the search field. The products that correspond to the keyword input in the search bar are displayed to the admin. Admins will see that each product has an "Action" column next to it. It includes the tasks that they are able to do. In this instance, admins have the ability to “View”, “Edit”, and “Delete” for each product.

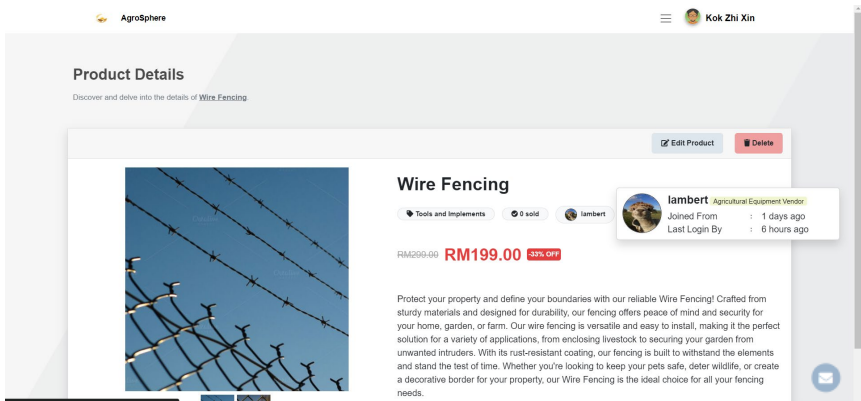


Figure 4.200 [Admin Site]: View Product Details

Following selection, the specific product's information will be shown to them. To see additional information, they just need to scroll down. Admins may now mouse over the username of publisher to see a little user activity card display. Additionally, the system will display the chosen user's profile when they click on the avatar or username of that person.

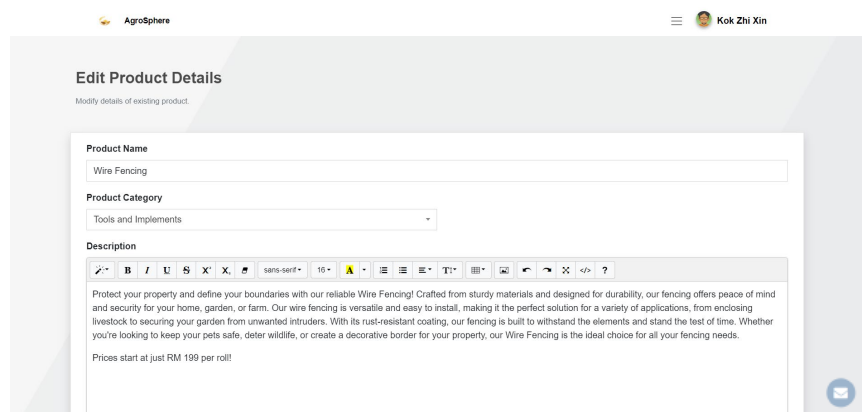


Figure 4.201 [Admin Site]: Edit Product Details

By using the “Edit” option from the dropdown menu adjacent to each product, admins may modify the information as needed. They may then choose the "Save" option to proceed.

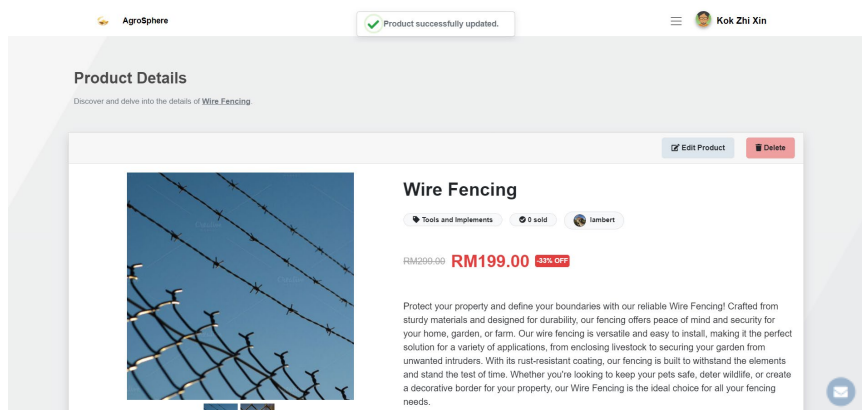


Figure 4.202 [Admin Site]: Product Edited Successfully Message

After clicking the "Save" button, the system will validate and edit the information as shown in the above picture, presenting a successful message and the modified product data.

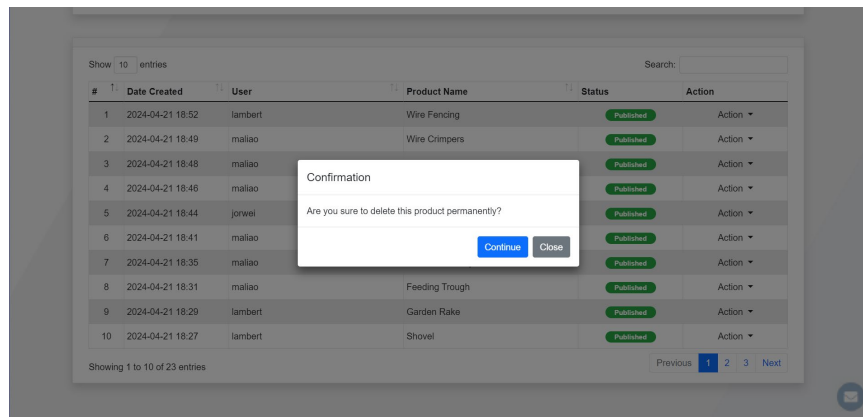


Figure 4.203 [Admin Site]: Delete Product

By using the “Delete” option from the dropdown menu adjacent to each product, admins may delete the particular product. The system will then remove the admin-confirmed post and display a successful message.

- **Sales Module**

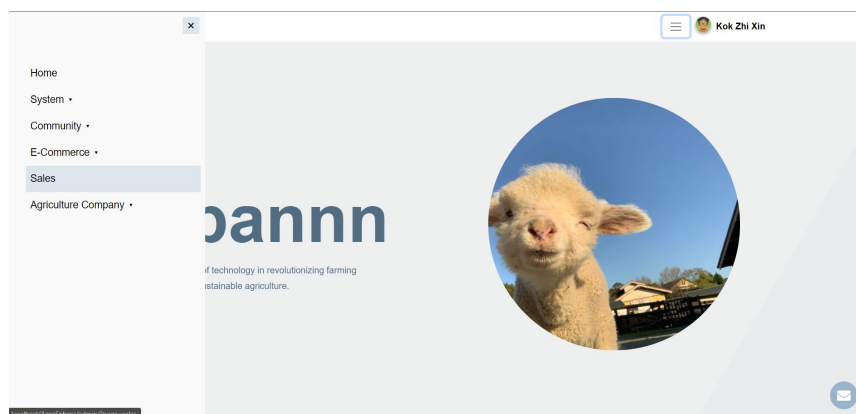


Figure 4.204 [Admin Site]: Access Sales Module

In order to access the “Sales” page, admins can select the “Sales” option in the side bar.

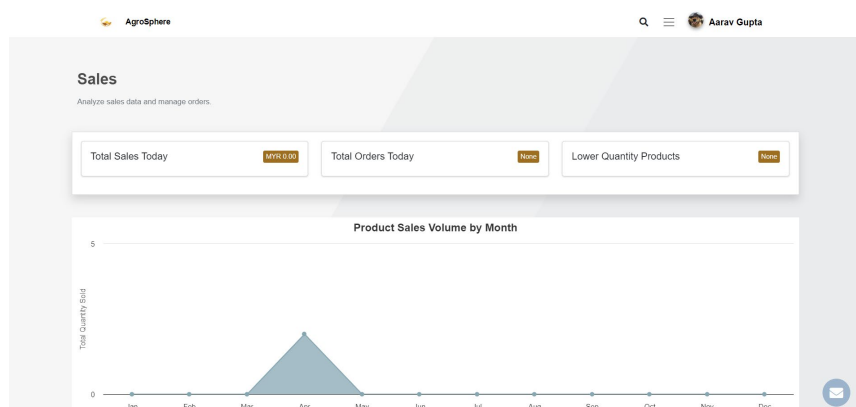


Figure 4.205 [Admin Site]: Sales Page

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The system will then take them to a page that contains sales visualization data and a listing all of the orders within the system.

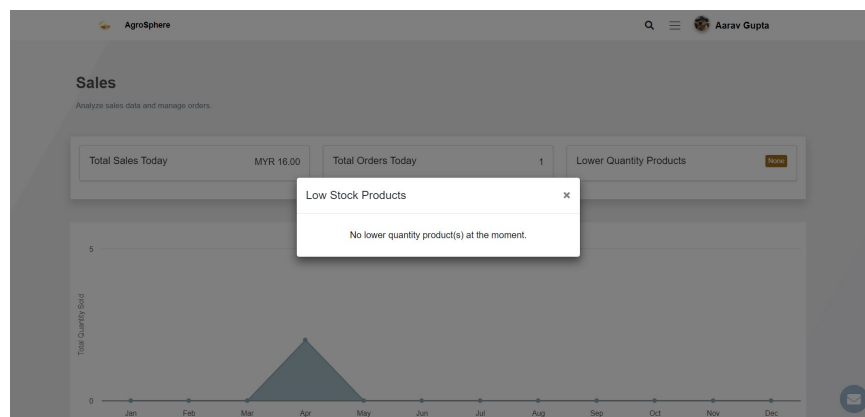


Figure 4.206 [Admin Site]: Sales Page (cont.)

The overall sales and orders for today, together with the smaller quantity goods (less than ten) within the system, will be shown at the top of the page. Admins may view additional data, including which items are now running lower quantity, by typing on the lower quantity products.

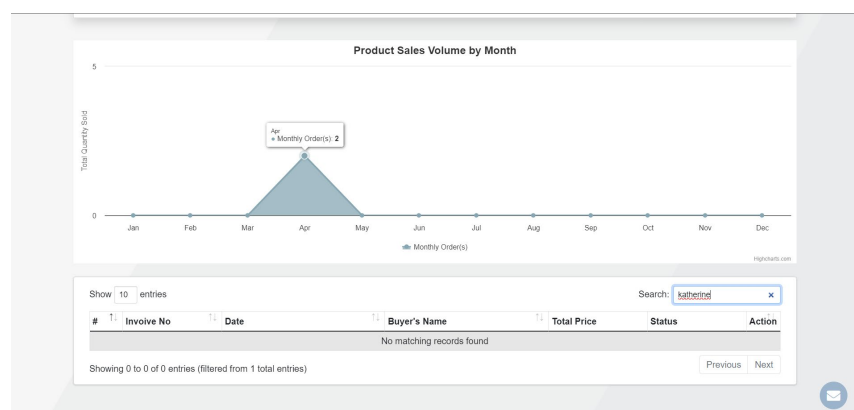


Figure 4.207 [Admin Site]: Sales Visualization Data Details and Search Order

Admins may inspect the details by moving their mouse pointer over the spot inside the sales visualization data. In the interim, they can enter a keyword in the search bar to search the orders. The system is then showing the orders that match the keyword.

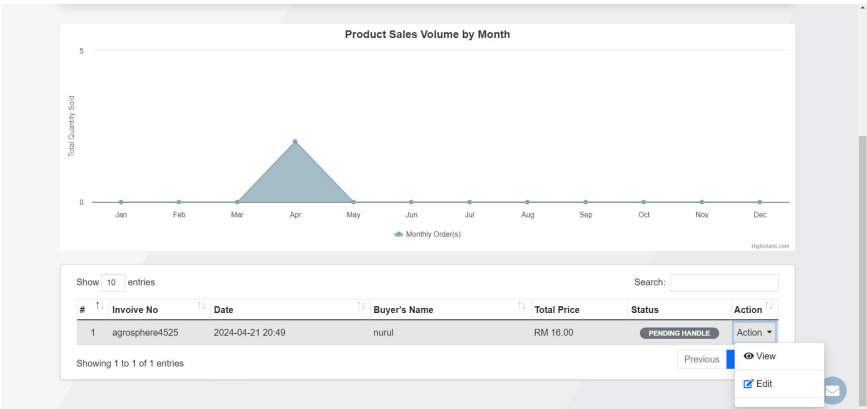


Figure 4.208 [Admin Site]: Actions Available in Sales Page

According to the figure above, they will see that each order has an "Action" column next to it. It includes the tasks that admins are able to do. In this instance, admins have the ability to “View”, and “Edit” for each order.

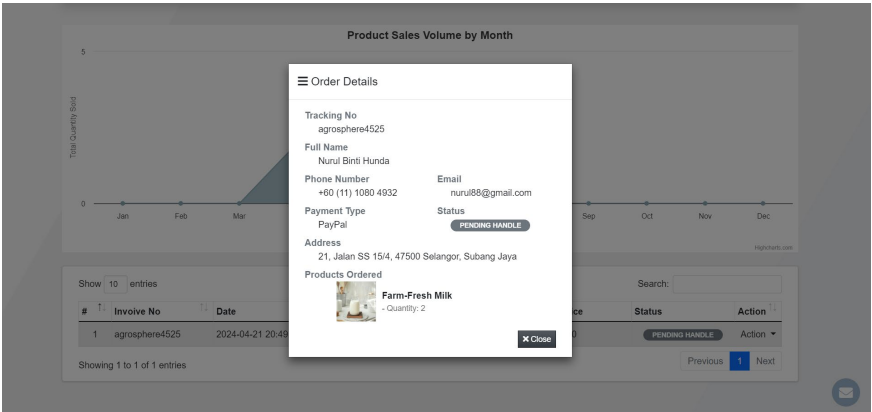


Figure 4.209 [Admin Site]: View Order Details

They can view the order details by selecting the “View” option from the dropdown menu adjacent to each order.

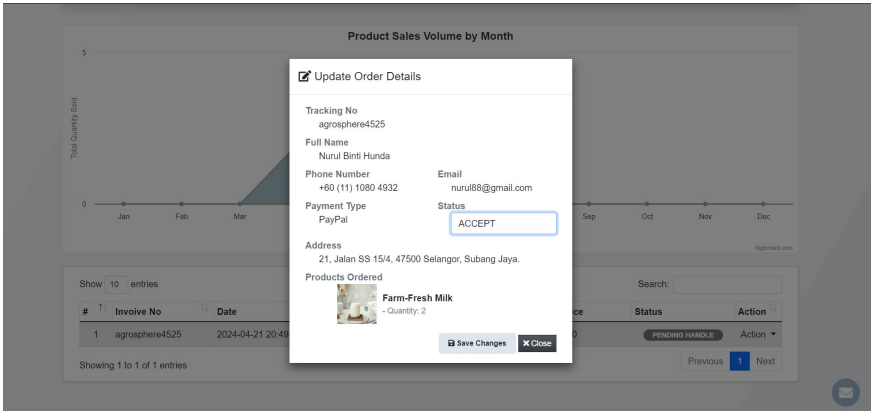


Figure 4.210 [Admin Site]: Edit Order Status

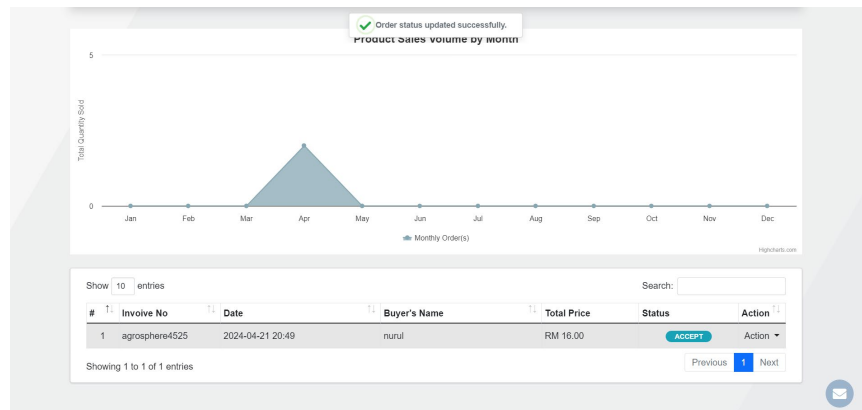


Figure 4.211 [Admin Site]: Order Edited Successfully Message

They can also edit an order's status by selecting the "Edit" option from the dropdown menu adjacent to each order. Then, admins can simply update the status by clicking the "Save Changes" button. After that, system will verify and modifies the status. Then, it displays a successful message and shows the updated order status.

- **Agriculture Company Module**

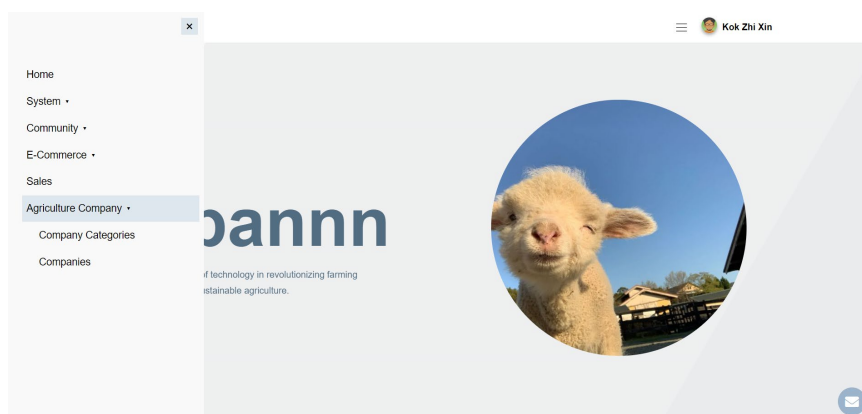


Figure 4.212 [Admin Site]: Access Agriculture Company Module

It is evident from the side bar that the "Agriculture Company" section has two options: "Company Categories", and "Companies".

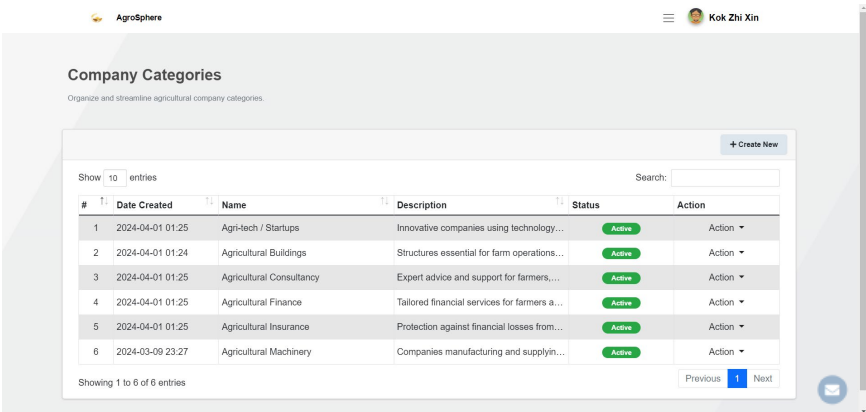


Figure 4.213 [Admin Site]: Company Categories Page

Admins can select the “Company Categories” option from the dropdown menu located under the “Agriculture Company” section in the sidebar if they wish to view and manage the list of company categories within the system. Then, they will be redirected to the page containing a list of company categories.

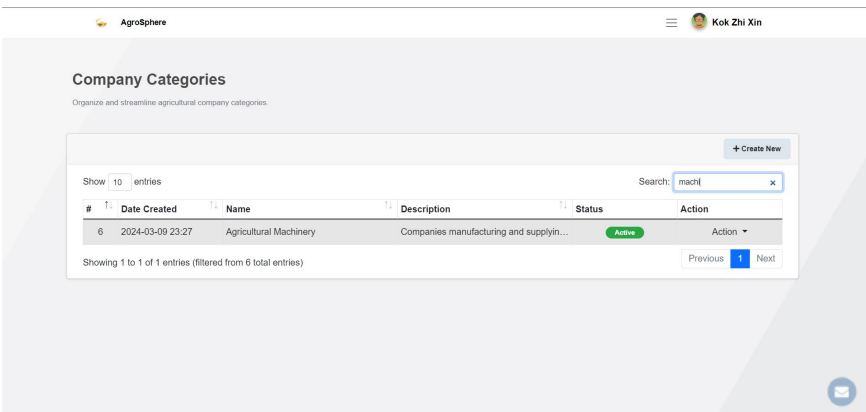


Figure 4.214 [Admin Site]: Search Company Categories

Admins can enter a keyword in the search bar in order to search the company categories within the system. The categories that correspond to the keyword input in the search bar are displayed to the admins.

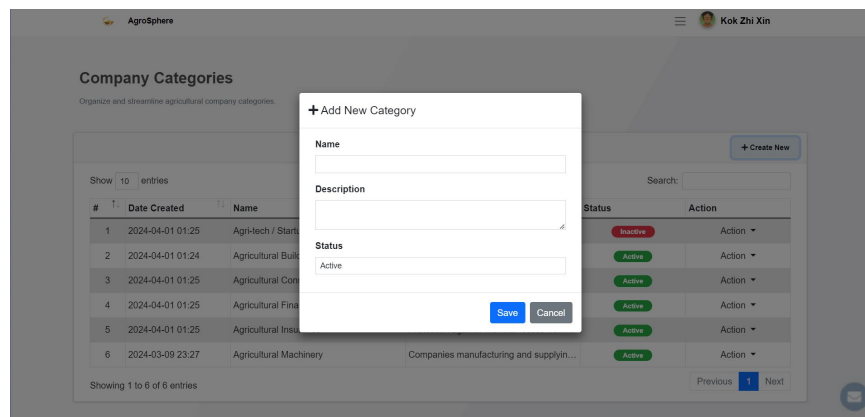


Figure 4.215 [Admin Site]: Add Company Categories

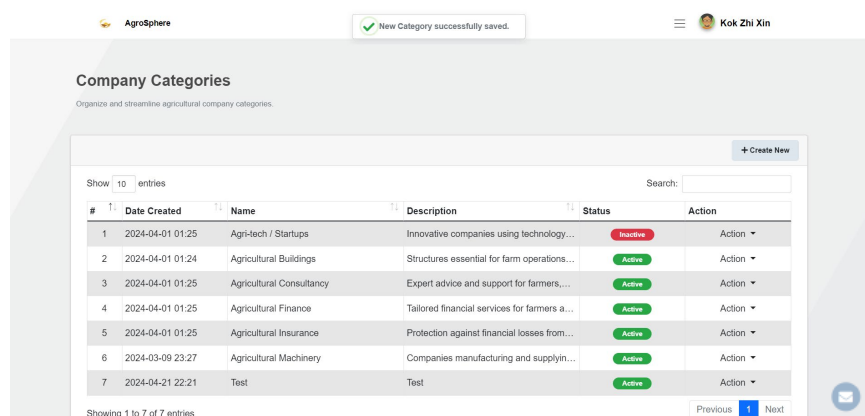


Figure 4.216 [Admin Site]: Company Categories Added Successfully Message

As depicted in Figure 4.215, admins may add a category by clicking the "Create New" button. Admins must then input the necessary information onto the card that is shown by the system. They may choose between the following two status choices. Admins may select the "Inactive" option in the status box if they want to add category that is only accessible to them and indicate that it is draft. In the absence of this, both admins and users will be able to see the category with the "Active" option. Then, admins may just click "Save" after that. The system will then confirm and save the information. After that, a successful message is shown, along with the specifics of the additional category (as shown in Figure 4.216).

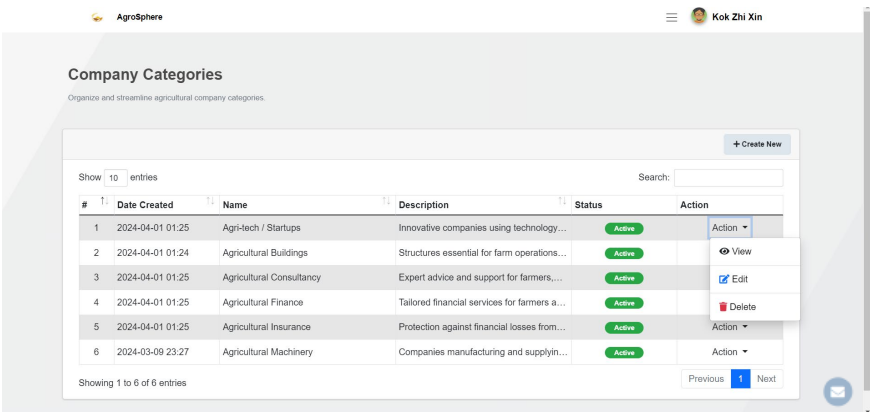


Figure 4.217 [Admin Site]: Actions Available in Company Categories Page

Admins will see that each category has an "Action" column next to it. It includes the tasks that they are able to do. In this instance, admins have the ability to “View”, “Edit”, and “Delete” for each category.

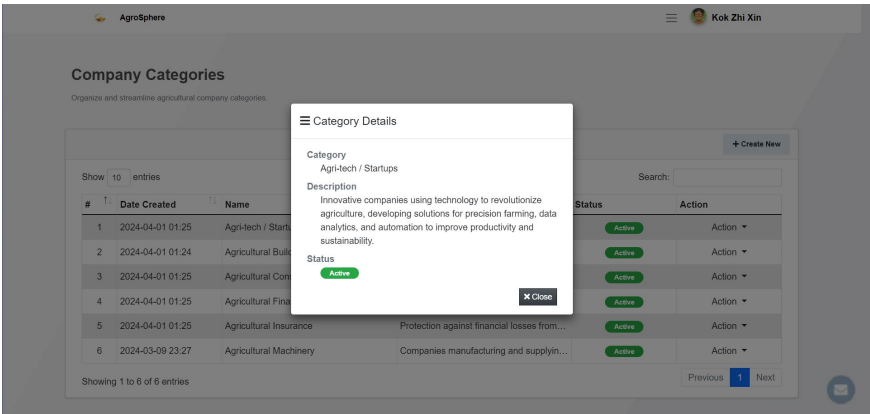


Figure 4.218 [Admin Site]: View Company Categories Details

By choosing the “View” option from the dropdown menu next to each category, admins may examine the category’s information.

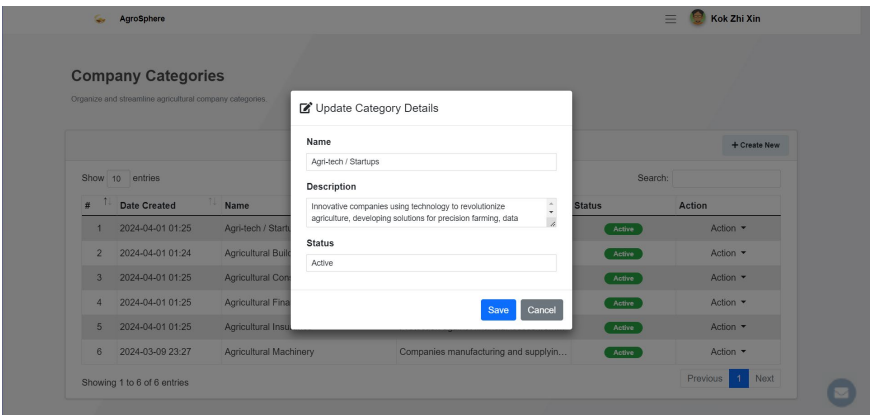


Figure 4.219 [Admin Site]: Edit Company Categories Details

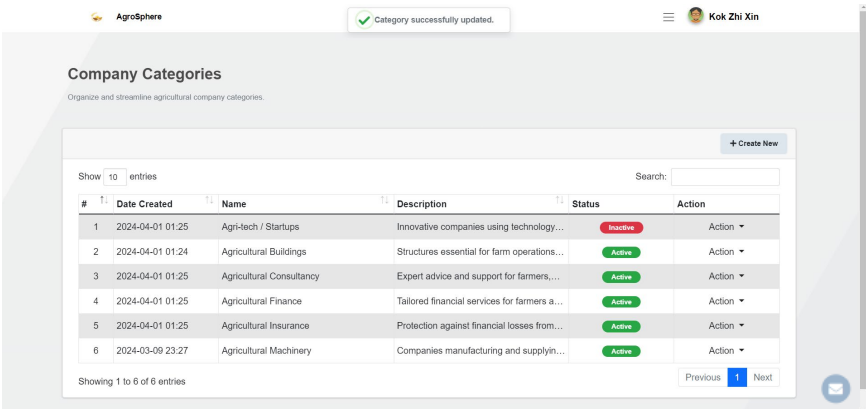


Figure 4.220 [Admin Site]: Company Categories Details Edited Successfully Message

By using the "Edit" option from the dropdown menu next to each category, admins may also change the specifics of a category (as shown in Figure 4.219). Admins may then easily change the information and "Save" button. The system will then check and update the information. After that, it presents the revised category data along with a successful message (as shown in Figure 4.220).

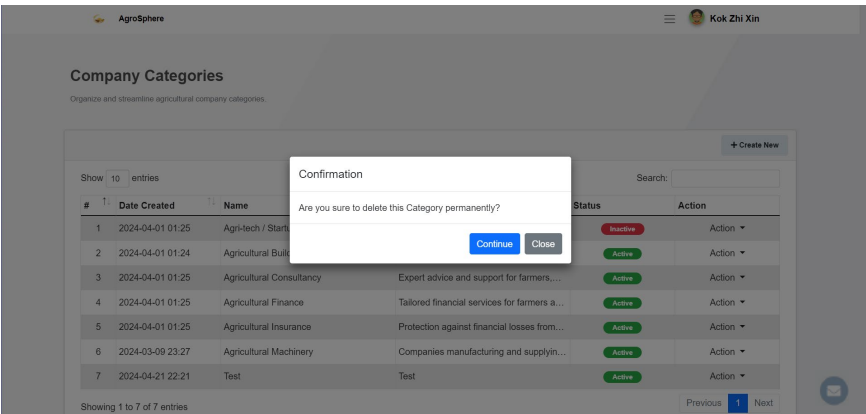


Figure 4.221 [Admin Site]: Delete Company Category

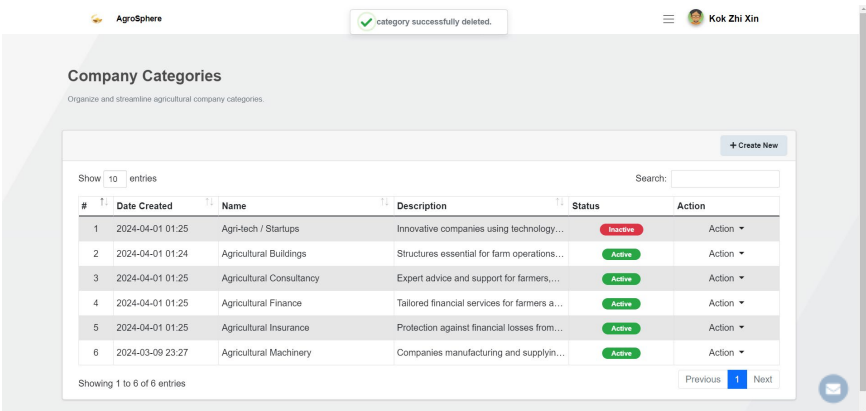
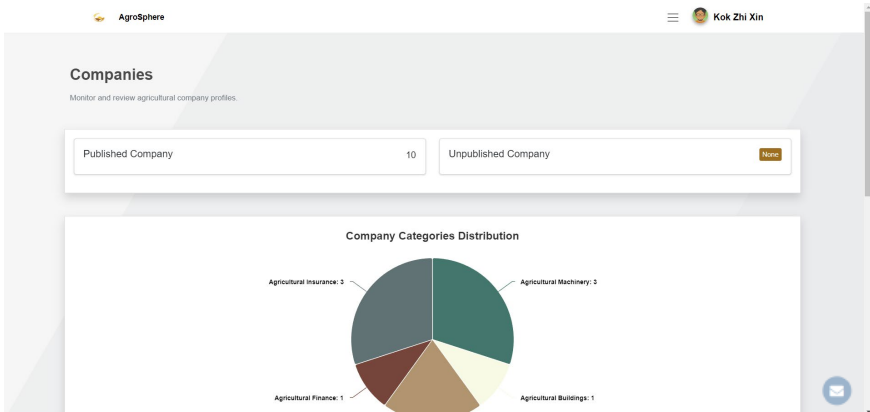


Figure 4.222 [Admin Site]: Company Categories Deleted Successfully Message

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If not, admins may confirm the deletion by selecting "Delete" from the dropdown menu next to each category. After that, the system will confirm, delete the category, and provide a success message.



#	Date Created	User	Company Name	Status	Action
1	2024-04-22 12:52	sspannn	Hap Seng Consolidated Berhad	Published	Action
2	2024-04-22 12:42	sspannn	Agrobank	Published	Action
3	2024-04-22 12:35	sspannn	IOI Corporation Berhad	Published	Action
4	2024-04-22 12:24	sspannn	Sime Darby Berhad	Published	Action
5	2024-04-22 12:19	sspannn	Lonpac Insurance Berhad	Published	Action
6	2024-04-22 12:12	sspannn	Zurich Malaysia	Published	Action
7	2024-04-22 12:00	sspannn	MAA Group Berhad	Published	Action
8	2024-04-01 02:02	sspannn	Agrow Corporation Malaysia Sdn. Bhd.	Published	Action
9	2024-03-30 02:35	sspannn	Yanmar Agricultural Machinery...	Published	Action
10	2024-03-09 23:53	sspannn	Tan Chong Industrial Machinery (TCIM)...	Published	Action

Figure 4.224 [Admin Site]: Companies Page (cont.)

To examine and control the list of companies in the system, admins may choose the "Companies" option from the dropdown menu under the "Community" section in the sidebar. Admins will then be sent to a page that displays posts list and posts visualization data.

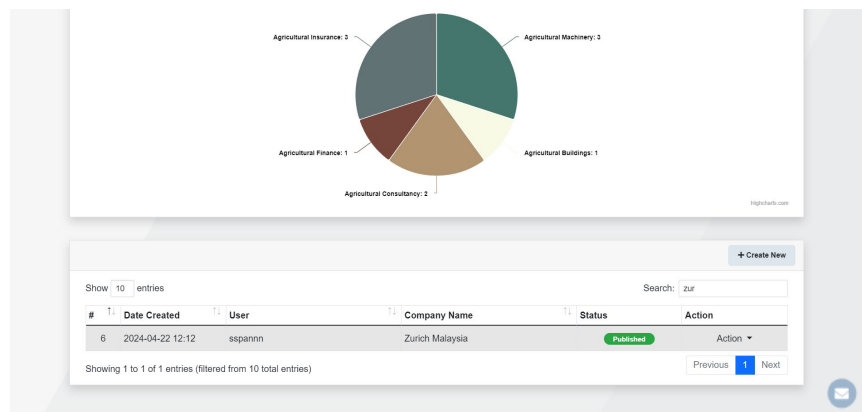


Figure 4.225 [Admin Site]: Search Companies

To search posts inside the system, admins may type a term into the search field. The users that correspond to the keyword input in the search bar are displayed to the admin.

Add New Company
Create new company for publication or draft.

Company Name
[Text Input Field]

Company Category
Please Select Category Here

Content
[Rich Text Editor with toolbar and text area]

Figure 4.226 [Admin Site]: Add Company

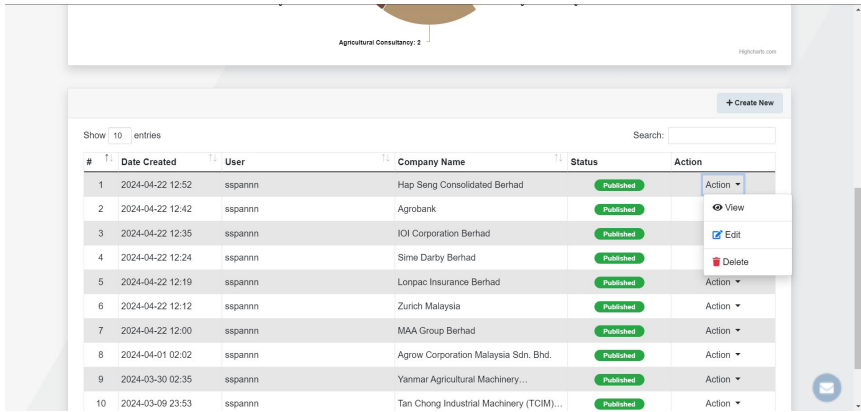
In order to publish a company, they can access the “Add New Company” page by clicking the “Create New” button on top of the companies list.

☒ Published

[Save] [Cancel]

Figure 4.227 [Admin Site]: Add Company (cont.)

Admins may then contribute the company's information. They should choose the "Publish" option if they want to the added company being visible by the users. Otherwise, admins should uncheck the "Published" option if they want to save the company as a draft first. Next, choose the "Save" option from the form's button that the system has provided.



#	Date Created	User	Company Name	Status	Action
1	2024-04-22 12:52	sppanmn	Hap Seng Consolidated Berhad	Published	Action
2	2024-04-22 12:42	sppanmn	Agrobank	Published	View
3	2024-04-22 12:35	sppanmn	IOI Corporation Berhad	Published	Edit
4	2024-04-22 12:24	sppanmn	Sime Darby Berhad	Published	Delete
5	2024-04-22 12:19	sppanmn	Lorpac Insurance Berhad	Published	Action
6	2024-04-22 12:12	sppanmn	Zurich Malaysia	Published	Action
7	2024-04-22 12:00	sppanmn	MAA Group Berhad	Published	Action
8	2024-04-01 02:02	sppanmn	Agrow Corporation Malaysia Sdn. Bhd.	Published	Action
9	2024-03-30 02:35	sppanmn	Yanmar Agricultural Machinery...	Published	Action
10	2024-03-09 23:53	sppanmn	Tan Chong Industrial Machinery (TCIM)...	Published	Action

Figure 4.228 [Admin Site]: Actions Available in Companies Page

Admins will see that each company has an "Action" column next to it. It includes the tasks that they are able to do. In this instance, admins have the ability to “View”, “Edit”, and “Delete” for each company.

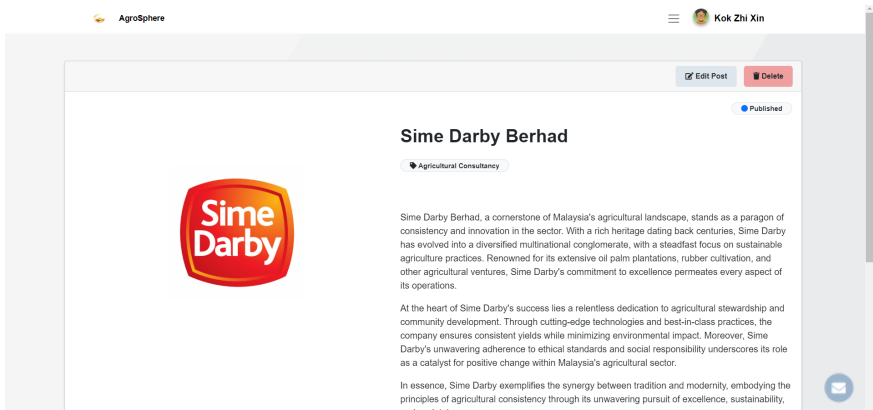


Figure 4.229 [Admin Site]: View Company Details

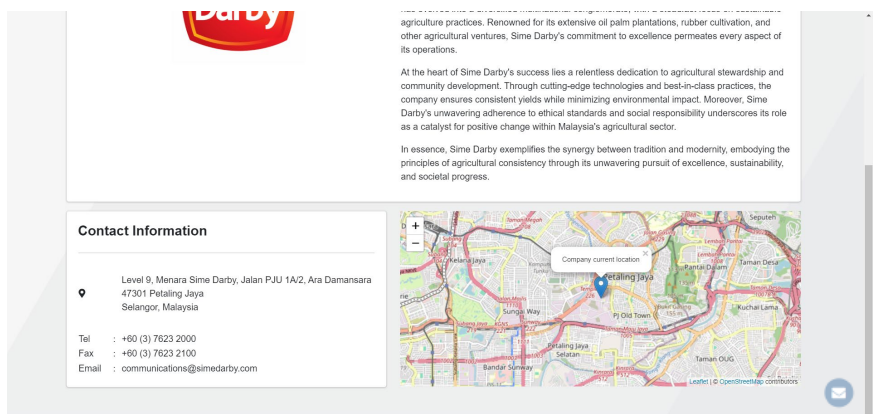


Figure 4.230 [Admin Site]: View Company Details (cont.)

Following selection, the specific company's information will be shown to them. To see additional information, they just need to scroll down.

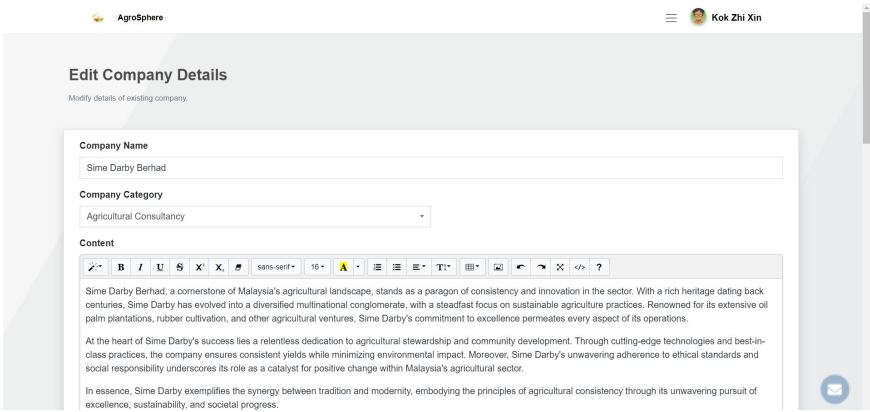


Figure 4.231 [Admin Site]: Edit Company Details

By using the “Edit” option from the dropdown menu adjacent to each company, admins may modify the information as needed. They may then choose the "Save" option to proceed.

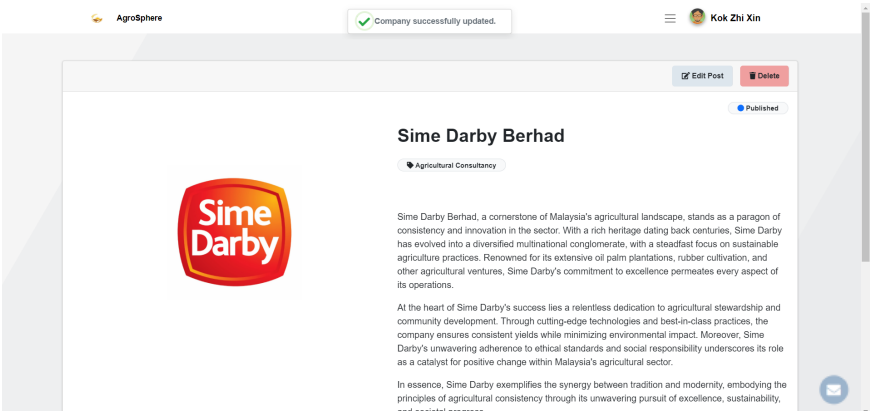


Figure 4.232 [Admin Site]: Company Edited Successfully Message

After clicking the "Save" button, the system will validate and edit the information as shown in the above picture, presenting a successful message and the modified company data.

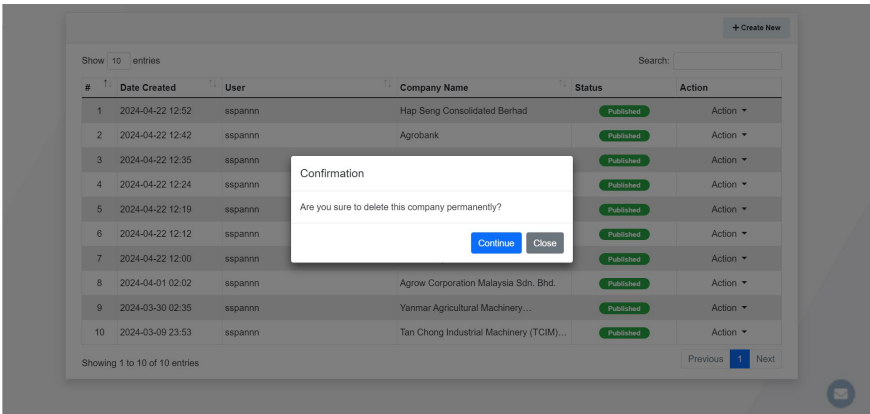


Figure 4.233 [Admin Site]: Delete Company

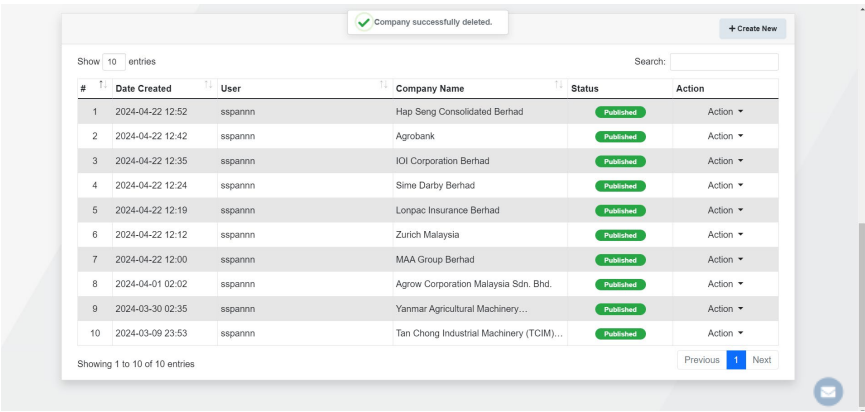


Figure 4.234 [Admin Site]: Company Deleted Successfully Message

By using the “Delete” option from the dropdown menu adjacent to each company, admins may delete the particular company. The system will then remove the admin-confirmed company and display a successful message (as depicted in *Figure 4.234*).

- **My Account Module**

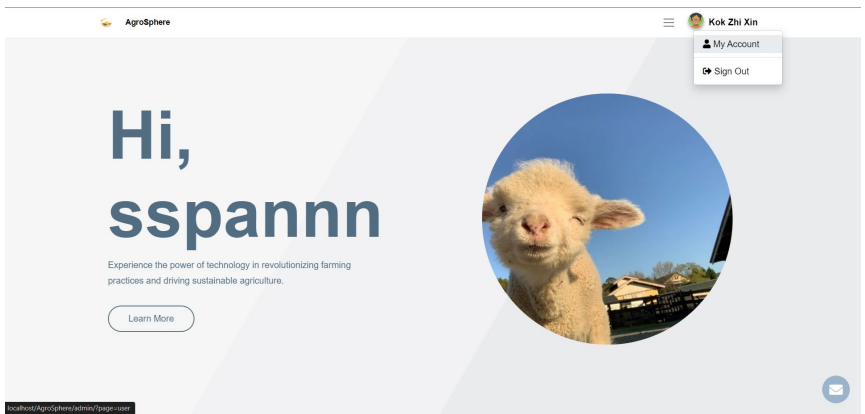


Figure 4.235 [Admin Site]: Access My Account Module

Admins can simply access “My Account” page by simply click the avatar and choose “My Account” option from the dropdown-menu at the top of the navigation bar.

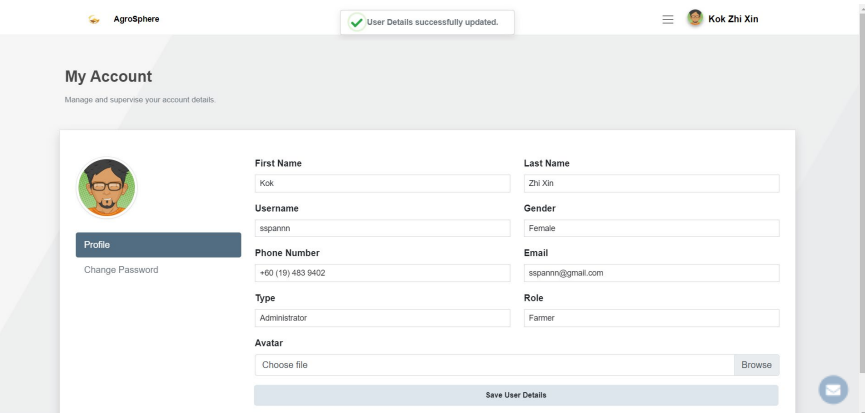


Figure 4.236 [Admin Site]: My Account Page – Profile Tab

Then, they will then be sent to a page where their information is divided into two tabs: “Profile”, and “Change Password”. They may easily change a single user's personal information by entering the revised data in the relevant areas and clicking the "Update" button on the "Profile" tab. Subsequently, the system will validate and adjust the information, presenting a successful message and the revised profile data (as shown in *Figure 4.236*).

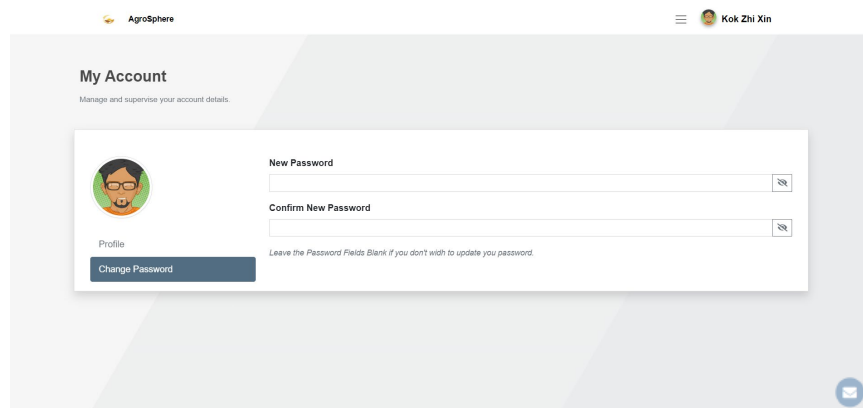


Figure 4.237 [Admin Site]: My Account Page – Change Password Tab

Admins just need to go to the “Change Password” tab, input a new password, confirm it, and click "Update" if they want to change their password.

- **Admin Sign Out**

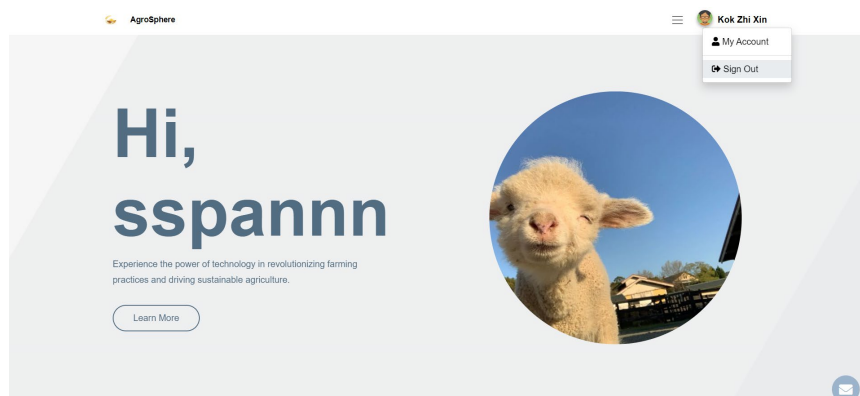


Figure 4.238 Admin Sign Out

Admins can simply click the avatar and choose “Sign Out” option from the dropdown-menu at the top of the navigation bar in order to sign them out the system.

4.5 Implementation Issues and Challenges

Debugging and testing constituted substantial obstacles that were confronted during the course of this multipurpose system's development. Due to the extensive scope and wide variety of features, scrupulous attention to detail was imperative. Significant effort was required to ensure the functionality and dependability of the system due to its magnitude and intricacy. Every component was required to pass rigorous testing in order to identify and rectify any oversights or errors that may have resulted in substantial problems in the future. The extensive functionality of the system augmented the difficulty of testing and debugging, necessitating meticulous scrutiny of all facets, ranging from backend operations to user interfaces, in order to guarantee smooth integration and peak performance. In conclusion, these endeavors were pivotal in reducing the likelihood of mistakes and ensuring the deployment of a resilient and consistent product.

In order to attract and retain a wide range of users, a successful web service must place emphasis on the creation of a user-friendly web interface, in addition to robust functionality. Developing an interface that is both intuitive and user-friendly is a significant undertaking, as it necessitates finding an intricate equilibrium between adaptability and simplicity. For example, the task of designing an interface that effectively incorporates multiple functionalities while maintaining a streamlined and navigable design can inherently involve considerable difficulty. The process of developing such an interface entails comprehending user inclinations, forecasting their requirements, and iteratively improving the interface in light of user input. Furthermore, factors such as information architecture, interactive components, and visual design are significant in augmenting usability and the overall user experience. Hence, it is critical to strike an ideal equilibrium between functionality and usability in order to develop an engaging web service that satisfies and captivates its users.

CHAPTER 5

System Evaluation and Discussion

This chapter provides system testing and performance metrics, testing setup and result, as well as objectives evaluation. It offers a comprehensive grasp of the testing procedure, system resilience, testing transparency, conquering obstacles, goal alignment, and concluding thoughts.

5.1 System Testing and Performance Metrics

A systematic application of black box testing is implemented throughout all features of this web service within the testing framework. For instance, the functionalities of the aforementioned modules which are Farm Management, Community, E-Commerce, Agriculture Company, Sales, FAQs, About Us, My Account, Private Messaging, and System. A series of test cases is developed for each module in order to encompass a broad spectrum of user input. The principal objective is to validate that the project provides accurate responses to valid inputs and handles invalid or unexpected inputs in a graceful manner, thus improving the overall user experience and system resilience.

A critical element of the black box testing methodology is performance. This entails evaluating the website's capacity to manage substantial volumes of traffic and its load times. By emulating the concurrent access of multiple users, I assess the scalability and responsiveness of the website, thereby verifying its optimal performance across diverse conditions.

In short, black box testing is a critical component of the development and maintenance of this web service. It contributes to the website's dependability, user-friendliness, and performance across a variety of user scenarios. By employing this testing methodology, possible complications are promptly detected and resolved, thereby augmenting the overall contentment and experience of the users.

5.2 Testing Setup and Result

5.2.1 Farm Management Module

Test Case	Action/Input	Expected Output	Actual Output	Status
Users in the role of farmer				
Access “Farm Management” page.	Users select the "Farm Management" option in the sidebar.	System redirects users to the farm management page where enables users to oversee and administer their farm location and fields.	Users are redirected to the page where they can oversee and administer their farm location and fields.	Pass
Add farm	Users click on the “Add Farm” button and input the farm details into the system-displayed form and click “Save” button.	System shows the farm details and location on a map.	Users are able to see their farm location and details on the map interface.	Pass
Edit farm	Users click on the “Edit Farm” button and make the necessary changes to the details, and then click the “Save” button.	System displays the farm’s updated location and information on the map.	Once the “Save” button is clicked, the details are validated and modified by the system. Then, it presents the updated farm location and information	Pass
Delete farm	Users click on the “Delete Farm” button and confirm deletion.	System removes the farm.	After confirming deletion, users are able to delete their farm along with the details.	Pass
Add field	Users click the “Add Field” button and draw the field on the map by using the tools that provided by the system and click “Save Field” button. After that, input the required details in the system-displayed form	System shows the added field on the map interface.	System validates and save the fields, displaying a successful message to the user and shows the added field on the map interface.	Pass

	and click “Save” button.			
Edit field	Users select a particular field on the map, then click the edit icon within the pop-up card. Following that, modify the field’s location and details as required. Then, click the “Save” button.	System shows the updated fields location and details.	System validates and save the updated fields information, displaying a successful message to the user and shows the updated field on the map interface.	Pass
Delete field	Users select a particular field on the map, then click the delete icon within the pop-up card and affirm deletion.	System removes the selected field.	Once deletion has been confirmed, users have the ability to remove both the specified field and its associated details.	Pass

Table 5.1 Farm Management Module Testing

5.2.2 Community Module

Test Case	Action/Input	Expected Output	Actual Output	Status
Users				
[Irrespective of users’ system login status]: Access “Forum” page	Users select the "Forum" option from the dropdown menu located under the "Community" section in the sidebar.	System redirects users to the forum page where they can view the list of post categories.	Users are redirected to the forum page and are granted access to the list of post categories, along with analytics for each category.	Pass
[Irrespective of users’ system login status]: View the description of each category of posts	Users expand a category by clicking “+” sign to view the description.	System shows each category’s description in conjunction with the “View More” button.	Each category’s description and a “View More” button is accessible to users.	Pass
[Irrespective of users’ system login status]:	Users click the search icon that located in the top navigation bar and	System displays the post categories that correspond to the keyword.	The post categories that correspond to the keyword input in the search bar are	Pass

Test Case	Action/Input	Expected Output	Actual Output	Status
Search/filter the post categories	enter a keyword in the search bar.		displayed to the user.	
[Irrespective of users' system login status]: View post contained in the chosen category	Users click "View More" button once a category has been expanded.	System exhibits every single post that falls within the designated category.	By being redirected to the "Post Hub" page, users are granted access to all posts that fall under the specified category.	Pass
[Irrespective of users' system login status]: Search/filter the posts	Users click the search icon that located in the top navigation bar and enter a keyword in the search bar.	System displays the posts that correspond to the keyword.	The posts that correspond to the keyword input in the search bar are displayed to the user.	Pass
[Irrespective of users' system login status]: Access the specifics of the chosen post	Choose an individual post that is displayed on the "Post Hub" page.	System exhibits the specific information pertaining to the chosen post.	Users are granted access to the view the selected post's details.	Pass
[Irrespective of users' system login status]: View Post Participants' Profile	Click on the avatar or username of the post participants.	System presents the profile of the chosen participant in the post.	Users are able to view the profile of the selected post participant.	Pass
[Consider registered users]: Publish comments	Users enter text in the input box and click "Save" button.	System publishes the comment under the post.	Users are permitted to respond to a post by publishing a comment beneath it.	Pass
[Consider registered users]: Access "My Posts" page	Users select "My Posts" option from the dropdown menu located under the "Community" in the sidebar.	System redirects users to the page where they can access their authored posts.	Users are redirected to the page where they can access their own posts.	Pass

Test Case	Action/Input	Expected Output	Actual Output	Status
[Consider registered users]: Edit Post Details	Users click the edit icon located at the top of the post, make the necessary changes to the details, and then click the “Update” button.	System displays the post’s updated information.	System verifies and modifies the details after the “Update” button is clicked. Then, it displays a successful message and shows the updated post details.	Pass
[Consider registered users]: Delete Post	Users click the delete icon located at the top of the post and confirm deletion.	System deletes the selected post.	System deletes the user-confirmed post and presents a successful message.	Pass
[Consider registered users]: Access “Publish Post” page	Users select the “Publish Post” option from the dropdown menu located under the “Community” section in the sidebar.	System redirects users to the page where they can publish the post.	Users are redirected to the page where they can publish the post.	Pass
[Consider registered users]: Publish post	Users provide the post details, check the “Publish” checkbox, and then click the “Save” button on the system-displayed form.	System saves the post details and publish the post to the forum.	System verifies and saves the information, then displays a successful message. Then, it displays the published post in the “Forum” page.	Pass
[Consider registered users]: Unpublish post	Users provide the post details, uncheck the “Publish” checkbox, and then click the “Save” button on the system-displayed form.	System saves the post details and only display the post in the “My Posts” page.	The information is validated and saved by the system, which then outputs a successful message. However, the post will only be visible on the “My Posts” page, signifying that it is a draft and accessible only to the publisher.	Pass
Admins				
Access “Post Categories” page	Admins select the “Post Categories” option from the dropdown menu	System redirects admins to the “Post Categories” page where they can	Admins are redirected to the page containing visualization data	Pass

Test Case	Action/Input	Expected Output	Actual Output	Status
	located under the “Community” section in the sidebar	view and manage the list of post categories.	and a list of post categories	
Search/filter the post categories	Admins enter a keyword in the search bar.	System displays the post categories that correspond to the keyword.	The post categories that correspond to the keyword input in the search bar are displayed to the admins.	Pass
View post category details	The “View” option is selected by admins from the dropdown menu adjacent to each category.	System presents the details of the category in card view.	Admins have the ability to view the specifics of selected category.	Pass
Add Active Post Category	The “Create New” button is selected by admins. Then, admins proceed to provide details, select the active option, and press the “Save” button.	System saves the category details.	System verifies and saves the information and displays a successful message. Then, it displays the category in the “Forum” page.	Pass
Add Inactive Post Category	The “Create New” button is selected by admins. Then, admins proceed to provide details, select the inactive option, and press the “Save” button.	System saves the category details and only display the category to the admins.	The information is validated and saved by the system, which then outputs a successful message. However, the category will only be visible on by admins, signifying that it is a draft.	Pass
Edit Post Category	The “Edit” option is selected by admins from the dropdown menu adjacent to each category. Then, admins proceed to modify the details and press the “Save” button.	System displays the category’s updated information.	System verifies and modifies the details after the “Update” button is clicked. Then, it displays a successful message and shows the updated post details.	Pass
Delete Post Category	The “Delete” option is selected by admins from	System deletes the selected category.	System deletes the user-confirmed category and	Pass

Test Case	Action/Input	Expected Output	Actual Output	Status
	the dropdown menu adjacent to each category.		presents a successful message.	
Access “Posts” page.	Admins select the “Posts” option from the dropdown menu located under the “Community” section in the sidebar.	System redirects admins to the “Posts” page where they can view and manage the list of posts.	Admins are redirected to the page containing visualization data and a list of posts.	Pass
Search/filter the post.	Admins enter a keyword in the search bar.	System displays the posts that correspond to the keyword.	The posts that correspond to the keyword input in the search bar are displayed to the admins.	Pass
Publish post	Admins provide the post details, check the “Published” checkbox, and then click the “Save” button on the system-displayed form.	System saves the post details and publish the post to the forum.	System verifies and saves the information, then displays a successful message. Then, it displays the published post in the “Forum” page.	Pass
Unpublish post	Admins provide the post details, uncheck the “Published” checkbox, and then click the “Save” button on the system-displayed form.	System saves the post details and only display the post to admins.	The information is validated and saved by the system, which then outputs a successful message. However, the post will only be visible by the admins, signifying that it is a draft.	Pass
View Post Participants’ Profile	Admins click on the avatar or username of the post participants.	System presents the profile of the chosen participant.	Admins are able to view the profile of the selected post participant.	Pass
Publish comments	Admins enter text in the input box and click “Save” button.	System publishes the comment under the post.	Admins are permitted to respond to a post by publishing a comment beneath it.	Pass
Edit Post Details	Admins select the “Edit” option from the dropdown	System displays the post’s updated information.	System verifies and modifies the details after the “Update”	Pass

Test Case	Action/Input	Expected Output	Actual Output	Status
	menu adjacent to each post, make the necessary changes to the details, and then click the “Update” button.		button is clicked. Then, it displays a successful message and shows the updated post details.	
Delete Post	Admins select the “Delete” option from the dropdown menu adjacent to each post and confirm deletion.	System deletes the selected post.	System deletes the user-confirmed post and presents a successful message.	Pass

Table 5.2 Community Module Testing

5.2.3 E-Commerce Module

Test Case	Action/Input	Expected Output	Actual Output	Status
Users				
[Irrespective of users' system login status]: Access “Marketplace” page	Users select the "Marketplace" option from the dropdown menu located under the "E-Commerce" section in the sidebar.	System redirects users to the page where they can view the list of product categories.	Users are redirected to the page and are granted access to the list of product categories, along with analytics for each category.	Pass
[Irrespective of users' system login status]: View the description of each category of products	Users expand a category by clicking “+” sign to view the description.	System shows each category's description in conjunction with the “View More” button.	Each category's description and a “View More” button is accessible to users.	Pass
[Irrespective of users' system login status]: Search/filter the product categories	Users click the search icon that located in the top navigation bar and enter a keyword in the search bar.	System displays the product categories that correspond to the keyword.	The product categories that correspond to the keyword input in the search bar are displayed to the user.	Pass
[Irrespective of users' system login status]:	Users click “View More” button once a category has been expanded.	System exhibits every single product that falls within the	By being redirected to the “Product Hub” page, users are granted access to all posts that fall	Pass

Test Case	Action/Input	Expected Output	Actual Output	Status
Access every product contained in the chosen category		designated category.	under the specified category.	
[Irrespective of users' system login status]: Search/filter the products	Users click the search icon that located in the top navigation bar and enter a keyword in the search bar.	System displays the products that correspond to the keyword.	The products that correspond to the keyword input in the search bar are displayed to the user.	Pass
[Irrespective of users' system login status]: Access the specifics of the chosen product	Choose an individual product that is displayed on the "Product Hub" page.	System exhibits the specific information pertaining to the chosen product.	Users are granted access to the view the selected product's details.	Pass
[Irrespective of users' system login status]: View product publisher's profile	Click on the avatar or username of the product's publisher.	System presents the profile of the chosen product's publisher.	Users are able to view the profile of the selected product publisher.	Pass
[Consider user in the roles of farmer or agricultural equipment vendor]: Access "My Products" page	Users select the "My Products" option from the dropdown menu located under the "E-Commerce" section in the sidebar.	System redirects users to the page where they can access their authored products.	Users are redirected to the page where they can access their own products.	Pass
[Consider user in the roles of farmer or agricultural equipment vendor]: Edit Product Details	Users click the edit icon located at the top of the product, make the necessary changes to the details, and then click the "Update" button.	System displays the product's updated information.	System verifies and modifies the details after the "Update" button is clicked. Then, it displays a successful message and shows the updated product details.	Pass

Test Case	Action/Input	Expected Output	Actual Output	Status
[Consider user in the roles of farmer or agricultural equipment vendor]: Delete Post	Users click the delete button located at the top of the product and confirm deletion.	System deletes the selected product.	System deletes the user-confirmed product and presents a successful message.	Pass
[Consider user in the roles of farmer or agricultural equipment vendor]: Access “Publish Product” page	Users select the “Publish Product” option from the dropdown menu located under the “E-Commerce” section in the sidebar.	System redirects users to the page where they can publish the product.	Users are redirected to the page where they can publish the product.	Pass
[Consider user in the roles of farmer and or agricultural equipment vendor]: Publish product	Users provide the product details, check the “Publish” checkbox, and then click the “Save” button on the system-displayed form.	System saves the product details and publish the product to the marketplace.	System verifies and saves the information, then displays a successful message. Then, it displays the published product in the marketplace.	Pass
[Consider user in the roles of farmer or agricultural equipment vendor]: Unpublish post	Users provide the product details, uncheck the “Publish” checkbox, and then click the “Save” button on the system-displayed form.	System saves the product details and only display the product in the “My Products” page.	The information is validated and saved by the system, which then outputs a successful message. However, the product will only be visible on the “My Products” page, signifying that it is a draft and accessible only to the publisher.	Pass
[Consider user in the roles of farmer or customer]: Access “Shopping Cart” page	Users select the “Shopping Cart” option from the dropdown menu located under the “E-Commerce” section in the sidebar.	System redirects users to the page where they can observe and manipulate the items currently in the shopping cart.	Users are redirected to a page where they are able to view and modify the products that are presently present in the shopping cart.	Pass

Test Case	Action/Input	Expected Output	Actual Output	Status
[Consider user in the roles of farmer or customer]: Add products in shopping cart.	Users click the “Add to Cart” button after viewing the details of a particular product.	System saves the selected product to the users’ shopping cart.	Users have the capability to add the intended products and the quantity they desire into their shopping cart.	Pass
[Consider user in the roles of farmer or customer]: Update product’s quantity in shopping cart	Users adjust the quantity by clicking the “+” or “-” sign in the quantity selector.	System enables users to modify the quantity of items contained within the shopping cart.	Users are able to update the quantity of a specific product contained within the shopping cart.	Pass
[Consider user in the roles of farmer or customer]: Remove products in shopping cart.	Users click the delete icon beside the selected product to remove it.	System deletes the selected product contained within the shopping cart.	System deletes the user-confirmed product and presents a successful message.	Pass
[Consider user in the roles of farmer or customer]: Checkout and place order	Users click “Checkout” button after selecting the desired products and select a payment method/	System provides users with an order summary and enables them to place orders for the desired products.	After selecting a payment method, users are able to finalize the transaction and checkout with the desired products.	Pass
[Consider user in the roles of farmer or customer]: Access “Purchase History” page	Users select the “My Products” option from the dropdown menu located under the “E-Commerce” section in the sidebar	System redirects users to the page where they can observe their purchase histories within the system.	The system displays a page containing a particular user’s purchase history details.	Pass
Admins				
Access “Product Categories” page	Admins select the “Product Categories” option from the dropdown menu located under the “E-Commerce”	System redirects admins to the “Product Categories” page where they can view and manage	Admins are redirected to the page containing visualization data and a list of product categories.	Pass

Test Case	Action/Input	Expected Output	Actual Output	Status
	section in the sidebar	the list of product categories.		
Search/filter the product categories	Admins enter a keyword in the search bar.	System displays the product categories that correspond to the keyword.	The product categories that correspond to the keyword input in the search bar are displayed to the admins.	Pass
View product category details	The “View” option is selected by admins from the dropdown menu adjacent to each category.	System presents the details of the category in card view.	Admins have the ability to view the specifics of selected category.	Pass
Add active product category	The “Create New” button is selected by admins. Then, admins proceed to provide details, select the active option, and press the “Save” button.	System saves the category details.	System verifies and saves the information and displays a successful message. Then, it displays the category in the marketplace.	Pass
Add inactive product category	The “Create New” button is selected by admins. Then, admins proceed to provide details, select the inactive option, and press the “Save” button.	System saves the category details and only display the category to the admins.	The information is validated and saved by the system, which then outputs a successful message. However, the category will only be visible on by admins, signifying that it is a draft.	Pass
Edit product category	The “Edit” option is selected by admins from the dropdown menu adjacent to each category. Then, admins proceed to modify the details and press the “Save” button.	System displays the category’s updated information.	System verifies and modifies the details after the “Update” button is clicked. Then, it displays a successful message and shows the updated category details.	Pass
Delete product category	The “Delete” option is selected by admins from	System deletes the selected category.	System deletes the user-confirmed category and	Pass

Test Case	Action/Input	Expected Output	Actual Output	Status
	the dropdown menu adjacent to each category.		presents a successful message.	
Access “Products” page	Admins select the “Products” option from the dropdown menu located under the “E-Commerce” section in the sidebar.	System redirects admins to the “Products” page where they can view and manage the list of products.	Admins are redirected to the page containing visualization data and a list of products.	Pass
Search/filter the products.	Admins enter a keyword in the search bar.	System displays the products that correspond to the keyword.	The products that correspond to the keyword input in the search bar are displayed to the admins.	Pass
Edit Product Details	Admins select the “Edit” option from the dropdown menu adjacent to each product, make the necessary changes to the details, and then click the “Update” button.	System displays the product’s updated information.	System verifies and modifies the details after the “Update” button is clicked. Then, it displays a successful message and shows the updated product details.	Pass
Delete Product	Admins select the “Delete” option from the dropdown menu adjacent to each product and confirm deletion.	System deletes the selected product.	System deletes the user-confirmed product and presents a successful message.	Pass

Table 5.3 E-Commerce Module Testing

5.2.4 Agriculture Company Module

Test Case	Action/Input	Expected Output	Actual Output	Status
Users				
[Irrespective of users’ system login status]: Access “Agriculture Company” page	Users select the "Agriculture Company" option in the sidebar.	System redirects users to the page where they can view the list of company categories.	Users are redirected to the page and are granted access to the list of company categories, along with analytics for each category.	Pass

Test Case	Action/Input	Expected Output	Actual Output	Status
[Irrespective of users' system login status]: View the description of each category.	Users expand a category by clicking “+” sign to view the description.	System shows each category's description in conjunction with the “View More” button.	Each category's description and a “View More” button is accessible to users.	Pass
[Irrespective of users' system login status]: Search/filter the company categories	Users click the search icon that located in the top navigation bar and enter a keyword in the search bar.	System displays the company categories that correspond to the keyword.	The company categories that correspond to the keyword input in the search bar are displayed to the user.	Pass
[Irrespective of users' system login status]: View companies contained in the chosen category	Users click “View More” button once a category has been expanded.	System exhibits every single company that falls within the designated category.	By being redirected to the “Company Hub” page, users are granted access to all companies that fall under the specified category.	Pass
[Irrespective of users' system login status]: Search/filter the companies.	Users click the search icon that located in the top navigation bar and enter a keyword in the search bar.	System displays the companies that correspond to the keyword.	The companies that correspond to the keyword input in the search bar are displayed to the user.	Pass
[Irrespective of users' system login status]: Access the specifics of the chosen company	Choose an individual company that is displayed on the “Company Hub” page.	System exhibits the specific information pertaining to the chosen company.	Users are granted access to the view the selected company's details.	Pass
Admins				
Access “Company Categories” page	Admins select the “Company Categories” option from the dropdown menu located under the “Agriculture	System redirects admins to the “Company Categories” page where they can view and manage the list of company categories.	Admins are redirected to the page containing visualization data and a list of company categories.	Pass

Test Case	Action/Input	Expected Output	Actual Output	Status
	Company” section in the sidebar.			
Search/filter the company categories	Admins enter a keyword in the search bar.	System displays the company categories that correspond to the keyword.	The categories that correspond to the keyword input in the search bar are displayed to the admins.	Pass
View company category details	The “View” option is selected by admins from the dropdown menu adjacent to each category.	System presents the details of the category in card view.	Admins have the ability to view the specifics of selected category.	Pass
Add active company category	The “Create New” button is selected by admins. Then, admins proceed to provide details, select the active option, and press the “Save” button.	System saves the category details.	System verifies and saves the information and displays a successful message. Then, it displays the category in the “Agriculture Company” page for users.	Pass
Add inactive company category	The “Create New” button is selected by admins. Then, admins proceed to provide details, select the inactive option, and press the “Save” button.	System saves the category details and only display the category to the admins.	The information is validated and saved by the system, which then outputs a successful message. However, the category will only be visible by admins, signifying that it is a draft.	Pass
Edit company category	The “Edit” option is selected by admins from the dropdown menu adjacent to each category. Then, admins proceed to modify the details and press the “Save” button.	System displays the category’s updated information.	System verifies and modifies the details after the “Update” button is clicked. Then, it displays a successful message and shows the updated category details.	Pass
Delete company category	The “Delete” option is selected by admins from the dropdown	System deletes the selected category.	System deletes the user-confirmed category and	Pass

Test Case	Action/Input	Expected Output	Actual Output	Status
	menu adjacent to each category.		presents a successful message.	
Access “Companies” page	Admins select the “Companies” option from the dropdown menu located under the “Agriculture Company” section in the sidebar.	System redirects admins to the “Companies” page where they can view and manage the list of companies.	Admins are redirected to the page containing visualization data and a list of companies.	Pass
Search/filter the companies	Admins enter a keyword in the search bar.	System displays the companies that correspond to the keyword.	The companies that correspond to the keyword input in the search bar are displayed to the admins.	Pass
Publish company	Admins provide the company details, check the “Published” checkbox, and then click the “Save” button on the system-displayed form.	System saves the company details and publish the company to let the users access.	System verifies and saves the information, then displays a successful message. Then, the published company is displayed for user.	Pass
Unpublish company	Admins provide the company details, uncheck the “Published” checkbox, and then click the “Save” button on the system-displayed form.	System saves the post details and only display the company to admins.	The information is validated and saved by the system, which then outputs a successful message. However, the post will only be visible by the admins, signifying that it is a draft.	Pass
Edit Company Details	Admins select the “Edit” option from the dropdown menu adjacent to each company, make the necessary changes to the details, and then click the “Update” button.	System displays the company’s updated information.	System verifies and modifies the details after the “Update” button is clicked. Then, it displays a successful message and shows the updated company details.	Pass
Delete Company	Admins select the “Delete” option from the	System deletes the selected company.	System deletes the user-confirmed company and	Pass

Test Case	Action/Input	Expected Output	Actual Output	Status
	dropdown menu adjacent to each company and confirm deletion.		presents a successful message.	

Table 5.4 Agriculture Company Module Testing

5.2.5 Sales Module

Test Case	Action/Input	Expected Output	Actual Output	Status
Users in the roles of farmer or agricultural equipment vendor				
Access "Sales" page	Users select the "Sales" option in the sidebar.	System redirects users to the page where they can supervise sales activities and manage the status of received order.	Users are redirected to the page containing sales visualization data and the received order list.	Pass
Search/filter the received orders.	Users enter a keyword in the search bar.	System displays the received orders that correspond to the keyword.	The received orders that correspond to the keyword input in the search bar are displayed to the users.	Pass
View received order details	The "View" option is selected by users from the dropdown menu adjacent to each order.	System presents the details of the selected order in card view.	Users have the ability to view the specifics of selected order.	Pass
Edit received order status	The "Edit" option is selected by users from the dropdown menu adjacent to each order, update the status and click the "Save Changes" button.	System presents the updated status of the received order.	System verifies and modifies the status after the "Save Changes" button is clicked. Then, it displays a successful message and shows the updated order details.	Pass
Admins				
Access "Sales" page	Admins select the "Sales" option in the sidebar.	System redirects admins to the "Sales" page where they can monitor and modify every order in the system.	Admins are redirected to the page containing visualization data and a list of orders list.	Pass

Test Case	Action/Input	Expected Output	Actual Output	Status
Search/filter all orders within the system	Admins enter a keyword in the search bar.	System displays the orders that correspond to the keyword.	The orders that correspond to the keyword input in the search bar are displayed to the admins.	Pass
View order details	The “View” option is selected by admins from the dropdown menu adjacent to each order.	System presents the details of the order in card view.	Admins have the ability to view the specifics of selected order.	Pass
Edit order status	The “Edit” option is selected by admins from the dropdown menu adjacent to each order, update the status and click the “Save Changes” button.	System presents the updated status of the order.	System verifies and modifies the status after the “Save Changes” button is clicked. Then, it displays a successful message and shows the updated order details.	Pass

Table 5.5 Sales Module Testing

5.2.6 FAQs Module

Test Case	Action/Input	Expected Output	Actual Output	Status
Users				
[Irrespective of users' system login status]: Access “FAQs” page	Users select the "FAQs" option in the sidebar.	System redirects users to the page where they can view the list of frequently asked questions.	Users are redirected to the page and are granted access to the list of frequently asked questions.	Pass
[Irrespective of users' system login status]: View the answer of each answer	Users expand a question by clicking “+” sign to view the description.	System shows each question's answer.	Each question's answer is accessible to users.	Pass
[Irrespective of users' system login status]: Search/filter the questions	Users click the search icon that located in the top navigation bar and enter a keyword in the search bar.	System displays the questions and repetitive answers that correspond to the keyword.	The questions and repetitive answers that correspond to the keyword input in the search bar are	Pass

and repetitive answers			displayed to the user.	
------------------------	--	--	------------------------	--

Table 5.6 FAQs Module Testing

5.2.7 About Us Module

Test Case	Action/Input	Expected Output	Actual Output	Status
Users				
[Irrespective of users' system login status]: Access "About Us" page	Users select the "About Us" option in the sidebar.	System redirects users to the page where they can view the additional information regarding this web service.	Users are redirected to the page and are granted access to view the additional information regarding this web service.	Pass

Table 5.7 About Us Module Testing

5.2.8 My Account Module

Test Case	Action/Input	Expected Output	Actual Output	Status
Users				
[Considered registered users]: Access "My Account" page	At the top of the navigation bar, users click the avatar and choose "My Account" from the dropdown-menu.	System redirects users to the page where they can supervise their personal information.	Users are redirected to the page that comprises information into the following tabs: "Profile", "Addresses", and "Change Password".	Pass
[Considered registered users]: Update profile	In "Profile" tab, users enter the updated data into specific fields and click the "Update" icon.	System presents the updated profile information.	System verifies and modifies the details after the "Update" button is clicked. Then, it displays a successful message and shows the updated profile details.	Pass
[Considered registered users]: Add address	Users click "Save" button after entering address information and selecting the "Address" tab and "Add Address" button.	System displays the added address in the "Address" tab.	System verifies and saves the address. Then, it displays a successful message.	Pass

Test Case	Action/Input	Expected Output	Actual Output	Status
[Considered registered users]: Edit address details	Users click the edit icon next to an address and input the updated details. Then, click on the “Update” button.	System displays the updated address details in “Address” tab.	System validates updates the details. Then, it displays a message of successful.	Pass
[Considered registered users]: Delete address	Users click on the delete icon next to an address and confirm deletion.	System removes the selected address from the “Address” tab.	System deletes the user-confirmed address and presents a successful message.	Pass
Change password	Users click the “Update” button after entering a new password and confirming it on the “Change Password” tab.	System saves the updated password.	System verifies and updates the password. Then, it displays a successful message.	Pass
Admins				
Access “My Account” page	At the top of the navigation bar, admins click the avatar and choose “My Account” from the dropdown-menu.	System redirects admins to the page where they can supervise their personal information.	Admins are redirected to the page that comprises information into the following tabs: “Profile”, and “Change Password”.	Pass
Update profile	In “Profile” tab, admins enter the updated data into specific fields and click the “Update” icon.	System saves and presents the updated profile information.	System verifies and modifies the details after the “Update” button is clicked. Then, it displays a successful message and shows the updated profile details.	Pass
Change password	Admins click the “Update” button after entering a new password and confirming it on the “Change Password” tab.	System saves the updated password.	System verifies and updates the password. Then, it displays a successful message.	Pass

Table 5.8 My Account Module Testing

5.2.9 Private Messaging Module

Test Case	Action/Input	Expected Output	Actual Output	Status
Admins & Registered Users				
Access the private messaging feature	Admins and users click the envelope icon at the right bottom corner of the system.	Admins and users able to view the chat box.	System displays the chat box and show a list of previous chat to the admins and users.	Pass
Search user	Admins and users enter a keyword in search bar to search for a particular user.	System displays the admins or users that correspond to the keyword.	The admins or users that correspond to the keyword input in the search bar are displayed to the person who use the search feature.	Pass
View chat details	Admins and users select a chat with a particular user from the previous chat list or through searching.	System displays the chat details that is with a particular admin or user.	System opens up a chat room that is with the selected user or admin and displays the chat details	Pass
Send messages	Admins and users typing into the message input box and either clicking the send button or pressing the “Enter” button on the keyboard.	Receiver successfully receive the message that is sent.	System sends the message out to the receiver and display it in the chat room along with the date and time.	Pass
Receive messages	–	Admins and users receive messages in real-time.	Admins and users receive messages in real-time.	Pass
View chat participants’ profile	Admins and users click on the avatar or username of the chat participants on top of the chat room.	System presents the profile of the chosen participant.	Admins and users are able to view the profile of the selected chat participant.	Pass

Table 5.9 Private Messaging Module Testing

5.2.10 System Module

Test Case	Action/Input	Expected Output	Actual Output	Status
Admins				
Access “System Settings” page	Admins select the “System Settings” option from the dropdown menu	System redirects admins to the “System Settings” page where they	Admins are redirected to the page that provides the detailed	Pass

Test Case	Action/Input	Expected Output	Actual Output	Status
	located under the “System” section in the sidebar.	can view and manage the system settings.	information regarding the system settings.	
Edit settings	Admins enter the amended data into specific fields and select the “Update” button.	System presents the updated details.	System verifies and modifies the details after the “Update” button is clicked. Then, it displays a successful message and shows the updated settings.	Pass
Access “Users” page	Admins select the “Users” option from the dropdown menu located under the “System” section in the sidebar.	System redirects admins to the “Users” page where they can view and manage the list of registered users.	Admins are redirected to the page containing visualization data and a list of registered users.	Pass
Search/filter the users	Admins enter a keyword in the search bar.	System displays the users that correspond to the keyword.	The users that correspond to the keyword input in the search bar are displayed to the admins.	Pass
View users details	The “View” option is selected by admins from the dropdown menu adjacent to each users.	Admins have the ability to view the specifics of selected users.	System presents the details of the users in card view.	Pass
Add user	The “Create New” button is selected by admins. Then, admins proceed to provide details and press the “Create Account” button.	System saves the users details.	System verifies and saves the information and displays a successful message.	Pass
Edit user	The “Edit” option is selected by admins from the dropdown menu adjacent to each users. Then, admins proceed to modify the details and press the “Save” button.	System displays the users’ updated information.	System verifies and modifies the details after the “Update” button is clicked. Then, it displays a successful message and shows the updated users details.	Pass

Test Case	Action/Input	Expected Output	Actual Output	Status
Delete user	The “Delete” option is selected by admins from the dropdown menu adjacent to each user.	System deletes the selected user.	System deletes the admin-confirmed user and presents a successful message.	Pass
Access “FAQs” page	Admins select the “FAQs” option from the dropdown menu located under the “System” section in the sidebar.	System redirects admins to the “FAQS” page where they can view and manage the list of frequently asked questions.	Admins are redirected to the page containing a list of frequently asked questions.	Pass
Search/filter the questions	Admins enter a keyword in the search bar.	System displays the questions that correspond to the keyword.	The questions that correspond to the keyword input in the search bar are displayed to the admins.	Pass
View questions details	The “View” option is selected by admins from the dropdown menu adjacent to each question.	Admins have the ability to view the specifics of selected question.	System presents the details of the question in card view.	Pass
Edit question	The “Edit” option is selected by admins from the dropdown menu adjacent to each question. Then, admins proceed to modify the details and press the “Save” button.	System displays the question’s updated information.	System verifies and modifies the details after the “Update” button is clicked. Then, it displays a successful message and shows the updated question details.	Pass
Delete question	The “Delete” option is selected by admins from the dropdown menu adjacent to each question.	System deletes the selected question.	System deletes the user-confirmed question and presents a successful message.	Pass

Table 5.10 System Module Testing

5.2.11 Other functionalities

Test Case	Action/Input	Expected Output	Actual Output	Status
Users				
Users sign in	Users enter their credentials (username and password).	Users can gain access to the system.	Users successfully gained access to the system and are being redirected to the home page.	Pass
Forgot password	Users click on the “Forgot Password” text and enter a new password as well as confirming it. Then, click on the “Reset” button.	System saves the updated password.	System verifies and updates the password. Then, it displays a successful message.	Pass
Users sign up	Users click on the “New Here? Sign Up” text and enter their registration details on a system-displayed form. Then, click on the “Create Account” button.	Users can create an account.	Users successfully create an account and gain access to the system.	Pass
Users sign out	At the top of the navigation bar, users click the avatar and choose “Sign Out” from the dropdown-menu.	System logs the users out.	Users successfully signed out the system.	Pass
Admins				
Admins sign in	Admins enter their credentials (username and password).	Admins can gain access to the system.	Admins successfully gained access to the system and are being redirected to the home page.	Pass
Admins sign out	At the top of the navigation bar, admins click the avatar and choose “My Account” from the dropdown-menu.	System signs the admins out.	Admins successfully signed out the system.	Pass

Table 5.11 Other Functionalities Testing

5.3 Objectives Evaluation

This project's primary objective is to assess the merits and demerits of current agricultural management services in order to develop a more effective application that leverages web service functionalities to assist farmers in acquiring knowledge and increasing their profits. In order to accomplish this goal, an evaluation is conducted on a number of web services designed for farming management, as mentioned in Chapter 2, with the purpose of identifying their merits and demerits so that their merits may subsequently be incorporated into the web service while its flaws may be circumvented. To provide an example, while the majority of these projects lack the capability for direct dealing and provide agriculture company information, this particular one incorporates these functionalities. Additionally, none of them offer features such as private messaging. However, this initiative enables admins and users to engage in private conversations, thereby fostering more substantive information exchange.

Furthermore, the secondary objective is to develop a web project that enables farmers to communicate with one another and act as a conduit for dealing between them and other farmers, agricultural equipment vendors, as well as customers. In order to accomplish this objective, four modules are created which are the Community module, the Private Messaging module, the E-Commerce module, and the Sales module. Simply put, the purpose of both the Community module and the Private Messaging module is to facilitate public or private communication capabilities. By having these modules, users, particularly those in the farmer role, able to remain informed and eliminates the reliance on obsolete data. The E-Commerce and Sales modules, conversely, are designed to facilitate direct transactions. The E-Commerce module facilitates a direct commerce channel without the need for intermediary authorities or individuals. This, in turn, optimizes farmers financial gains.

The third objective is to evaluate the functionality of web project developed by using black box technique. To attain this objective, a sequence of assessments is being conducted. As described in *5.2 Testing Setup and Result*, a series of test cases are created for each of the aforementioned modules to ensure that they cover a wide range of user input, thereby improving the overall user experience during the use of this project.

CHAPTER 5

In summary, the objectives of this web project were effectively accomplished, notwithstanding the interruptions and difficulties that were encountered throughout the process. The final products were successful in delivering the farm management-related web service, circumventing issues that are prevalent in current web services for farming management, such as the absence of a communication function, a channel for conducting direct transactions, and a feature to display agriculture company information.

CHAPTER 6

Conclusion and Recommendation

This chapter will discuss the overall contributions made for this web project as well as additional recommendations for future enhancement.

6.1 Conclusion

To put it simply, AgroSphere is a Web Service for Farming Management that combines a number of features into a one platform, saving users from having to switch between them. Users like farmers, agricultural equipment vendors, and customers (farmers in particular) will surely gain immensely from it. Following an evaluation of the benefits and drawbacks of the farm management services that available over the Internet, the project's goals have been meticulously crafted. In addition to providing a complete solution to successfully solve the obstacles and constraints people face, it also provides extra capabilities to maintain its competitive advantage over other online services for agricultural management.

By equipping users with a range of communication functionalities, including the ability to utilize private messaging and partake in forums. They can undeniably gain a substantial advantage in terms of engaging in substantive discussions and exchanging information with fellow users. In the interim, the project also facilitates direct user-to-user trade, thereby addressing the demand for channels that enable direct business transactions. The farmer's profitability will undoubtedly increase as a result of this method, as they will be able to transact directly with others without the need for an intermediary. While allowing users to access comprehensive information pertaining to agricultural companies in Malaysia, it also incorporates supplementary functionalities that empowers users such as farmers to effectively oversee their farms entirely within the system.

Essentially, the project endeavors to promote a proactive approach to agricultural management through the resolution of identified limitations and the incorporation of novel features. It is anticipated that users of this website, particularly farmers, will be able to manage their farms in a more efficient, exhaustive, and effortless manner.

6.2 Recommendation

In order to augment the overall user experience and promote increased community participation on the forum page, a number of significant improvements may be applied. To begin with, the incorporation of social engagement functionalities would greatly augment user interaction and content exploration. These functionalities would include a "like" button for expressing gratitude towards posts, a "share" option for distributing valuable content across social networks, and a "collect or save" feature for allowing users to bookmark or archive posts of interest. To ensure accessibility and usability, these features ought to be seamlessly incorporated into the user interface through the use of intuitive design elements.

Analogous to the forum page, it is imperative that these functionalities be seamlessly incorporated into the user interface of the marketplace to guarantee intuitive navigation and accessibility. To enhance user recognition and facilitate navigation, the bookmarking functionality can be represented by visually enticing buttons or icons. Additionally, in order to permit users to arrange their bookmarked products in accordance with their personal preferences, customization options should be made available in order to further enhancing the user experience

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APPENDIX

FINAL YEAR PROJECT WEEKLY REPORT

(Project II)

Trimester, Year: Trimester 3, Year 3	Study week no.: 2
Student Name & ID: Kok Zhi Xin 21ACB01802	
Supervisor: Miss Norazira Binti A Jalil	
Project Title: A Web Service for Farming Management	

1. WORK DONE

- Setting up the report format.
- Refine Chapter 1, Chapter 2, and Chapter 3 of the report.
- Adjust and refine the overall website design.
- Refine the Community module for both users and admin site.
- Refine the My Account module for both users and admins site.

2. WORK TO BE DONE

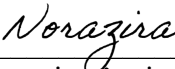
- E-Commerce module for both users and admins site.
- Sales module for both users and admins site.
- System module for admins site.
- Agriculture Company module for both users and admins site.
- About Us module for users site.

3. PROBLEMS ENCOUNTERED

- Brainstorming what innovative features can be added to the project.

4. SELF EVALUATION OF THE PROGRESS

- Satisfied with the progress I have made so far and have successfully managed to fulfil all of my time arrangements as planned.


 Supervisor's signature


 Student's signature

FINAL YEAR PROJECT WEEKLY REPORT

(Project II)

Trimester, Year: Trimester 3, Year 3	Study week no.: 7
Student Name & ID: Kok Zhi Xin 21ACB01802	
Supervisor: Miss Norazira Binti A Jalil	
Project Title: A Web Service for Farming Management	

1. WORK DONE

- E-Commerce module for both users and admins site.
- Sales module for both users and admins site.
- System module for admins site.
- About Us module for admins site.

2. WORK TO BE DONE

- Agriculture Company module for both users and admin site.
- [Innovative Feature]: Farm Management module for users site.
- [Innovative Feature]: Private Messaging module for both users and admin site.

3. PROBLEMS ENCOUNTERED

- None

4. SELF EVALUATION OF THE PROGRESS

- Satisfied with the progress I have made so far and have successfully managed to fulfil all of my time arrangements as planned.

Norazira

Supervisor's signature

KZX

Student's signature

FINAL YEAR PROJECT WEEKLY REPORT

(Project II)

Trimester, Year: Trimester 3, Year 3	Study week no.: 11
Student Name & ID: Kok Zhi Xin 21ACB01802	
Supervisor: Miss Norazira Binti A Jalil	
Project Title: A Web Service for Farming Management	

1. WORK DONE

- Complete Agriculture Company module for both users and admins site.
- Complete Farm Management module for users site.
- Complete Privately Messaging module for both users and admins site.

2. WORK TO BE DONE

- Refine the Chapter 3 of the report.
- Chapter 4, 5, 6 of the report.

3. PROBLEMS ENCOUNTERED

- None

4. SELF EVALUATION OF THE PROGRESS

- Satisfied with the progress I have made so far and have successfully managed to fulfil all of my time arrangements as planned.

Norazira

Supervisor's signature

Kok Zhi Xin

Student's signature

POSTER



FACULTY OF INFORMATION
COMMUNICATION AND TECHNOLOGY



AgroSphere

A Web Service for Farming Management



/INTRODUCTION/

A web service for farmers to exchange information and trade directly with others, boosting farm management and profitability.



/OBJECTIVES/

To develop a web project that enables farmers to communicate with one another and act as a conduit for dealing between them and other farmers, vendors, and customer.



/PROPOSED METHOD/

Agile Methodology



/WHY USED THE SYSTEM?/

-
-
-
-
-
-
-

*Engage in a vibrant forum community
Access a convenient marketplace
Track sales
Streamline farm management
Utilize private messaging
Gain insights into agriculture companies
Enhanced security*

PROJECT DEVELOPER: Kok Zhi Xin

PROJECT SUPERVISOR: Miss Norazira Binti A Jalil

PLAGIARISM CHECK RESULT

A Web Service for Farming Management

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Norazira

Signature of Supervisor

Name: Norazira Binti A Jalil

Date: 25/4/2024

Signature of Co-Supervisor

Name: _____

Date: _____



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Kok Zhi Xin

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