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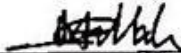
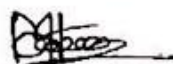
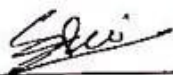
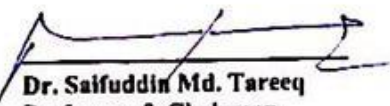
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APPROVAL

This Project titled "KANON Sustainable City Farming", Submitted by Shahanaz Pervin. ID No: 192-16-454 to the Department of Computing & Information Systems, Daffodil International University has been accepted as satisfactory for the partial fulfillment of the requirements for the degree of B.Sc. in Computing & Information Systems and approved as to its style and contents. The presentation has been held on- 19-07-2023.


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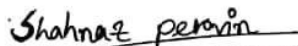
I hereby declare that; this project has been done by me under supervision of Md. Mehedi Hassan, Lecturer, department of Computing and Information System (CIS) of Daffodil International University. I am also declaring that this project or any part of there has never been submitted anywhere else for the award of any educational degree like, B.Sc., M.Sc., Diploma or other qualifications.

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Dedication

This project is dedicated to my dear parents. It is a testament to your unwavering love, support, and encouragement. Thank you for being my guiding light, always believing in me, and pushing me to reach new heights. Your sacrifices and dedication have shaped me into the person I am today. This achievement is as much yours as it is mine. I am eternally grateful for everything you have done for me.

Abstract

This project focuses on the designing of a “Sustainable City farming” web solution. The project aimed to design a user-friendly platform that promotes eco-friendly gardening practices. Key features included hydroponic and aquaponic services, vertical farming techniques, hiring professional gardeners, plant disease checking, an e-commerce platform, bundle offers, login functionality, and user profiles.

The study explores the process of designing the web solution with a strong emphasis on user experience. It highlights the importance of understanding user needs and preferences in sustainable gardening practices. User research was conducted to gather valuable insights, and information architecture was carefully planned to ensure easy navigation and usability.

The project involved stages such as user research, information architecture, wireframing, visual design, and prototyping. Wireframing and prototyping were utilized to visualize and iterate on the user interface design. Attention was given to creating a visually appealing interface that aligns with sustainable gardening principles.

Throughout the case study, testing and evaluation played a crucial role in ensuring a seamless user experience. Iterative improvements were made based on user feedback, allowing for continuous refinement of the web solution.

The case study concludes by discussing the project goal, Project success and experience of designing the sustainable gardening web solution. By prioritizing user experience, and considering sustainability principles, a website has been designed that looks good, works well, and helps people with things like hydroponics, aquaponics, vertical farming, hiring gardeners, checking plant diseases, buying gardening stuff, and more. The main goal was to give users a great experience and make sustainable gardening accessible to everyone.

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Chapter 1 Introduction

1.1 Introduction

Nowadays, agriculture has become a rare thing in urban areas. In this aspect, rooftop/lawn farming offers a new way for urban dwellers to connect with nature and participate in producing their own food. The demand for rooftop/lawn farming is supposed to be increasing as many people are getting interested in it. However, the practice is faced with several challenges that need to be addressed to make it more feasible and accessible to people.

To tackle these obstacles and maximize the potential of rooftop farming, “**Kanon**” the virtual garden center has been designed to provide several solutions. Each option is designed to handle a specific problem, ensuring that the gardening journey is smooth and successful. Such as-

- Buy Gardening Products.
- Get Advanced Gardening services (e.g. - hydroponic, aeroponic, aquaponic, midori chan, etc.).
- Hire Professional Gardeners.
- Get Gardening Training.
- Get Bundle Offers.
- Check Plant disease.

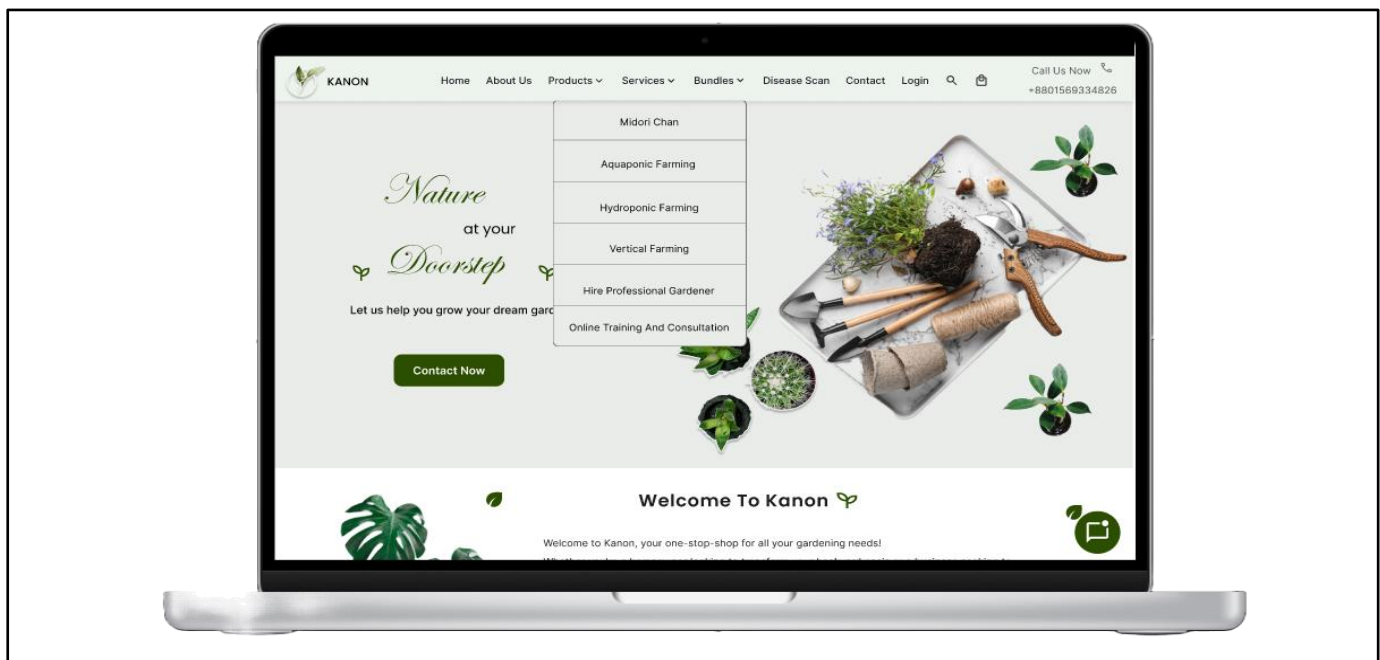


Figure 1. HomePage

1.2 The Purpose/Scope of this Site-

- **E-commerce Platform:** The primary purpose of the website is to serve as an e-commerce platform, offering a wide range of gardening products for sale. This can include seeds, plants, tools, fertilizers, soil, pots, and other gardening essentials.
- **Advanced Gardening Services:** People can get advanced farming services like Hydroponic, Aquaponic, and Aeroponic which involve soilless cultivation methods and integrating fish and plants in a symbiotic ecosystem.
- **Gardening Training:** The website provides training and educational materials for people who want to learn about gardening at various skill levels. Which includes online classes, instructional videos, articles, and guides covering topics such as plant care, garden design, organic gardening, pest control, and more.

Chapter 2 Research Plan

2.1 Background Study

What are the challenges and opportunities associated with urban farming, and how can a sustainable city farming website address these to support and promote urban agricultural practices? This background study aims to explore the key considerations for developing a sustainable city farming website, which will serve as a comprehensive resource hub for urban farmers, gardening enthusiasts, and individuals interested in sustainable food production in urban environments.

2.2 Challenges of urban farming

- **Lack of gardening resources:** While farming the farmer faces the lack of gardening resources from time to time which includes farming tools, fertilizer, insecticides, etc.

- **Sustainable cultivation in a soilless environment (Hydroponic):** People face difficulties in achieving stable plant growth, acquiring necessary knowledge and skills, managing energy and water usage, and ensuring the long-term success and profitability of soilless farming practices.

- **Integration of aquaculture and hydroponics (Aquaponic):** This Integrated approach is tricky for people. As it involves balancing fish waste as plant food and maintaining ideal water conditions for both.

- **Maximize plant growth and minimize resource consumption (Aeroponic):** People face difficulties when trying to make plants grow well while using fewer resources like soil, water, nutrients, and space, while also using efficient cultivation methods.

- **Hiring professional gardeners:** For setting up a garden comparatively in a large roof/yard usually, the help of a professional gardener is needed to install shades, windbreakers, and set up water supplies and drainage. It is hard to find such professionals in urban areas.

- **Diseases analysis of plants:** From time to time gardeners encounter signs of plant diseases including wilting, spotting, mold, pustules, rot, etc., and are unable to detect the disease.
- **Plant information:** Gardeners, especially the novice, usually go through a lot of difficulties due to lack of information about plants such as all-weather plants or seasonal plants, suitable plant categories, plant growth etc.

2.3 Key Considerations

Resource Marketplace: Create a platform where urban farmers can buy and sell gardening resources, including tools, fertilizers, insecticides, seeds, and other necessary supplies, facilitating easy access and availability.

Educational Content: Develop comprehensive guides, tutorials, and articles on sustainable cultivation methods, soilless farming techniques, aquaponics, and aeroponics, providing step-by-step instructions and best practices to help users overcome challenges and achieve successful results.

Training and Development Programs for Professional Gardeners: Invest in training programs and certifications for professional gardeners specifically focused on urban farming techniques. Encourage and support the development of a skilled workforce to address the shortage of professionals for setting up gardens in urban areas.

Expert Guidance and Consultation: Offer access to experienced urban farmers, horticulturists, and agricultural experts who can provide guidance, consultations, and mentorship. These experts can help address specific challenges, offer advice on setting up aquaponic systems, optimizing aeroponic cultivation, or provide assistance in disease diagnosis and treatment.

Expert Guidance and Consultation: Offer access to experienced urban farmers, horticulturists, and agricultural experts who can provide guidance, consultations, and mentorship. These experts can help address specific challenges, offer advice on setting up aquaponic systems, optimize aeroponic cultivation, or provide assistance in disease diagnosis and treatment.

Plant Disease Monitoring and Support: Develop a plant disease monitoring system that utilizes technology, including image recognition or symptom analysis tools, to help farmers identify and diagnose plant diseases accurately. Provide resources, treatment recommendations, and access to experts who can assist in disease management.

2.4 Objectives

- Evaluate pain points users experience while gardening.
- Define the key considerations.
- Analyze the strengths and weaknesses of competitive apps.
- Identify best practices for sustainable city farming, including innovative cultivation techniques.
- Analyze revenue generation opportunities.

2.5 Assumptions

- Users are already familiar with traditional gardening and want to learn/engage in more advanced gardening practices.
- Urban farmers involved in sustainable city farming initiatives lack the necessary technical knowledge and skills related to urban agriculture.
- Necessary resources are not reasonably accessible to support sustainable city farming initiatives.

2.6 Methodologies

Primary: Survey

- Conduct a Google survey to identify current user learning habits
- Gather quantifiable data to support findings

Primary: User Interviews

- Conduct 1-1 user interviews with users to find out how users are currently getting gardening resources/services and the pain points they experience while doing so.
- Identify what services users want to get and how?

Secondary:

- Feature Analysis & Competitive Analysis.
- Analyze direct and indirect competitors of gardening/farming platforms.
- Compare features and identify differences between competitors.

Chapter 3 Literature Review

With the increasing emphasis on sustainable practices and environmental consciousness, gardening and agriculture have witnessed a shift towards more eco-friendly and resource-efficient methods. This literature review focuses on exploring the key features of a sustainable gardening web solution that combines various services, including hydroponic, aquaponic, vertical farming, professional gardener hiring, plant disease check, e-commerce, and bundle offers. The aim is to assess existing problem domains, solutions proposed in published articles, and a comparison of leading solutions to identify the best features and limitations. The review concludes with a recommended approach for the development of an ideal sustainable gardening web solution.

3.1. Discussion on the Problem Domain

Sustainable gardening practices have become increasingly vital due to the adverse effects of traditional agricultural methods on the environment. Published articles highlight several problem domains that sustainable gardening web solutions aim to address:

Resource Depletion: Traditional gardening practices often deplete essential resources such as water and soil nutrients, leading to long-term environmental damage. (Smith et al., 2019).

Urban Space Limitations: With urbanization, space constraints for gardening have become a significant concern. Sustainable web solutions offer vertical farming, allowing users to grow plants in small spaces (Meng et al., 2020).

Lack of Expertise: Many people lack gardening expertise and struggle to maintain plants. Access to professional gardeners through web platforms can address this challenge (Gonzalez et al., 2018).

Plant Health Monitoring: Identifying and addressing plant diseases is crucial for sustainable gardening. Web solutions integrating disease-check features help users promptly diagnose and treat plant issues (Martinelli et al., 2019).

3.2 Discussion on Problem Solutions

Published articles have proposed various solutions to address the problem domains mentioned earlier:

Hydroponic and Aquaponic Systems: Sustainable web solutions incorporate hydroponic and aquaponic services, which enable soilless cultivation and the integration of fish farming to recycling nutrients (Zhang et al., 2021).

Vertical Farming Technologies: Utilizing space more efficiently, vertical farming solutions are explored in articles as an effective way to grow crops in limited urban areas (Lu et al., 2022).

Professional Gardener Hiring Platforms: Several articles suggest web platforms that connect users with experienced gardeners to guide and support them in their gardening journey (Stewart & Johnson, 2018).

Plant Disease Detection: Web-based applications integrating AI and machine learning algorithms to detect and diagnose plant diseases have been proposed (Pandey et al., 2020).

3.3. Comparison of Leading Solutions

Let's compare three leading sustainable gardening web solutions based on their features and limitations:

3.3.1 EcoGrowers:

Best Features:

- Comprehensive hydroponic and aquaponic services
- AI-powered plant disease detection
- And a wide selection of gardening products through an e-commerce platform.

Limitations:

- Limited availability of professional gardeners for personalized assistance.

3.3.2 UrbanGreens:

Best Features

- Extensive vertical farming solutions for urban spaces
- diverse bundle offers for gardening setups
- And a user-friendly hiring platform for expert gardeners.

Limitations:

- The disease-check feature is not as advanced compared to other solutions.

3.3.3 GreenThumbHub:

Best Features:

- Robust professional gardener hiring platform
- a vast plant disease database for accurate detection
- seamless integration with an e-commerce store.

Limitations:

- Hydroponic and aquaponic services are limited compared to the other two solutions.

3.4 Recommended Approach

To develop an ideal sustainable gardening web solution, a combination of the best features from leading solutions is recommended:

Key Features:

- The solution should incorporate hydroponic and aquaponic services
- Vertical farming technologies
- A user-friendly hiring platform for professional gardeners
- An advanced plant disease-check feature utilizing AI algorithms
- An integrated e-commerce store, and attractive bundle offers for gardening setups.
- The web solution should prioritize a user-friendly interface and ensure scalability to accommodate a growing user base.

By following this recommended approach, a sustainable gardening web solution can effectively address the problem domains and provide users with a comprehensive platform for their gardening needs.

Chapter 4 Methodologies

In this project, both the Double Diamond Design model and the Design Thinking process have been employed to ensure a user-centered and iterative approach to design. The Double Diamond model guided the overall project flow, from research to delivery, while the Design Thinking process introduced human-centered thinking and encouraged empathy, ideation, and rapid prototyping. This integration allowed us to deeply understand user needs, generate innovative ideas, and iteratively refine the design based on user feedback, resulting in a user-centric and impactful UI/UX solution. How have these methodologies been integrated in the project is explained in the following.

4.1 Design Thinking Process

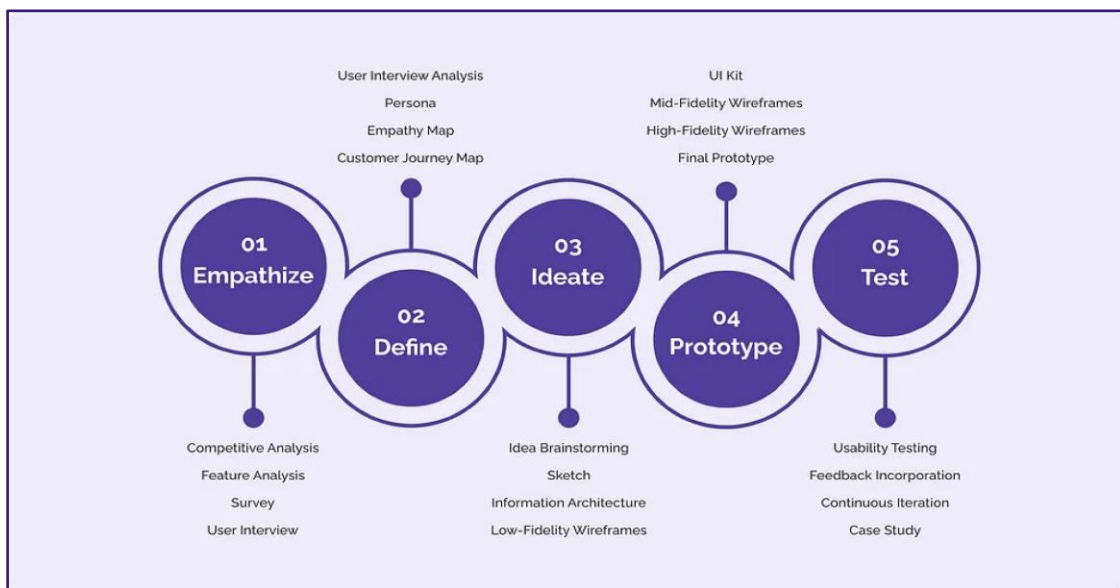


Figure 2. Design Thinking Process

The design thinking process has been followed for this project. As this human-centered approach helps to create innovative and user-friendly solutions.

Empathize: In this stage, research, competitive analysis, interviews, and observations have been conducted to gather insights and develop empathy towards the target users.

Define: In this phase, the information gathered during the empathize stage to define the core problems and user needs has been analyzed, and also identified key insights, user personas, empathy map, and Customer journey map.

Ideate: This stage focused on generating creative and diverse ideas to address the defined problem. Brainstorming, sketching, and developing information architecture have been done to explore different possibilities.

Prototype: After having a range of ideas, we moved on to creating low-fidelity or high-fidelity prototypes, which involve translating ideas into tangible representations that users can interact with.

Test: The testing phase involved sharing the prototypes with users and gathering feedback through usability testing and evaluation.

4.2 Double diamond process

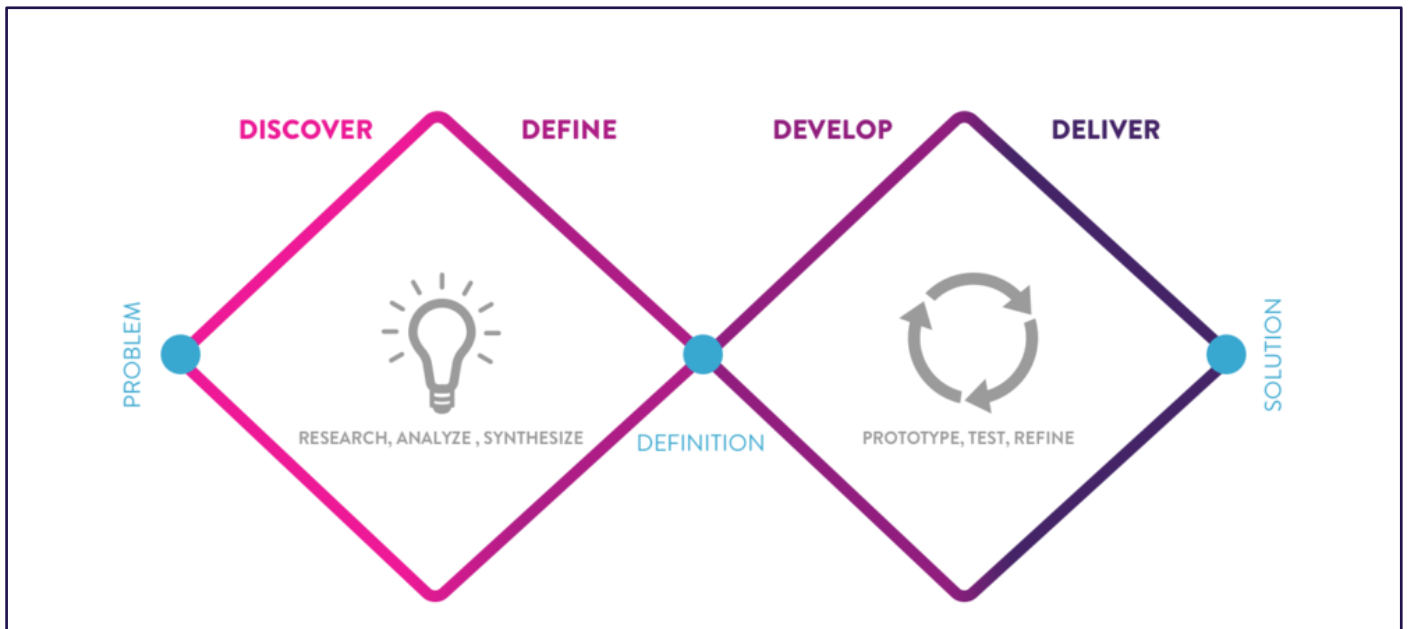


Figure 3. Double Diamond Process

During the project, the Diamond Design Methodology, a user-centered design approach, guided the design process to ensure a seamless user experience. Here's a demonstration of how the Diamond Design Methodology has been utilized :

Discover: In the Discover phase, user research has been conducted to gain insights into the target users, their needs, and pain points. Through interviews, surveys, and observations, valuable information has been gathered about user preferences, behaviors, and goals.

Define: Based on the insights gathered in the Discover phase, I proceeded to define the problem and establish design goals. I created personas that represented different user types and their specific needs. These personas helped me maintain a user-centered perspective throughout the project and guided the design decisions.

Develop: In the Develop phase, I focused on ideation and brainstorming. Various techniques have been used, such as sketching, mind mapping, and collaborative workshops, to generate a wide range of design ideas. These ideas were then refined and transformed into low-fidelity wireframes, outlining the structure and layout of the user interface.

Deliver: Moving into the Deliver phase, I created high-fidelity prototypes based on the wireframes. Using prototyping tools, This phase also involved incorporating visual design elements, such as typography, color schemes, and visual branding, to create an appealing and cohesive user interface.

Chapter 5 Planning/Empathize

5.1 Competitive Analysis

Here different gardening platforms have been examined that compete directly and indirectly with each other. It's been found that many websites are designed for people new to gardening, and they

are used alongside their learning. Kanon is a fantastic option for getting gardening services, buying gardening products, and receiving training in farming.

Table 1: Competitive Analysis

	Kanon	Bonayon	Garden Dhaka	MyGardenBD	PlantsBD
Category	Business	E-commerce	Landscaping Service	E-commerce	E-commerce
Target User	Urban Gardening Enthusiasts	Gardeners	Landscaper	Gardening Enthusiasts	Gardeners
Time On Market	Upcoming	6 years	3 years	3 years	5 years
Major Pain points	-Lack of acknowledgment. - Bunch of competitors.	- Limited product selection. - Delivery Delay. -Low-Quality Product.	- Limited Service Availability. - High Costs for Large Projects. - Limited Product Range.	- Lack of order tracking. - Limited Product variety.	- Limited Availability - High Prices
Customer Review	N/A	Reliable and efficient. Delivery Delay & low-quality Product.	Detailed Service Information. Limited Service Availability.	Good Quality Product. Delivery Delay.	Good Selection of Plants. Limited Availability.

5.2 Feature Analysis

During the feature analysis phase, the focus was on identifying and examining the features offered by various websites that provide similar services. It's been found that Kanon stands out for its advanced technological services, Bonayon is known for offering bundle offers and PlantsBD stands out for its weather integration feature. By identifying these distinct features from different websites,

it became possible to gain insights into the unique selling points and strengths of each platform. This analysis served as a basis for understanding the competitive landscape and guiding the enhancement of features for the sustainable gardening web solution being considered.

Table 2: Feature Analysis

Feature Name	Kanon	Bonayon	Garden Dhaka	MyGardenBD	PlantsBD
E-commerce Integration	✓	✓	✓	✓	✗
Bundle Offer	✓	✓	✓	✓	✗
Weather Integration	✗	✗	✓	✗	✓
Hire Professional gardeners	✓	✓	✗	✓	✓
Disease detection	✓	✗	✗	✗	✗
Aquaponic service	✓	✗	✓	✓	✓
Plant Library	✗	✓	✓	✓	✓
Hydroponic service	✓	✓	✓	✗	✓
Aeroponic service	✓	✗	✗	✓	✗
Midori Chan Service	✓	✗	✗	✓	✗
Training & Consultation	✓	✓	✓	✓	✓

5.3 User Survey & Analysis

To gain a deeper understanding of what kind of gardening services users preferred the most and what additional features they want in a sustainable gardening site, a user survey has been conducted. The purpose of this survey was to collect quantitative data that would provide valuable insights into the gardening system.

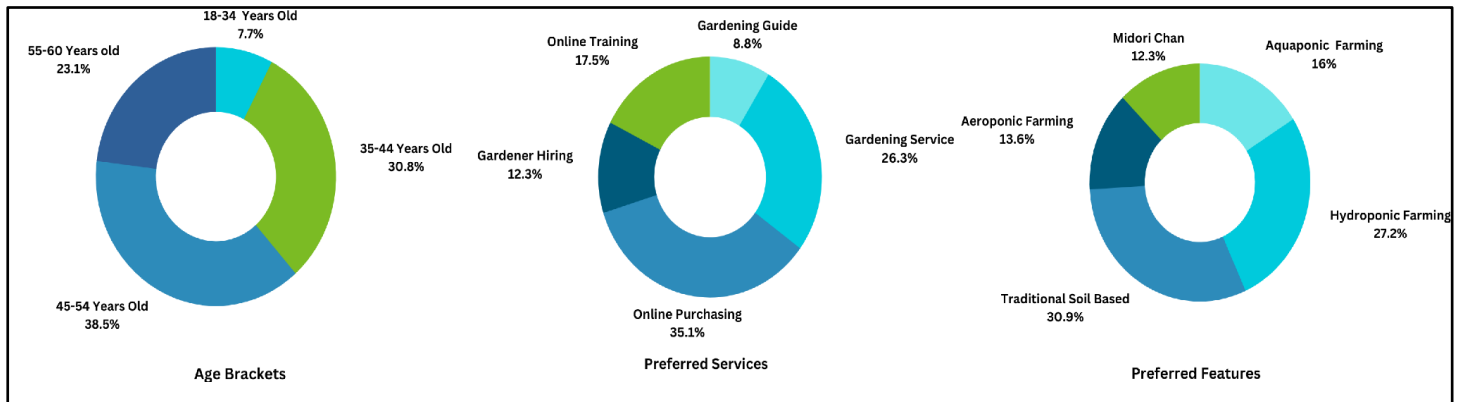


Figure 4. User survey and analysis

- Most of the people who participated in the survey and have an interest in gardening or actively engage in gardening are between the ages of 40 and 55.
- The majority of respondents choose online purchasing as their most preferred feature choice.
- While choosing the most preferred service it has been found that most people still prefer traditional soil-based gardening. The second most popular choice is hydroponic farming.

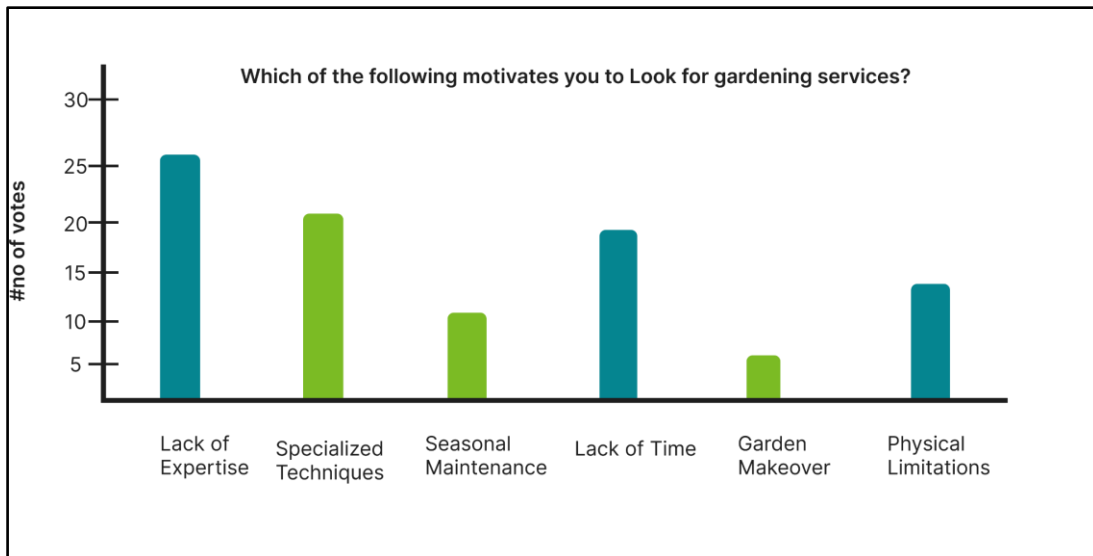


Figure 5. Votes for services

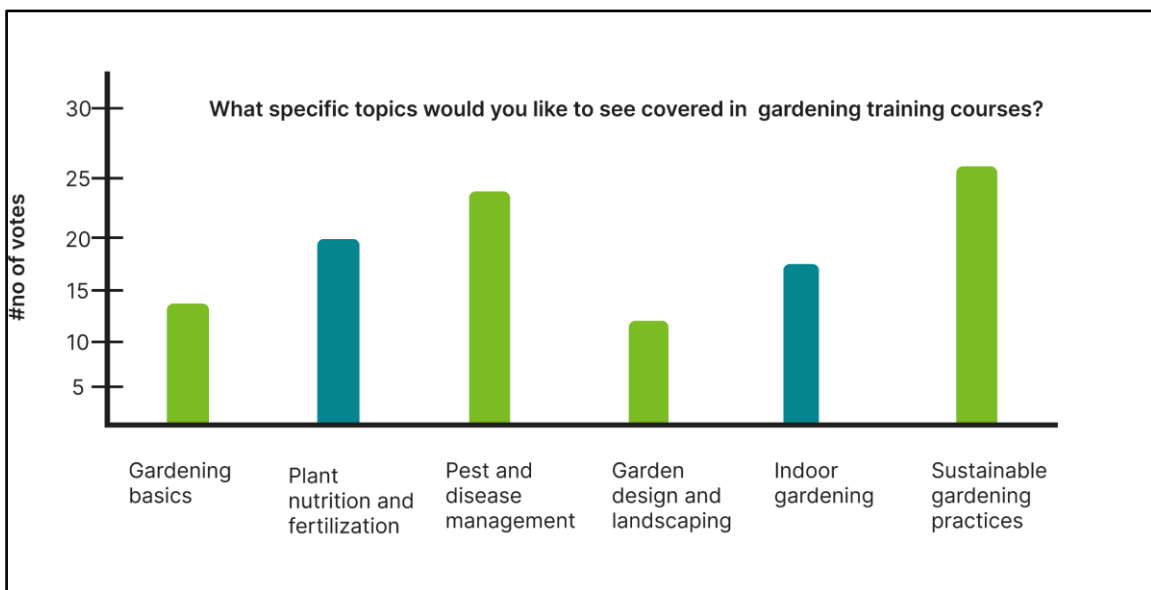


Figure 6. Votes for training courses

- The main reason why garden enthusiasts seek gardening services is because they feel they don't have enough knowledge or skills in gardening.
- The majority of participants in the survey expressed a desire to have sustainable gardening practices included in gardening training courses.

From the survey result it's been found that,

- When asked what are the biggest challenges they face when it comes to roof farming, most of them mentioned that one of the biggest problems they faced was figuring out how to use their available space effectively for growing crops.
- 75% of the participants said that they would really appreciate having detailed guides on roof farming techniques including step-by-step instructions and gardening tips.
- The survey revealed that a significant number of respondents (35%) are interested in growing vegetables and leafy greens in their rooftop gardens.

5.4 User Interview & Analysis



Participant #1

Age: 32

Occupation: Entrepreneur

Location: Jatrabari, Dhaka

- Been gardening in his urban apartment for about two years now.
- Wants to have some greenery in his living space and grow his own herbs and vegetables.
- Limited space and sunlight have been the biggest challenges.
- Love the satisfaction of harvesting fresh herbs and vegetables from his own balcony.
- Looking for a low maintenance farming option.



Participant #2

Age: 45

Occupation: Teacher

Location: Shonirakhra, Dhaka

- Been gardening in his backyard for over 4 years.
- Wants to grow his own organic produce.
- Dealing with pests and maintaining a proper watering schedule has been challenging.
- Prefers the taste and quality of homegrown fruits and vegetables.
- Looking for a flexible farming option.



Participant #3

Age: 42

Occupation: Housewife

Location: Sayedabad, Dhaka

- Been practicing city farming for about the last 3 years.
- Wants to bring nature indoors and make the most of the limited space she has.
- Ensuring proper plant growth and support has been challenging.
- Harvesting fresh herbs and greens for cooking, even in an urban setting is the best experience.
- Looking for a reliable & affordable source of gardening resources.

5.5 The Process & Timeline

In the following, the Gantt chart shows each listed task along with its duration in dates. The timeline began with the Initiation phase, followed by the define phase where requirements are defined. Then, the project moved into the Ideate phase for generating design ideas. The following phases included Prototype, where wireframes and visual design were created, and Testing, where usability testing took place to evaluate the UI design.

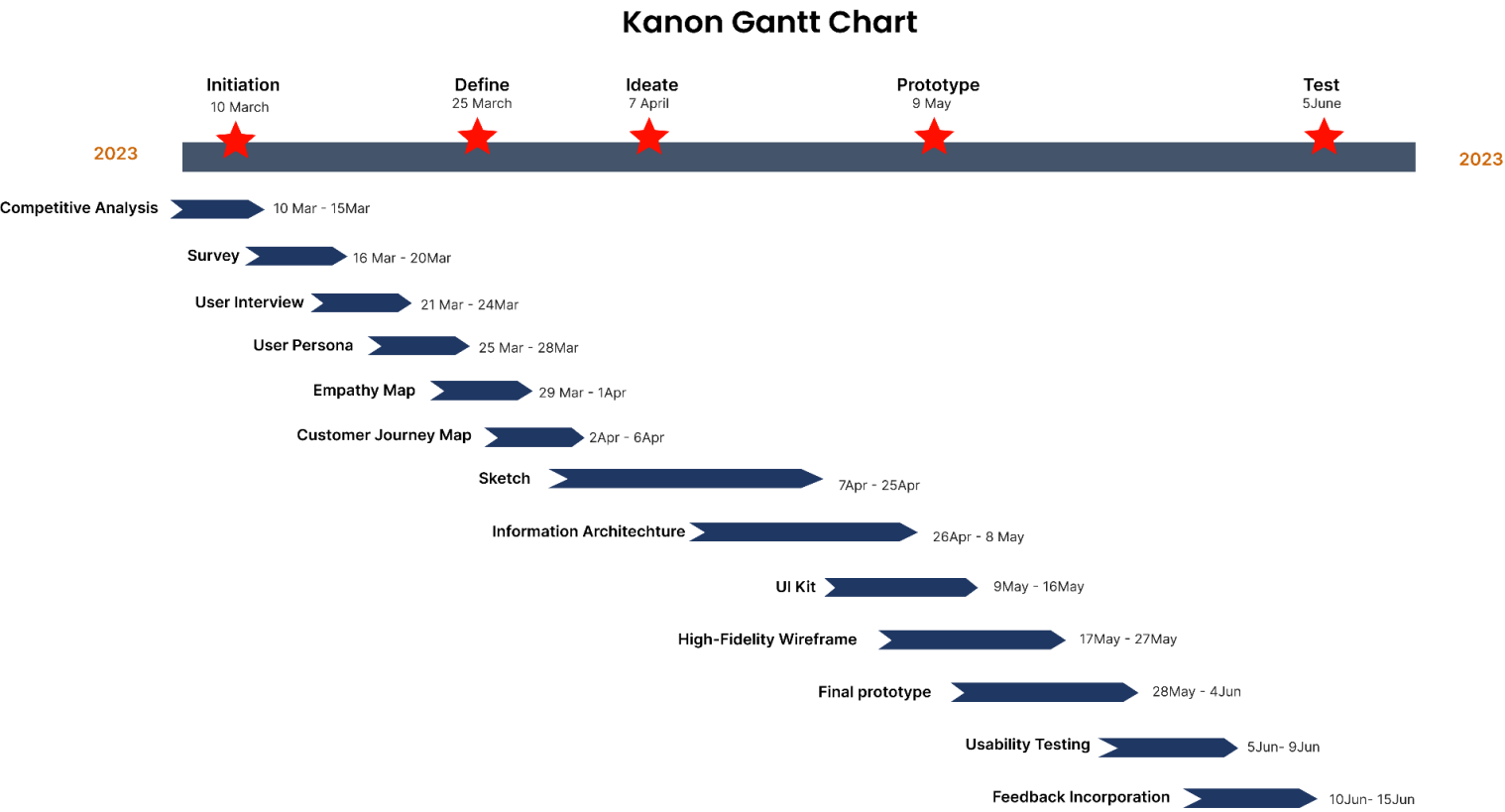


Figure 7. Gantt chart

5.6 Revenue Model

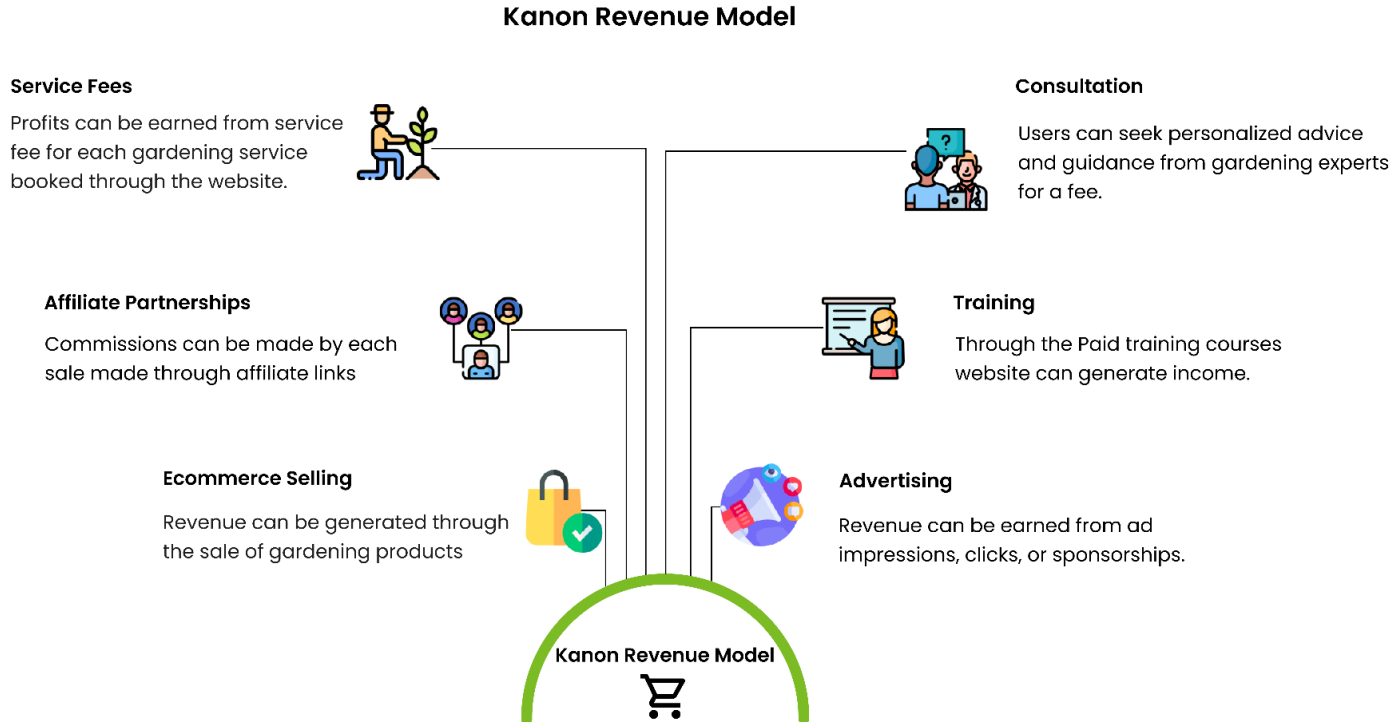


Figure 8. Revenue Model

Chapter 6 Define

6.1 Personas

Creating personas is a fundamental step in the design process that allows to develop a deeper understanding of the target users. A persona is a fictional representation of a specific user segment based on real user data and insights. By considering the goals & needs, motivations, and fear & frustrations of the persona, the design process is humanized. User experiences can be created that resonate with the users, leading to higher engagement, satisfaction, and ultimately, the success of the product or service.

Farzana Hossain

Entrepreneur

PROFILE

Gender : Female
Age : 37
Marital Status : Married with 2 Children
Address : Dhaka, Bangladesh



"I don't have a lot of experience with gardening, but I'm excited to learn and get my hands dirty and also looking for a way to connect with nature"

GOALS AND NEEDS

- Looking for ways to utilize her rooftop space effectively
- Wants to provide fresh and healthy food
- Interested in growing flowers and fruits
- Needs guidance on how to set up and maintain a rooftop garden

PAINPOINTS

- Lacks knowledge and experience in gardening
- Busy with household and work responsibilities
- Limited space for gardening in her home
- Concerned about the cost of gardening

BEHAVIOURS

- Patient and attentive to detail
- Willing to invest time and money for a good solution
- Enjoys spending time outdoors

Figure 9. User persona 1

Fatima Begum

House Wife

PROFILE

Gender : Female
Age : 50
Marital Status : Married with 2 Grown Children
Address : Dhaka, Bangladesh



"I want to grow my own vegetables without having to spend too much time or money on it. It's important to me to eat healthy and save money at the same time"

GOALS AND NEEDS

- Wants a low-maintenance gardening solution
- Looking for a way to save money and eat healthier
- Wants to grow organic vegetables
- Looking for a reliable and affordable source for seeds and plants

PAINPOINTS

- Difficulty finding organic supplies in her area
- Concerned about pests and diseases
- Limited sunlight on her rooftop
- Limited budget for gardening supplies

BEHAVIOURS

- Detail-oriented
- Cautious about spending money on new ventures
- Values Organic Living

Figure 10. User persona 2

Ayesha Rahman

Teacher

PROFILE

Gender : Female
Age : 42
Marital Status : Married with 1 Grown Children
Address : Dhaka, Bangladesh



"I want to create a peaceful, green space in my busy city life and also I want to experience the flavor of freshly picked produce."

GOALS AND NEEDS

- Wants to create a peaceful outdoor space on her rooftop
- Wants to promote a healthier lifestyle
- Interested in growing vegetables and fruits
- Looking for a low-maintenance and flexible farming option.

PAINPOINTS

- Lacks knowledge and experience in gardening
- Difficulty balancing the demands of work and gardening
- Uncertainty about how to maintain a garden during different seasons
- Worries about pests and diseases affecting her plants

BEHAVIOURS

- Enjoys connecting with like-minded individuals
- Enjoys socializing
- Willing to invest in high-quality products and services

Figure 11. User persona 3

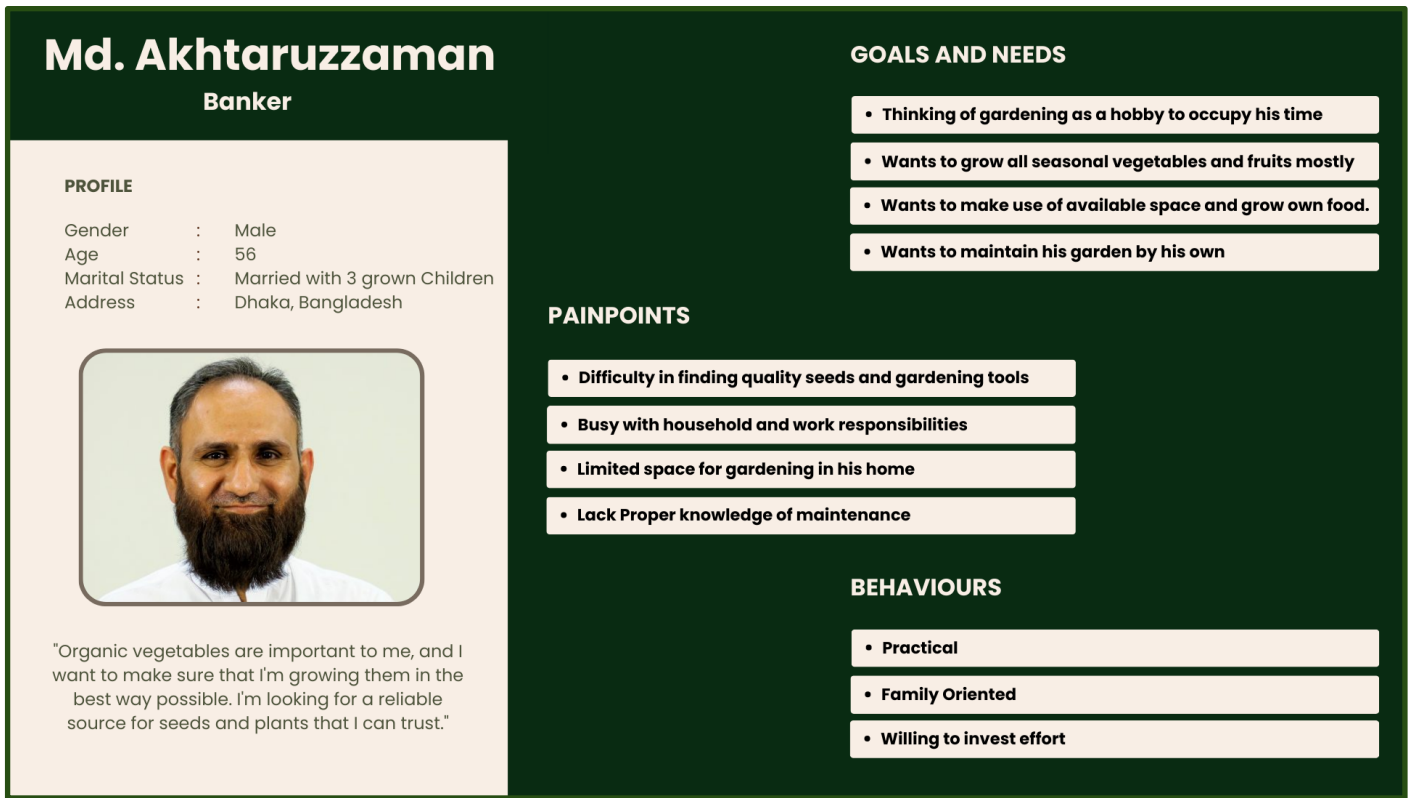


Figure 12. User persona 4

6.2 Empathy Map

By considering the user's thoughts, feelings, actions, and needs, the empathy map helped guide the design process. It allowed creating user experiences that address the user's motivations and pain points effectively.

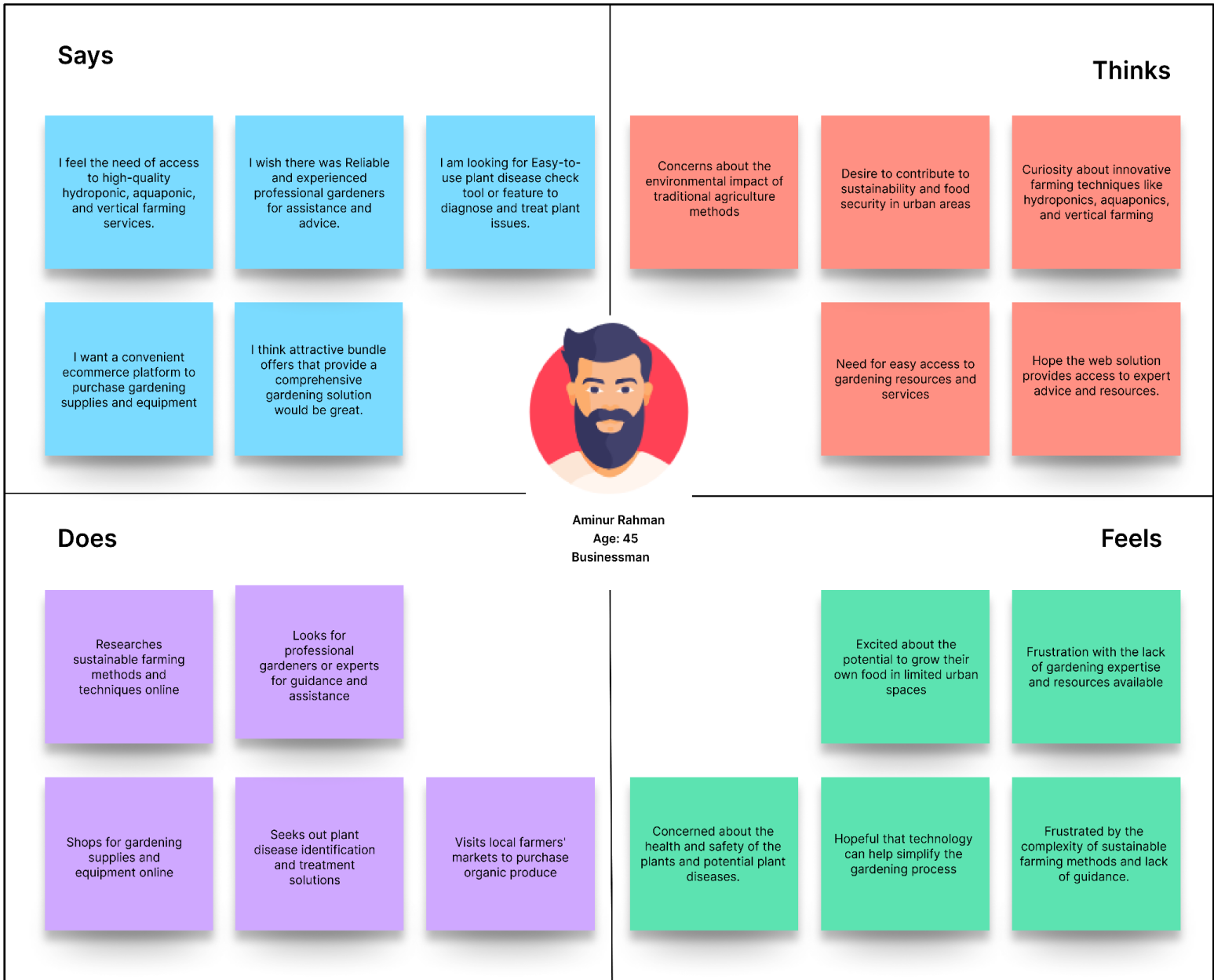


Figure 13. Empathy map

6.3 Customer Journey Map

In following the customer journey map has been developed that helps identify pain points, needs, and opportunities to enhance the user experience. It provides insights into the user's feelings and actions at each stage, allowing the design team to focus on addressing user needs, providing seamless interactions, and building customer loyalty.

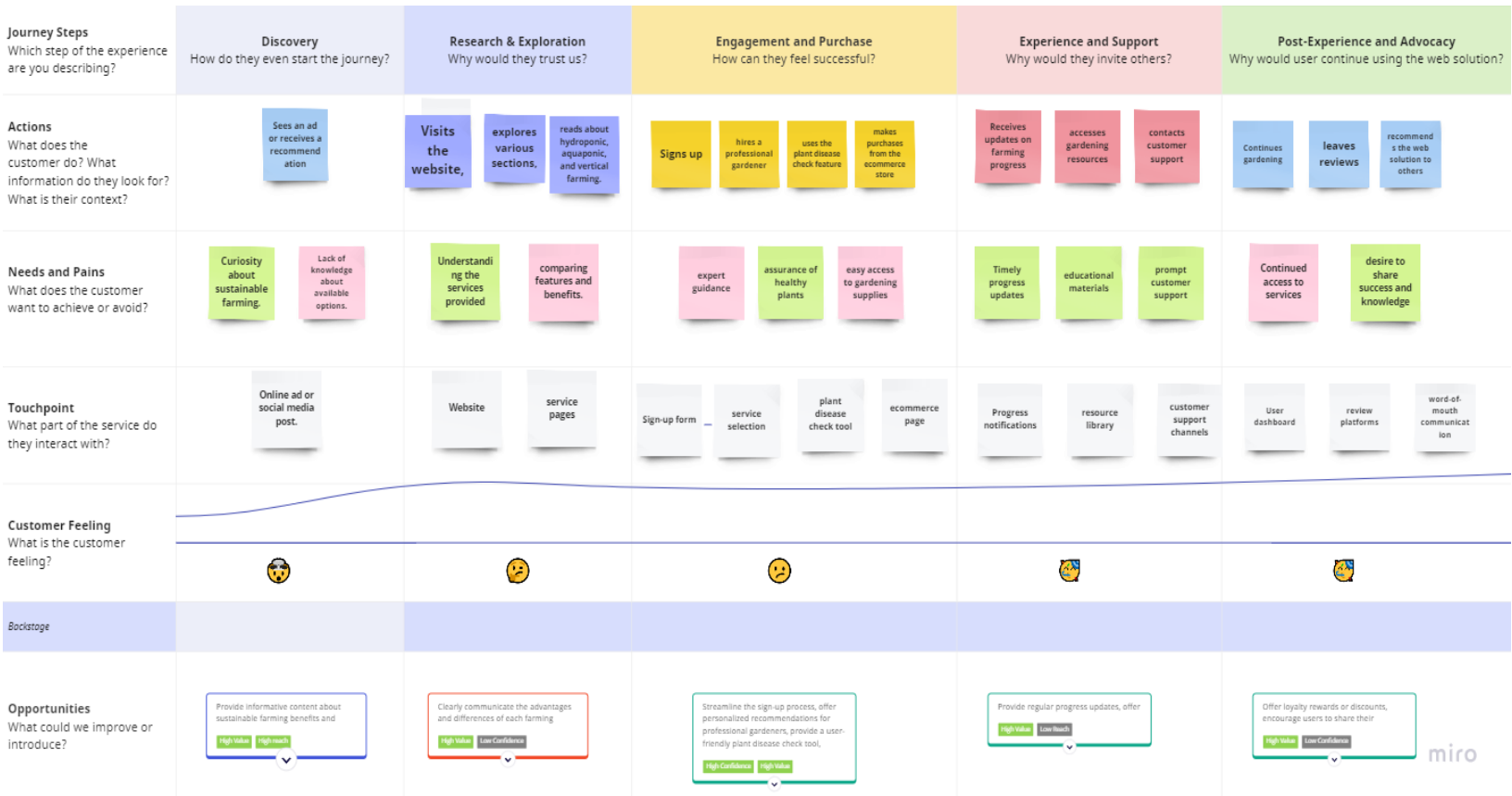


Figure 14. Customer journey map

Chapter 7 Ideate

7.1 Site Map

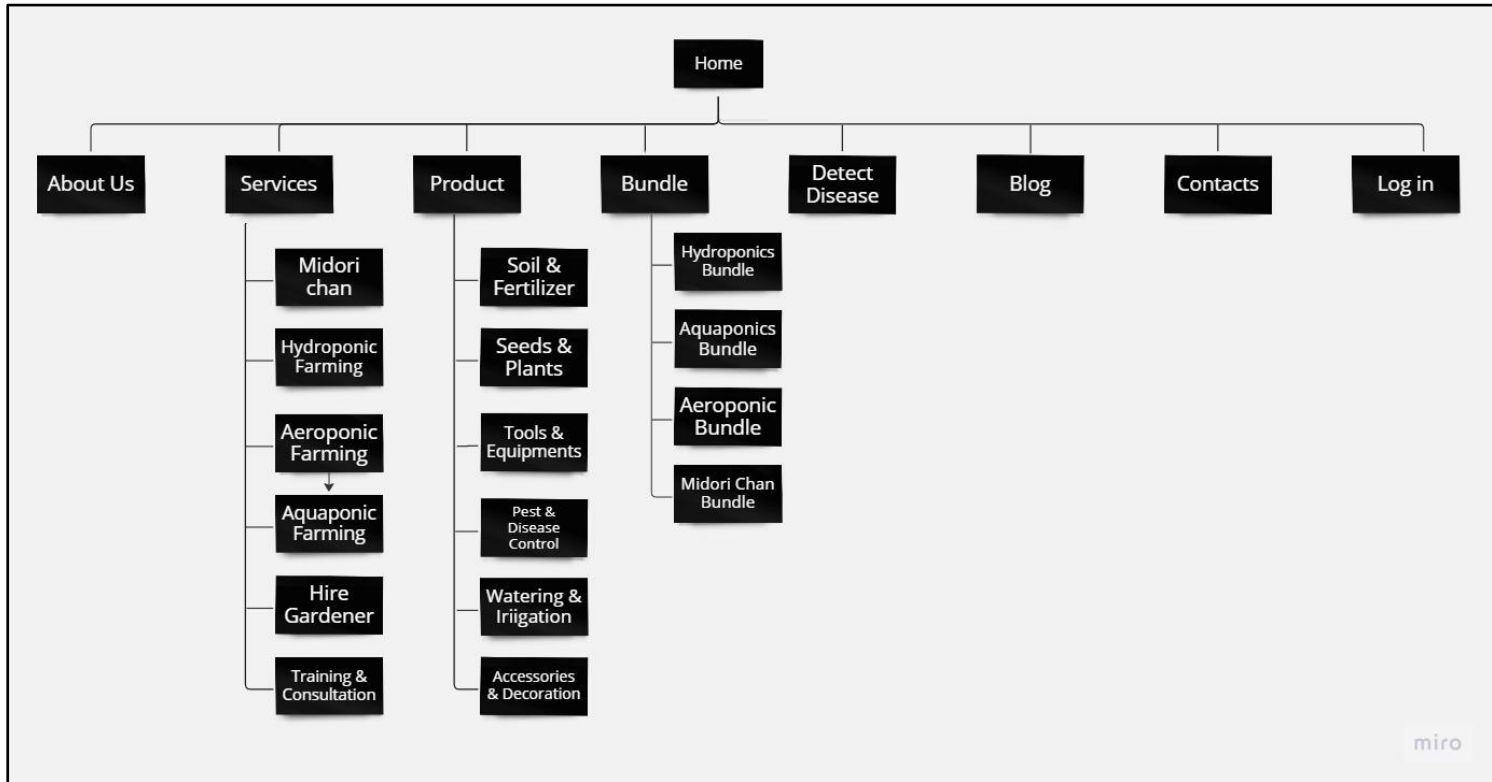


Figure 15. Site map

7.2 Information Architecture

This information architecture helps organize the project in a clear and organized way, making it easy for users to find what they need. It makes sure that people can easily explore different services, hire gardeners, check for plant diseases, buy gardening supplies, manage their profile, and get useful information for sustainable gardening. With this structure, users can have a smooth and enjoyable experience while using the website.

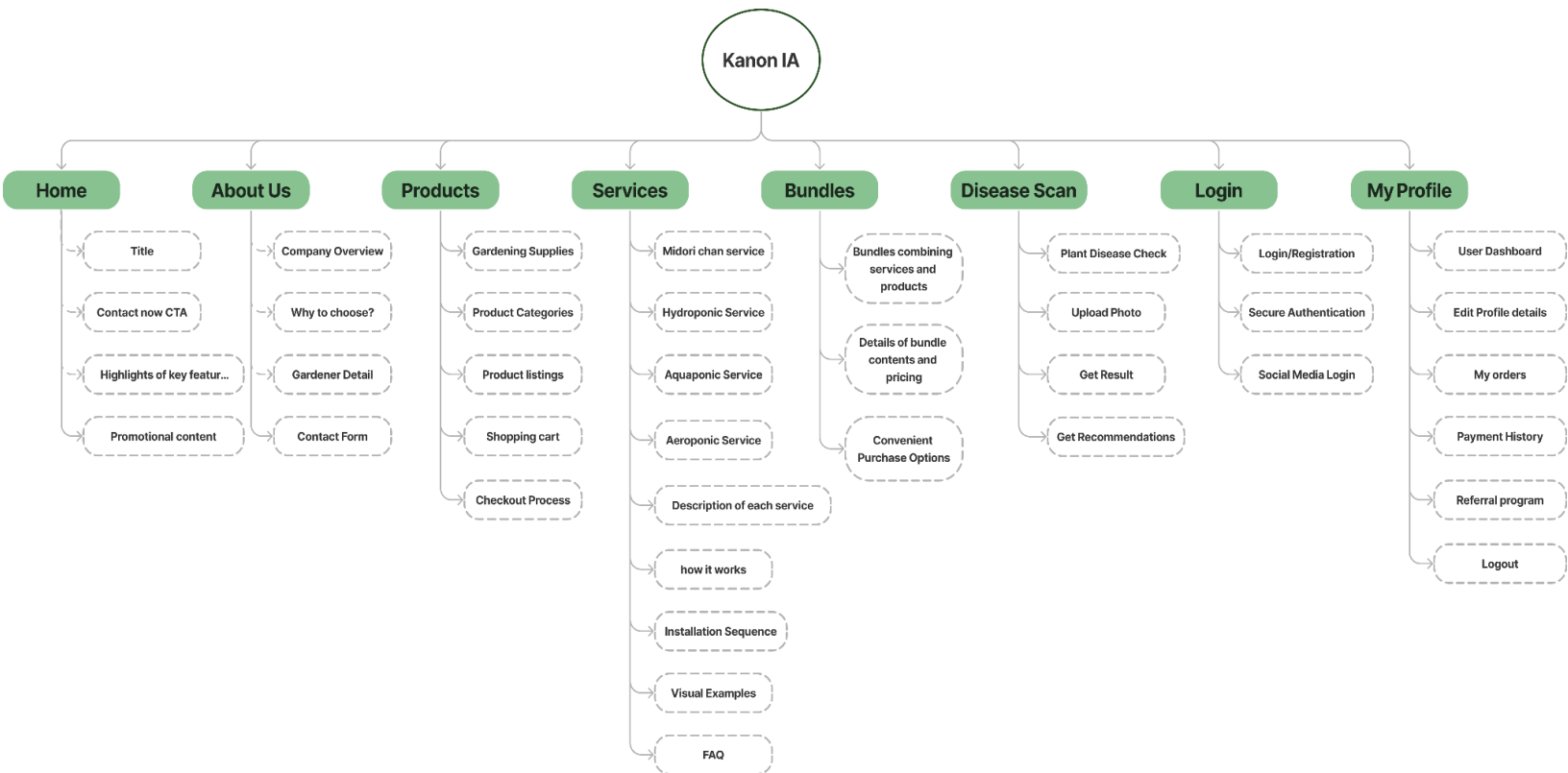


Figure 16. Information architecture

7.3 HTA (Hierarchical Task Analysis)

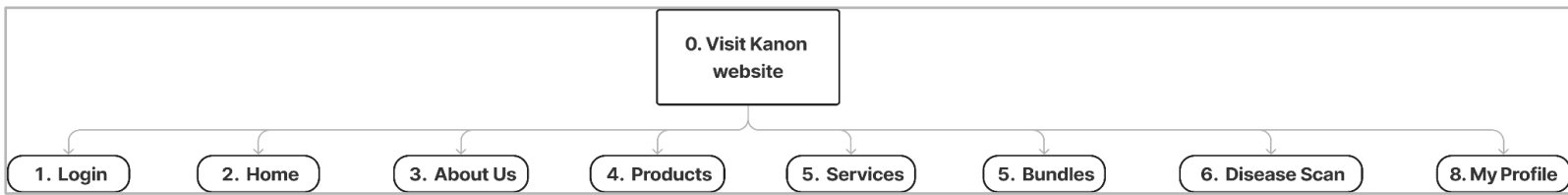


Figure 17. HTA_0

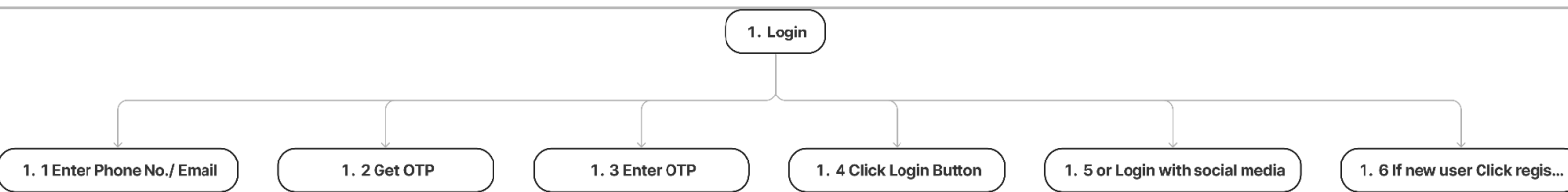


Figure 18. HTA_1



Figure 19. HTA_2

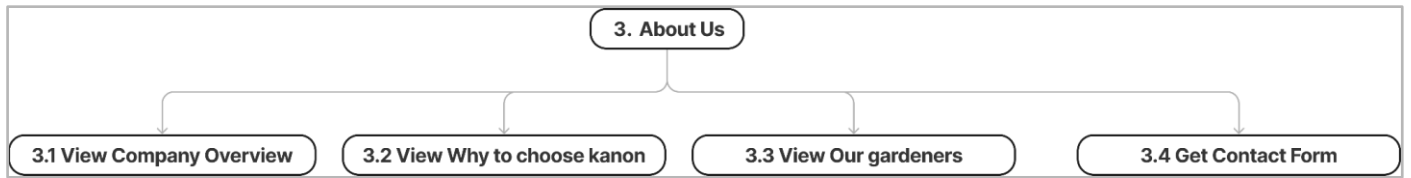


Figure 20. HTA_3

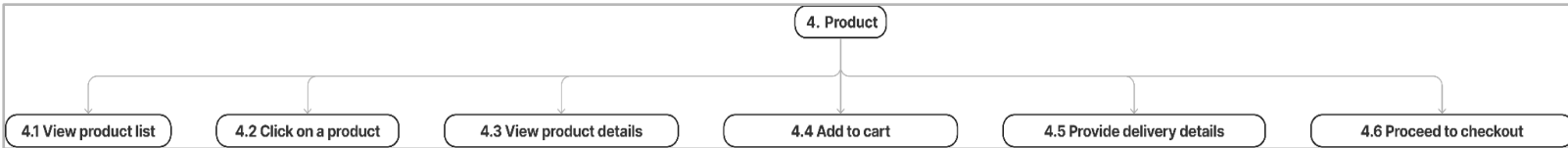


Figure 21. HTA_4

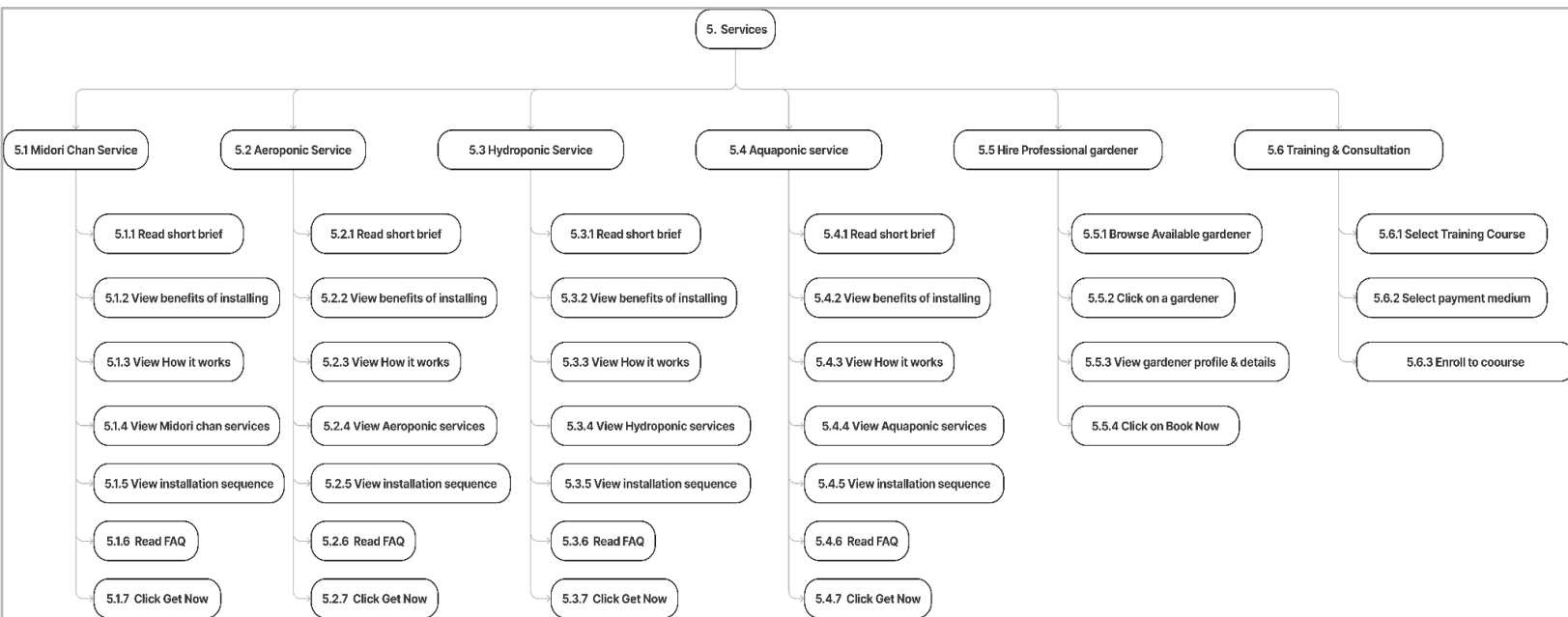


Figure 22. HTA_5

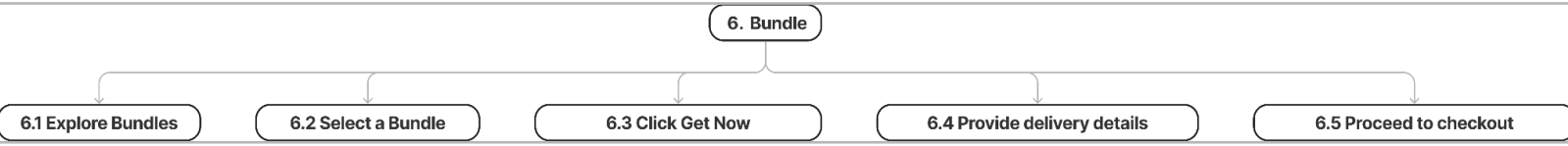


Figure 23. HTA_6

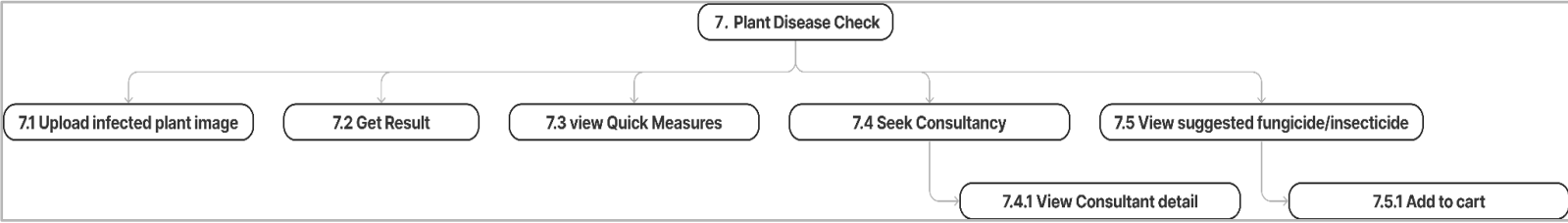


Figure 24. HTA_7

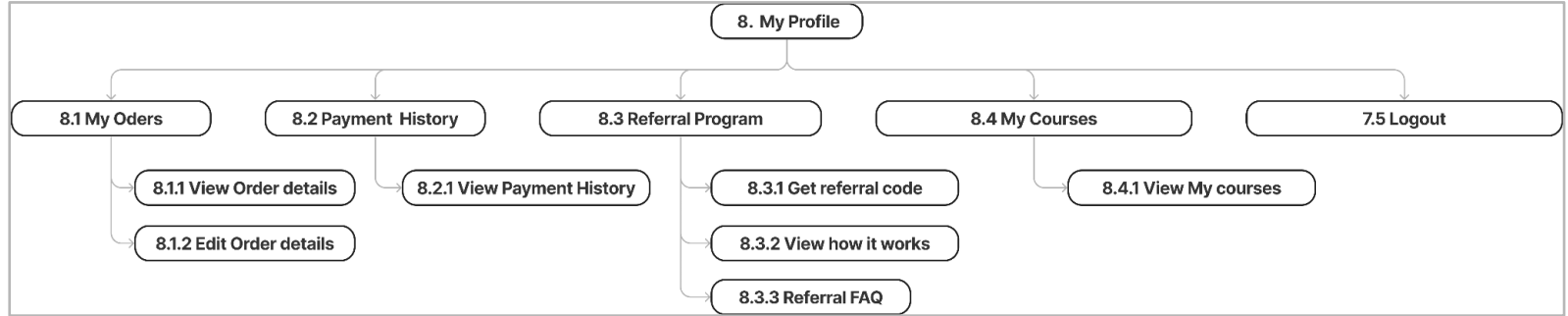


Figure 25. HTA_8

7.4 Use Case

7.4.1 Full system use case

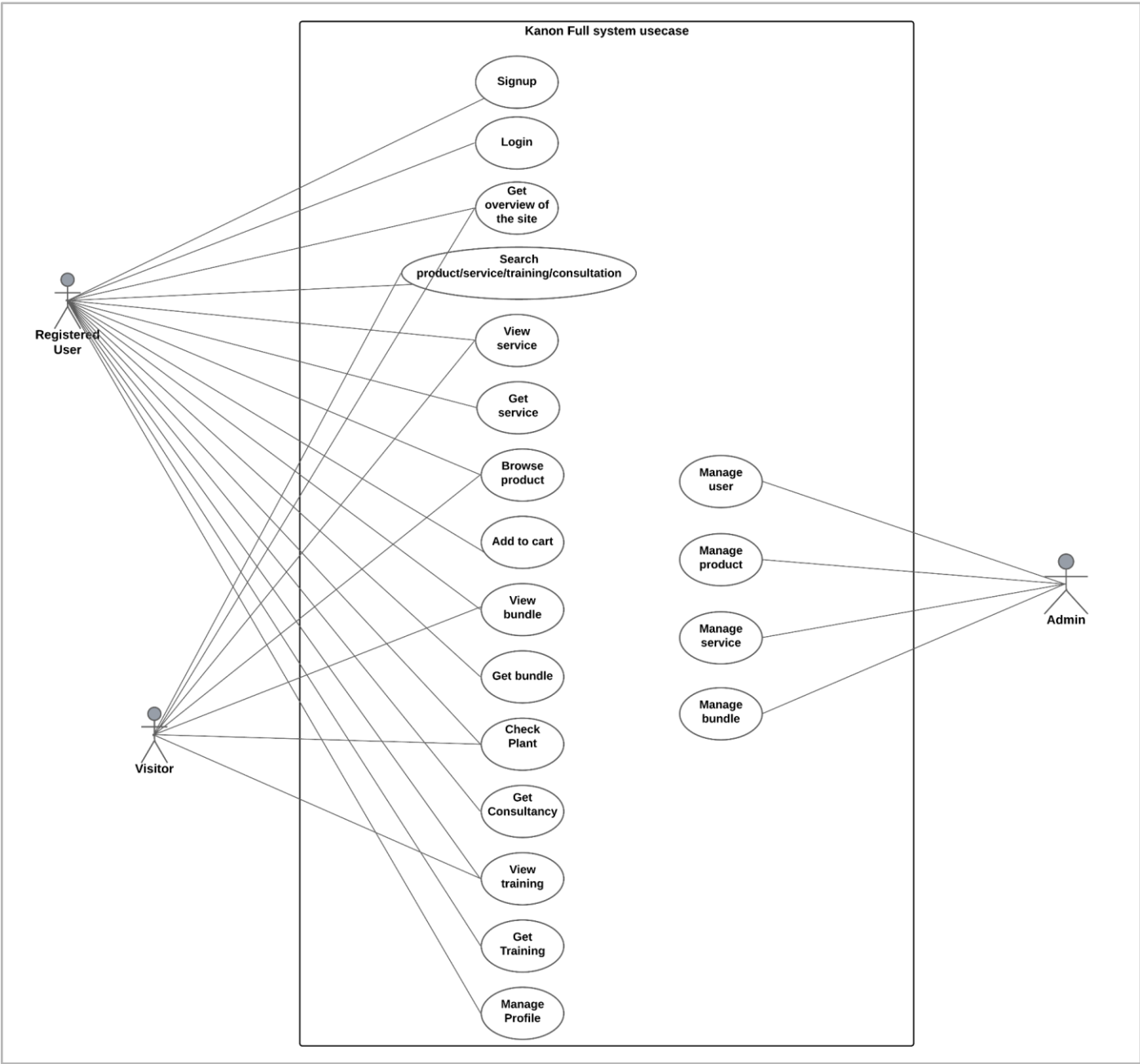


Figure 26. Full system use case

7.4.2 Use case for Login

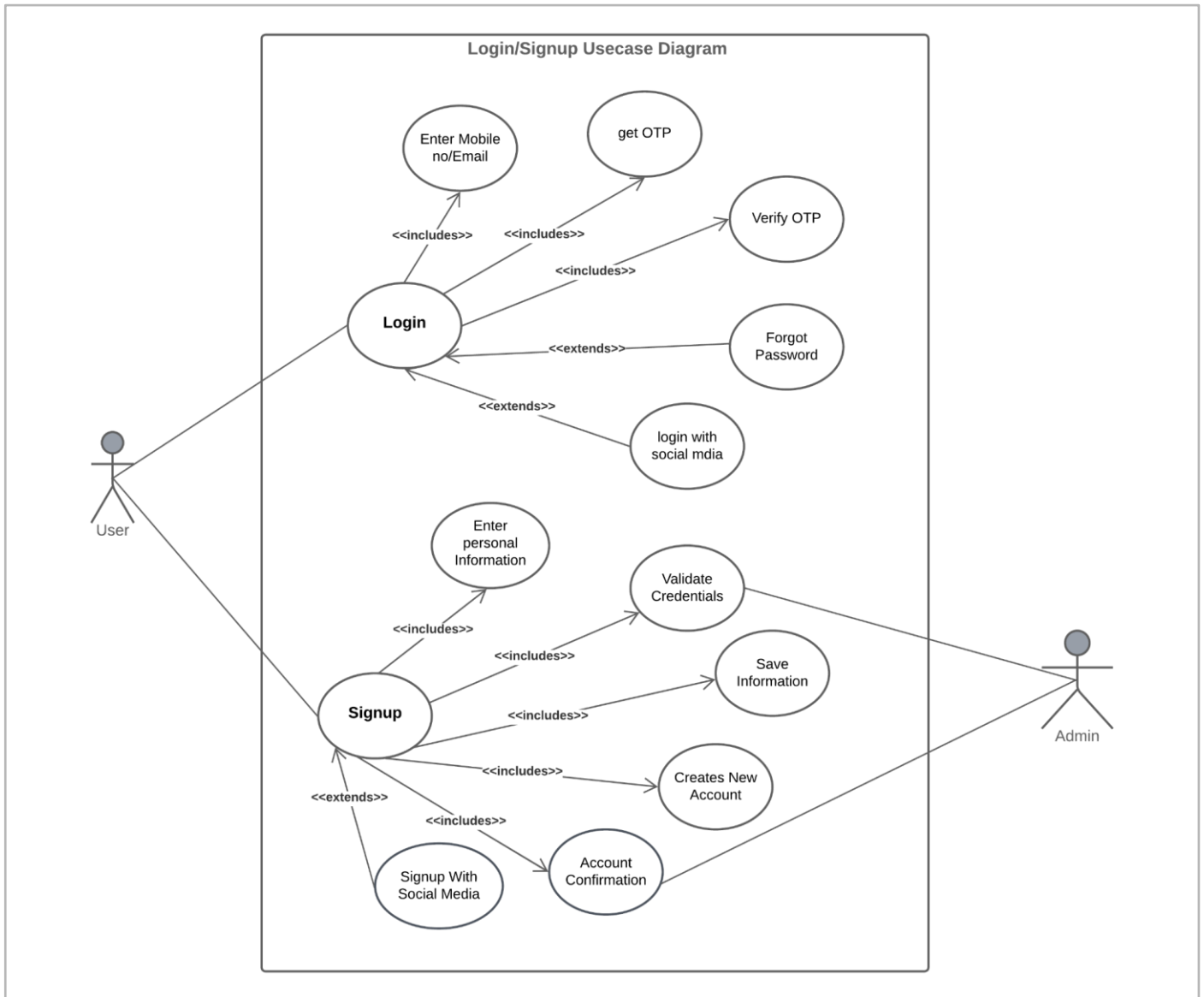


Figure 27. Login use case

7.4.3 Use case for e-commerce

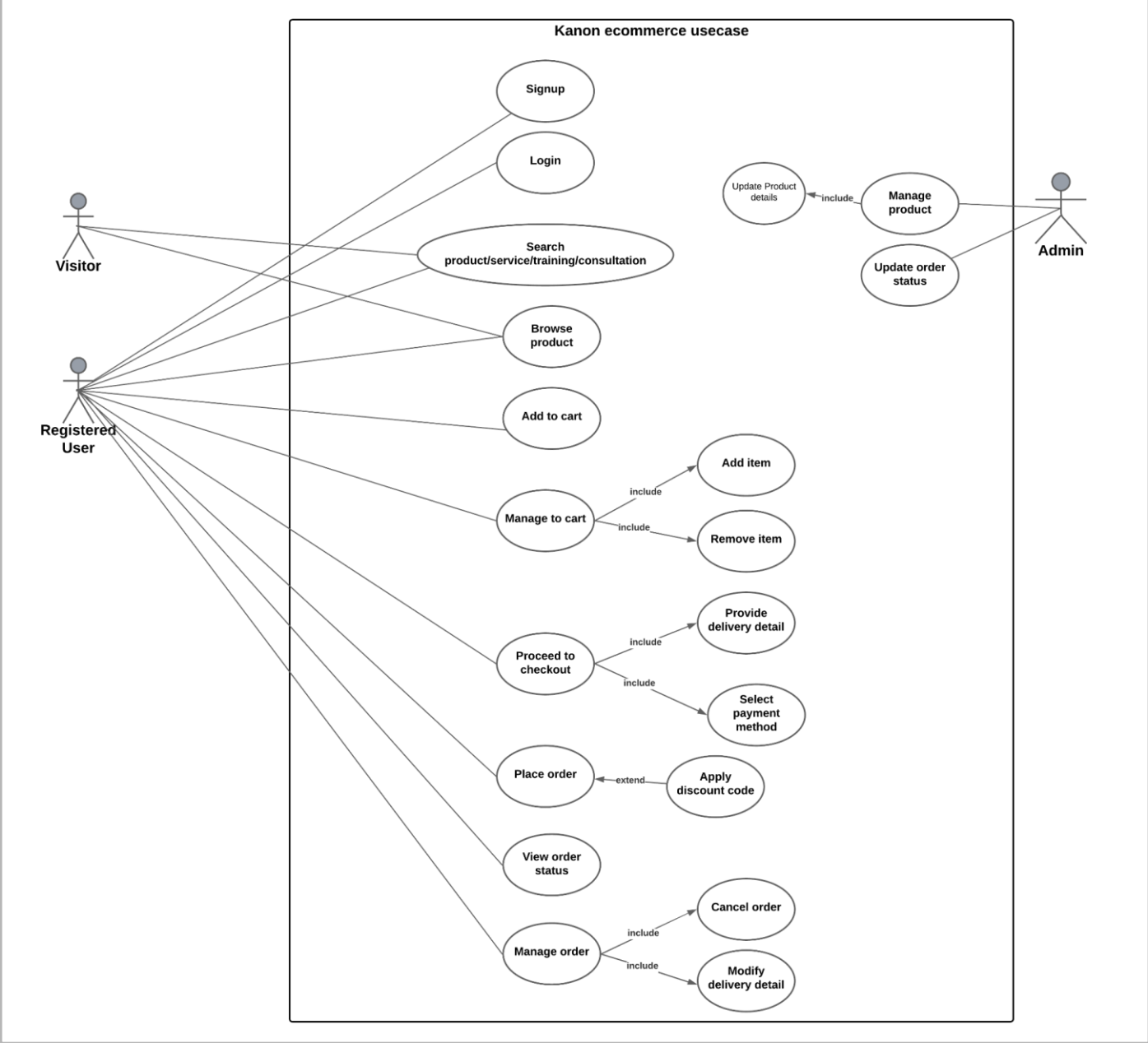


Figure 28. E-commerce use case

7.4.4 Use case for service

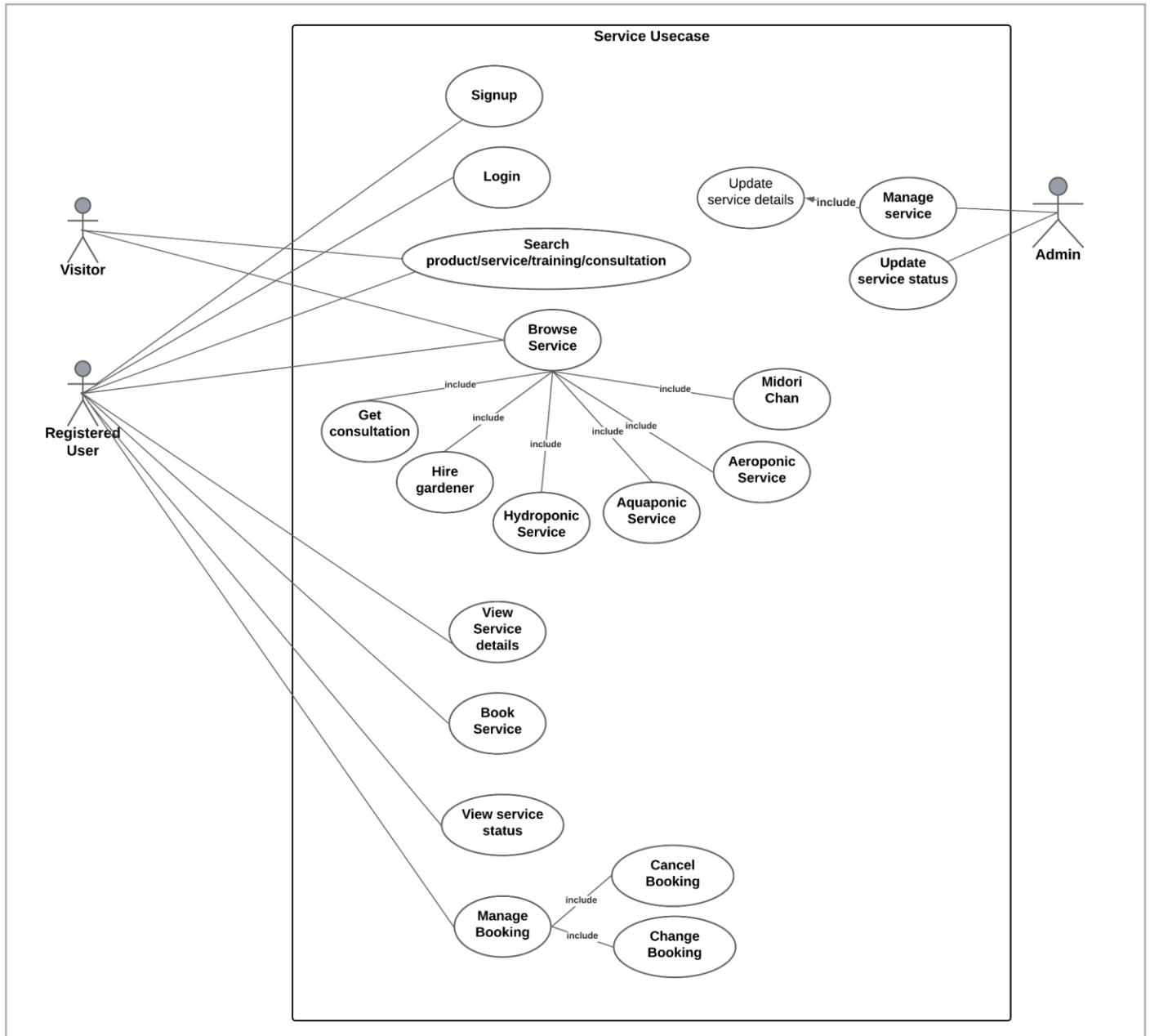


Figure 29. Service use case

7.4.5 Use case for my profile

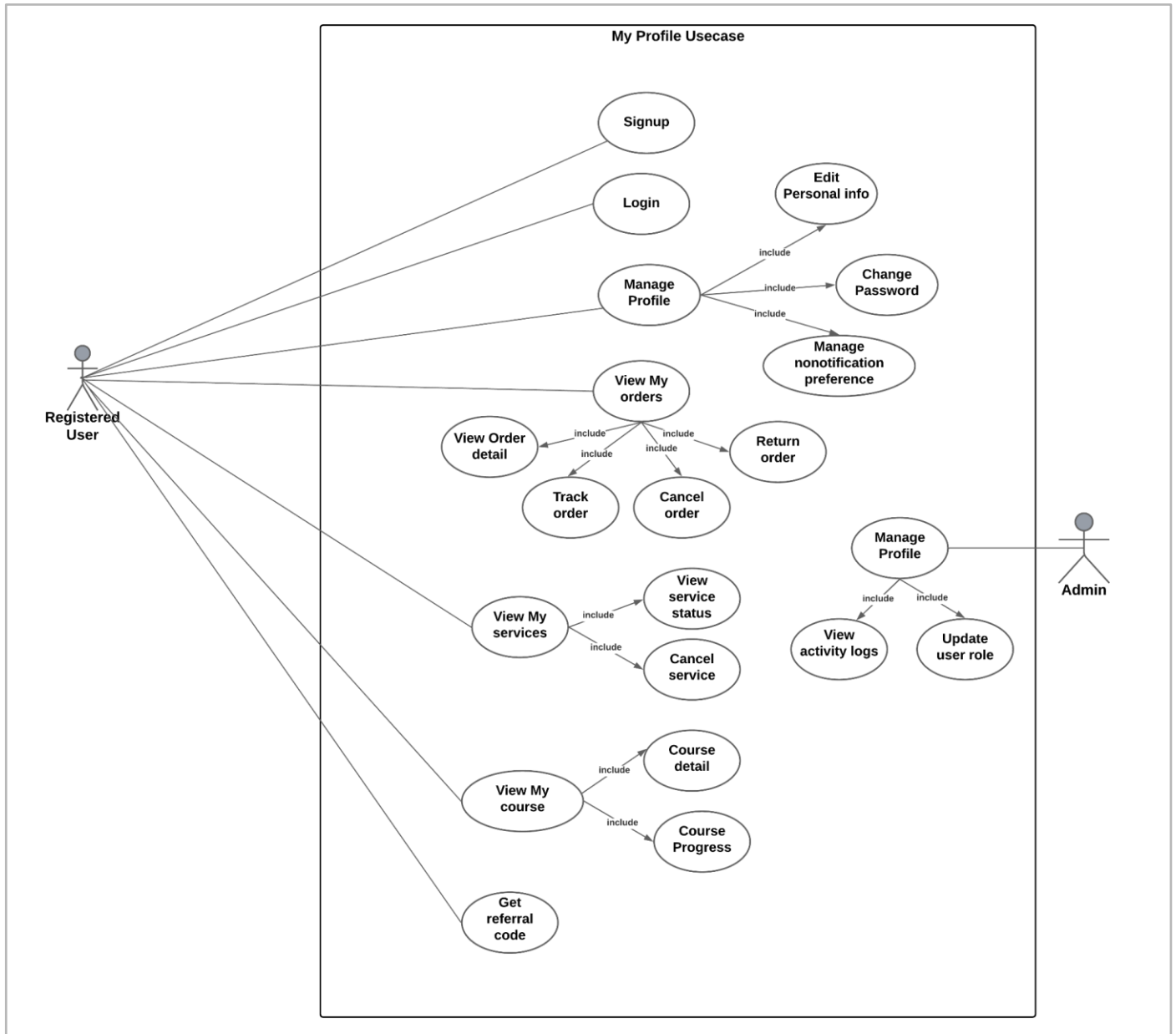


Figure 30. My Profile use case

7.5 Functional requirements

- Allow users to register and create accounts.
- Enable users to log in securely using email/password or social media accounts.
- Provide options for password reset and account recovery.
- Display featured products, services, or promotions.
- Enable users to search for specific products, services, or information on the website.
- Include the company's sustainability initiatives and practices.
- Display a catalog of gardening products and services.
- Allow users to add products and services to the cart for purchase.
- Provide secure and reliable payment processing options.
- Enable users to track their orders and receive order status updates.
- Show a summary of selected items and services before checkout.
- Allow users to modify the cart contents, such as updating quantities or removing items.
- Display the total cost, including taxes and shipping charges.
- Send order confirmation and delivery notifications.
- Offer various gardening services such as hydroponic setup, professional gardener hiring, consultation services, and gardening training.
- Provide detailed information about each service.
- Create bundled packages combining products and services.
- Allow users to view and edit their personal information.
- Provide access to order history.

7.6 Non-functional requirements

- Having a user-friendly interface.
- Should implement user authentication and authorization.
- The website should be compatible with various web browsers and devices.
- Collect data on popular products/services, user preferences, and trends.
- Ensure smooth interactions.
- Encrypt sensitive user information and payment details.

- Provide alternative text for images and clear navigation for screen readers.
- Provide options for users to choose their preferred language.

7.7 Mid-Fidelity Wireframe

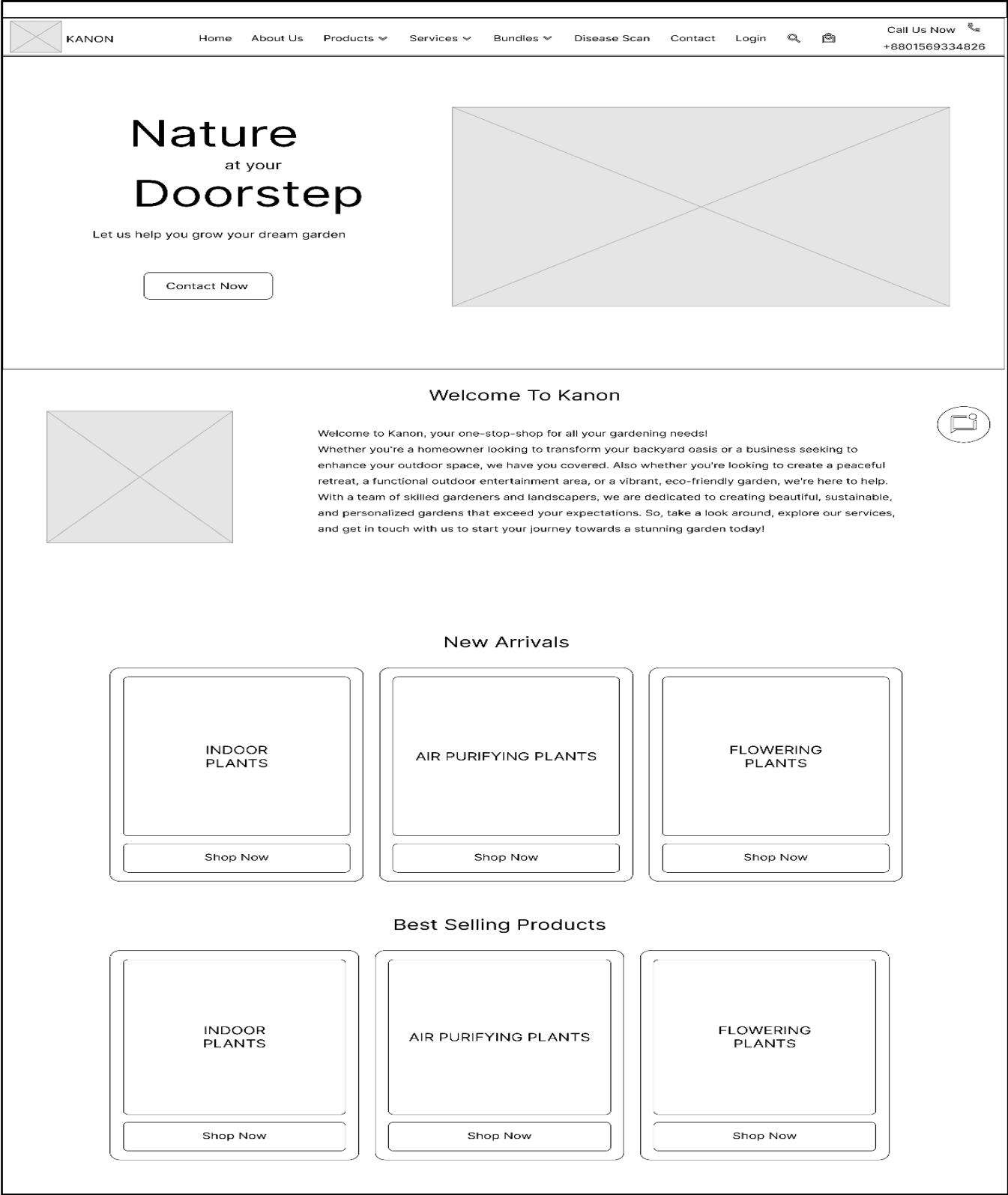


Figure 31. Mid-fidelity Home_0

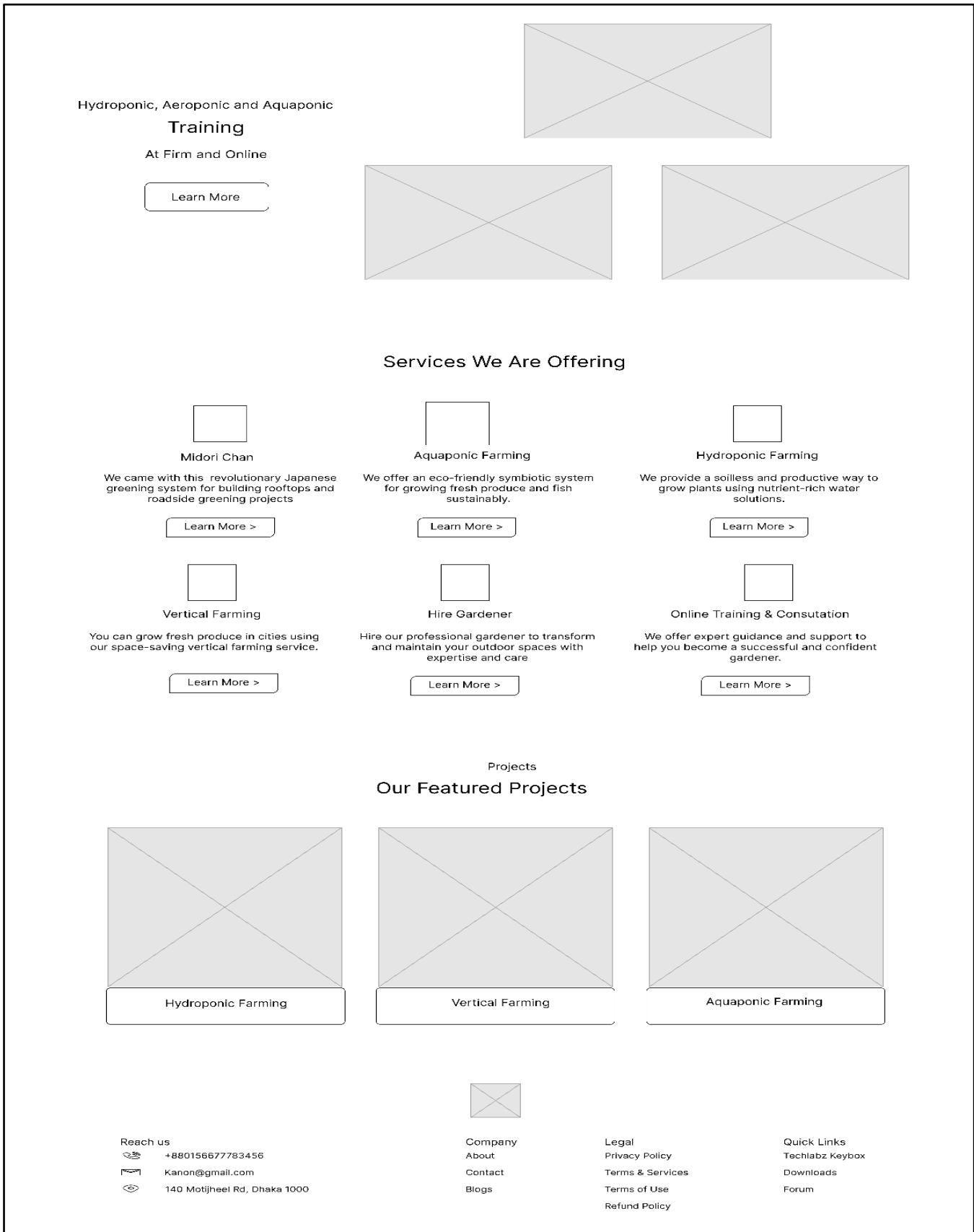


Figure 32. Mid-fidelity Home_1

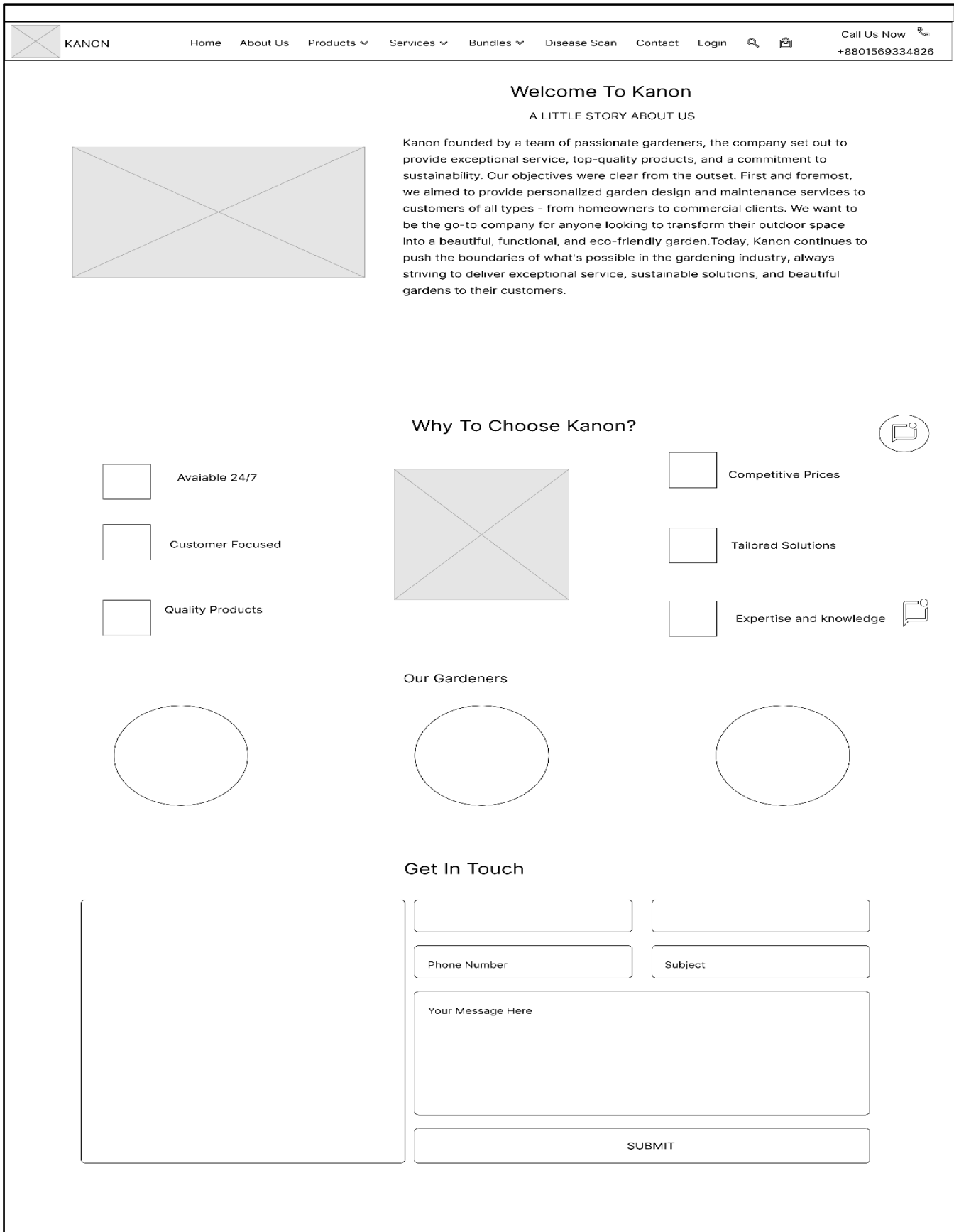


Figure 33. Mid-fidelity About us

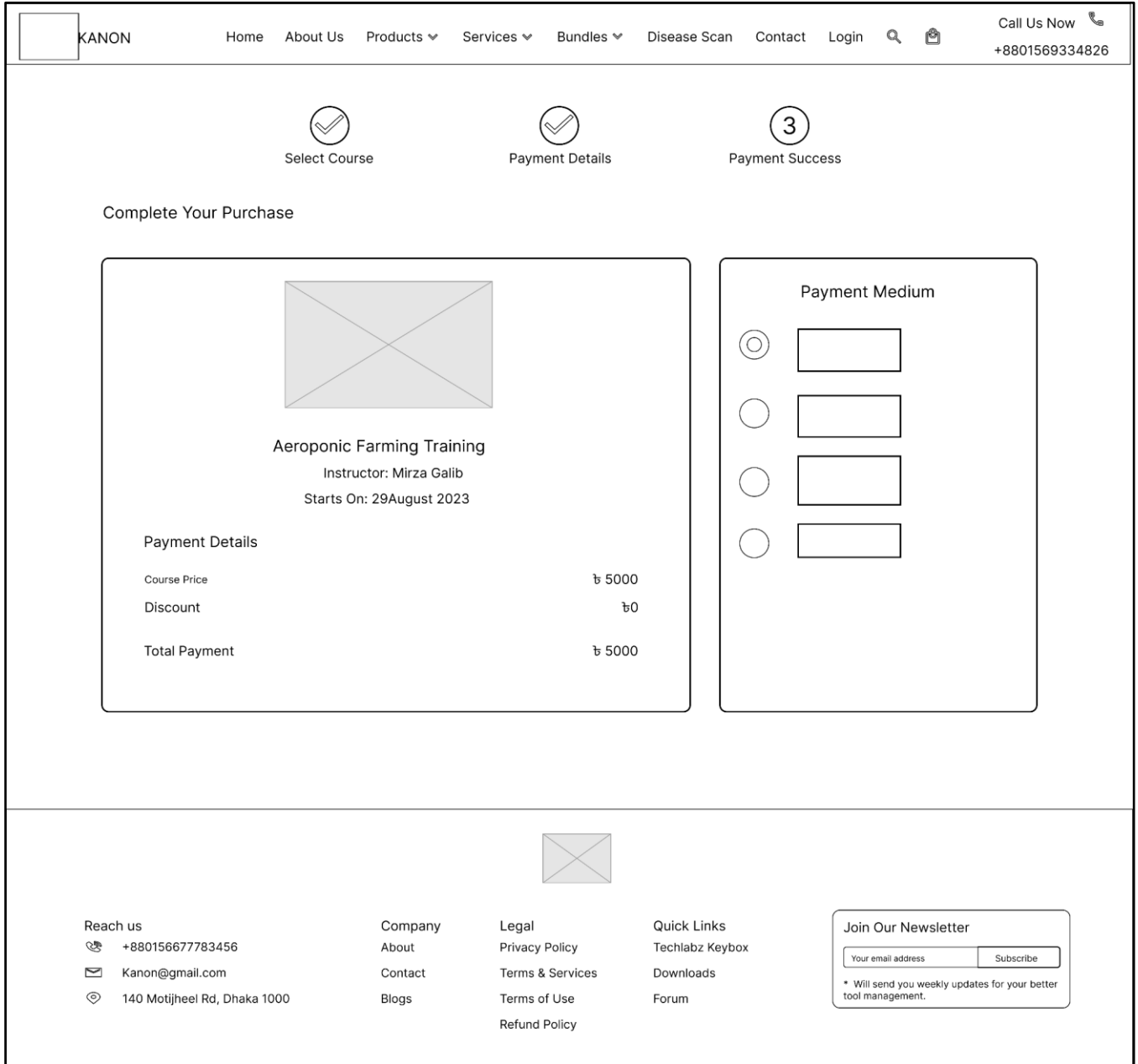


Figure 34. Mid-fidelity Services_Training

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With Aeroponic Services

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Contact Now

Aeroponic Services

System Installation

We offer designing and installing systems tailored to the specific requirements of individuals or businesses

Training & Consultation

We offer training programs and educational resources to help clients understand the best practices for successful cultivation.

Seedling & Nutrients Supply

We provide high-quality seedlings and customized nutrient solutions tailored for aeroponic systems

Customization

We provide tailored solutions to meet the specific needs and requirements of individuals or businesses.

Nutrient Formulation

We provide nutrient solutions considering the unique needs of each crop and growth preferences.

Maintenance and Support

We provide individuals and businesses with the knowledge, skills, and guidance necessary for successful aeroponic cultivation

Installation Sequence

①

Design and construct the aeroponic system, including the framework, plant support structures

②

Design and construct the aeroponic system, including the framework, plant support structures

③

Design and construct the aeroponic system, including the framework, plant support structures

④

Design and construct the aeroponic system, including the framework, plant support structures

⑤

Design and construct the aeroponic system, including the framework, plant support structures

⑥

Design and construct the aeroponic system, including the framework, plant support structures

Figure 35. Mid-fidelity Services_Aeroponic_0

Top (Vine Crops)

- Bottle Guard
- Cucumber
- Tinda
- Green beans



Aeroponic Services FAQ

Q1: Can I customize the items in the Bundle? ▼

Q2: Can I avail of the gardening services separately without purchasing the bundle? ▼

Q3: Will I receive planting instructions with the Gardening Bundle? ▼

Q4: How can I purchase the Bundle? ▼

Q5: What if I have further questions or need guidance about gardening? ▼

Q6: Can I return or exchange products included in the bundle? ▼

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Kanon@gmail.com



Opening Hours
Mon - Fri : 10am to 7pm
Saturday : 10am to 4pm
Sunday : Closed



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Figure 36. Mid-fidelity Services_Aeroponic_1

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Greening Your Space with Midori-Chan

Midori-chan is a revolutionary Japanese greening system d that has been designed for building rooftops and roadside greening projects. It uses natural rainwater and recycled waste material to promote maximum vegetation growth.The ultra-lightweight system transfers moisture from water storage units via the thermal energy balance in the soil. A specially regenerated layer of charcoal filters the rainwater before it is drawn up into the plants' roots.

Contact Now

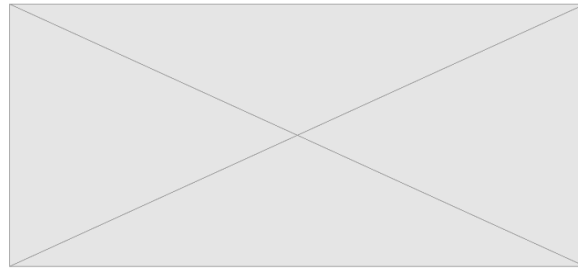
Benefits of installing

Midori-Chan

	<p>Saves costs by using dramatically less water than conventional greening systems.</p>		<p>Reduces temperatures of concrete decks by over 30°C.</p>
	<p>Decreases the thermal load of the local environment by transferring heat to vegetation</p>		<p>Removes more CO2 from the atmosphere through photosynthesis.</p>
	<p>Offers flexibility around loading constraints by tailoring soil depth, as required.</p>		<p>A specially regenerated layer of charcoal filters the rainwater before it is drawn up into the plants' roots.</p>

Figure 37. Mid-fidelity Services_Midori-chan_0

How the Midori-chan System Works



- 1 Rainwater is cleaned as it filters through Kawada's special capillary-action soil mix, plus a layer of regenerated charcoal, into water storage units
- 2 The water storage units are locked and interlinked, much like ice-cube trays, and are designed to enable excess water to drain away naturally.
- 3 Resin nets above the water storage units enable the hassle-free installation of bags of regenerated charcoal
- 4 Vegetation roots won't access the filtered rainwater directly due to a root barrier layer between the resin net and regenerated charcoal
- 5 The water storage units ensure an air gap exists between the stored water surface and the regenerated charcoal.
- 6 Surface soil starts to dry during hot weather.
- 7 The layer of regenerated charcoal below the soil absorbs water vapour from the air gap and feeds water steadily to the roots above

Midori-Chan Services

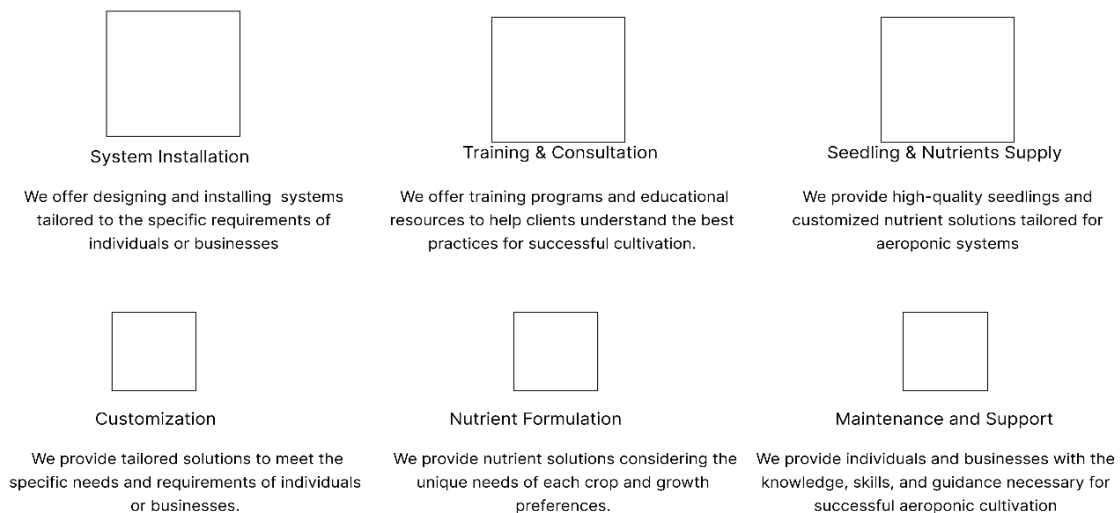
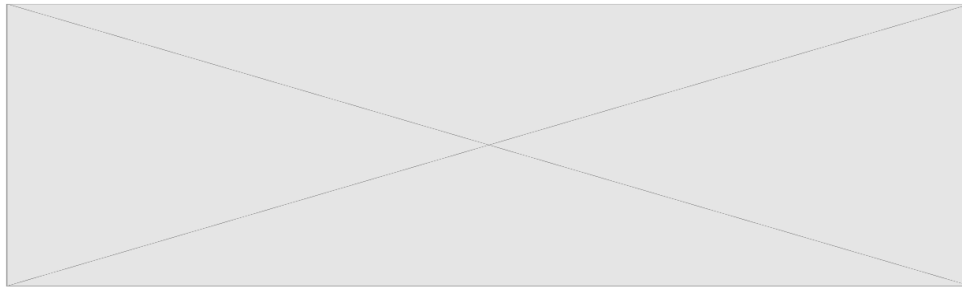


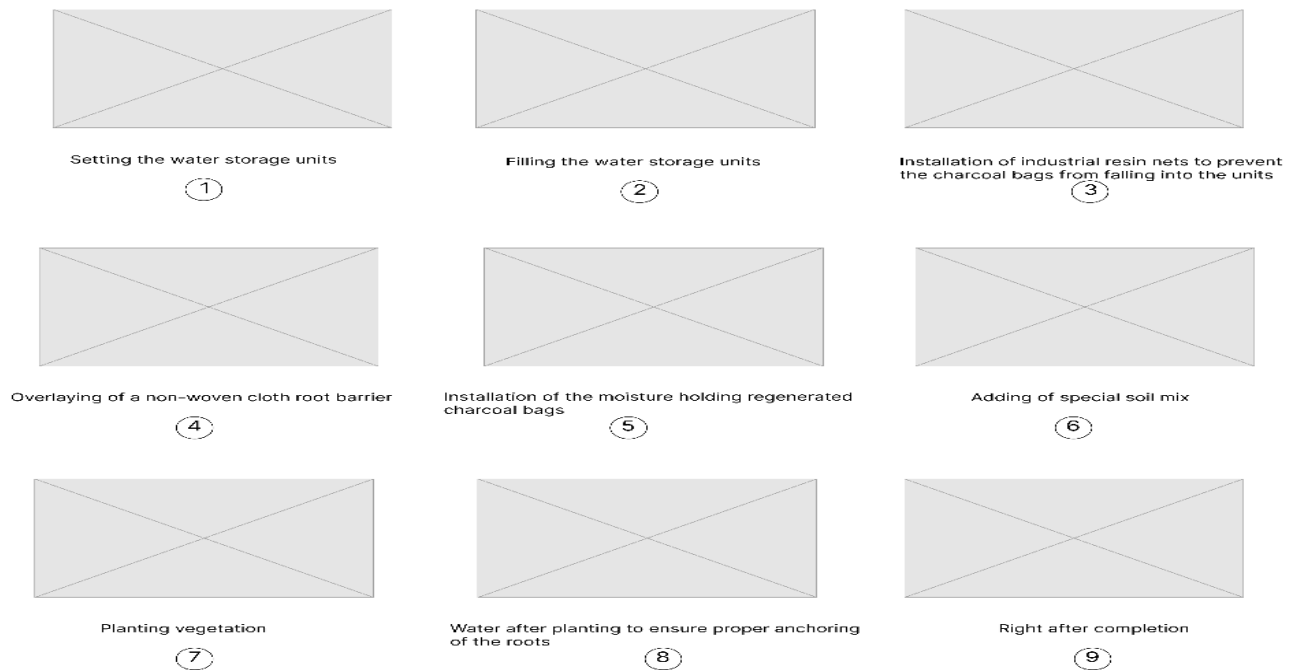
Figure 38. Mid-fidelity Services_Midori-chan_1

Vegetation Characteristics

The Midori-chan greening system allows for the installation of more than 100 plant species, including grass, shrubs and mid-sized trees.



Installation Sequence



Midori-Chan Services FAQ

- Q1: Can I customize the items in the Bundle?
- Q2: Can I avail of the gardening services separately without purchasing the bundle?
- Q3: Will I receive planting instructions with the Gardening Bundle?
- Q4: How can I purchase the Bundle?
- Q5: What if I have further questions or need guidance about gardening?
- Q6: Can I return or exchange products included in the bundle?

Figure 39. Mid-fidelity Services_Midori-chan_2

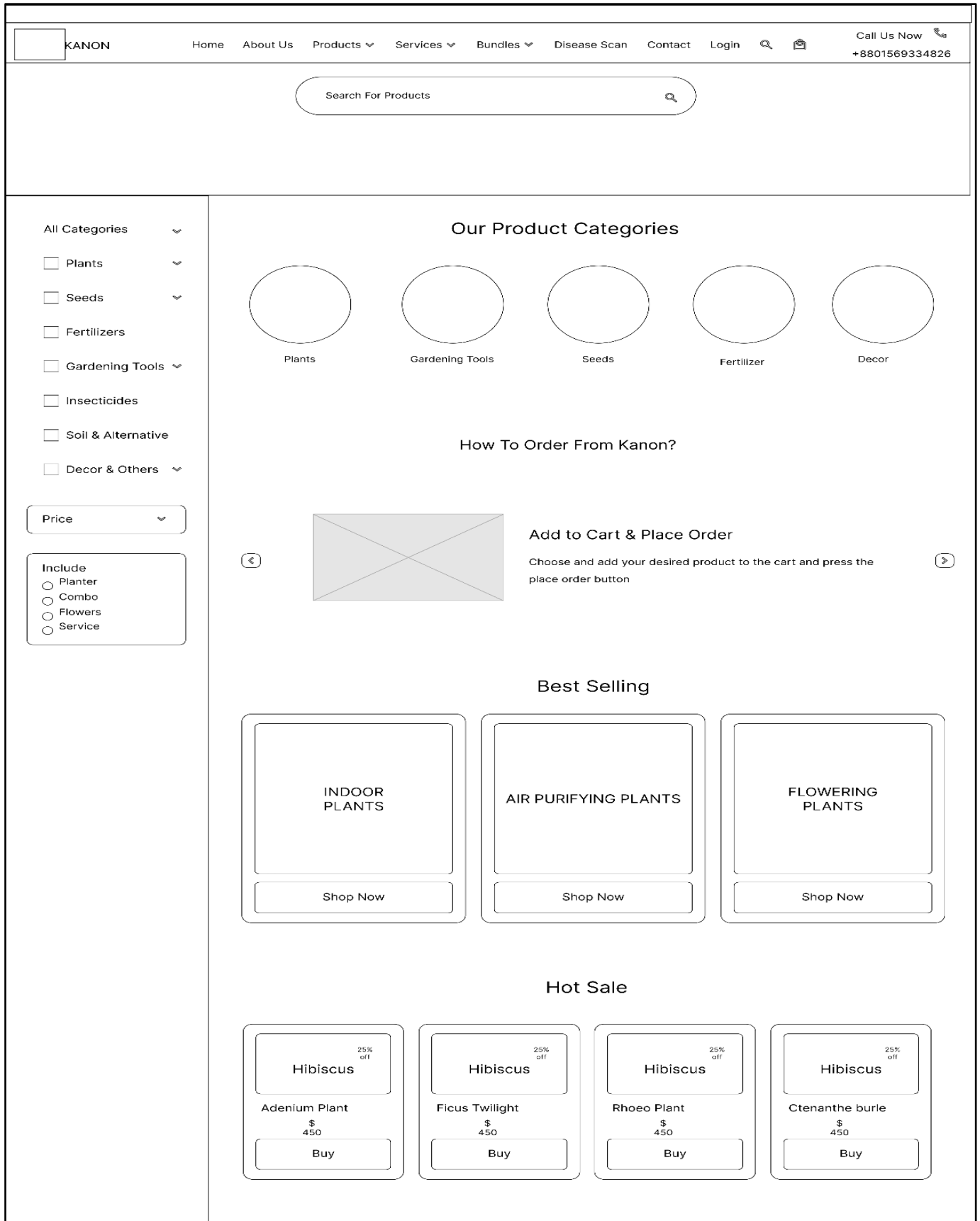



Figure 40. Mid-fidelity Products_0

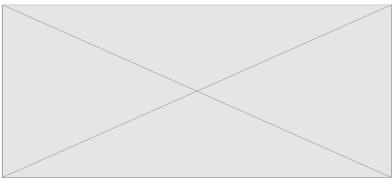


Figure 41. Mid-fidelity Products_1


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Custom Bundle Packages Tailored to Your Needs

Welcome to our Custom Bundle Packages, where we prioritize your unique needs and deliver tailored solutions for your garden. Whether you're looking for comprehensive lawn care, stunning landscape designs, or expert plant maintenance, our Custom Bundle Packages allow you to select the services that align perfectly with your vision.



All services in one bundle



<p>Starter \$1700</p> <ul style="list-style-type: none"> ✓ 1 Fruit Plant (\$ 400 - \$ 400) ✓ 1 Fruit Plant (\$ 400 - \$ 400) ✓ 1 Fruit Plant (\$ 400 - \$ 400) ✓ 1 Fruit Plant (\$ 400 - \$ 400) ✓ 1 Fruit Plant (\$ 400 - \$ 400) <p>Get Now</p>	<p>Most Popular <small>15% off</small></p> <p>Standard \$3000</p> <ul style="list-style-type: none"> ✓ 1 Fruit Plant (\$ 400 - \$ 400) ✓ 1 Fruit Plant (\$ 400 - \$ 400) ✓ 1 Fruit Plant (\$ 400 - \$ 400) ✓ 1 Fruit Plant (\$ 400 - \$ 400) ✓ 1 Fruit Plant (\$ 400 - \$ 400) ✓ 1 Fruit Plant (\$ 400 - \$ 400) <p>Get Now</p>	<p>Premium \$6000</p> <ul style="list-style-type: none"> ✓ 1 Fruit Plant (\$ 400 - \$ 400) ✓ 1 Fruit Plant (\$ 400 - \$ 400) ✓ 1 Fruit Plant (\$ 400 - \$ 400) ✓ 1 Fruit Plant (\$ 400 - \$ 400) ✓ 1 Fruit Plant (\$ 400 - \$ 400) <p>Get Now</p>
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Bundle FAQ

Welcome to our Gardening Bundle FAQ section! Here, we've compiled a list of commonly asked questions to help you better understand our gardening bundle and make an informed decision. If you have any additional queries, feel free to reach out to our customer support team for further assistance.

- Q1: Can I customize the items in the Bundle? ▾
- Q2: Can I avail of the gardening services separately without purchasing the bundle? ▾
- Q3: Will I receive planting instructions with the Gardening Bundle? ▾
- Q4: How can I purchase the Bundle? ▾
- Q5: What if I have further questions or need guidance about gardening? ▾
- Q6: Can I return or exchange products included in the bundle? ▾




Figure 42. Mid-fidelity Bundles

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Try our AI powered plant disease detection

Our AI-powered system uses advanced technology to accurately find and diagnose diseases that can harm your plants. It's an easy and fast way to detect plant diseases, so you can take action right away to protect your garden's health. Give our AI-powered plant disease detection a try today and discover the exciting future of smart gardening.

How It Works?

 <p>1 Click A Picture Take a picture of your plant leaf</p>	 <p>2 Upload Picture Click on try now to upload the picture</p>	 <p>3 Get The Report Our AI Powered system will analyze your plant & will provide a report for you</p>
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Your plant needs you

Our plants, just like humans and animals, can get sick too. When a plant falls ill, it can suffer from various diseases that hinder its growth and overall well-being. However, as plant caregivers, we have the power to protect and nurture them. In this brief, we'll explore the importance of plant disease checks and how you can ensure the health and vitality of your beloved plants.

Conduct a Plant Disease Check:

- Visual Inspection:** Observe your plants regularly, looking for any changes in their appearance, such as discolored leaves, spots, wilting, stunted growth, or unusual patterns. Also, check for signs of pests or insect damage.
- Leaf Examination:** Examine the leaves closely, both from the top and the underside. Look for spots, lesions, mold, or any abnormal growth. Pay attention to any leaf discoloration, yellowing, or browning.
- Stem and Root Inspection:** Check the stems and roots for signs of decay, rot, lesions, or unusual discoloration. Gently touch the stem to see if it feels firm or soft. Healthy roots should appear white or light-colored, while diseased roots may be brown, silmy, or show signs of decay.
- Pest Presence:** Keep an eye out for any pests that may be infesting your plants. Insects like aphids, mites, or caterpillars can cause damage and transmit diseases. Look for holes in leaves, chewed foliage, or the presence of webbing.

<p>Reach us</p> <p>📞 +88015667783456</p> <p>✉ Kanon@gmail.com</p> <p>📍 140 Motijheel Rd, Dhaka 1000</p>	<p>Company</p> <p>About</p> <p>Contact</p> <p>Blogs</p>	<p>Legal</p> <p>Privacy Policy</p> <p>Terms & Services</p> <p>Terms of Use</p> <p>Refund Policy</p>	<p>Quick Links</p> <p>Techlabz Keybox</p> <p>Downloads</p> <p>Forum</p>	<div data-bbox="1153 1606 1429 1701"> <p>Join Our Newsletter</p> <p>Your email address <input type="text"/> <input type="button" value="Subscribe"/></p> <p>* Will send you weekly updates for your better tool management.</p> </div>
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Figure 43. Mid-fidelity Disease Scan_0

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⚠️ 1 disease detected

Cedar Apple Rust

Disease Detail

Cedar apple rust is a fungal disease that affects apple trees (*Malus* spp.) and certain species of junipers or cedars (*Juniperus* spp.). It is caused by the fungus *Gymnosporangium juniperi-virginianae*. The disease gets its name from the fact that it requires both apple trees and cedar or juniper trees to complete its life cycle.

Quick Measures

- ✓ Consider planting apple tree varieties that are resistant to cedar apple rust.
- ✓ Remove and destroy any galls on cedar or juniper trees during the dormant season to reduce the amount of fungal spores available for infection.
- ✓ Prune apple trees to improve air circulation and sunlight penetration, which can help reduce disease incidence.
- ✓ In severe cases, fungicides can be applied according to the recommended schedule to protect apple trees from infection. Consult with local agricultural extension services or professionals for appropriate fungicide options and application timings.

Seek Consultancy

Dr. Robin Anwar
 Plant pathology expert
 Specializes in providing comprehensive plant disease solutions for a wide range of crops including IPM, Crop specific solution, Cutting edge diagnostics.
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 Email: dr.robinanwar@gmail.com

Suggested Fungicide/Insecticide for Cedar Apple Rust

Myclobutanil
\$ 450

Buy

Mancozeb
\$ 450

Buy

Triademifon
\$ 450

Buy

[See More >>](#)

Figure 44. Mid-fidelity Disease Scan_1

7.8 UI Kit (Style Guide)



Figure 45. UI Kit

Chapter 8 Prototype

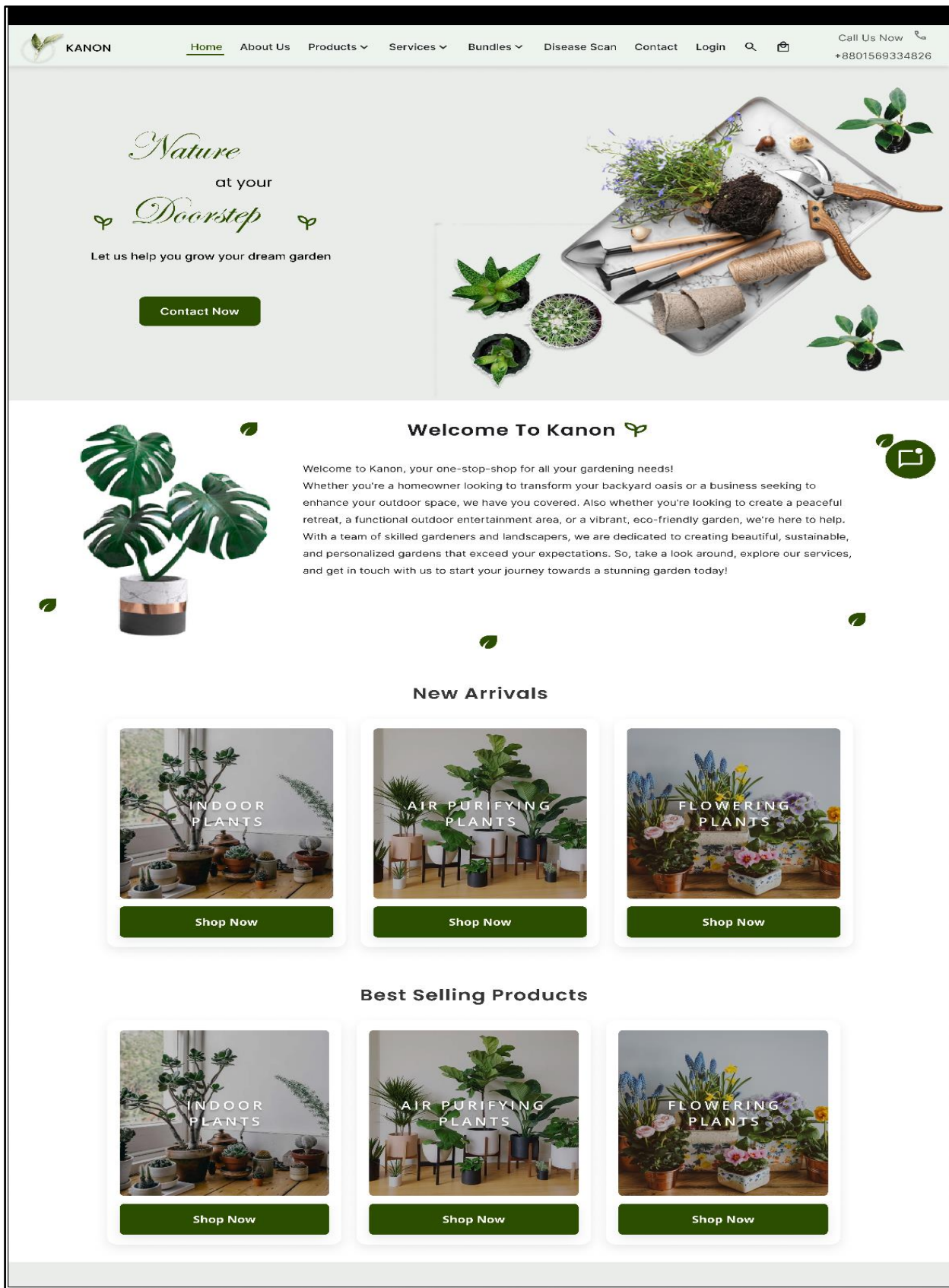


Figure 46. Home_0

Hydroponic, Aeroponic and Aquaponic

Training

At Firm and Online

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Services We Are Offering

Midori Chan

We came with this revolutionary Japanese greening system for building rooftops and roadside greening projects

[Learn More >](#)

Aquaponic Farming

We offer an eco-friendly symbiotic system for growing fresh produce and fish sustainably.

[Learn More >](#)

Hydroponic Farming

We provide a soilless and productive way to grow plants using nutrient-rich water solutions.

[Learn More >](#)

Vertical Farming

You can grow fresh produce in cities using our space-saving vertical farming service.

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Hire Gardener

Hire our professional gardener to transform and maintain your outdoor spaces with expertise and care

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Online Training & Consultation

We offer expert guidance and support to help you become a successful and confident gardener.

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Our Featured Projects

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Figure 47. Home_1




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Grow More, Worry Less With Aeroponic Farming

Experience the Future of Farming with Aeroponics: Efficient, Sustainable, and Delicious. Our Aeroponic System Redefines Traditional Agriculture by Growing Crops in a Soil-Free Environment, Saving Water and Space, and Producing Nutrient-Rich Plants Year-Round. Join the Growing Community of Eco-Friendly Farmers and Discover the Benefits of Aeroponic Farming Today

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Aeroponic Services




System Installation

We offer designing and installing systems tailored to the specific requirements of individuals or businesses




Training & Consultation

We offer training programs and educational resources to help clients understand the best practices for successful cultivation.




Seedling & Nutrients Supply

We provide high-quality seedlings and customized nutrient solutions tailored for aeroponic systems




Customization

We provide tailored solutions to meet the specific needs and requirements of individuals or businesses.



Nutrient Formulation


We provide nutrient solutions considering the unique needs of each crop and growth preferences.



Maintenance and Support

We provide individuals and businesses with the knowledge, skills, and guidance necessary for successful aeroponic cultivation


Installation Sequence



Setup and Design

1


Design and construct the aeroponic system, including the framework, plant support structures



Construction of Grow Towers

2


Design and construct the aeroponic system, including the framework, plant support structures



Installation of Nutrient Delivery System

3


Design and construct the aeroponic system, including the framework, plant support structures



Installation of Misters

4


Design and construct the aeroponic system, including the framework, plant support structures



Electrical Wiring and Automation

5

Design and construct the aeroponic system, including the framework, plant support structures



Planting and Transplanting

6

Design and construct the aeroponic system, including the framework, plant support structures

Figure 48. Services Aeroponic_0

Tower Plant Arrangement

Top (Vine Crops)

Bottle Guard
Cucumber
Tinda
Green beans

Middle (Leafy Greens)

Basil
Cilantro
Dill
Coriander
Spinach
Chard
Kale
Argula

Bottom (Big Plants)

Green beans
Tomato
Brinjals
Zucchini
Cabbage



Aeroponic Services FAQ

Q1: Can I customize the items in the Bundle?

Q2: Can I avail of the gardening services separately without purchasing the bundle?


Q3: Will I receive planting instructions with the Gardening Bundle?

Q4: How can I purchase the Bundle?

Q5: What if I have further questions or need guidance about gardening?

Q6: Can I return or exchange products included in the bundle?

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Opening Hours

Mon - Fri : 10am to 7pm
Saturday : 10am to 4pm
Sunday : Closed



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Figure 49. Services Aeroponic_1

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Greening Your Space with Midori-Chan

Midori-chan is a revolutionary Japanese greening system d that has been designed for building rooftops and roadside greening projects. It uses natural rainwater and recycled waste material to promote maximum vegetation growth. The ultra-lightweight system transfers moisture from water storage units via the thermal energy balance in the soil. A specially regenerated layer of charcoal filters the rainwater before it is drawn up into the plants' roots.

Contact Now

Benefits of installing Midori-Chan

Saves costs by using dramatically less water than conventional greening systems.

Reduces temperatures of concrete decks by over 30°C.

Decreases the thermal load of the local environment by transferring heat to vegetation

Removes more CO2 from the atmosphere through photosynthesis.

Offers flexibility around loading constraints by tailoring soil depth, as required.

A specially regenerated layer of charcoal filters the rainwater before it is drawn up into the plants' roots.

How the Midori-chan System Works

- 1 Rainwater is cleaned as it filters through Kawada's special capillary-action soil mix, plus a layer of regenerated charcoal, into water storage units
- 2 The water storage units are locked and interlinked, much like ice-cube trays, and are designed to enable excess water to drain away naturally.
- 3 Resin nets above the water storage units enable the hassle-free installation of bags of regenerated charcoal
- 4 Vegetation roots won't access the filtered rainwater directly due to a root barrier layer between the resin net and regenerated charcoal
- 5 The water storage units ensure an air gap exists between the stored water surface and the regenerated charcoal.
- 6 Surface soil starts to dry during hot weather.
- 7 The layer of regenerated charcoal below the soil absorbs water vapour from the air gap and feeds water steadily to the roots above

Figure 50. Services Midori-chan_0

Midori-Chan Services



System Installation
We offer designing and installing systems tailored to the specific requirements of individuals or businesses.



Training & Consultation
We offer training programs and educational resources to help clients understand the best practices for successful cultivation.



Seedling & Nutrients Supply
We provide high quality seedlings and customized nutrient solutions tailored for aeroponic systems.



Customization
We provide tailored solutions to meet the specific needs and requirements of individuals or businesses.









Nutrient Formulation
We provide nutrient solutions considering the unique needs of each crop and growth preferences.












Maintenance and Support
We provide individuals and businesses with the knowledge, skills, and guidance necessary for successful aeroponic cultivation.

Vegetation Characteristics

The Midori-chaan greening system allows for the installation of more than 100 plant species, including grass, shrubs and mid-sized trees.

	Grass Thin type	Grass Standard type	Groundcover 100-500mm	Shrub (small) 400mm to 1m	Shrub (large) 900mm-1,200mm	Mid sized tree 1,200mm-2,500mm
Vegetation installation examples						
Plant spacing	Complete coverage	Complete coverage	Within intervals	900mm intervals	900mm intervals	1,000mm intervals
Plant spacing	mm	mm	mm	mm	mm	mm
Soil thickness	30	30	100	150	200	250
Regenerated charcoal	30	30	30	30	30	30
Water storage unit	40	70	70	70	70	70
Total thickness	100	130	200	300	350	400
Estimated weight	Without plants kg/m ²	75	100	160	210	260
With plants kg/m ²	80	117	168	215	261	300
Dry weight with plants kg/m ²	52	62	100	156	220	290

Installation Sequence

- 1  Setting the water storage units
- 2  Filling the water storage units
- 3  Installation of industrial resin nets to prevent the charcoal bags from falling into the units
- 4  Overlaying of a non-woven cloth root barrier
- 5  Installation of the moisture holding regenerated charcoal bags
- 6  Adding of special soil mix
- 7  Planting vegetation
- 8  Water after planting to ensure proper anchoring of the roots
- 9  Right after completion

Midori-Chan Services FAQ

- Q1: Can I customize the items in the Bundle?
- Q2: Can I avail of the gardening services separately without purchasing the bundle?
- Q3: Will I receive planting instructions with the Gardening Bundle?
- Q4: How can I purchase the Bundle?
- Q5: What if I have further questions or need guidance about gardening?
- Q6: Can I return or exchange products included in the bundle?

Figure 51. Services Midori-chaan_1

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Custom Bundle Packages Tailored to Your Needs

Welcome to our Custom Bundle Packages, where we prioritize your unique needs and deliver tailored solutions for your garden. Whether you're looking for comprehensive lawn care, stunning landscape designs, or expert plant maintenance, our Custom Bundle Packages allow you to select the services that align perfectly with your vision.

All services in one bundle

Starter
₹ 1700

- ✓ 1 Fruit Plant (₹ 400 - ₹ 400)
- ✓ 1 Fruit Plant (₹ 400 - ₹ 400)
- ✓ 1 Fruit Plant (₹ 400 - ₹ 400)
- ✓ 1 Fruit Plant (₹ 400 - ₹ 400)
- ✓ 1 Fruit Plant (₹ 400 - ₹ 400)

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Most Popular

Standard
₹ 3000

15% off

- ✓ 1 Fruit Plant (₹ 400 - ₹ 400)
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- ✓ 1 Fruit Plant (₹ 400 - ₹ 400)
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- ✓ 1 Fruit Plant (₹ 400 - ₹ 400)

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Premium
₹ 6000

- ✓ 1 Fruit Plant (₹ 400 - ₹ 400)
- ✓ 1 Fruit Plant (₹ 400 - ₹ 400)
- ✓ 1 Fruit Plant (₹ 400 - ₹ 400)
- ✓ 1 Fruit Plant (₹ 400 - ₹ 400)
- ✓ 1 Fruit Plant (₹ 400 - ₹ 400)

[Get Now](#)

Bundle FAQ

Welcome to our Gardening Bundle FAQ section! Here, we've compiled a list of commonly asked questions to help you better understand our gardening bundle and make an informed decision. If you have any additional queries, feel free to reach out to our customer support team for further assistance.

Q1: Can I customize the Items in the Bundle? ▼

Q2: Can I avail of the gardening services separately without purchasing the bundle? ▼

Q3: Will I receive planting instructions with the Gardening Bundle? ▼

Q4: How can I purchase the Bundle? ▼

Q5: What if I have further questions or need guidance about gardening? ▼

Q6: Can I return or exchange products included in the bundle? ▼

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Figure 52. Bundles

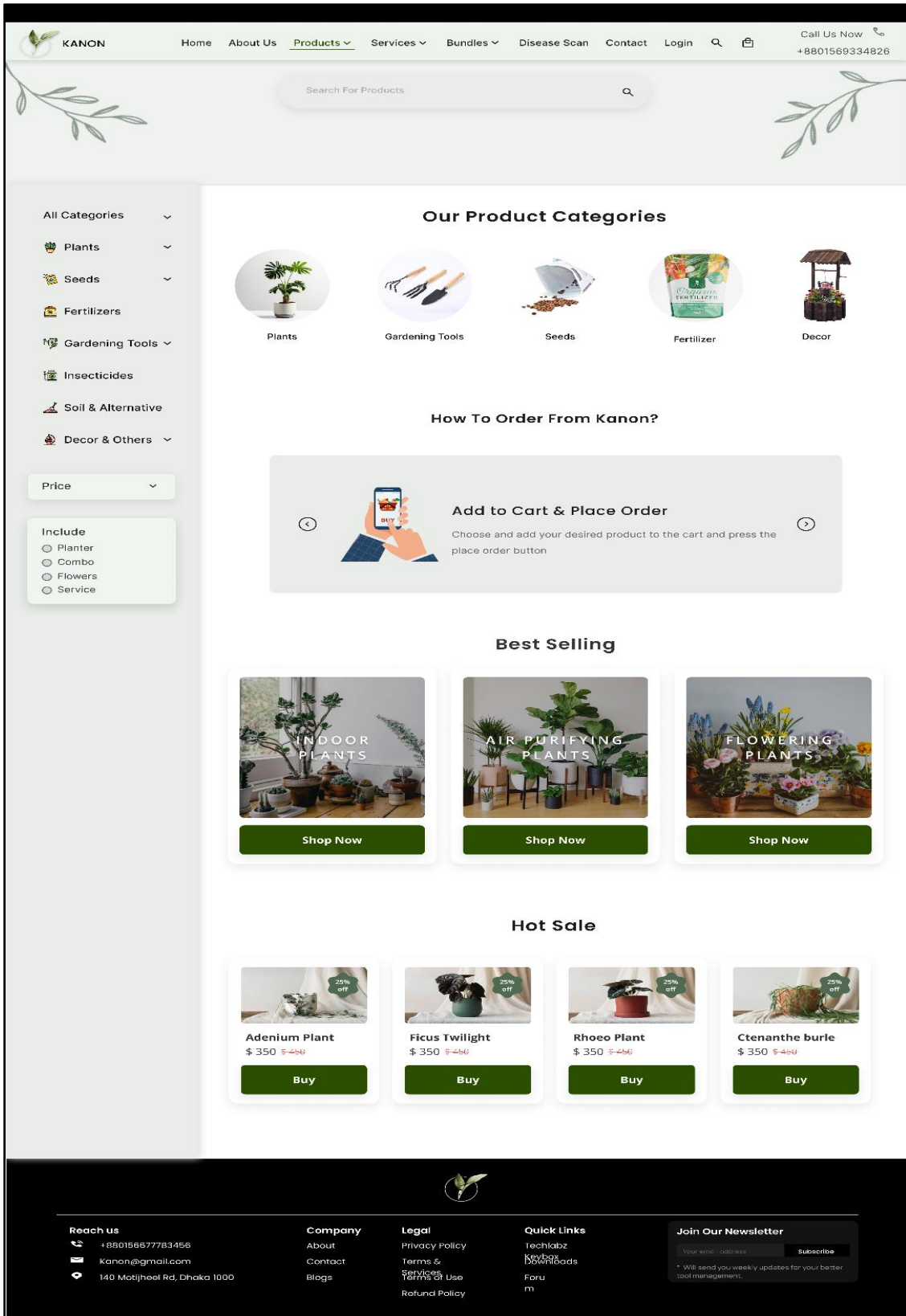


Figure 53. Products_0

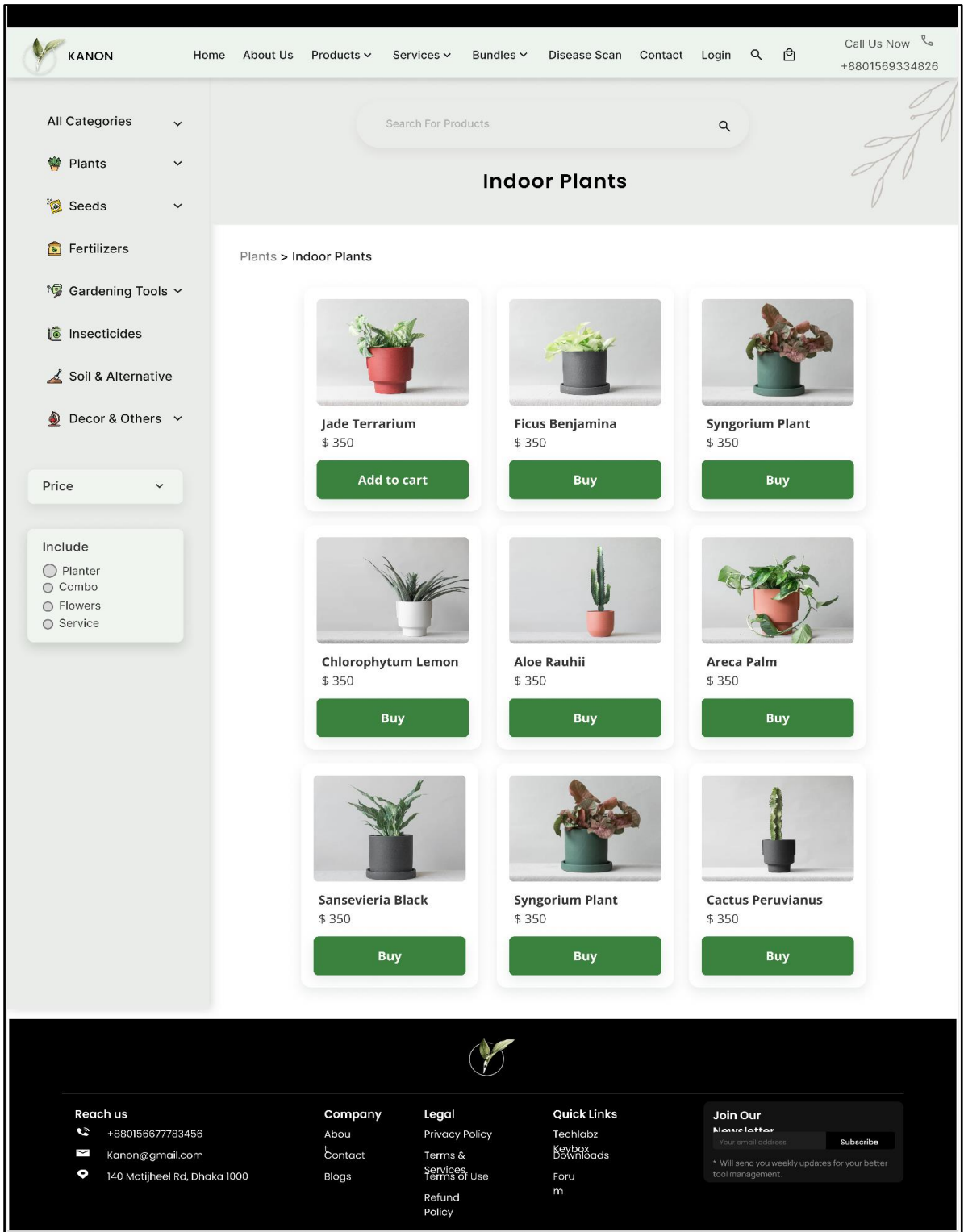


Figure 54. Products_1

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Try our AI powered plant disease detection

Our AI-powered system uses advanced technology to accurately find and diagnose diseases that can harm your plants. It's an easy and fast way to detect plant diseases, so you can take action right away to protect your garden's health. Give our AI-powered plant disease detection a try today and discover the exciting future of smart gardening.

Try Now

How It Works?

<p>1</p> <p>Click A Picture</p> <p>Take a picture of your plant leaf</p>	<p>2</p> <p>Upload Picture</p> <p>Click on try now to upload the picture</p>	<p>3</p> <p>Get The Report</p> <p>Our AI Powered system will analyze your plant & will provide a report for you</p>
--	--	---

Your plant needs you

Our plants, just like humans and animals, can get sick too. When a plant falls ill, it can suffer from various diseases that hinder its growth and overall well-being. However, as plant caregivers, we have the power to protect and nurture them. In this brief, we'll explore the importance of plant disease checks and how you can ensure the health and vitality of your beloved plants.

Conduct a Plant Disease Check:

- Visual Inspection:** Observe your plants regularly, looking for any changes in their appearance, such as discolored leaves, spots, wilting, stunted growth, or unusual patterns. Also, check for signs of pests or insect damage.
- Leaf Examination:** Examine the leaves closely, both from the top and the underside. Look for spots, lesions, mold, or any abnormal growth. Pay attention to any leaf discoloration, yellowing, or browning.
- Stem and Root Inspection:** Check the stems and roots for signs of decay, rot, lesions, or unusual discoloration. Gently touch the stem to see if it feels firm or soft. Healthy roots should appear white or light-colored, while diseased roots may be brown, slimy, or show signs of decay.
- Pest Presence:** Keep an eye out for any pests that may be infesting your plants. Insects like aphids, mites, or caterpillars can cause damage and transmit diseases. Look for holes in leaves, chewed foliage, or the presence of webbing.

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Figure 55. Disease Scan_0

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▲ 1 disease detected

Cedar Apple Rust


Disease Detail

Cedar apple rust is a fungal disease that affects apple trees (*Malus* spp.) and certain species of junipers or cedars (*Juniperus* spp.). It is caused by the fungus *Gymnosporangium juniperi-virginianae*. The disease gets its name from the fact that it requires both apple trees and cedar or juniper trees to complete its life cycle.

Quick Measures


- ✓ Consider planting apple tree varieties that are resistant to cedar apple rust.
- ✓ Remove and destroy any galls on cedar or juniper trees during the dormant season to reduce the amount of fungal spores available for infection.
- ✓ Prune apple trees to improve air circulation and sunlight penetration, which can help reduce disease incidence.
- ✓ In severe cases, fungicides can be applied according to the recommended schedule to protect apple trees from infection. Consult with local agricultural extension services or professionals for appropriate fungicide options and application timings.

Seek Consultancy




Dr. Robin Anwar
 Plant pathology expert
 Specializes in providing comprehensive plant disease solutions for a wide range of crops including IPM, Crop specific solution, Cutting edge diagnostics.
 Call: 01545638561
 Email: dr.robinanwar@gmail.com

Suggested Fungicide/Insecticide for Cedar Apple Rust




Myclobutanil
\$ 350 ~~\$-450~~ ♥

Buy



Mancozeb
\$ 350 ~~\$-450~~ ♥

Buy



Triademifon
\$ 350 ~~\$-450~~ ♥

Buy

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Figure 56. Disease Scan_1

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Gender

Date Of Birth

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Address 📍

+ New Address


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--	--	--	--	--

Figure 58. My Profile

Chapter 9 Test

9.1 Heat Map

Here by using the heatmap visibility testing has been done. Which provided insights into how users interact with the interface by visualizing their attention and focus areas. By analyzing and interpreting heatmap data, the visibility and effectiveness of key elements have been optimized.

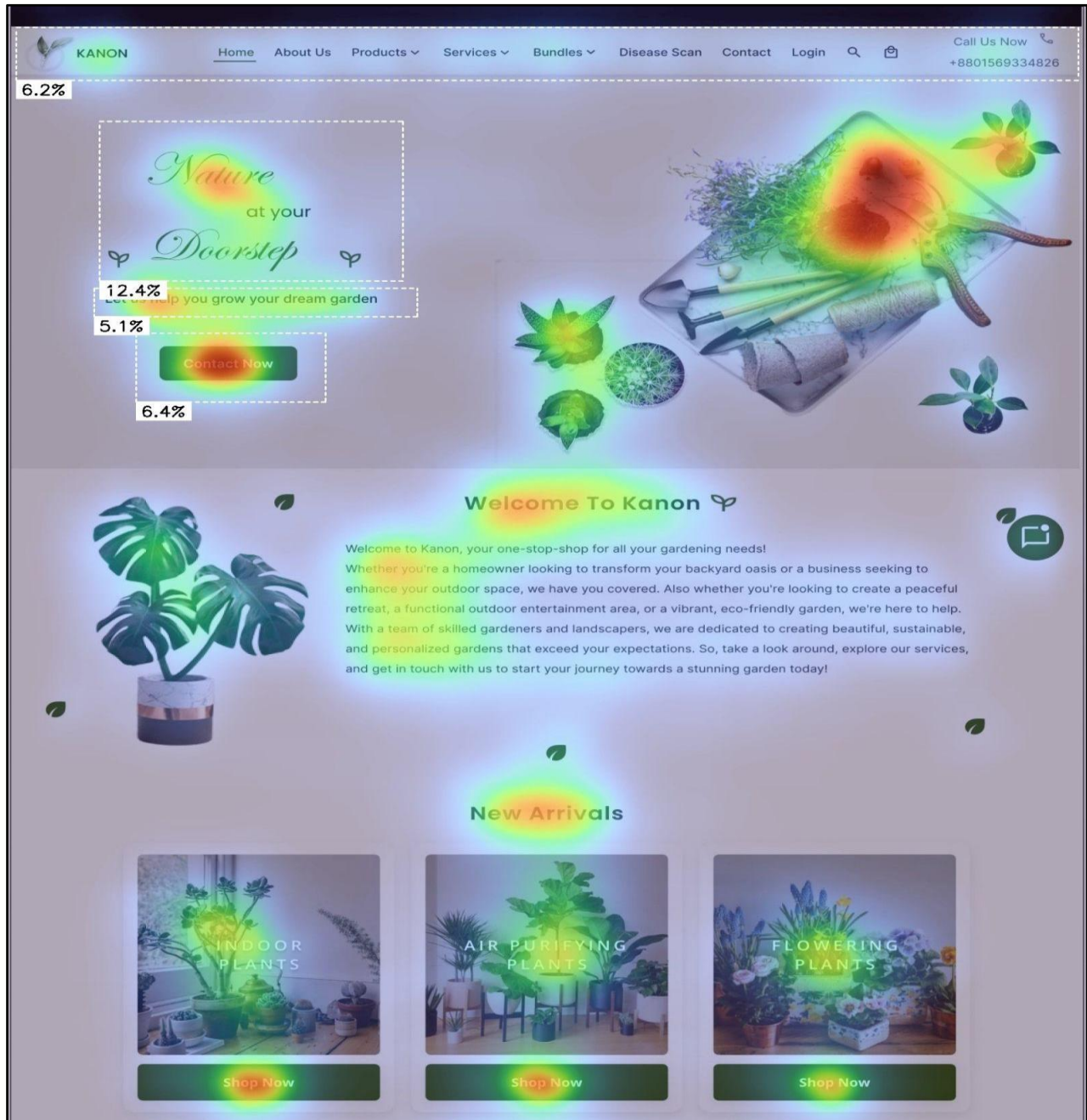


Figure 57. Heat Map Home_0

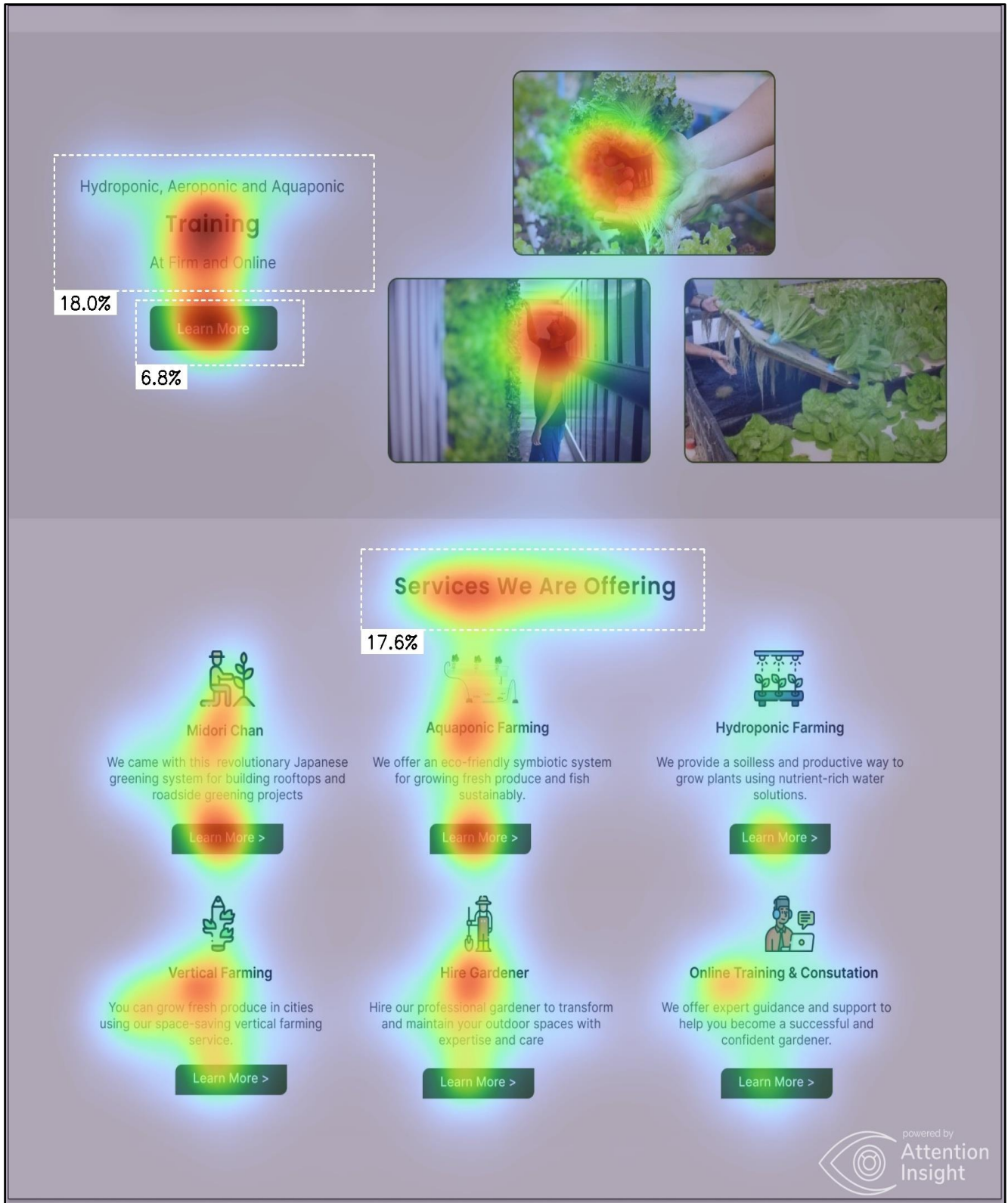


Figure 59. Heat Map Home_1

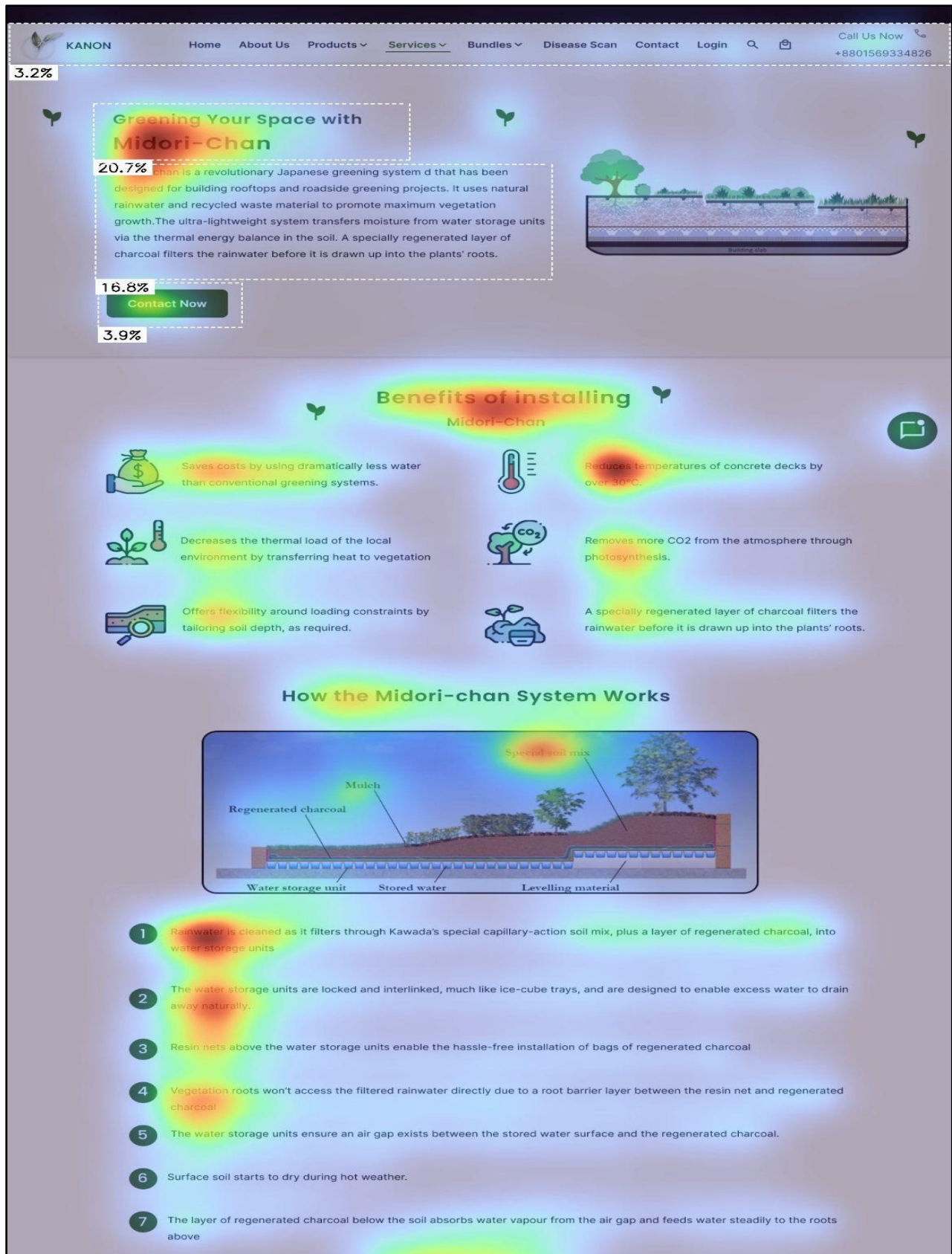


Figure 60. Heat Map Services Midori-chan_0

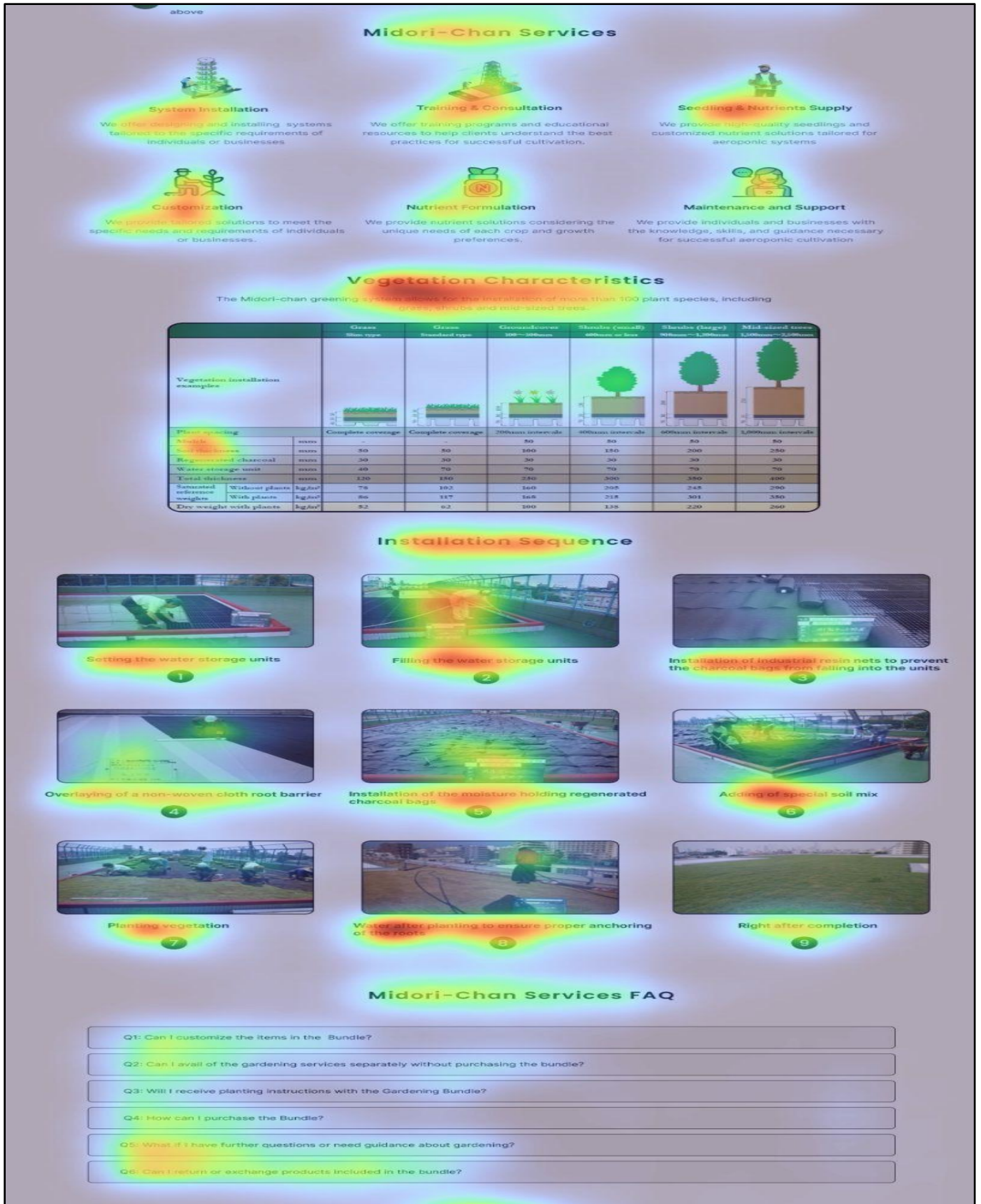


Figure 61. Heat Map Services Midori-chan_1

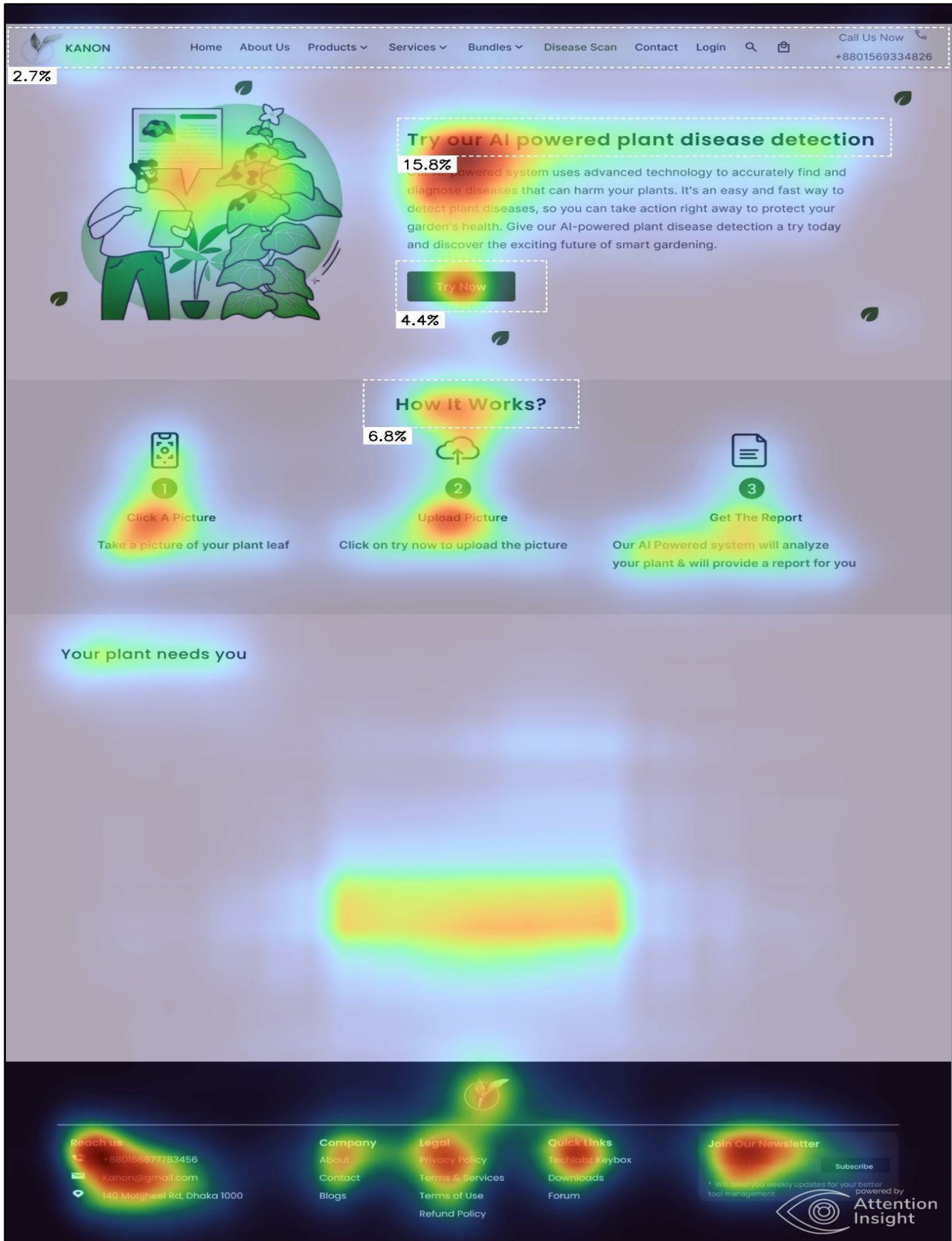


Figure 62. Heat Map Disease Scan



Figure 63. Heat Map Products

9.2 Usability testing()

Total feedback analyzed: 15 responses.

9.2.1 Task 1 Sentiment Analysis

Task - Browsing and Selecting Products

Positive Observations

- 80% of users appreciated the intuitive interface and smooth navigation while browsing and selecting products.
- 70% of users liked how the products were categorized, making it easier for them to find specific items.

Negative Observations

- 40% of users mentioned the need for more advanced filtering options to narrow down search results based on specific criteria.

Major Findings

- The search functionality received a neutral sentiment, indicating room for improvement.

Recommendations

- Enhance the filtering capabilities to allow users to refine their search results based on various criteria, such as price, brand, or specific features.

9.2.2 Task 2 Sentiment Analysis

Task - Managing the cart

Positive Observations

- 75% of users found it easy to add items to their cart without any issues or delays.
- 80% of users found it convenient to modify the quantities of items in their cart.

- 80% of Users appreciated the clear and concise presentation of their cart information.

Negative Observations

- 60% of users expressed disappointment over the absence of a saved cart feature.

Major Findings

- Difficulties with applying discount codes, lack of a saved cart feature, and limited payment options were identified as areas of improvement.
- Improvements can be made by providing visual confirmation, enhancing cart customization options, and introducing more promotional offers.

Recommendations

- Enable users to save their carts for future sessions or when they are not ready to complete the purchase immediately.
- Introduce features like sharing carts with others to offer users greater control and organization.

9.2.3 Task 3 Sentiment Analysis

Task - Booking a service

Positive Observations

- 80% of users found it easy to discover and explore the available services.
- 75% of users expressed satisfaction with the booking process, finding it intuitive and straightforward.

Negative Observations

- 60% of users expected features like selecting specific service providers or requesting additional preferences.
- 45% of Users expressed confusion about the confirmation process after booking a service.

Major Findings

- Improvement areas include enhancing customization options,
- and providing clearer confirmation processes.

Recommendations

- Implement a real-time availability calendar that informs users about service availability upfront.
- Introduce features that allow users to customize their service bookings, such as selecting specific service providers, requesting additional preferences, or providing specific instructions.
- Provide clear and concise information about the confirmation process after booking

9.2.4 Task 4 Sentiment Analysis

Task - Logging In and Accessing My Profile.

Positive Observations

- 90% of users found the login process smooth and straightforward.
- 85% of users found it easy to navigate to their profile section.
- 80% of users appreciated having access to their order history, service bookings, and other relevant information.

Negative Observations

- 45% of Users expressed a desire for more personalized recommendations or suggestions based on their profile information.
- 40% of users expected help documentation, FAQs, or customer support channels to assist them.

Major Findings

- Improvement areas include providing personalized recommendations.
- Provide accessible support resources.

Recommendations

- Implement personalized recommendations or suggestions based on the user's profile information.
- Provide comprehensive help documentation, FAQs, and accessible customer support channels to assist users in troubleshooting login or profile access issues.

Chapter 10 Evaluation

10.1 Evaluation technique(GOMS Evaluation Technique)

The evaluation has been done by following the GOMS(Goals, Operations, Methods, Selection rules) evaluation technique.

1. Goal: Place an Order

G1: Browse Product Catalog

- Open website----- (2 seconds)
- Navigate to product catalog----- (3 seconds)

G2: Select Desired Product

- Search for desired product----- (5 seconds)
- Click on product to view details----- (0.5 seconds)
- Add product to cart----- (1 second)

G3: Review and Modify Cart

- Open shopping cart----- (2 seconds)
- Review items in the cart----- (3 seconds)
- Modify quantity or remove items----- (4 seconds)

G4: Proceed to Checkout

- Click on Checkout button----- (0.5 seconds)

G5: Provide Billing and Shipping Information

- Enter billing address----- (30 seconds)
- Select shipping method----- (2 seconds)

G6: Select Payment Method

- Select preferred payment method----- (2.5 seconds)

G7: Confirm Order

- Review order summary----- (3 seconds)
- Move cursor to Place Order button----- (0.4 seconds)
- Click on Place Order button----- (0.2 seconds)

Total time: 59.6 seconds

2. Goal: Modify Order Details

G1: Navigate to My Orders Section

- Move cursor to My Orders section----- (1.2 seconds)
- Click on My Orders section----- (0.20 seconds)

G2: Locate the Specific Order

- Locate the specific order to modify----- (2 seconds)

G3: Open Order Details

- Click on the order to open details----- (0.20 seconds)

G4: Edit Order Detail

- Edit the desired order detail----- (10 seconds)

G5: Save Modified Order

- Save the modified order----- (0.50 seconds)

G6: Confirm Changes

- Move cursor to Confirm button----- (0.40 seconds)
- Click on Confirm button----- (0.20 seconds)

Total Time: 14.7 seconds

3. Goal: Book a service

G1: Browse available services

- Open service catalog----- (0.5 seconds)
- Scroll through the list of services----- (3 seconds)
- Read service descriptions----- (5 seconds)
- Select a desired service----- (1 second)

G2: Choose a service provider

- View service provider options----- (2 seconds)
- Read provider reviews and ratings----- (4 seconds)
- Compare prices and service details----- (6 seconds)
- Select a preferred service provider----- (1 second)

G3: Select a date and time

- View available dates and time slots----- (2 seconds)

- Check personal schedule----- (3 seconds)
- Choose a convenient date and time----- (1 second)

G4: Provide necessary information

- Enter personal details----- (5 seconds)
- Fill in service-specific information----- (8 seconds)

G5: Confirm and book the service

- Review booking details----- (3 seconds)
- Agree to terms and conditions----- (2 seconds)
- Click on "Book Now" button----- (0.5 seconds)
- Receive booking confirmation----- (1 second)

Total time: 46 seconds

4. Goal: Book a service

G1: Capture and upload picture

- Open the plant disease detection app----- (3 seconds)
- Access the camera function within the app----- (1.5 seconds)
- Capture a picture of the affected plant----- (2 seconds)
- Save the picture----- (0.5 seconds)
- Upload the saved picture to the app----- (3 seconds)

G2: Analyze the uploaded picture

- Process the uploaded picture for disease detection----- (10 seconds)
- Apply image recognition algorithms to identify plant diseases----- (5 seconds)
- Generate a report on the identified disease(s)----- (3 seconds)

G3: View the disease report

- Display the generated disease report on the screen----- (2 seconds)
- Provide a detailed description of the identified disease(s)----- (4 seconds)
- Show recommended treatments or actions to address the disease(s)----- (3 seconds)

Total time: 34 seconds

10.2 Validation of design

Table 3: Design Validation

Task	Time on Task	Number of clicks	Description
1. Place an Order	2 minutes	4	The user navigates to the "Shop" page, selects the desired product category, clicks on the specific product, adds it to the cart, and proceeds to checkout. Finally, the user confirms the order by clicking the "Place Order" button.
2. Modify order details	1 minute 30 seconds	3	The user goes to the "Orders" section in their account, selects the order they want to modify, clicks on the "Modify" button, makes the necessary changes (e.g., quantity, shipping address), and saves the updated details by clicking the "Update" button.
3. Book a service	2 minutes 30 seconds	4	The user visits the "Services" page, chooses the desired service category, selects a specific service, clicks on the available date/time slot, fills in the required details (e.g., name, contact information), and confirms the booking by clicking the "Book Now" button.
4. Get a course	3 minutes	5	The user goes to the "Training Courses" page, selects a specific course, clicks on the course details to learn more, adds the course to the cart, proceeds to checkout, fills in the necessary information, and finalizes enrollment by making the payment.
5. Check plant disease	2 minutes	3	The user goes to the Plant Health page, clicks the try now button, uploads a picture of the infected plant, and finally gets the result.

Chapter 11 Conclusion

11.1 Project Summary:

The sustainable gardening web solution project aimed to create a website where users can easily engage in eco-friendly gardening. The website included helpful features like hydroponic and aquaponic services, vertical farming information, the ability to hire professional gardeners, a tool to check for plant diseases, an online store for buying gardening supplies, special bundle offers, a login system, and user profiles. The project focused on making the website user-friendly and visually appealing to promote sustainable gardening practices.

11.2 Project Goal:

The goal of the project was to make a website that helps people learn about and practice sustainable gardening. The website provided

- Services like hydroponics, aquaponics and vertical farming
- taught several farming techniques,
- allowed users to hire professional gardeners,
- check for plant diseases,
- and buy gardening supplies online.
- The aim was to make it easy and enjoyable for users to adopt sustainable gardening practices.

11.3 Success of the Project:

The project can be considered successful based on the following achievements:

Implementation of key features: The project successfully integrated all the essential features, including hydroponic service, aquaponic service, vertical farming, hiring professional gardeners, plant disease check, e-commerce functionality, bundle offers, login system, and user profiles.

User-friendly interface: The web solution offers a user-friendly interface that allows users to navigate effortlessly and access the desired features with ease.

Visual appeal: The design elements and aesthetics of the solution were given due consideration, resulting in an attractive and engaging user interface.

11.4 Documentation:

The documentation for the project consisted of the following stages, activities, and plans:

Project Planning: Defined project objectives, identified target users, and determined key features to be incorporated.

User Research: Conducted research to understand the needs and preferences of the target users in sustainable gardening practices.

Information Architecture: Developed a clear structure and organization of the web solution to enhance user navigation and usability.

Wireframing and Prototyping: Created wireframes and interactive prototypes to visualize the user interface and gather feedback for improvements.

Visual Design: Designed the visual elements, including color schemes, typography, and icons, to create an appealing and consistent interface.

Testing: Conducted thorough testing to identify and rectify any bugs, usability issues, or performance concerns.

Evaluation: Evaluated the design by assessing and analyzing the user interface and user experience using GOMS evaluation technique.

11.5 My Experience:

Throughout the project, I gained valuable experience in UI/UX design. I learned to prioritize user experience, conduct user research, and iteratively improve the solution based on feedback. Overall, the project provided me with a comprehensive understanding of designing and developing sustainable gardening web solutions while considering user needs and sustainability principles.

Appendix

User Guide

For User(s):

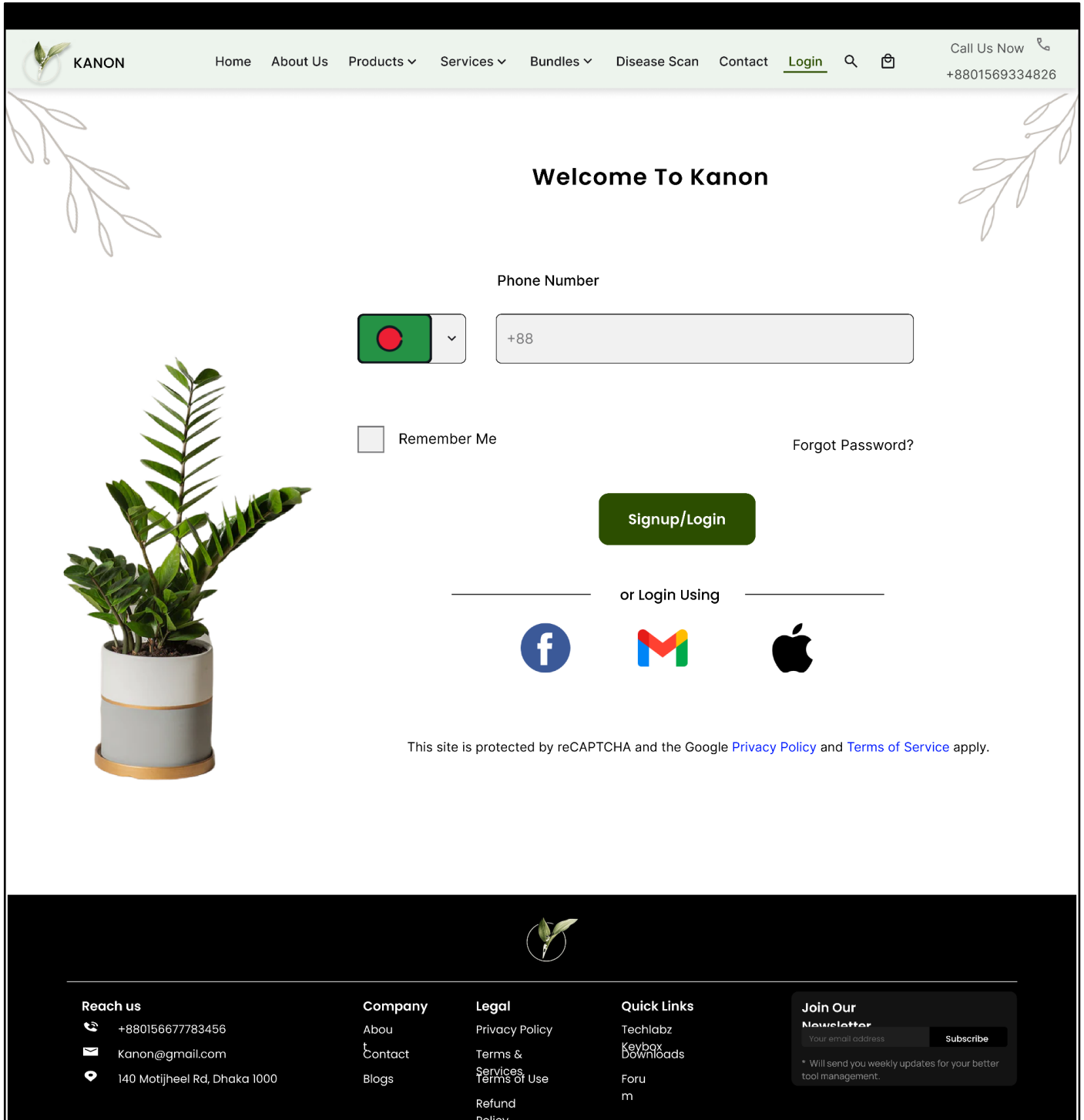


Figure 64. Appendix Products_0

Note: This is the login system for the users. Users need to log into the system first in order to access the services of the website. Users can save their login credentials for specific browser(s) by clicking on the 'Remember Me' option. If users forget their password, they can recover it by using the 'Forgot Password' option.

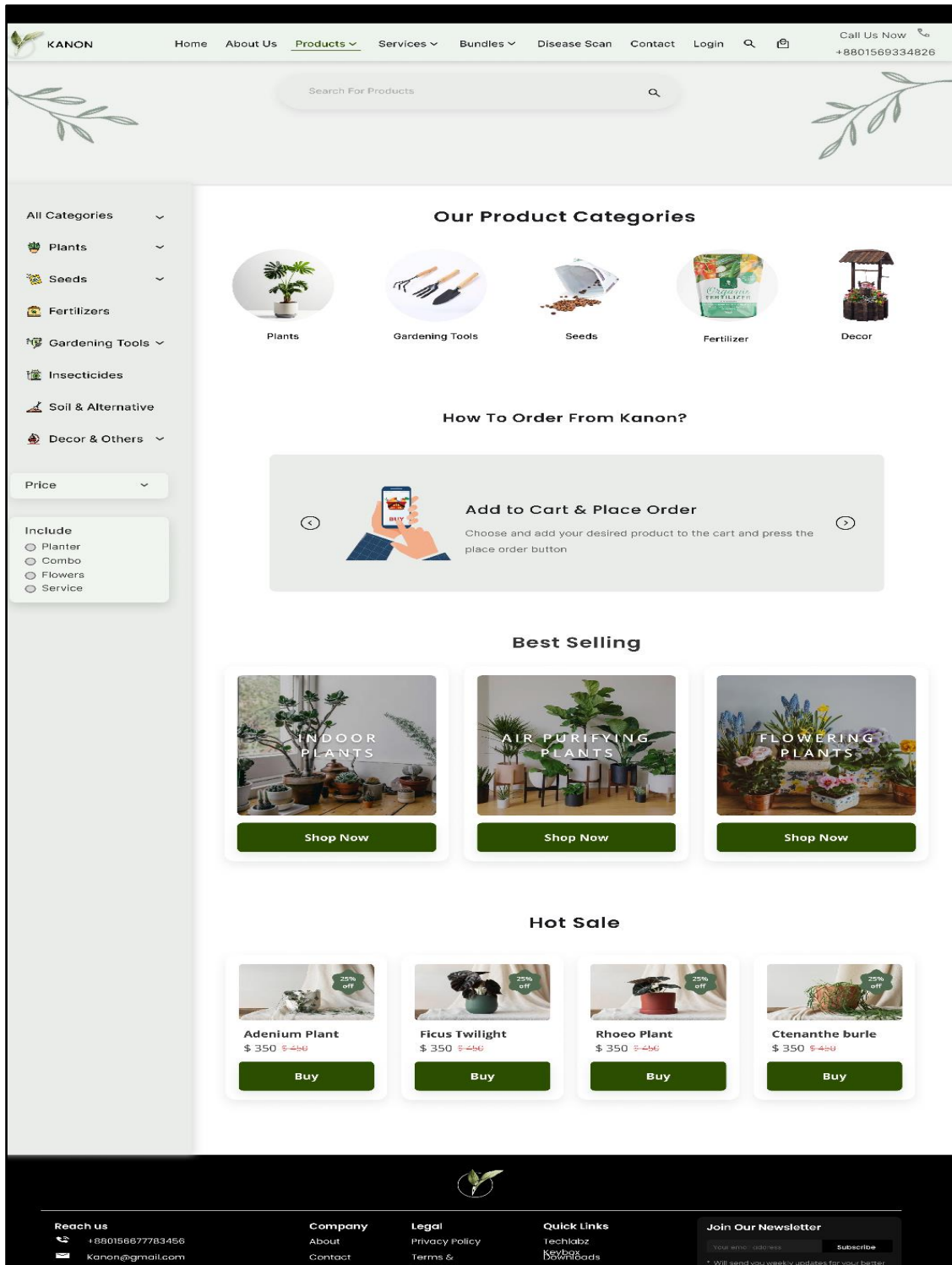


Figure 65. Appendix Products_1

Note: Users can browse products by categories. They also have the luxury to browse the ‘Best Selling’ and ‘Hot Sale’ products from the product page.

Examples of product categories:

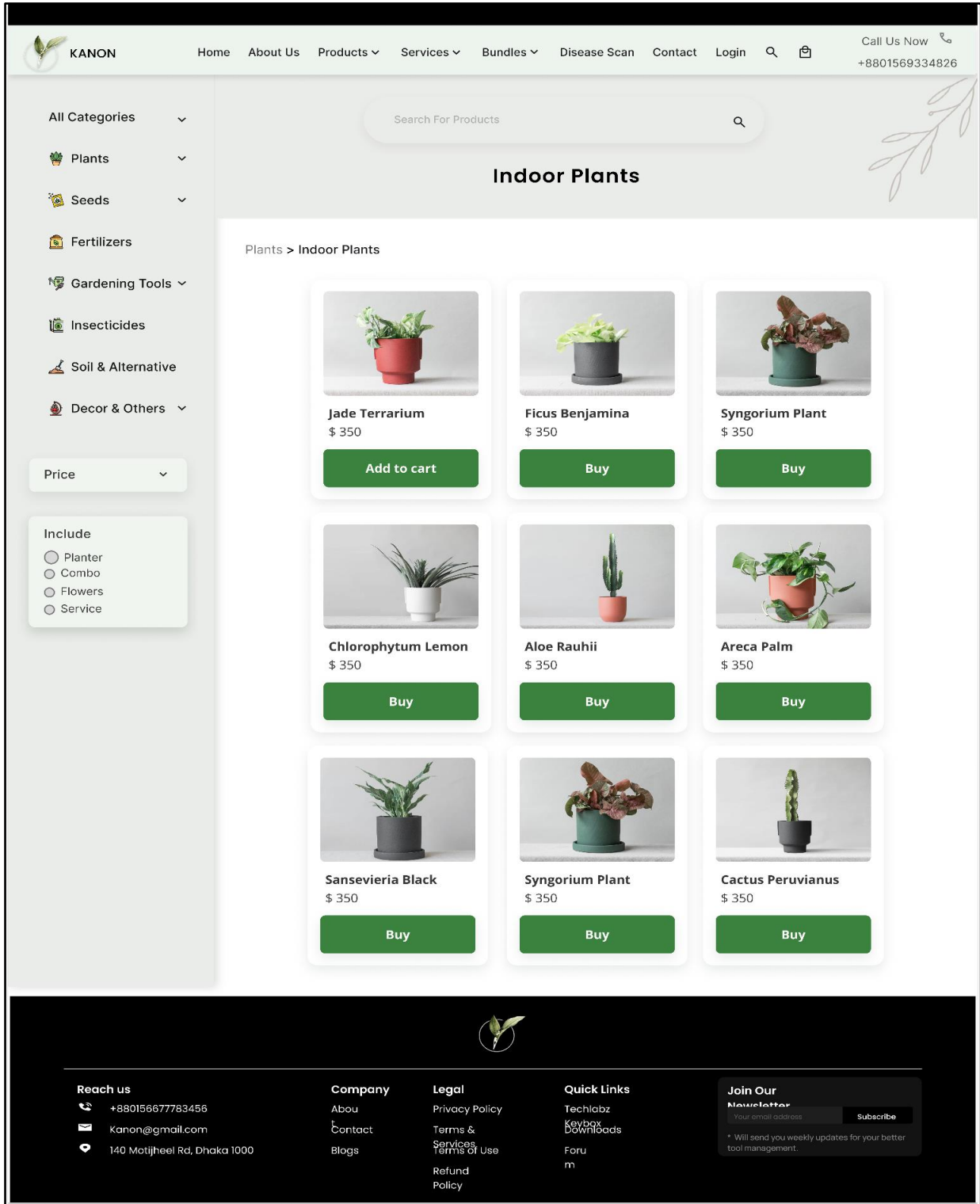


Figure 66. Appendix Products_2

KANON

[Home](#)
[About Us](#)
[Products](#)
[Services](#)
[Bundles](#)
[Disease Scan](#)
[Contact](#)
[Login](#)

[Call Us Now](#)
 +8801569334826

All Categories

- Plants
- Seeds
- Fertilizers
- Gardening Tools
- Insecticides
- Soil & Alternative
- Decor & Others

Price

Include

- Planter
- Combo
- Flowers
- Service

Seeds

Seeds > Vegetable Seeds

Jade Terrarium
\$ 350

Add to cart

Ficus Benjamina
\$ 350

Buy

Syngorium Plant
\$ 350

Buy

Chlorophytum Lemon
\$ 350

Buy

Aloe Rauhii
\$ 350

Buy

Areca Palm
\$ 350

Buy

Sansevieria Black
\$ 350

Buy

Syngorium Plant
\$ 350

Buy

Cactus Peruvianus
\$ 350

Buy

Reach us

+880156677783456

Kanon@gmail.com

140 Motijheel Rd, Dhaka 1000

Company

About

Contact

Blogs

Legal

Privacy Policy

Terms & Services

Terms of Use

Refund Policy

Quick Links

Techlabz

Keybox Downloads

Forum

Join Our Newsletter

Your email address

Subscribe

* Will send you weekly updates for your better tool management.

Figure 67. Appendix Products_3

Note: Users can see product details by clicking on the 'Buy Now' button. It shows useful information about the product such as product description, reviews and terms of use etc.

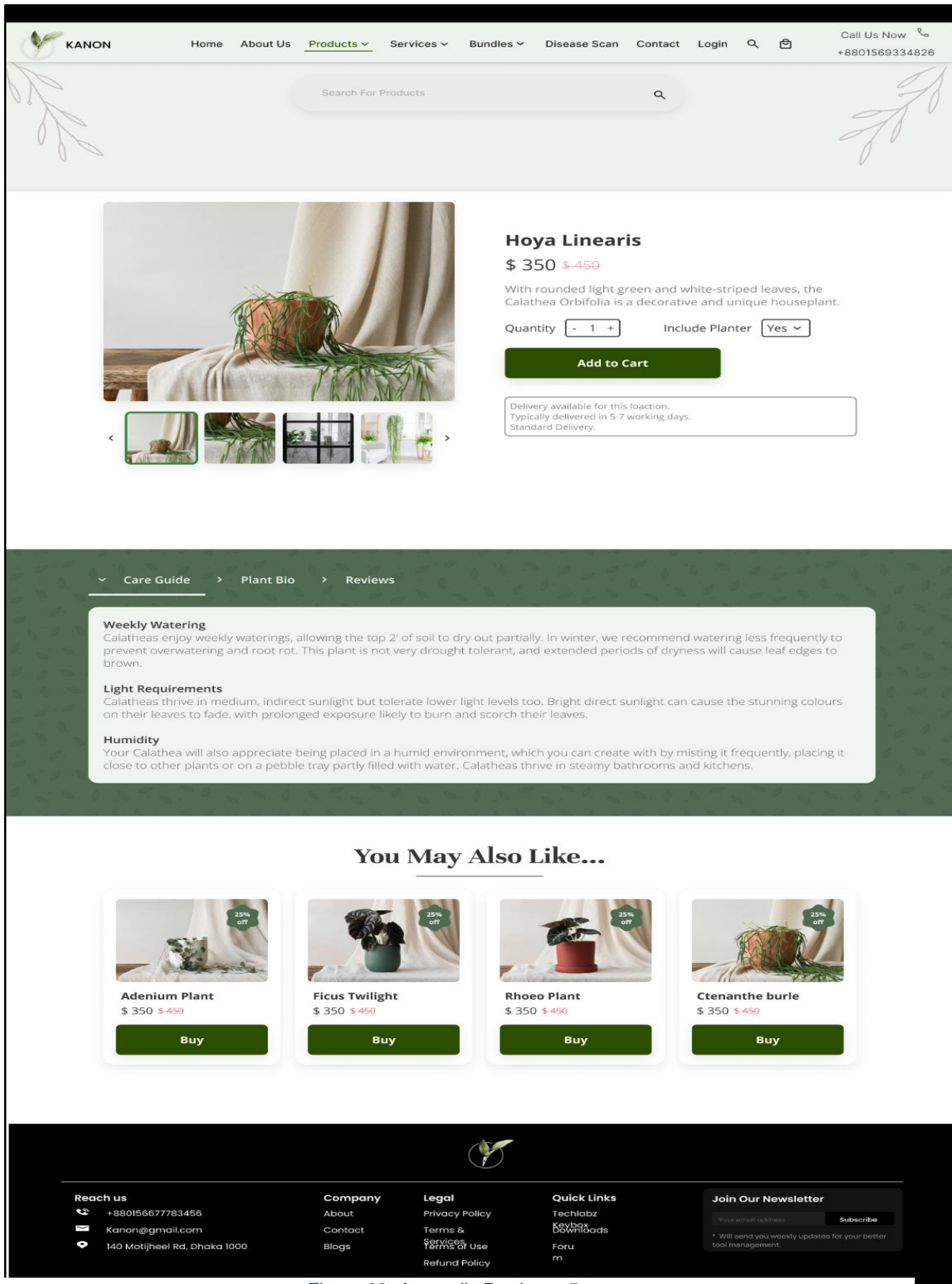


Figure 68. Appendix Products_5

Note: Same as products, users can also browse and add to cart their desired 'Services' and 'Bundles'.

Few examples:

KANON Home About Us Products Services Bundles Disease Scan Contact Login Call Us Now +8801569334826

Custom Bundle Packages Tailored to Your Needs

Welcome to our Custom Bundle Packages, where we prioritize your unique needs and deliver tailored solutions for your garden. Whether you're looking for comprehensive lawn care, stunning landscape designs, or expert plant maintenance, our Custom Bundle Packages allow you to select the services that align perfectly with your vision.

All services in one bundle

- Starter** ₹ 1700
 - ✓ 1 Fruit Plant (₹ 400 - ₹ 400)
 - ✓ 1 Fruit Plant (₹ 400 - ₹ 400)
 - ✓ 1 Fruit Plant (₹ 400 - ₹ 400)
 - ✓ 1 Fruit Plant (₹ 400 - ₹ 400)
 - ✓ 1 Fruit Plant (₹ 400 - ₹ 400)[Get Now](#)
- Standard** ₹ 3000 Most Popular 15% off
 - ✓ 1 Fruit Plant (₹ 400 - ₹ 400)
 - ✓ 1 Fruit Plant (₹ 400 - ₹ 400)
 - ✓ 1 Fruit Plant (₹ 400 - ₹ 400)
 - ✓ 1 Fruit Plant (₹ 400 - ₹ 400)
 - ✓ 1 Fruit Plant (₹ 400 - ₹ 400)[Get Now](#)
- Premium** ₹ 6000
 - ✓ 1 Fruit Plant (₹ 400 - ₹ 400)
 - ✓ 1 Fruit Plant (₹ 400 - ₹ 400)
 - ✓ 1 Fruit Plant (₹ 400 - ₹ 400)
 - ✓ 1 Fruit Plant (₹ 400 - ₹ 400)
 - ✓ 1 Fruit Plant (₹ 400 - ₹ 400)[Get Now](#)

Bundle FAQ

Welcome to our Gardening Bundle FAQ section! Here, we've compiled a list of commonly asked questions to help you better understand our gardening bundle and make an informed decision. If you have any additional queries, feel free to reach out to our customer support team for further assistance.

- Q1: Can I customize the items in the Bundle?
- Q2: Can I avail of the gardening services separately without purchasing the bundle?
- Q3: Will I receive planting instructions with the Gardening Bundle?
- Q4: How can I purchase the Bundle?
- Q5: What if I have further questions or need guidance about gardening?
- Q6: Can I return or exchange products included in the bundle?

Reach us
+88015687783456
Kanon@gmail.com
140 Motijheel Rd, Dhaka 1000

Company
About
Contact
Blog

Legal
Privacy Policy
Terms & Services
Terms of Use
Refund Policy

Quick Links
Techlabz Keybox
Downloads
Forum

Join Our Newsletter
Your email address
Subscribe
* Will send you weekly updates for your better tool management.

Figure 69. Appendix Bundles

[Home](#) [About Us](#) [Products](#) [Services](#) [Bundles](#) [Disease Scan](#) [Contact](#) [Login](#)

[Call Us Now](#)
 +8801569334826

Greening Your Space with Midori-Chan

Midori-chan is a revolutionary Japanese greening system that has been designed for building rooftops and roadside greening projects. It uses natural rainwater and recycled waste material to promote maximum vegetation growth. The ultra-lightweight system transfers moisture from water storage units via the thermal energy balance in the soil. A specially regenerated layer of charcoal filters the rainwater before it is drawn up into the plants' roots.

[Contact Now](#)

Benefits of installing Midori-Chan

Saves costs by using dramatically less water than conventional greening systems.

Reduces temperatures of concrete decks by over 30°C.

Decreases the thermal load of the local environment by transferring heat to vegetation

Removes more CO2 from the atmosphere through photosynthesis.

Offers flexibility around loading constraints by tailoring soil depth, as required.

A specially regenerated layer of charcoal filters the rainwater before it is drawn up into the plants' roots.

Figure 70. Appendix Services Midori-chan_0

KANON

Home About Us Products Services Bundles Disease Scan Contact Login

Call Us Now
+8801569334826

Grow More, Worry Less With Hydroponic Farming

Experience the Future of Farming with Aeroponics: Efficient, Sustainable, and Delicious. Our Aeroponic System Redefines Traditional Agriculture by Growing Crops in a Soil-Free Environment, Saving Water and Space, and Producing Nutrient-Rich Plants Year-Round. Join the Growing Community of Eco-Friendly Farmers and Discover the Benefits of Aeroponic Farming Today

Contact Now

Hydroponic Services

System Installation

We offer designing and installing systems tailored to the specific requirements of individuals or businesses

Training & Consultation

We offer training programs and educational resources to help clients understand the best practices for successful cultivation.

Seedling & Nutrients Supply

We provide high-quality seedlings and customized nutrient solutions tailored for aeroponic systems

Customization

We provide tailored solutions to meet the specific needs and requirements of individuals or businesses.

Nutrient Formulation

We provide nutrient solutions considering the unique needs of each crop and growth preferences.

Maintenance and Support

We provide individuals and businesses with the knowledge, skills, and guidance necessary for successful aeroponic cultivation

Figure 71. Appendix Services Midori-chan_1

Note: Users can complete purchasing products or services by using online payment method(s) such as bkash.

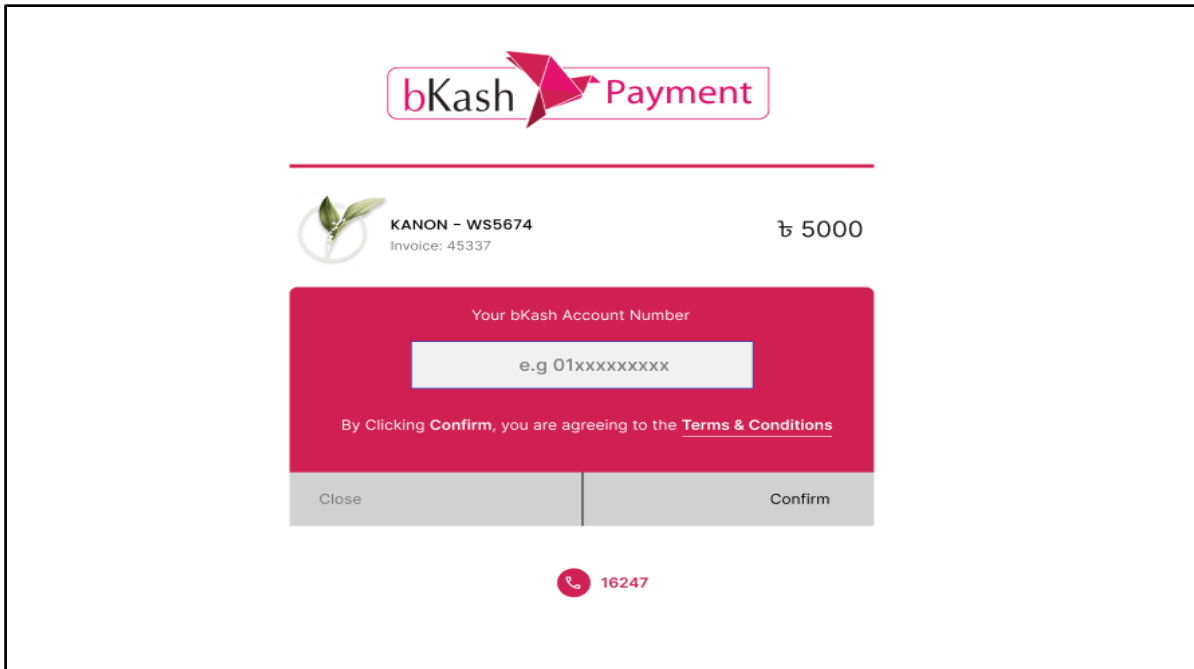


Figure 72. Payment_0

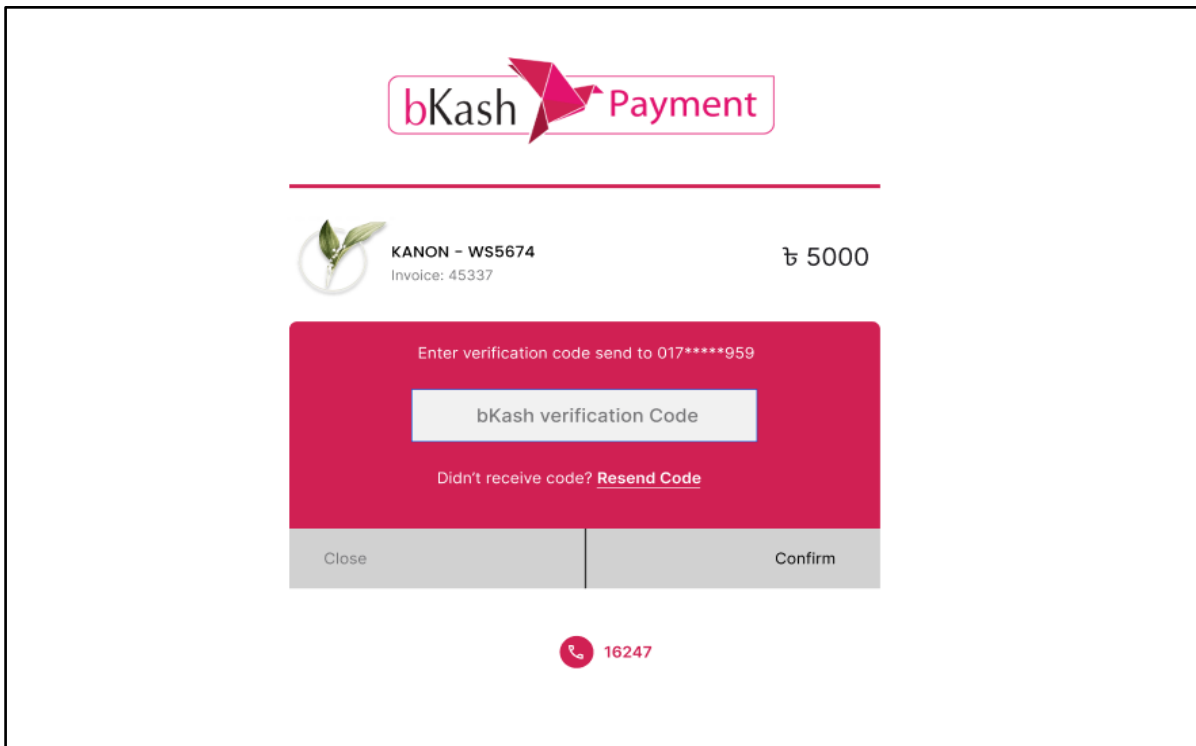


Figure 73. Payment_1

Note: Users also have the option to cancel payment during the payment process.

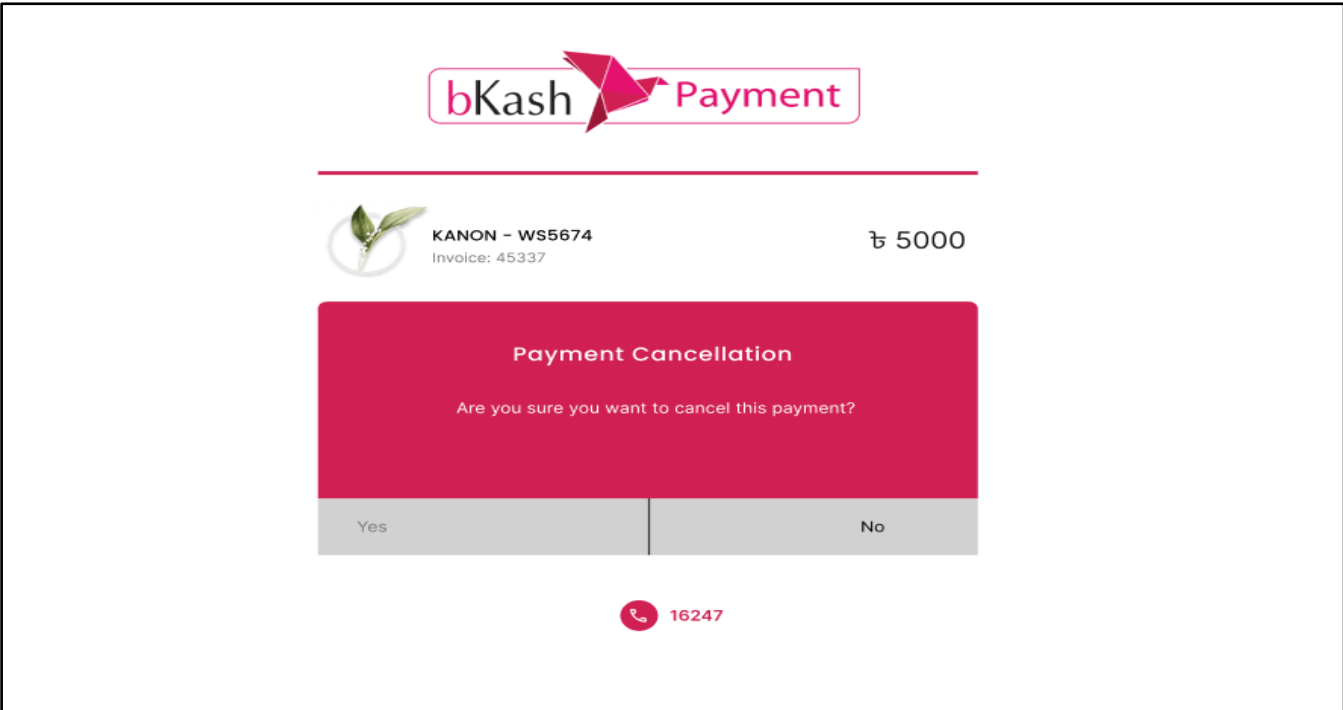


Figure 74. Payment_2

For Admin:

KANON

Dashboard

Product

Orders

Customers

Seller

Analytics

All Time | 12 Months | 30 Days | 7 Days | 24 Hour

Select Dates | + Add Product

Total Revenue: ₹25,000 (+10%)

Total Sales: 31,500 (+15%)

Product SKU: 247 (0%)

Balance: ₹14,750 (-25%)

Sales Progress
This Quarter: 75.55% (+10%)
You succeed earn \$240 today, its higher than yesterday

Statistics
Revenue and Sales

Top Selling Product

Product	Sales	Amount	Price	Status
Hedge shears (SKU: 302012)	401	₹84,611	₹121.00	Low Stock
Fertilizer (SKU: 302012)	301	₹177,000	₹590.00	Published
Pruning saw (SKU: 302012)	300	₹37,500	₹125.00	Low Stock
Flower bed (SKU: 302012)	298	₹103,704	₹348.00	Published
Shovel (SKU: 302012)	256	₹150,000	₹607.00	Published

Showing 1-5 from 15

Sales by Location

Dhanmondi (340 Sales)	₹17,678 (+12%)
Mirpur (100 Sales)	₹5,500 (-5%)
Jatrabari (50 Sales)	₹2,500 (0%)
Uttara (147 Sales)	₹7,456 (+19%)
Khilgaon (540 Sales)	₹24,189 (-25%)
Azimpur (345 Sales)	₹15,700 (+11%)
Motijhil (560 Sales)	₹24,700 (-12%)
Nayanganj (48 Sales)	₹2,000 (+7%)
Keraniganj (23 Sales)	₹1,500 (0%)

Recent Orders (+2 Orders)

Order ID	Product	Date	Customer	Total	Payment	Status	Action
#302012	Shovel (+3 other products)	1 min ago	John Bushmill (Johnb@mail.com)	₹121.00	bKash	Processing	👁️ ✎️
#302011	Fertilizer (+1 other products)	1 min ago	Iliham Budi A (ilahmbudi@mail.com)	₹590.00	Visa	Processing	👁️ ✎️
#302002	Flower bed	5 hour ago	Mohammad Karim (m_karim@mail.com)	₹125.00	Transfer	Shipped	👁️ ✎️
#301901	Hedge shears (+1 other products)	1 day ago	Linda Blair (lindablair@mail.com)	₹348.00	Cash	Shipped	👁️ ✎️
#301900	Shovel	2 day ago	Josh Adam (josh_adam@mail.com)	₹607.00	bKash	Delivered	👁️ ✎️
#301881	Flower bed (+1 other products)	5 Jan 2023	Sin Tae (sin_tae@mail.com)	₹234.00	Visa	Cancelled	👁️ ✎️
#301643	Pruning saw	1 Jan 2023	Rajesh Masvidal (rajesh_m@mail.com)	₹760.00	Transfer	Shipped	👁️ ✎️
#301600	Hedge shears (+1 other products)	24 Dec 2022	Fajar Surya (fsurya@mail.com)	₹400.00	Cash	Delivered	👁️ ✎️
#301555	Fertilizer (+4 other products)	2 Dec 2022	Francis Greg (francisg@mail.com)	₹812.00	bKash	Delivered	👁️ ✎️
#301002	Hedge shears (+1 other products)	2 Dec 2022	Linda Blair (lindablair@mail.com)	₹123.00	bKash	Delivered	👁️ ✎️

Showing 1-10 from 100

Support | Setting

Figure 75. Admin Dashboard_Home


Note: After successfully logging into Admin Dashboard, admin have the features to monitor and control over various information like products, orders, customers, seller, analytics etc.

The screenshot shows the 'Product List' page in the KANON Admin Dashboard. The page features a sidebar on the left with navigation options: Dashboard, Product (selected), Product List, Categories, Orders (with a red notification badge), Customers, Seller, and Analytics. The main content area is titled 'Product' and includes a search bar, 'Export' and 'Add Product' buttons, and 'Select Dates' and 'Filters' options. Below these is a table listing products with the following columns: Product, SKU, Category, Stock, Price, Status, Added, and Action. The table contains 10 rows of product data, including 'Wheelbarrow', 'Pruning saw', 'Seeds', 'Plant pot', 'Hedge shears', 'Gloves', 'Axe', 'Wheelie bin', 'Shovel', and 'Boots'. Each row shows the product name, its SKU, category, stock quantity, price, status (e.g., 'Low Stock', 'Published', 'Draft', 'Out of Stock'), the date it was added, and action icons for view, edit, and delete. At the bottom of the table, it indicates 'Showing 1-10 from 100' and includes a pagination control with page numbers 1 through 5 and an ellipsis.

Product	SKU	Category	Stock	Price	Status	Added	Action
Wheelbarrow 3 Variants	302012	Tools	10	₹121.00	Low Stock	29 Dec 2023	View Edit Delete
Pruning saw 2 Variants	302011	Tools	204	₹590.00	Published	24 Dec 2023	View Edit Delete
Seeds 3 Variants	302002	Seed	48	₹125.00	Draft	12 Dec 2023	View Edit Delete
Plant pot 1 Variants	301901	Decor	401	₹348.00	Published	21 Oct 2023	View Edit Delete
Hedge shears 4 Variants	301900	Decor	120	₹607.00	Published	21 Oct 2023	View Edit Delete
Gloves 3 Variants	301881	Tools	432	₹234.00	Published	21 Oct 2023	View Edit Delete
Axe 1 Variants	301643	Soil	0	₹760.00	Out of Stock	19 Sep 2023	View Edit Delete
Wheelie bin 3 Variants	301600	Fertilizer	347	₹400.00	Published	19 Sep 2023	View Edit Delete
Shovel 2 Variants	301555	Plant	299	₹812.00	Published	19 Sep 2023	View Edit Delete
Boots 3 Variants	301002	Insecticide	38	₹123.00	Draft	10 Aug 2023	View Edit Delete

Figure 76. Admin Dashboard_Products

Note: In the products page, there is products list and categories. From the list, admin can view, delete and edit products info of the stocks.


KANON

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Khalequzzaman

Manager

🏠 Dashboard

📦 Product

📦 Product List

📂 Categories

🛒 Orders 2

👤 Customers

🏪 Seller

📊 Analytics

🗣️ Support

⚙️ Setting

Add Product

Dashboard > Product List > Add Product

✕ Cancel
+ Add Product

General Information

Product Name

Description

Media

Photo

🖼️
 Drag and drop image here, or click add image
Add Image

Video

🎥
 Drag and drop video here, or click add video
Add Video

Pricing

Base Price

Discount Type

Discount Percentage (%)

Tax Class

VAT Amount (%)

Inventory

SKU

Barcode

Quantity

Variation

Product Completion
0%

✕ Cancel
+ Add Product

Figure 77. Admin Dashboard_AddProducts

Note: In order to add products, Admin needs to enter product name and description first. Then needs to add product image or video and then fill the necessary fields like pricing, discounts, category, quantity etc. and hit the 'Add Product' button to add product.

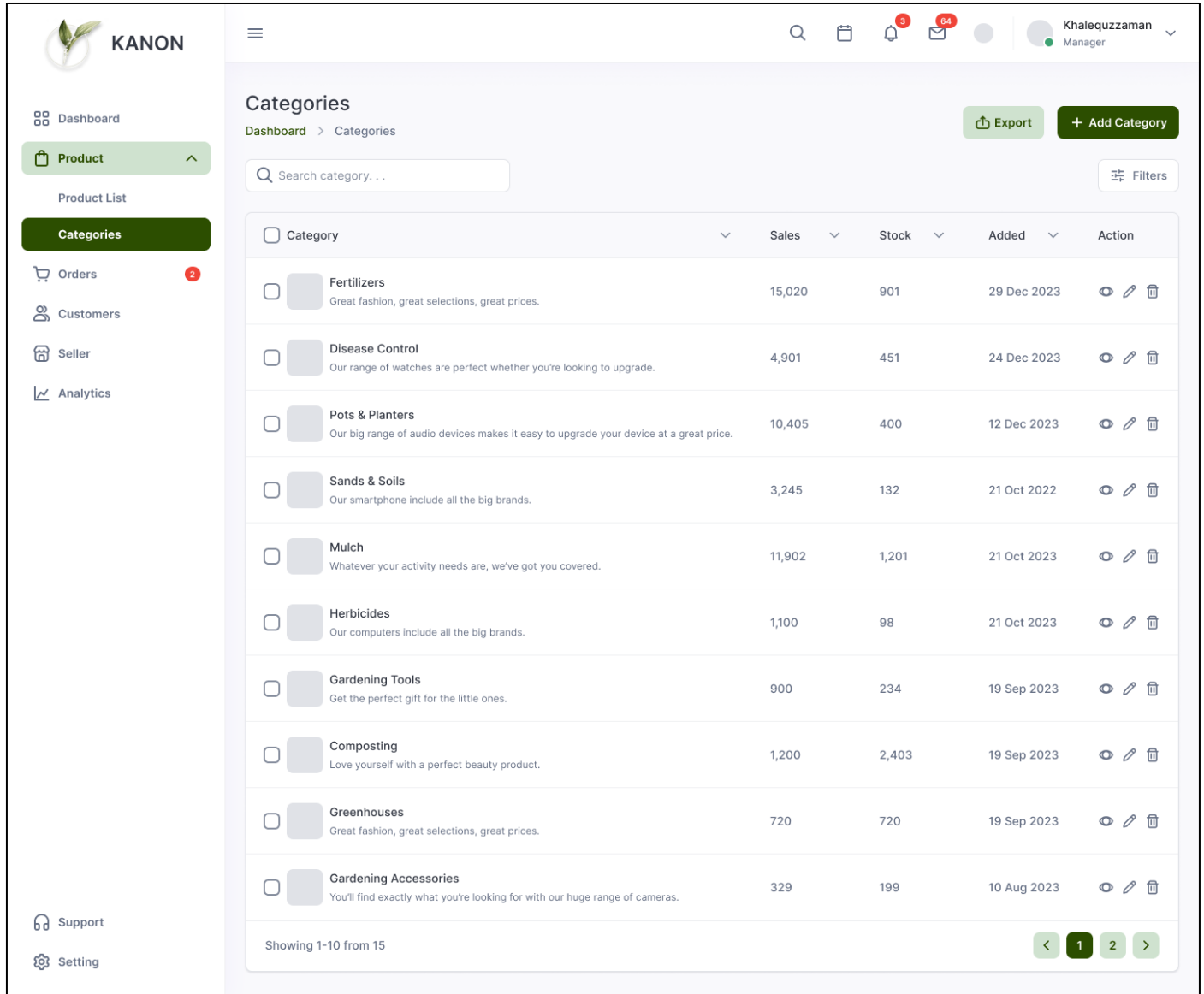


Figure 78. Admin Dashboard_Categories

Note: Just like products, Admin can also create, view, edit and delete product categories as well as category details.

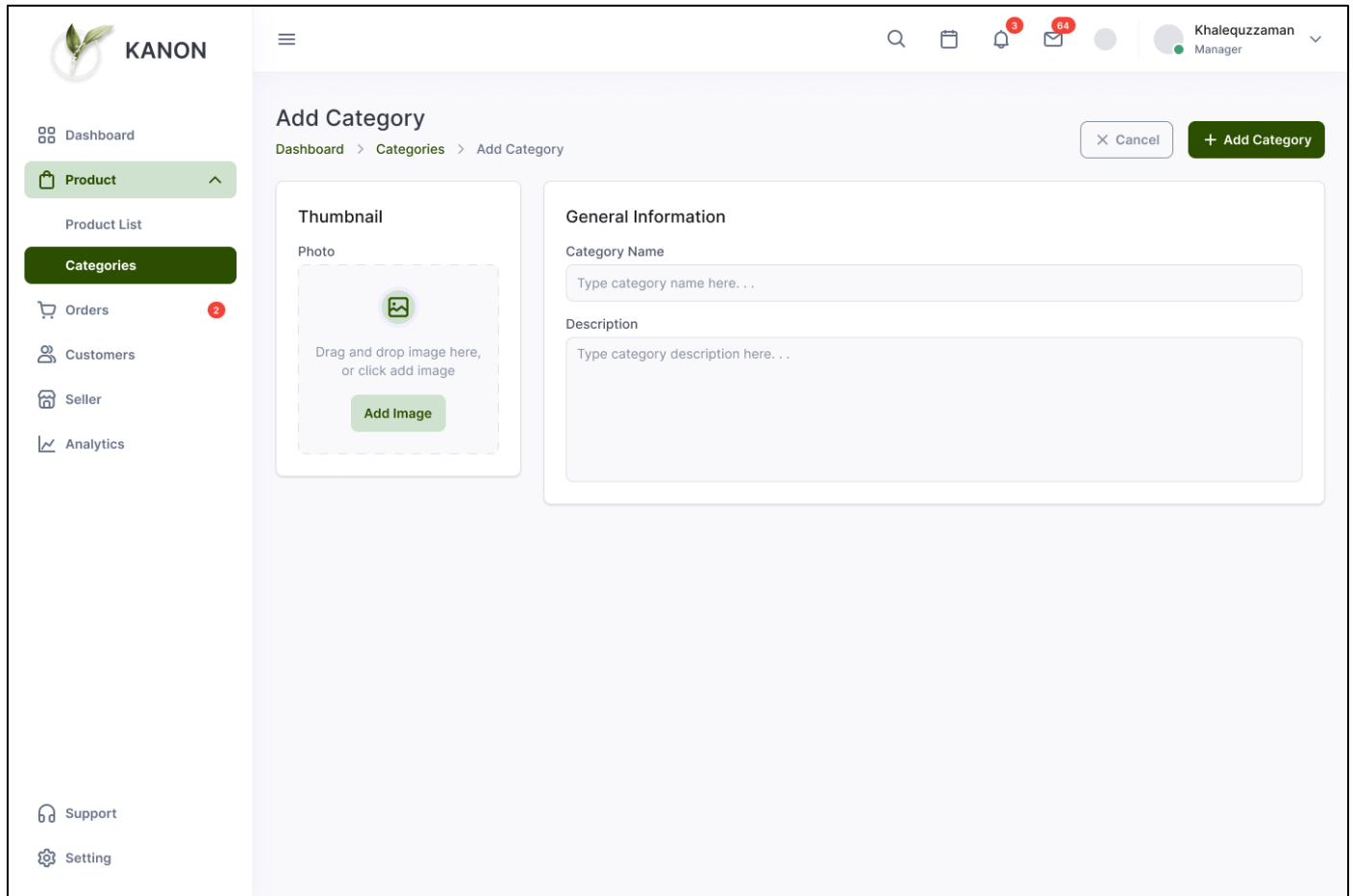


Figure 79. Admin Dashboard_AddCategories

Note: Admin can upload a thumbnail for specific categories and add category name with description and then hit 'Add Category' button to add a new category. Admin has also the luxury to edit existing category information following the same process.

KANON

Dashboard > Order List

Export Add Order

Select Dates Filters

Order ID	Product	Date	Customer	Total	Payment	Status	Action
#302012	Gloves +3 other products	1 min ago	John Bushmill johnb@mail.com	₹121.00	Visa	Processing	👁️ ✎
#302011	Pruning Shears +1 other products	1 min ago	Ilham Budi A ilahmbudi@mail.com	₹590.00	bKash	Processing	👁️ ✎
#302002	Loppers	5 hour ago	Mohammad Karim m_karim@mail.com	₹125.00	Cash	Shipped	👁️ ✎
#301901	Garden Fork +1 other products	1 day ago	Linda Blair lindablair@mail.com	₹348.00	Cash	Shipped	👁️ ✎
#301900	Hand Trowel	2 day ago	Josh Adam josh_adam@mail.com	₹607.00	bKash	Delivered	👁️ ✎
#301881	Spade +1 other products	5 Jan 2023	Sin Tae sin_tae@mail.com	₹234.00	bKash	Cancelled	👁️ ✎
#301643	Rake	1 Jan 2023	Rajesh Masvidal rajesh_m@mail.com	₹760.00	Cash	Shipped	👁️ ✎
#301600	Hoe +1 other products	24 Dec 2022	Fajar Surya fsurya@mail.com	₹400.00	Visa	Delivered	👁️ ✎
#301555	Nozzle +4 other products	2 Dec 2022	Francis Greg francisg@mail.com	₹812.00	Cash	Delivered	👁️ ✎
#301002	Watering Wand +1 other products	2 Dec 2022	Linda Blair lindablair@mail.com	₹123.00	bKash	Delivered	👁️ ✎

Showing 1-10 from 100

1 2 3 4 5 ...

Figure 80. Admin Dashboard_Orders

Note: Admin has the access to view and edit order information. Admin can also generate invoice of ordered products or services by clicking the invoice button.

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👤 Khalequzzaman Manager

- Dashboard
- Product
- Orders 2
- Customers
- Seller
- Analytics
- Support
- Setting

Order Details

Dashboard > Order List > Order Details

Processing
Export
Invoice

Order #302011 Processing

- 📅 Added 12 Dec 2022
- 💳 Payment Method Visa
- 🚚 Shipping Method Flat Shipping

Customer

- 👤 Customer Josh Adam
- ✉ Email josh_adam@mail.com
- 📞 Phone 909 427 2910

Document

- 📄 Invoice INV-32011
- 🚚 Shipping SHP-2011REG
- 🎁 Rewards 480 point

Order List 2 Products

Product	SKU	QTY	Price	Total
Wheelbarrow Black	302011	1 pcs	₳400.00	₳400.00
Loppers Black Gray	302011	1 pcs	₳185.00	₳185.00
			Subtotal	₳585.00
			VAT (0%)	₳0
			Shipping Rate	₳5.00
			Grand Total	₳590.00

Address

- 📍 Billing
39-40 Urdu Road, Dhaka, Bangladesh
- 📍 Shipping
39-40 Urdu Road, Dhaka, Bangladesh

Order Status

- 🛒 **Order Placed**
An order has been placed.
12/12/2022, 03:00
- 🔄 **Processing**
Seller has processed your order.
12/12/2022, 03:15
- 📦 **Packed**
DD/MM/YY, 00:00
- 🚚 **Shipping**
DD/MM/YY, 00:00
- ✅ **Delivered**
DD/MM/YY, 00:00

Figure 81. Admin Dashboard_Order_Details

KANON

Dashboard > Customer List

Export Add Customer

Search customer...

Filters

<input type="checkbox"/>	Customer Name	Phone	Orders	Balance	Status	Created	Action
<input type="checkbox"/>	John Bushmill Johnb@mail.com	078 5054 8877	124	₹121.00	Blocked	29 Dec 2023	👁️ ✎️ 🗑️
<input type="checkbox"/>	Laura Prichet laura_prichet@mail.com	215 302 3376	45	₹590.00	Active	24 Dec 2023	👁️ ✎️ 🗑️
<input type="checkbox"/>	Mohammad Karim m_karim@mail.com	050 414 8778	984	₹125.00	Blocked	12 Dec 2023	👁️ ✎️ 🗑️
<input type="checkbox"/>	Josh Bill josh_bill@mail.com	216 75 612 706	99	₹348.00	Blocked	21 Oct 2023	👁️ ✎️ 🗑️
<input type="checkbox"/>	Josh Adam josh_adam@mail.com	02 75 150 655	1,540	₹607.00	Active	21 Oct 2023	👁️ ✎️ 🗑️
<input type="checkbox"/>	Sin Tae sin_tae@mail.com	078 6013 3854	431	₹234.00	Active	21 Oct 2023	👁️ ✎️ 🗑️
<input type="checkbox"/>	Rajesh Masvidal rajesh_m@mail.com	828 216 2190	36	₹760.00	Blocked	19 Sep 2023	👁️ ✎️ 🗑️
<input type="checkbox"/>	Fajar Surya fsurya@mail.com	078 7173 9261	77	₹400.00	Active	19 Sep 2023	👁️ ✎️ 🗑️
<input type="checkbox"/>	Lisa Greg lisag@mail.com	077 6157 4248	89	₹812.00	Active	19 Sep 2023	👁️ ✎️ 🗑️
<input type="checkbox"/>	Linda Blair lindablair@mail.com	050 414 8778	1,296	₹723.00	Active	10 Aug 2023	👁️ ✎️ 🗑️

Showing 1-10 from 100

1 2 3 4 5 ... >

Figure 82. Admin Dashboard_Customers

Note: Admin can view current customers list on the website, can create a new customer and delete an existing customer by clicking the options.

KANON

Dashboard > Customer List > Customer Details

Export Add Customer

Customer Details

Linda Blair Premium
@linda_blair321

User ID: ID-011221
Billing Email: lindablair@mail.com
Phone Number: 050 414 8778
Delivery Address: 1833 Bel Meadow Drive, Fontana, California 92335, USA
Latest Transaction: 12 December 2022

Total Balance: ₺723.00 (-25%)
Total Orders: 1,296 (+10%)
Rewards Point: 1400 (+10%)

Transaction History

Order ID	Product	Total	Status	Date
#302012	Loppers +3 other products	₺121.00	Processing	12 Dec 2023
#302011	Garden Fork +1 other products	₺590.00	Processing	1 Dec 2023
#302006	Hand Trowel	₺125.00	Shipped	10 Nov 2023
#302001	Spade +1 other products	₺348.00	Shipped	2 Nov 2023
#301998	Wheelbarrow	₺607.00	Delivered	7 Sep 2023

Showing 1-5 from 1,296

Figure 83. Admin Dashboard_CustomersDetails

References

- [1] Sazonov, A. A., & Sazonova, M. V. (2023). Development of a model for the transformation of agriculture in the digital economy. *E3S Web of Conferences*, 390, 03001. <https://doi.org/10.1051/e3sconf/202339003001>
- [2] Oh, S., & Lu, C. (2022, November 12). Vertical farming - smart urban agriculture for enhancing resilience and sustainability in food security. *The Journal of Horticultural Science and Biotechnology*, 98(2), 133–140. <https://doi.org/10.1080/14620316.2022.2141666>
- [3] Martinelli, F., Scalenghe, R., Davino, S., Panno, S., Scuderi, G., Ruisi, P., Villa, P., Stroppiana, D., Boschetti, M., Goulart, L. R., Davis, C. E., & Dandekar, A. M. (2014, September 11). Advanced methods of plant disease detection. A review. *Agronomy for Sustainable Development*, 35(1), 1–25. <https://doi.org/10.1007/s13593-014-0246-1>
- [4] Al-Kodmany, K. (2018, February 5). The Vertical Farm: A Review of Developments and Implications for the Vertical City. *Buildings*, 8(2), 24. <https://doi.org/10.3390/buildings8020024>
- [5] Prashar, N., & Sangal, A. L. (2021, September 10). Plant Disease Detection Using Deep Learning (Convolutional Neural Networks). *Lecture Notes in Networks and Systems*, 635–649. https://doi.org/10.1007/978-3-030-84760-9_54
- [6] Smith P., M. Bustamante, H. Ahammad, H. Clark, H. Dong, E.A. Elsidig, H. Haberl, R. Harper, J. House, M. Jafari, O. Masera, C. Mbow, N.H. Ravindranath, C.W. Rice, C. Robledo Abad, A. Romanovskaya, F. Sperling, and F. Tubiello, 2014: Agriculture, Forestry and Other Land Use (AFOLU). In: Climate Change 2014: Mitigation of Climate Change. Contribution of Working Group III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Edenhofer, O., R. Pichs-Madruga, Y. Sokona, E. Farahani, S. Kadner, K. Seyboth, A. Adler, I. Baum, S. Brunner, P. Eickemeier, B. Kriemann, J. Savolainen, S. Schlömer, C. von Stechow, T. Zwickel and J.C. Minx (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA
- [7] Cabrera, A. N., Droste, A., Heusinkveld, B. G., & Steeneveld, G. J. (2021, August 20). The Potential of a Smartphone as an Urban Weather Station—An Exploratory Analysis. *Frontiers in Environmental Science*, 9. <https://doi.org/10.3389/fenvs.2021.673937>
- [8] Rajalakshmi, M., Manoj, V. R., & Manoj, H. (2022, December 31). Comprehensive Review of Aquaponic, Hydroponic, and Recirculating Aquaculture Systems. *Journal of Experimental Biology and Agricultural Sciences*, 10(6), 1266–1289. [https://doi.org/10.18006/2022.10\(6\).1266.1289](https://doi.org/10.18006/2022.10(6).1266.1289)
- [9] Manju, M., Karthik, V., Hariharan, S., & Sreekar, B. (2017, March). Real time monitoring of the environmental parameters of an aquaponic system based on the Internet of Things. *2017 Third*

- [10] Güven, B., Baz, P., Kocaoğlu, B., Toprak, E., Erol Barkana, D., & Soğutmaz Özdemir, B. (2023). Smart Farming Technologies for Sustainable Agriculture: From Food to Energy. *A Sustainable Green Future*, 481–506. https://doi.org/10.1007/978-3-031-24942-6_22

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