SKINSITE

BY

MISS.	WARINTORN	JIRATHIPWANGLAD	6488152
MISS.	TAYAPA	SANTIPAP	6488187
MISS.	SARANPORN	CHIRANNAKORN	6488207

ADVISOR
ASST.PROF. JIDAPA KRAISANGKA

A Senior Project Submitted in Partial Fulfillment of
the Requirement for

THE DEGREE OF BACHELOR OF SCIENCE
(INFORMATION AND COMMUNICATION TECHNOLOGY)

Faculty of Information and Communication Technology
Mahidol University
2024

ACKNOWLEDGEMENTS

SKINSITE

MISS. WARINTORN JIRATHIPWANGLAD   6488152 ITCS/B
MISS. TAYAPA   SANTIPAP   6488187 ITCS/B
MISS. SARANPORN CHIRANNAKORN   6488207 ITCS/B

B.Sc. (INFORMATION AND COMMUNICATION TECHNOLOGY)

PROJECT ADVISOR: ASST.PROF. JIDAPA KRAISANGKA

ABSTRACT

From the past to the present, the marketing of skincare products in Thailand has grown every year. However, there is still information about Thai products that is not published and is not accessible enough, causing consumers to lack access to information, making it less popular than it should be. Thai products are of good quality, no less than other countries, are reasonably priced, and are suitable for Thai skin types. There are quite several websites that publish information about skincare products, but even so, each website hardly has any Thai brand products. Most of them, if they have any, are international brands. However, for Thai skincare products, there are almost none or none at all on each website. In addition, some features on the website, such as searching and product information, have flaws in finding the key information, or not enough information, the design is difficult to use and not up-to-date, etc. This project aims to solve the problem of users' access to information so that users can know more about Thai brands and trust the quality and safety of the products by creating a website that we will call **SkinSite**. We also develop a product comparison system that can compare up to 3 products. There is also a system for calculating product scores to measure how good the quality is and how suitable it is for the skin type, including a warning system for users to be aware of products that contain ingredients that users are concerned about and can also create their own routine sets. If we do it for us, we will develop it further in the future as an application and adjust it to fit other products.

CONTENTS

CHAPTER 1
INTRODUCTION

This chapter includes motivation, problem identification, project objectives, project scope, expected benefits, and document organization.

1.1 Motivation

According to the global skincare market revenue data by country in 2023, the top three countries with the highest skincare sales are the United States (23,594.38 million U.S. dollars), Japan (22,330.33 million U.S. dollars), and China (20,703.43 million U.S. dollars) [1, 2]. In this statistical histogram report, Thailand is not included in any 26 countries. The sales of Thailand in 2023 were 1,034.65 million U.S. dollars [3]. In addition, most of the skincare websites we have studied are products from abroad, and some websites do not have products from Thai brands. Therefore, accessing information on Thai products takes a lot of work. It shows that Thai skincare brands are not very popular, but it can be seen that in the sales statistics of Thailand from 2019 to 2023, there has been growth every year [3].

Therefore, this is our motivation to create a Thai skincare brand website to make the marketing of beauty products in Thailand more widespread and show the efficiency of products in Thailand that are of quality equal to other countries. The website is created to meet the needs of users who like to use beauty products, help in analyzing the quality of raw ingredients, and desired budget, comparing products to see which products are recommended or have products that can be used instead of each other with similar quality in many budget ranges, and search for products. Including the accuracy, clarity, and reliability of the product that it is effective, by scoring from reviewing from real users, ingredients used, etc.

Our product scores are calculated from several components: review weighting, ingredient risks, and ingredients. It can also create a skincare routine for you specifi-cally, including the preferences and concerns of the user, such as no alcohol, no oil, no

animal testing, FDA (Food and Drug Administration), or the risk of using substances in the product ingredients, ingredients or even skin conditions. In addition to our website helping Thai products to be more widespread, it also allows users to access information without wasting time searching for information from many places and be aware of the safety of that product to allow them to decide to buy.

1.2 Problem Statement

Despite the growing demand for skincare products in Thailand, Thai skincare brands face significant challenges related to visibility and accessibility. Many Thai brands are poorly represented on existing websites, resulting in limited availability and reliable information for consumers. Most current platforms primarily showcase foreign cosmetics, creating a noticeable gap in the representation of Thai products. When Thai items are featured, the information provided is often superficial, consisting only of basic descriptions, ingredient lists, and prices. This lack of a dedicated platform hampers consumer awareness and limits the potential for local brands to thrive. Existing websites fail to offer comprehensive insights, such as detailed analyses of ingredient efficacy, potential allergens, and user-specific concerns (e.g., alcohol-free or oil-free products). Furthermore, they do not facilitate effective comparisons between similar products, making it difficult for consumers to evaluate their options thoroughly. Therefore, it is essential to develop solutions to help increase the exposure of Thai skincare brands.

1.3 Objectives of the project

- To develop a website for Thai skincare brands by providing easy access, including various features, for example, product information, credible reviews, and price comparisons, aimed at attracting a range of users.

- To understand the real problems and needs of users, what kind of features and functions do they need to make decisions and must have an easy-to-use interface.

- To develop a database of Thai skincare products with detailed descriptions, ingredient lists, and skin suitability for users to find all relevant information in one place.

1.4 Scope of the Project

This project involves developing websites that provide detailed information on Thai facial skincare products organized into 14 distinct categories. Data will be collected from various sources, including official websites and e-commerce platforms that sell skincare products. The research team aims to gather as much relevant data as possible, given that information on Thai products is dispersed across multiple sites. The goal is to consolidate this information into a centralized resource on our website for improved accessibility and comprehensiveness.

1.5 Expected Benefits

This project focuses on recommendations for a skincare website dedicated to facial products. It addresses the display of product information, user reviews, product comparisons, a user account system, search and sorting functions, and the development of a scoring system to enhance user decision-making. Here's a comprehensive analysis of the benefits of your bilingual Thai skincare product comparison website across four key categories:

1.5.1 Benefits for Users

1. Informed Decision Making

   - Access to detailed product information in English, making it accessible to both local and international users

   - Ability to compare prices, ingredients, and effectiveness across different products

   - User reviews and ratings provide real-world experiences and results

   - Scoring system helps simplify complex product information into digestible metrics.

2. Convenience and Accessibility

   - One-stop platform for Thai skincare product research.

- Personalized user accounts for saving favorites and notifying the user of skin concerns.

- Advanced search and filtering options save time in finding suitable products.

1.5.2 Benefits for Merchants

1. Market Exposure

   - Direct access to targeted skincare enthusiasts.

   - Platform for showcasing product uniqueness and benefits.

   - Opportunity to reach global markets.

2. Customer Insights

   - Access to user reviews and feedback.

   - Understanding of consumer preferences and trends.

   - Data on product performance and user satisfaction.

   - Competitive analysis opportunities.

3. Brand Building

   - Enhanced credibility through transparent product information.

   - Opportunity to highlight the brand story and values.

   - Building trust through verified product information.

1.5.3 Benefits for Further Development

1. For Chemists:

   - Database of ingredient combinations and their effectiveness

   - Understanding of consumer reactions to different formulations

   - Trends in product formulation preferences

   - Research opportunities for new product development

- Insight into gap areas in the market

2. For Web Developers:

- Data structure models for product comparison systems

- User interface patterns for presenting complex product information

- Scoring algorithm development experience

- Integration patterns for review and rating systems

1.5.4 Benefits for Thailand Economy

1. Industry Growth

- Promotion of Thai skincare products globally

- Support for local skincare manufacturers

- Increased visibility of Thai beauty innovations

- Potential for increased exports

2. Market Development

- Enhancement of Thailand's position in the global beauty market

- Attraction of international investment in the Thai skincare industry

- Creation of new job opportunities in related sectors

- Support for Thai beauty tourism

3. Digital Economy

- Contribution to Thailand's digital transformation

- Development of e-commerce capabilities

- Enhancement of cross-border digital trade

- Promotion of digital literacy and online commerce

CHAPTER 2
BACKGROUND

This chapter provides essential context for your study. It includes important knowledge, theories, or concepts related to your work. **This section is optional.**

CHAPTER 3
RELATED WORKS

We conducted a survey and analyzed various websites to compare their function-alities. This chapter presents work relevant to or useful for this project's research.

Functions	Features		Websites										
			1	2	3	4	5	6	7	8	9	10	11
Search	Text	Brand	●	●	●	●	●	●	●	●	●	●	●
		Product Name	●	●	○	●	●	●	●	●	●	●	●
		Ingredient Concern		○	○	○	○	○					○
		Ingredient		●	○	○							●
		Benefit/Product Goal	○	○	○	○	○	○					○
	Filter	1 Filter	●		●				○	●		●	
		More than 1		●		●	●	●		●	●		●
		Image							●			●	
Recommendations			●	●	●	●				○		○	
Sorting			●	●	●	●	●	●		●	●	●	●
Wishlist				●	●	●	●	●	●	●		●	●
Skin Routine Set													●
Review			●	●	●		●	●	●			●	●
Product Comparison					●				●	●			●
User Account Management			●	●	●	●				●		●	●

Table 3.1: Website Function and Feature Comparison Table

Table 3.1 provides an analysis of ten websites identified as most relevant to the project, with each website represented by a number as follows:

1. Cosmenet [4]

2. Konvy [5]

3. Jeban [6]

4. Beautrium [7]

5. Shopee [8]

6. Lazada [9]

7. Incidecoder [10]

8. Skincarisma [11]

9. EWG's Skin Deep [12]

10. CosDNA [13]

11. SkinSort [14]

The analysis shows that most websites provide essential features, including brand name and product name search, sorting options for displaying products, and a wishlist function for saving products of interest. In the table, these features are denoted by bullet symbols (●).

However, certain websites exhibit functionality limitations, specifically with inaccurate and incomplete product results. For instance, Konvy, Lazada, and Skinsort display products that are irrelevant to the user search queries, potentially undermining user experience and the effectiveness of the search function. Additionally, incomplete product listings appear on some platforms during text-based searches; only product names that exactly match the search terms are shown, while other relevant products are omitted. This issue is observed on the Jeban, Beautrium, Shopee, and Lazada websites, as indicated by circle symbols (○) in the table.

Furthermore, some advanced features—such as image upload, product comparison, and advanced search options—are absent on certain platforms, as represented by blank boxes in the table.

3.1 Related measures of the skincare rating

3.1.1 EWG Verified

The Environmental Working Group is a nonprofit, nonpartisan organization dedicated to helping you live your healthiest life. The Environmental Working Group's (EWG) Skin Deep® database [15] evaluates personal care products using two rating systems including Hazard Score and Data Availability

Hazard Score ranges from 1 to 10, indicating the potential health risks associated with a product's ingredients. A lower score suggests fewer known hazards, while a higher score indicates greater concern.

Data Availability reflects the extent of scientific research available on a product's ingredients, categorized as none, limited, fair, good, or robust. A higher data availability rating signifies that more information is available to assess the ingredient's safety.

Moreover, EWG Verified is the highest standard EWG awards for products that avoid chemicals of concern, disclose all ingredients (including fragrance components), and meet EWG's strictest health and transparency criteria. Products with the EWG VERIFIED® mark are vetted by EWG's scientists to ensure adherence to the highest health standards.

When evaluating products, it's ideal to look for those with a low hazard score, high data availability, and, if possible, the EWG VERIFIED® mark for additional assurance of safety and transparency.

CHAPTER 4
METHODOLOGY

This chapter explains the overall software design through analysis and design. It comprises four parts: the survey of users in Thai skincare brands, a system structure chart, an ER Diagram, and a UX/UI design.

4.1 Analysis of users in Thai skincare brands

In this step, we explore consumer behavior in purchasing facial skincare products in general and Thai brand products. In addition, we survey on the features consumers preferences on the website design. The collected data shows the preferences, purchasing habits, and decision-making factors that affect brand selection. This questionnaire has a total of 124 participants. Data collection began from October 24 to November 5 use this data to analyze the overall user, the overall skincare usage of the users, and the interest specifically in facial skincare products of Thai brands.

4.1.1 Analysis Overall of Participants
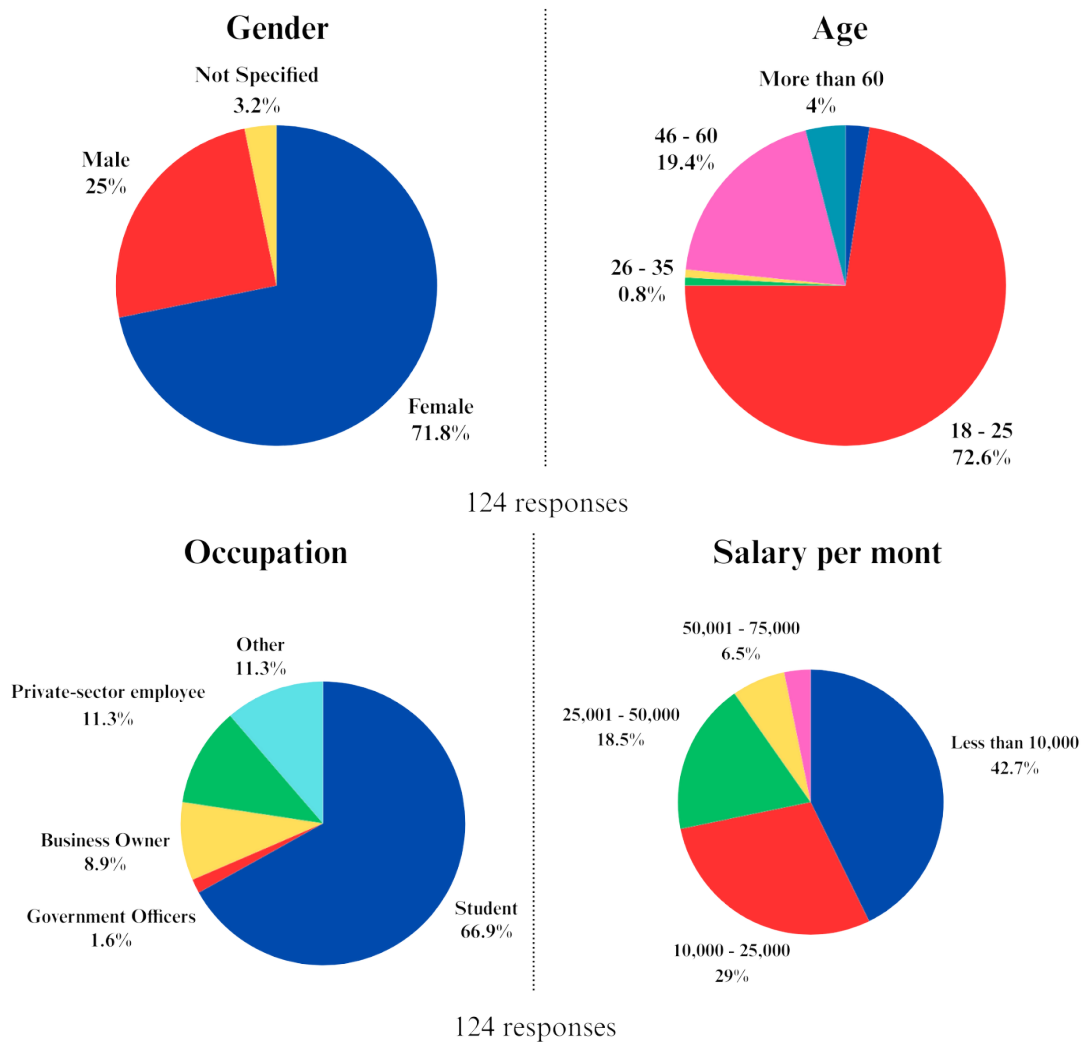
Figure 4.1: Pie chart showing overall of respondents information

From the survey, it can be seen that there were 124 respondents in total, the majority of whom were female (71.8%) and male (25%). The age distribution of the participants revealed that the population was mainly young adults, with 72.6% of the respondents being between the ages of 18-25, followed by 19.4% who were under 18. In terms of employment, 66.9% of the respondents were students, as shown in Figure 4.1, indicating that skincare products are of great interest to those still studying. The monthly income of the respondents varied, with the highest salary range being 25,001 - 50,000 baht, totaling 42.7%, followed by 29% who earned between 10,000 - 25,000 baht. This range reflects a moderate spending ability. Overall, it can be concluded that most

of the respondents, 91.9%, have used facial skincare products before, highlighting the widespread involvement in skincare routines among this sample. This high percentage indicates a strong interest in facial skin care products.

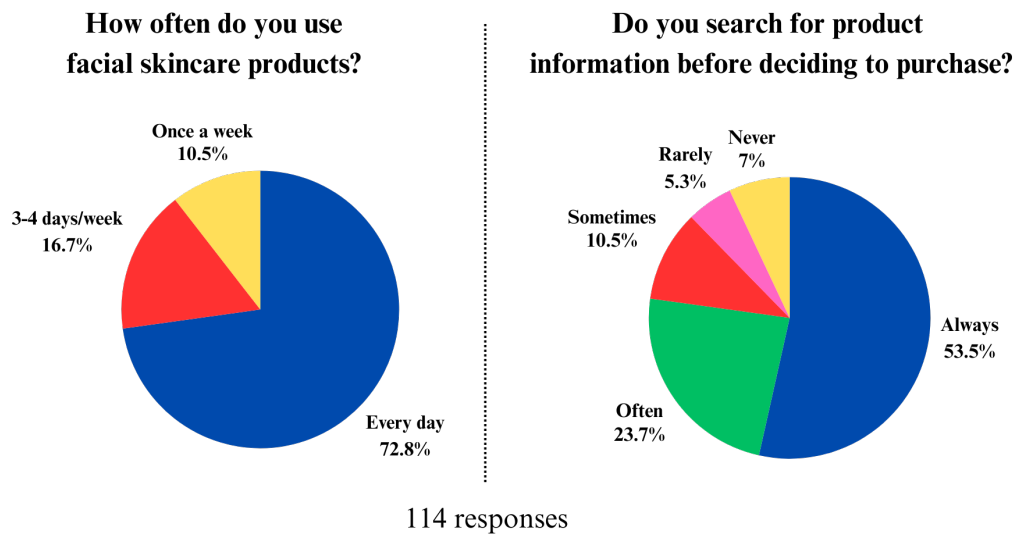### 4.1.2 Analysis Overall of Skincare Usages

Figure 4.2: Pie chart showing the frequency of facial skincare product use by respondents and the number of respondents who searched for product information before purchasing

According to the survey of those who have used facial skincare products, it was found that 72.8% of the respondents, as shown in Figure 4.2, use skincare products daily and most of them concluded that users will buy skincare products every 1-3 months. These figures show that most of the participants use skincare products regularly, reflecting their commitment to taking care of their skin regularly. From the survey, it can be concluded that social media influences the purchase of facial skincare products the most, showing the reach and persuasive power of digital platforms in the skincare product market. When looking at social media, respondents indicated that recommendations from friends and family were influential, and users also valued reviews. On the other hand, traditional media sources such as television and magazines showed little influence, indicating that users preferred more interactive and customized sources.

The majority of respondents indicated that they research before making a pur-

chase decision. 53.5% of respondents indicated that they always research products before purchasing, as shown in Figure 4.2. This highlights a clear trend among consumers to seek out product details, reviews, or other insights before making a purchase decision, highlighting the importance of accessible and comprehensive product information in helping consumers make informed purchasing decisions. Additionally, the survey of respondents found that the most useful website for researching skincare products was Konvy, followed by Watsons and Beautrium, showing that consumers rely on reputable retail platforms with a wide range of products to find quality, useful, and safe products to use. The survey also revealed that users prioritize certain features when searching for products online, with personalized recommendations receiving the highest ratings, followed by detailed product descriptions and ingredient lists. Many users found these to be very useful, and although product comparisons received slightly lower scores, many respondents still appreciated them. These scores highlight the need for sites to focus on providing detailed product descriptions, detailed ingredient lists, and personalized recommendations to increase user satisfaction and engagement.

From the overall survey of respondents, it was found that the factor that most influenced the decision to purchase facial skin care products was product quality, followed by price and reviews from real users, respectively. Safety certification, ingredient lists, promotions or discounts, ease of purchase, reputable brands, and scientific research are also important factors to consider. However, features such as salesperson, advertising, and trial are also considered factors but are not significant. This data emphasizes the importance of quality, price, and user reviews in consumers' decision to purchase facial skincare products. Most of the respondents can afford to pay 300 to 700 baht for facial skin care products, which shows the purchasing power of consumers that they are motivated to purchase products.

4.1.3 Analysis of Thai Skincare Brands

Are you interested in using facial skincare products made in Thailand?

Not interested at all
0.9%

Interested
39.5%

Depend on Brand
59.6%

114 responses

Which purchasing channel do you use frequently for facial skincare products?

Drug Stores
27.9%

E-commerce platform
30.7%

Social media
5.4%

Official Website
4.5%

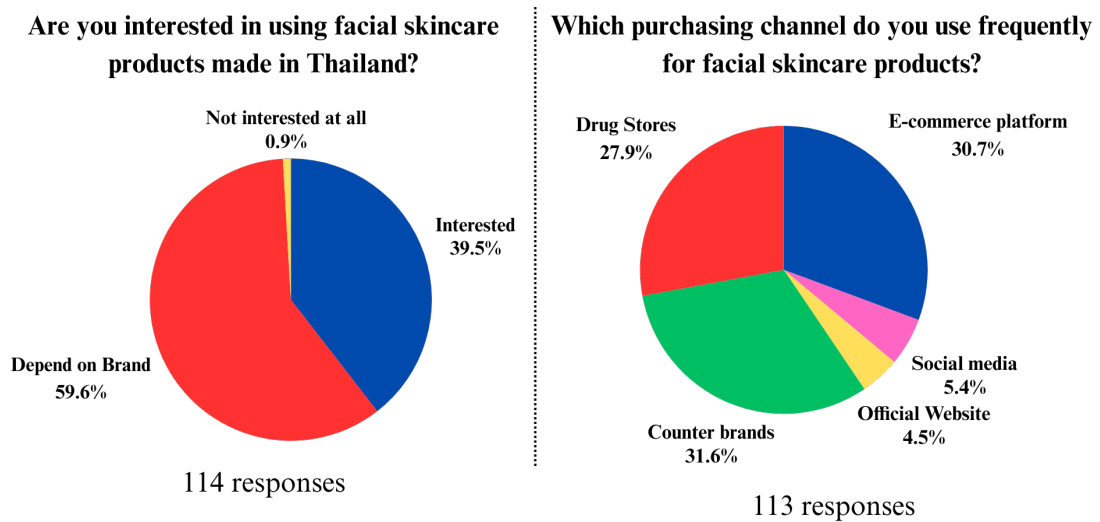Counter brands
31.6%

113 responses

Figure 4.3: Pie chart showing the number of respondents who are interested in using Thai facial skincare products and the number of channels through which respondents purchase facial skin care products

The survey results found that the majority of respondents, 59.6%, stated that their interest in using Thai facial skin care products depends on the brand, and of the 39.5% of respondents, only 0.9% were not interested in Thai brand products, as shown in Figure 4.3, indicating that users are still interested in Thai brand products due to their affordable prices, ingredients that are suitable for Thai skin types, and visible results, respectively. In addition, natural ingredients, easy access to information to choose products, support for the domestic economy, desire to try products, and product variety are other factors that attract consumers to Thai brand products. The survey results indicated that unclear or exaggerated information is the top problem for Thai-branded products. In addition, there are problems of imitation, substandard quality products, no safety certification, overpriced, inaccessible products, products not as advertised, ingredients not suitable for Thai people, and finally, allergic to ingredients.

Of those interested in Thai brand products, it was found that they chose to buy facial skin care products through brand counters the most at 31% because it allows users to trust the quality and safety of the products with their reputation and quality guaran-

tees through various channels. In addition to brand counters, there are duty-free shops (30.1%) and pharmacies such as Boots or Watsons (27.4%) respectively, as shown in Figure 4.3. However, users still encounter problems using various functions from the websites of Thai facial skincare brands, with the most common problems being incomplete and unclear product details, followed by slow website operation, no reviews or ratings, ineffective search or filter functions, no personalized product recommendations, no ingredient details, unfriendly design for phones, and results that do not match what users are searching for, respectively.

4.1.4 Analysis of User Feature Requirements

What are your expectations for the website's tone, and color scheme?

Bright and vibrant colors
10%

Soft and neutral tones
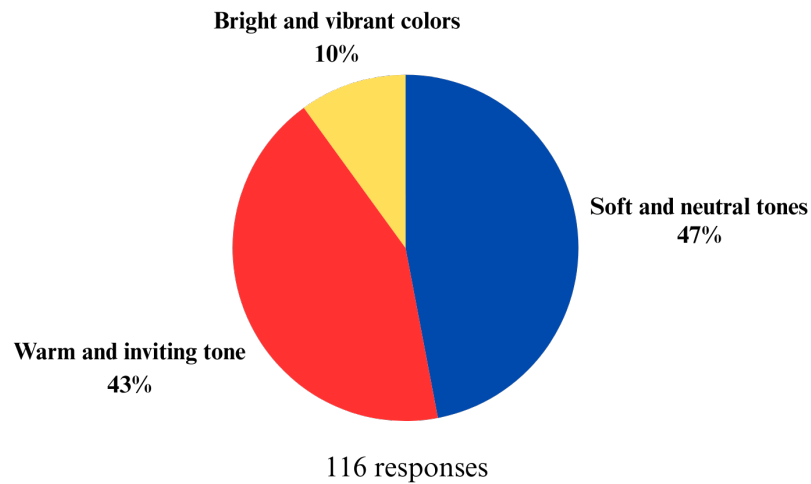47%

Warm and inviting tone
43%

116 responses

Figure 4.4: Pie chart showing the number of tone colors that respondents expected on the website

The survey of the respondents was divided into 2 parts users buying products through the website and the store have different advantages as follows: In choosing to buy products through the website, the advantages are convenience, cheaper prices or discounts, reviews from users, a lot of products to choose from, fast delivery and ready to sell, can trust the seller, and have recommendations from acquaintances or influencers, respectively. The advantages of buying products through physical stores are that you can see the actual product and check the condition of the product, you can compare many products immediately, you can get advice from the sales staff, you can be sure of the quality of the product and believe that it is genuine, there is no shipping cost, you can try the product before buying, and finally, there are promotions and gifts only in the store.

From this questionnaire, it was found that users wanted these features on a website designed to purchase facial skin care products, with the most requested features being filters for skin type, skin concerns, etc. Users also wanted detailed product comparisons, indicating the need for a complete comparison of products. Both ingredient details and personalized skincare recommendations were important to respondents, indicating that transparency and customization were desired. Text search is also important, demonstrat-

ing search efficiency.

However, some users are interested in more advanced search tools, such as searching with the camera or uploading images. Finally, saving products and items of interest shows that tracking products for future purchases is also important. The desired features emphasize convenience, information, and a modern, easy-to-use design. In terms of website color tones, most respondents expect 47% to focus on light and neutral colors and 43% to warm and friendly colors, as shown in Figure 4.4. Furthermore, if we analyze the data from the questionnaire, we will find that most users like designs that are modern, elegant, and expensive-looking, but not too much or too little, minimalistic, and easy to use.

In terms of functions, users want to emphasize features related to filters for skin conditions, skin problems, and prices, be able to compare products, have reviews and ratings from users, be able to recommend suitable products to users, have complete ingredient details, being able to search by typing and picture, and being able to save products of interest in order. It also has features that users want, such as a ranking system that shows how well a product ranks to determine how effective it is, or a clear comparison of prices and images of every product to avoid confusion among customers.
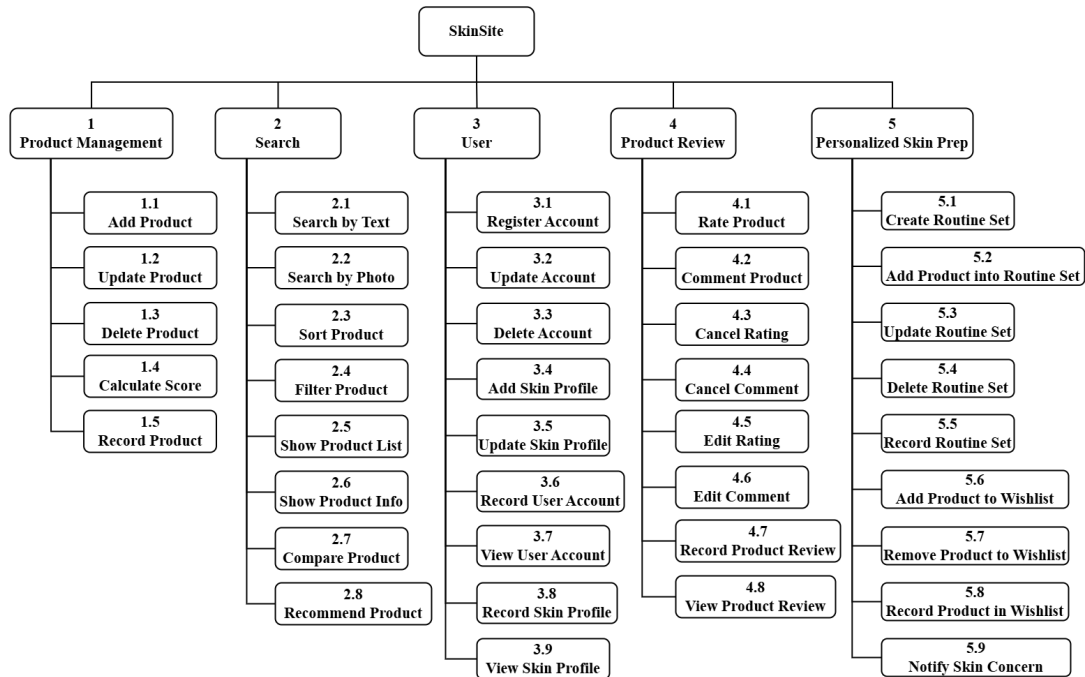
4.2 Structure Chart

Figure 4.5: Structure Chart

From gathering data from Chapter 3 and Section 4.1, we designed the SkinSite features as shown in the Structure Chart (Figure 4.5). The SkinSite website system structure diagram comprises 5 subsystems SkinSite. This chart provides an overview of the structural organization of the SkinSite website, which is divided into 5 principal workflows: Product Management, Search, User, Product Review, and Personalized Skin Preparation.

4.2.1 Product Management

Product Management is a comprehensive system dedicated to managing products on the SkinSite platform. The admin is responsible for all management tasks, which include the following:

- **Add Product**: This function requires the admin to enter product details, including product ID, brand name, product name, how to use the product, product image, product size, product price, product category, skin type that the product can be used with, and product ingredients.

- **Update Product**: This allows the admin to make modifications to an existing product's details.

- **Delete Product**: This function enables the admin to remove a product from the system.

- **Calculate Score**: The website calculates a product's score based on several factors: the number of reviews from our database, the risk of using the ingredient, the percentage of good use for each skin type, and the number of good ingredients. The most important factor is the risk of using the ingredient, followed by the percentage of good use for each skin type, the number of good ingredients, and finally the number of reviews and the rating, respectively. The display of scores on the website will make the interface easy to understand by using 5 grade levels: A, B, C, D, and E, arranged from very good to bad. We will use colors to help display the interface. A is dark green, B is light green, C is yellow, D is orange, and E is red. The calculation of the full score is 100, so each level will be divided into 20 ranges (A: 81-100, B: 61-80, C: 41-60, D: 21-40, and E: 0-20). Our website's scoring is based on the user's skin type. For example, if two users are interested in the same product, but the first user's skin condition is oily and the second user's skin condition is dry, and this product from the analysis works well on oily skin, the display of the scores of these two users will not be the same. The user with oily skin will have a better display of the score than the user with dry skin. If the user has not registered an account, the system will not have the user's information. Therefore, the product comparison in the score display section will show the score according to normal skin type.

- **Record Product**: This function is responsible for keeping an accurate record of products in the system.

4.2.2 Search

The Search subsystem provides a product search function accessible to both logged-in and non-logged-in users. It includes the following search options:

- **Search by Text**: Users can search for products by entering keywords related to the product name, brand name, ingredients, ingredient concerns, and benefits.

- **Search by Photo**: This function enables users to search for products by uploading an image.

- **Sort Product**: This function is a product sorting function. It can be sorted by score, popular products by the number of people who saved products to wishlist, reviews, and ratings.

- **Filter Product**: This function is a filter function for the data that the user wants, including categories, skincare goals, popular ingredients, preferences concern, skin condition, desired price, and advanced search, which is a specific type that the user wants.

- **Show Product List**: This function allows users to view a list of all products that match their search, filter, or sort, including displaying products by default with a ranking from their score.

- **Show Product Info**: This function allows users to view detailed product information.

- **Compare Product**: This function is about comparing two or three products. The information shown includes product details, benefits, ingredients (number of ingredients, risks of using ingredients), allergy information, price, and score.

- **Recommend Product**: This function is to recommend products from the products that the user has brought to compare. The system will analyze the data and pull data of products that are similar to the products that the customer is interested in to display on this page. This function provides options for the user if there are other products of the same quality, better, or cheaper.

4.2.3 User

The user is the system that allows all users to register and edit information. Users can manage their accounts as follows:

- **Register Account**: This function is a function that allows users to fill in information to register such as email, password, first and last name, gender, date of birth, desired budget, skincare goals, preferred concerns, skin type, allergenic ingredients, and favorite brands. In terms of budget, skincare goals, concerns, skin type, allergenic ingredients, and preferred brands, these can be skipped and revised later.

- **Update Account**: This allows the user to make modifications to existing user information.

- **Delete Account**: This allows the user to delete an existing user account.

- **Add Skin Profile**: This function allows users to add their skin profile such as budget, skincare goals, concerns, skin type, allergenic ingredients, and preferred brands.

- **Update Skin Profile**: This function allows users to change their skin profile information such as skincare goals, preference concerns, skin type, allergy ingredients, desired budget, and favorite brand.

- **Record User Account**: This function is responsible for correctly recording user accounts in the system.

- **View User Account**: This function allows users to view their account information.

- **Record Skin Profile**: This function is responsible for correctly recording the skin profile of the user in the system.

- **View Skin Profile**: This function allows users to view their skin profile information.

4.2.4 Product Review

Product Review is a function that allows users to review products by commenting and giving stars and can also edit reviews. This function can only be done by users who are members.

- **Rate Product**: This function allows users to give a star rating to products based on their satisfaction. The full rating is 5, so the stars displayed on the website will be 5.

- **Comment Product**: This function allows users to comment on this product.

- **Cancel Rating**: This function allows users to cancel star ratings.

- **Cancel Comment**: This function allows users to cancel comments.

- **Edit Rating**: This function allows users to edit their star rating scores.

- **Edit Comment**: This function allows users to edit comments.

- **Record Product Review**: This function is responsible for correctly recording the review of the user in the system.

- **View Product Review**: This function allows users to view their review. There will be a page that lists the review pages that users have reviewed and users can see which products they have reviewed.

4.2.5 Personalized Skin Prep

Personalized Skin Prep is a function for members only. What this function can do is create your own skincare routine set which can be edited at any time, including recording your favorite products to your wishlist. In addition, there will be a notification if the user is interested in products that they are concerned about, which information will be obtained from the user's registered skin profile. If the registered user does not fill in the skin profile, the system will not notify and the score shown on the website will be the score from the normal skin condition that does not have any allergies or concerns.

- **Create Routine Set**: This function allows users to create their own skincare routine set. The system will let users choose whether they want to set the set for day or night. The steps are divided into 5 steps: the first step is toner, the second step is toner, the third step is essence, and the fourth step is serum. The first 4 steps are the same for day and night sets, but the fifth step in the morning set is sunscreen,

while the night set is a sleeping mask. If users want to use the same product in the first 4 steps, they can select the same button and the system will process the same product for the user.

- **Add Product into Routine Set**: This function is a function that allows users to add products to each step of the routine set as desired by the customer. If the user has filled in their skin profile information when searching for a product to add to their routine set and it has the user's concern, the system will notify the user that this product has the user's concern.

- **Update Routine Set**: This function allows users to edit their skincare routine set without having to re-create it every time.

- **Delete Routine Set**: This function allows users to delete skincare routine sets that they do not need.

- **Record Routine Set**: This function is responsible for correctly recording the skincare routine set of the user in the system.

- **Add product to Wishlist**: This function allows users to save products that they are interested in and like to their wishlist so they can come back to them at any time.

- **Remove Product in Wishlist**: This function allows users to remove uninterested items from the wishlist.

- **Record Product in Wishlist**: This function is responsible for correctly recording the wishlist in the wishlist list.

- **Notify Skin Concern**: This function allows users who have entered their skin profile information into the system to receive notifications about concerns about product ingredients. For example, if the user is concerned that this product contains alcohol or ingredients that they are allergic to, the system will alert the user as a sign that this product is of concern to the user and therefore is not recommended for use. If the user goes to the product information page, the system will highlight

the ingredients that the user does not want. In addition, in terms of budget, if this product is priced beyond the user's budget, the system will alert the user.
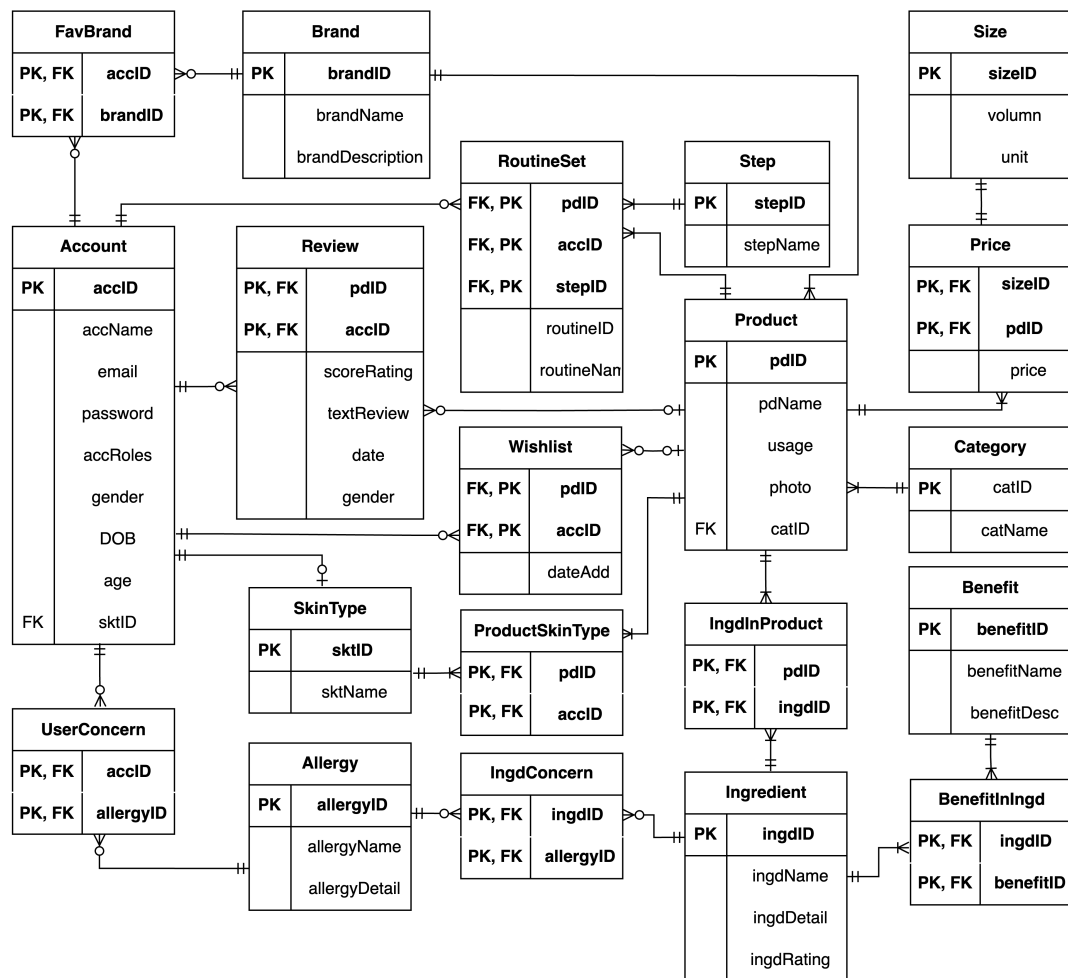
4.3 ER Diagram

Figure 4.6: ER Diagram.

The project's data storage design includes ten primary entity tables, including Account, Brand, Product, Ingredient, Allergy, Benefit, Step, SkinType, Size, and Category, to efficiently manage website data. These tables, as shown in the ER diagram, structure the relationships and dependencies essential for managing and retrieving information on the website.

4.4 User Interface design

From gathering data from related work to gathering user behaviors and turning them into the structural chart, we designed the interface in Figma, a collaboration tool for interface design. The report highlights the seven primary functional pages, aligning with user needs.

4.4.1 Registration Page

Figure 4.7: Registration Page

The main form begins with basic information fields that contain Email, Password, Name, Gender, and Birth date. Continuing, the users set a budget slider where they are asked to set a skincare budget in the range of 0 to 10,000 Baht. Scrolling down the page, users can select benefits or product objectives, such as UV Protection, Brightening, and Anti-Aging.

Additionally, users can specify preferred standards for skincare products, including Cruelty-Free, Paraben-Free, and Alcohol-Free. They can also choose skin conditions

suitable for their needs, such as Oily Skin, Dry Skin, or Normal Skin. These features enable tailored recommendations to meet individual preferences and requirements.

There is also an additional text field to fill in the allergic ingredients they would like to avoid and a field to list their favorite skin-care brands, which could then be used to recommend similar or complementary products. After users register, pressing the "SAVE" button will enable users to save their input securely.
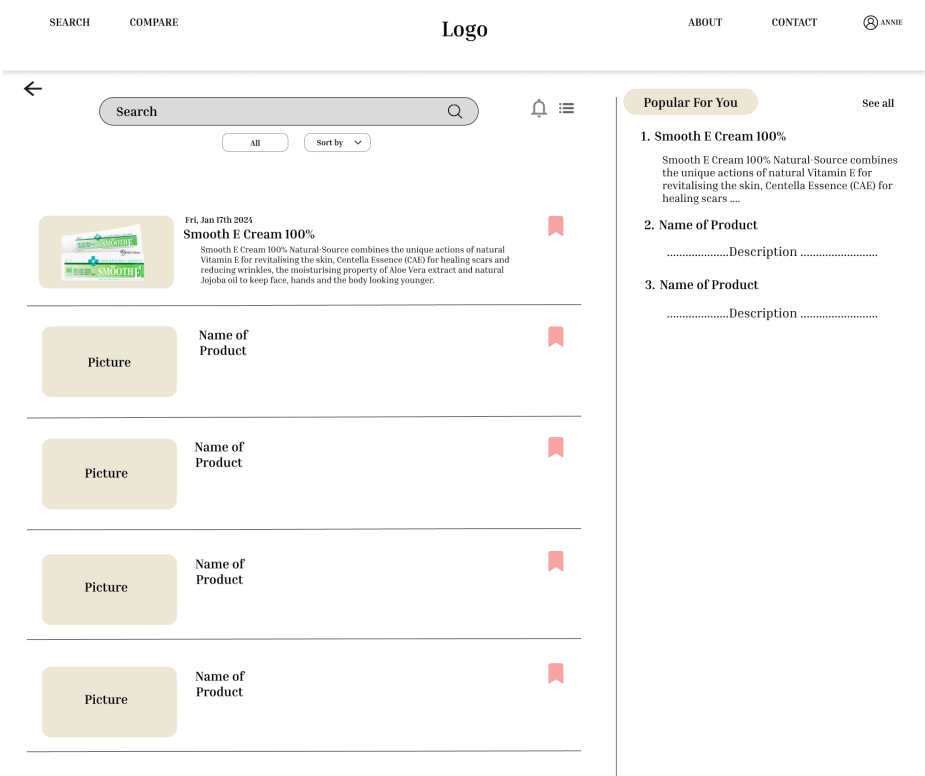
4.4.2 Wishlist page

Figure 4.8: Wishlist Page

Figure 4.8 shows the Wishlist page that contains the product interests of the users. The website allows users to filter into categories like "All" and "Sorted by" to ensure that whatever is sorted is relevant to the user's personal preferences. In listing each product, there will be an image, product name, description, and the bookmark icon that the user has saved that product.

On the right, there is a "Popular For You" section, which includes suggestions for products based on user preference. A short description of each product is included. This

balances discovery with convenience, allowing a fast and effortless review of products, comparing and saving those that best fit the user's skincare needs. Its minimalistic design ensures usability by focusing on essential product details along with navigation.
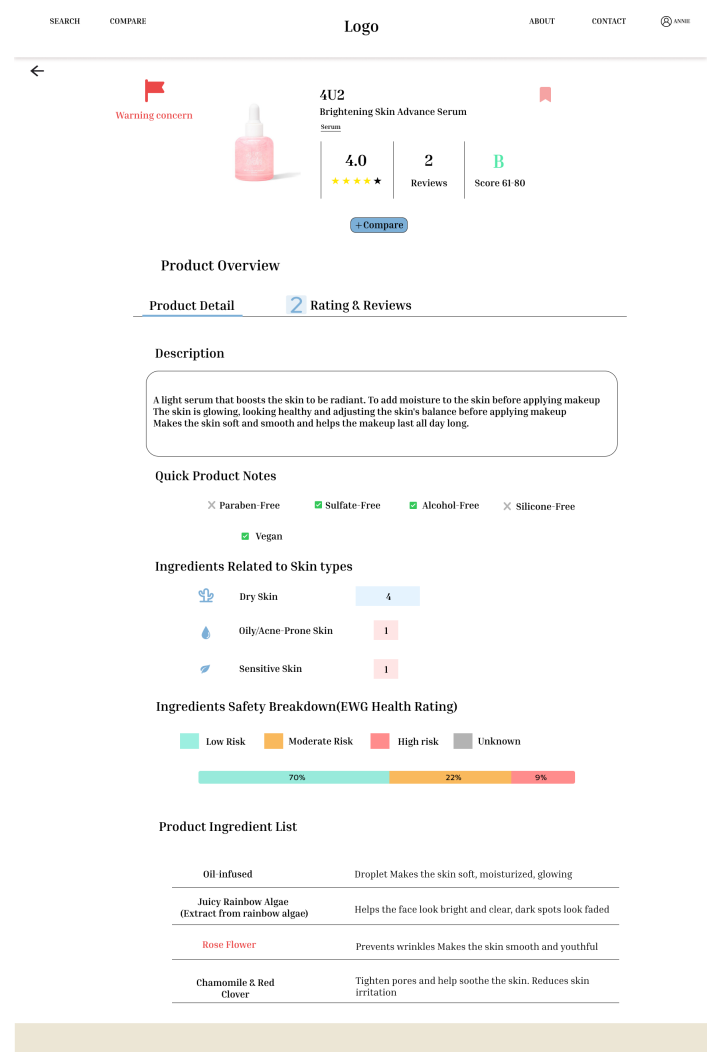
4.4.3   Product Information page

Figure 4.9: Product Information page

Figure 4.9 is a product information page that provides detailed insights to aid decision-making based on personalized concerns. At the top, it displays the product name, type, average rating, number of reviews, and a grade score (0 to 100) calculated from factors like ingredients and usage risks, with an option to compare similar products. There is a flagged icon and red text highlights potential allergens or sensitivities.

After scrolling down the "Product detail" section includes a detailed description and quick notes about the ingredient concerns such as parabens, sulfates, alcohol, and silicones. Next, Ingredients are grouped by suitability for skin types (e.g., dry or sensitive), while the "Ingredients Safety Breakdown" uses EWG Health Ratings to show the safety levels of ingredients. An ingredient list details the benefits of each component, ensuring that critical allergy and sensitivity information is clear and user-friendly.
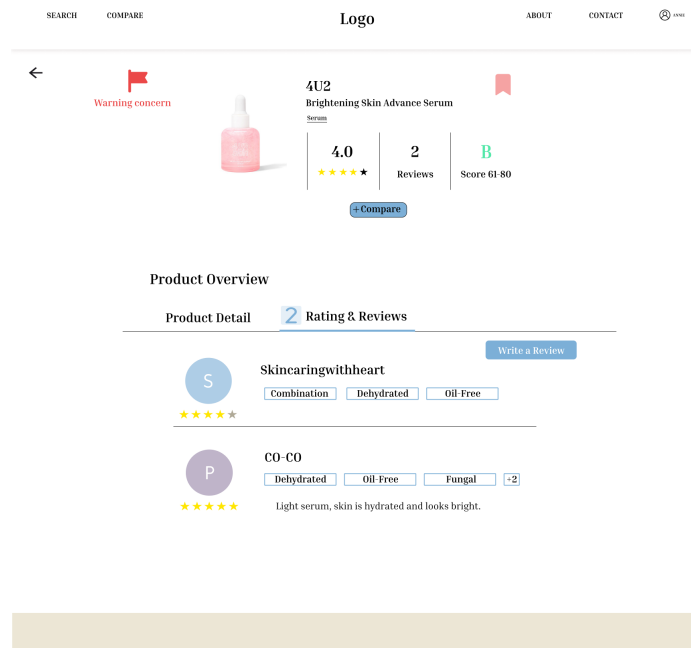

Figure 4.10: Product Information page(review)

Figure 4.10 is the "Rating and Reviews" section that allows users to read feedback from others and write their reviews. Each review displays the reviewer's username, skin type, and product-related tags. Ratings are visually represented by stars, and users can provide additional comments about the product.
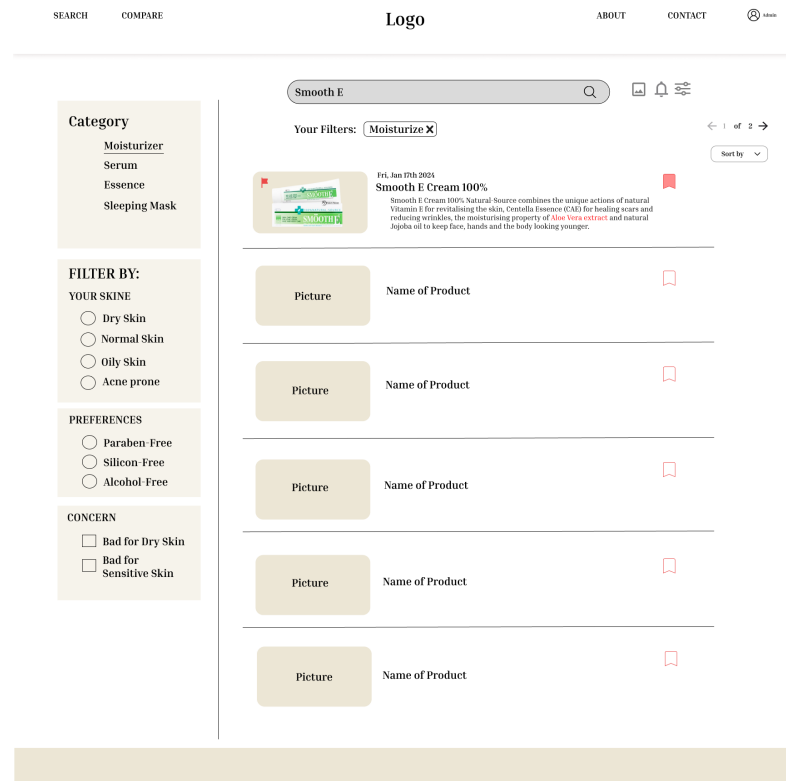
4.4.4 The Search page

Figure 4.11: Search page

The search interface as shown in figure 4.11 can search by text, upload pictures, or filter to find a suitable product for users. The left side of the page has product filters to help the users find the product that matches their needs. There are many types of filters such as categories, skin, user preference, and benefits. After searching, the website will show the result on the right-hand side with images of products, product names, short descriptions, and user options to bookmark or flag items.

For registered users, the system tracks their product history and displays a text warning if a product contains ingredients that may pose a risk to the skin. The warning highlights potential concerns directly on the product page, ensuring users are informed about any harmful components. However, for unregistered users, all products are displayed without any flagged notifications, showing the full list of items without customization based on personal sensitivities.
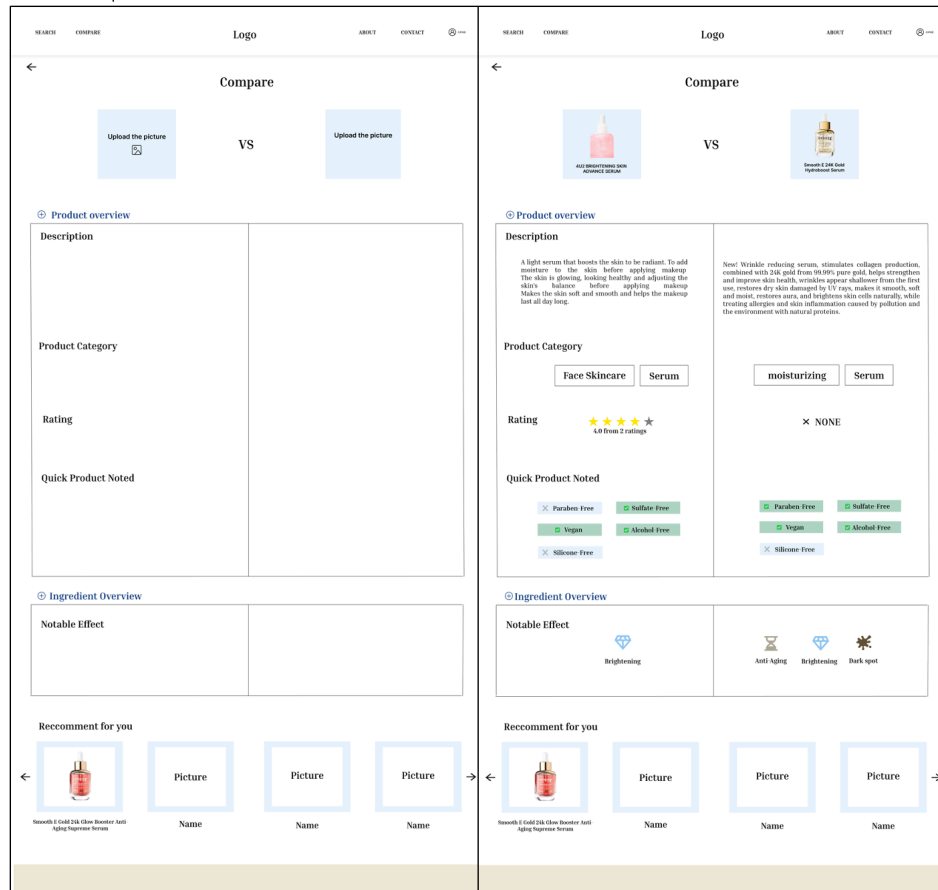
4.4.5 The comparison page

Figure 4.12: Comparison page

Figure 4.12 shows a page comparing two skincare products. The image on the left-hand side is used to upload the products to be compared. After uploading photos, a product comparison consists of the product overview, review rating, and ingredient overview. Also, the Recommendation section below suggests similar products that may be considered further. This page enables users to make informed decisions by comparing product features, benefits, and ingredients side by side.
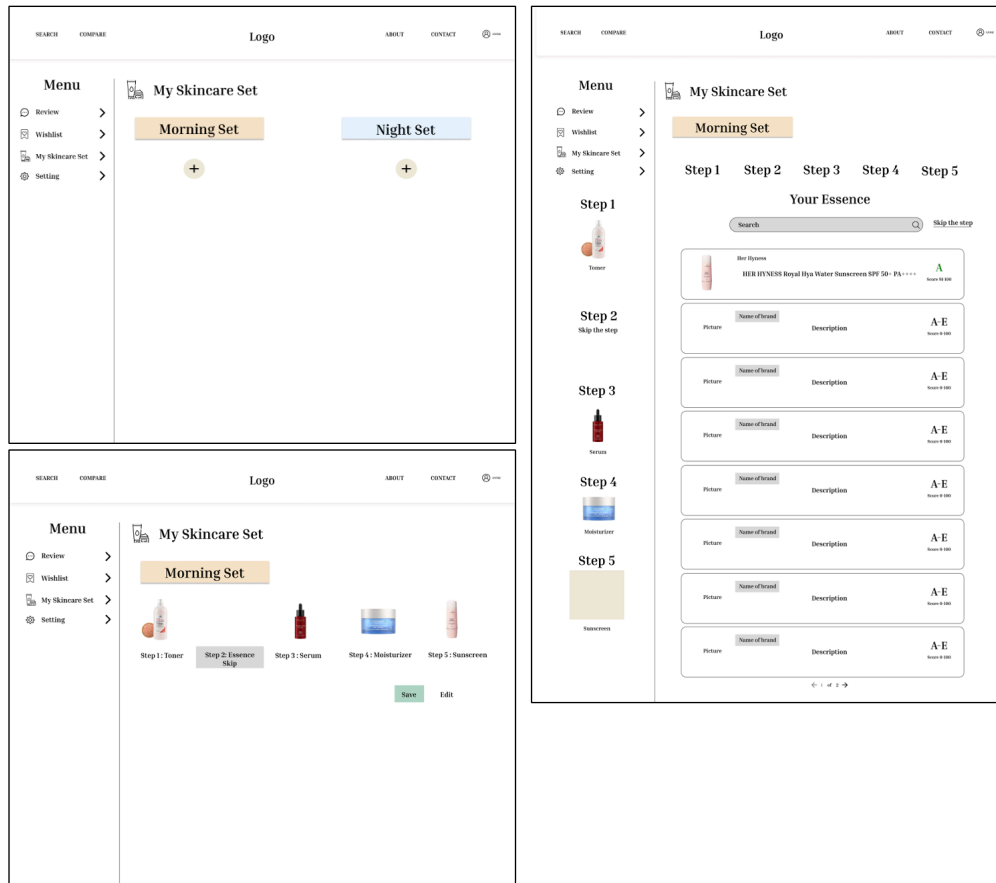
4.4.6 The Skincare Routine Set page

Figure 4.13: Skincare morning routine set

This page focuses on creating personalized skincare routine sets, allowing users to customize their routines by selecting products tailored to their individual needs for both morning (Figure 4.13) and night (Figure 4.14). The system recommends the proper sequence of skincare steps, assisting users who are unsure of the order or wish to organize their routines. Users have the flexibility to skip steps as needed, ensuring a full customization experience. Once completed, routines can be saved and edited later, allowing users to adapt their regimen to evolving needs and preferences.
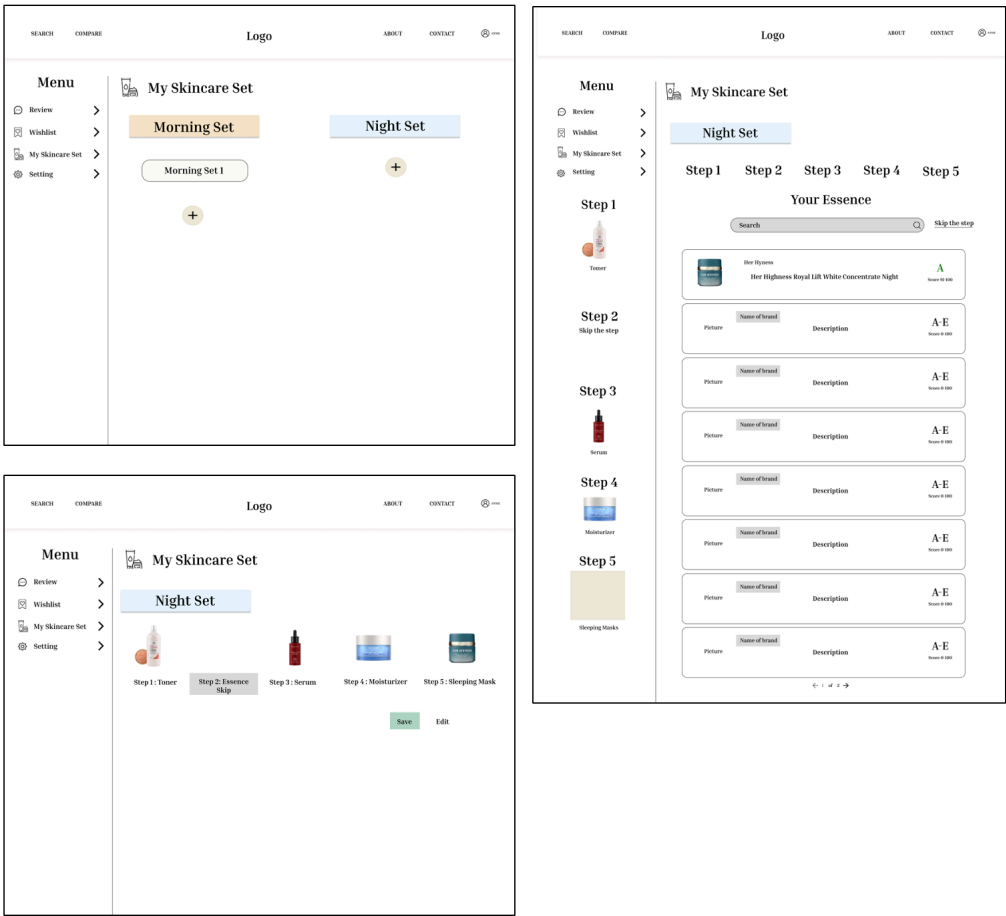
Figure 4.14: Skincare night routine set

4.5 Timeline

These Figures 4.15 focus on the project timeline, outlining the key phases from initiation to completion. Each phase was planned to ensure a systematic approach to achieving the project's objectives.
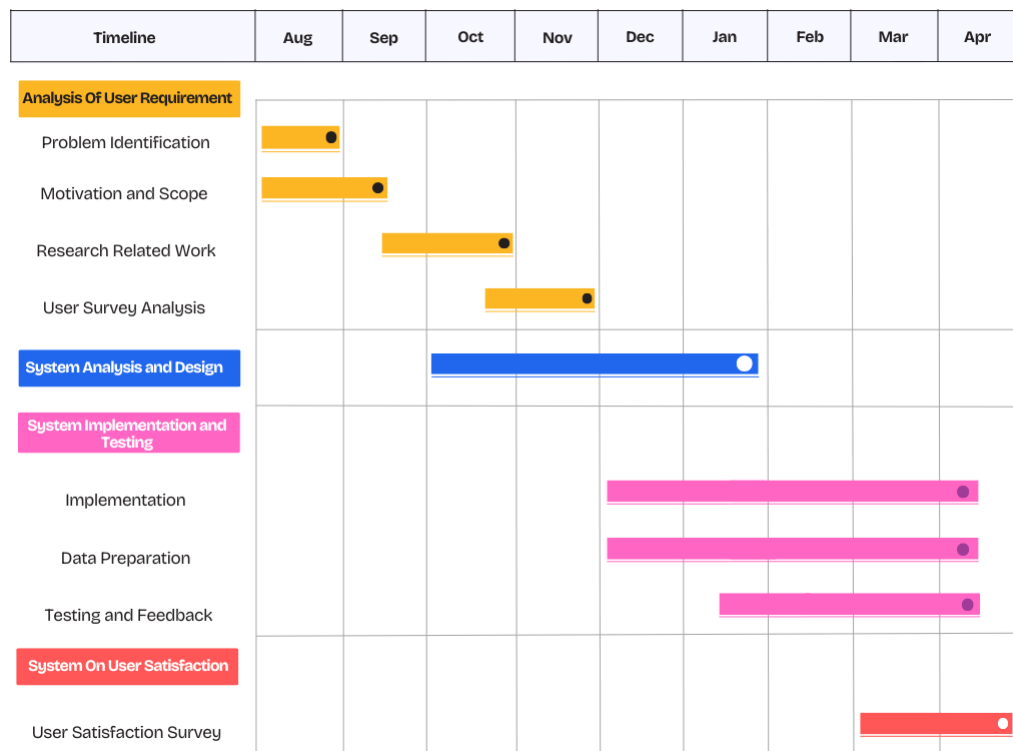
4.5.1   Schedule in August to April

Figure 4.15: Timeline

Key Tasks and Phases:

1. **Analysis of User Requirements (as shown in the yellow bar)**:

   - **Problem Identification**: This task begins and is completed in August, marking the start of the project by clearly defining the challenges to address.

   - **Motivation and Scope**: This phase took place from August through mid-September. The main idea was to find a rationale behind the project and establish the scope so that the course would be clearly defined for the next activities.

- **Research Related Work**: It started in mid-September and was completed by October; this phase involved exploring and identifying gaps to ensure the project's relevance and innovation.

- **User Survey Analysis**: This step analyzed the survey data collected from October 24th to November 5th. Though the survey remained open throughout November, this survey analysis provided insights into user needs, guiding the system's design.

2. **System Analysis and Design (as shown in the blue bar)**:

- This step started in October and will continue into January, as this is an activity to explain the requirements gathered into structured system design. The key deliverables are the structure chart, calculate score, UI design, and ERD, depicting the flow and arrangement of data in the system.

3. **System Implementation and Testing (as shown in pink bar)**:

- **Implementation**: Build an intuitive and user-friendly interface for the website to ensure seamless interaction for end users and indicate the core in building the functionality of the platform, which will start in December to mid-April.

- **Data Preparation:** This step will gather the preliminary collection and structuring of data to be used in the project.

- **Testing and Feedback**: This process will start in mid-January to April. This is the testing of the system for functionality, obtaining feedback, and making necessary adjustments to develop an efficient platform.

4. **System on User Satisfaction (as shown in the red bar)**:

- **User Satisfaction Survey**: Planned for the month of March to April, it captures feedback from users in regard to their experience with the platform. The insights gained will drive final adjustments in efforts to meet user expectations.

CHAPTER 5
EVALUATION AND RESULTS

This chapter evaluates the effectiveness and performance of your system, focusing on system validation or verification. It should detail the criteria or metrics used for evaluation, the strategies or settings applied, and the evaluation results. Additionally, analysis and interpretation of these results can also be included.

CHAPTER 6
CONCLUSION AND FUTURE WORK

This chapter summarizes the outcome and reflects on a project as a whole. It includes a concise recap of the main results and contributions of the project, problems and limitations, and future works, which suggests potential improvements, or recommendations for the next steps.

REFERENCES

[1] Department SR.. "Worldwide revenue of the skin care market by country in 2023";,   https:// www.statista.com/ forecasts/ 758611/ revenue-of-the-skin-care-market-worldwide-by-country.

[2] Department SR.. "Revenue of the global skin care market in 2023, by country";, https://www.statista.com/forecasts/1270035/global-revenue-skin-care-market.

[3] Department SR.. "Revenue of the skin care market in Thailand from 2018 to 2029";, https://www.statista.com/forecasts/1220299/thailand-revenue-skin-care-market.

[4] Cosmenet. "cosmenet.in.th เว็บ รีวิว เครื่อง สำอาง จาก ผู้ ใช้ จริง";,   https:// www.cosmenet.in.th/.

[5] Konvy. "Konvy - เครื่องสำอาง สกินแคร์ เมคอัพ";, https://www.konvy.com/.

[6] Jeban. "Daisy by Jeban.com";, https://reviews.jeban.com/.

[7] Beautrium. "BEAUTRIUM บิวเทรี่ยม | น้ำหอม เครื่องสำอาง สกินแคร์ ของแท้ ส่งเร็ว";, https://thebeautrium.com/.

[8] Shopee. "Shopee Thailand | Hot Deals, Best Price"; 2021, https://shopee.co.th/.

[9] beautrium. "lazada.co.th- ช้อป ปิ้ง ออนไลน์ รับ เครดิต เงิน คืน 10   https:// www.lazada.co.th/#?

[10] Incidecoder. "INCIDecoder - Decode your skincare ingredients.";, https://incide-coder.com/comedogenic-rating.

[11] SkinCarisma. "Cosmetic and skincare ingredient analyzer tool | Skincarisma.";, https://www.skincarisma.com/.

[12] Group EW.. "Skin Deep® Cosmetics Database | EWG"; 2008,   https:// www.ewg.org/skindeep/.

[13] CosDNA. "CosDNA Cosmetic Ingredients";, https://cosdna.com/eng/.

[14] SkinSort. "Build Your Perfect Skincare Routine";, https://skinsort.com/.

[15] Group EW.. "Understanding Skin Deep® ratings || Skin Deep® Cosmetics Database,"; 2008, https:// www.ewg.org/ skindeep/ understanding_skin_deep_ratings/.