Modern Marketing Platform for Surin Farmer Group

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Abstract

The objective of this research was to create a modern marketing platform for the Surin Farmer Group and evaluate user satisfaction with the platform. The platform development process involved integrating the Line application (Line), which is highly popular among farmers, to provide convenience and user-friendly functionality. The Software Development Life Cycle (SDLC) process was employed to assist in system development, and the tools used for system development included Visual Studio Code, PHP as the programming language, JavaScript Library (jQuery), and MySQL database management system. Additionally, the LINE Frontend Framework or LIFF, a technology used for connecting Line applications, was incorporated. The principles of a LINE business account (Line OA) were applied to enhance the development into an online marketing platform. The study included a sample of individuals interested in buying and selling products online in Surin province. The sample groups consisted of 20 farmers from Surin province and 50 general users. The research findings indicated that the developed platform is effective and responsive to user needs. The satisfaction evaluation results revealed that the sellers (farmers) had a satisfaction rating of 4.32, S.D. = 0.45, indicating significantly high satisfaction levels. On the other hand, the buyers (general users) had a satisfaction rating of 4.40, S.D. = 0.39, also indicating significantly high satisfaction levels.

Keywords: Modern Marketing, Online Marketing, Line OA.

1. Introduction

Surin Province is well-known for its large-scale agricultural activities, specifically for rice cultivation [1]. The province is committed to using organic farming practices and, in addition to rice, grows a wide variety of crops. The community produces a range of agricultural products, including goods derived from agricultural processing. These community products comprise processed agricultural goods and items made from leftover agricultural materials. For example, sweet potato is a popular alternative crop for Surin farmers, and during certain seasons, there is an oversupply that leads to low prices [2]. As a result, Surin has started to process sweet potato into health-oriented food products to manage surplus production efficiently. After processing, the surplus is often used as animal feed. Moreover, the silk industry in Surin is thriving. Silk cocoons, silk fabrics, and silk products are well-known and have a diverse market. Traditional items like "Ton-Morn" (a type of silk cocoon), handicrafts, jewelry, and various other goods made from silk are all part of the product range. The silk industry is a significant aspect of Surin's economy, and its products are sold in various forms to meet customer demand. The primary occupation of Surin's farmers is agriculture, primarily crop cultivation. However, during idle periods in farming, many households engage in supplementary activities such as silk weaving [3]. There is a wide range of agricultural products and outputs. Sometimes, oversupply issues arise, and having only one sales channel is insufficient for effective product distribution. Enhancing sales skills and expanding marketing channels could alleviate this challenge, providing farmers in Surin with increased income opportunities.

The Modern Marketing Platform for Surin Farmer Group

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focuses on online marketing to adapt to the current global changes. The development process employs information systems using the Systems Development Life Cycle (SDLC) [4]. The strategy involves expanding sales channels widely, by incorporating the LINE Official Account business model. This model uses the LINE Front-end Framework with Web View and Rich Menu to display menus on the LINE application. The application acts as an online store that helps businesses reduce their costs and gain access to new customers. The LINE application offers an easy-to-use communication channel that is popular for detailed discussions beyond image-based communication. This makes it convenient for customers to browse and purchase products, thus promoting the marketing and sales of agricultural products from Surin Province.

2. Research Objectives

2.1. To develop a modern marketing platform.

2.2. To determine results of user satisfaction evaluations using modern marketing platforms.

3. Theoretical Background and Related Researches

To create modern marketing platforms for Surin farmer groups, we conducted thorough studies of various theories and documents.

3.1 Modern Marketing Management (MMM)

This pertains to business management, which encompasses utilizing modern technology to engage with customers through various means, including marketing and operations. The objective is to analyze the genuine needs of customers, gathering information to enhance products and services. It considers several factors, including marketing management, operations, and technology. [5]

3.2 Concepts about the marketing mix

The marketing concept centers around satisfying the needs and desires of customers while also achieving the organization's goals. This approach distinguishes itself from the production and sales concepts. The production concept prioritizes efficiency in the production and distribution of products. To effectively sell products or services, it's crucial to prioritize the needs of the customer. This can be achieved through various marketing strategies, such as high-powered personal selling and aggressive advertising. For small businesses, it's paramount to apply marketing concepts that emphasize meeting the needs of customers. Here are some ways to do this [6].

1) Prior to successfully managing a small business, owners must possess a thorough understanding of its operations.

2) Emphasize meeting customer needs by analyzing their preferences to provide pertinent products.

3) Who constitutes your customer base? These individuals possess distinct requirements. What is their expenditure capacity for goods and services?

4) Grasp the characteristics of buyers that impact their purchasing choices.

5) Recognizing your competitors and comprehending their strategies is imperative. A thriving business must deliver superior products and services.

3.3 System development guidelines

In the development of modern marketing platforms, the System Development Life Cycle (SDLC) is used as a development guideline. The SDLC consists of a total of seven steps [7].

1) Problem Definition: This process involves identifying the causes of issues in current operations, exploring the possibility of developing a new system, and determining the needs and requirements of system analysts and users. This information can be gathered through interviews and by collecting data from various operations to summarize the requirements.

2) Analysis: Analysis involves examining a system by gathering information and creating a logical model. The system analyst designs the system based on user requirements, determining the desired behavior, format of display, and data storage. The analysis is presented through a data flow diagram and a data dictionary. Let's review this process again to ensure a thorough understanding.

3) Design: The process of system design involves creating

a new system that meets the needs of its users. Systems analysts are responsible for designing the system's functionality, as well as determining the appropriate hardware and information technology to be used. They also design the program interface that connects users with the system and set up the network characteristics for connecting computers. Additionally, they establish security measures and estimate the various expenses that will be incurred.

4) Development: This phase involves a collaborative effort between programmers and system analysts to create the system using the components gathered from steps 2 (Analysis) and 3 (Design). Documentation must also be prepared, and users must be trained simultaneously.

5) Testing: System testing is a crucial process to ensure that the system is fully functional before it is put into practical use. The developer first tests the data by creating simulated data. They then check the system's operation to identify any errors. If any errors are found, the system goes back to the development stage for further improvements.

6) Implementation: Once the system has been tested and its functionality and user-friendliness confirmed, proceed with the system installation for practical use.

7) Maintenance: Maintenance refers to the process of enhancing and modifying a system once it has been installed and used. This may be necessary if newly created programs encounter issues at some point or if they have been used for an extended period. Additionally, changes in the organization's structure or expansion may require modifications to the program to align with the organization's structure. Maintenance can be divided into four types: corrective maintenance, adaptive maintenance, perfective maintenance, and preventive maintenance, each serving a specific purpose.

3.4 Computer language used for system development.

Creating a modern marketing platforms, the tools and computer languages utilized for development were as follows:

1) PHP is a programming language that allows for embedded scripting. This means that PHP commands can be added to web pages alongside HTML tags and saved as files with the extensions .php, .php3, or .php4. The syntax used in PHP combines elements from C, Perl, and Java. PHP commands are typically incorporated into HTML documents. When using PHP language, a client opens a web browser to request a PHP file. The browser then asks the server for the PHP file, which is searched for and run through the PHP engine. The engine processes the data in the database and sends the results back to the client. These results are converted into HTML and sent back to the web browser for display [8].

2) HTML is a file format saved in ASCII code and created using text editing programs like Notepad or word processing software. HTML files are made up of tags, which are HTML commands enclosed within < and > symbols. These tags come in two types: container tags and empty tags. A container tag has an opening tag and a closing tag. The closing tag will have a "/" preceding the tag, like <h1>...</h1>. Meanwhile, empty tags only have an opening tag, such as <HR>, which can be written in uppercase or lowercase letters without affecting the web browser's display. This information is consistent across various sources [9].

3) CSS is a style sheet language that uses a specific syntax, like HTML and XHTML. It is used to format and decorate HTML and add spacing to make web pages more flexible and visually appealing. It allows for easy and quick editing of the appearance of information in the presentation. CSS is standardized by W3C (World Wide Web Consortium). To set various properties of HTML or XHTML documents, we can assign values to HTML elements like <body>, <p>, and <h1>. This helps to standardize our website [10].

4) JavaScript is a programming language that is distinct from HTML and CSS, which are display languages or markup languages. JavaScript is a processing language that can perform calculations, use variables, and execute arithmetic operations such as addition, subtraction, multiplication, and division. These capabilities are not present in HTML, so JavaScript is required. JavaScript is a small program that can be added to HTML code. It is important to note that JavaScript is a case-sensitive language, so capitalization matters.

For instance, 'Myworld' and 'MyWorld' are different names because the 'W' is in uppercase and lowercase, respectively. As a result, it is essential to be careful when naming variables [11].

3.5 MySQL database management system (MySQL)

MySQL is a widely used database often paired with PHP. It is favored by many for its medium size and high level of user satisfaction. Additionally, MySQL is available for free. However, interacting with the database through the command line can be challenging. To address this issue, tools were developed to assist PHP programmers in managing MySQL databases more efficiently. One such tool is a web application called phpMyAdmin, written in PHP, which can handle multiple tasks with MySQL. It interacts with users graphically, making it effortless to use. This tool saves time by reducing errors and eliminates the need for typing commands [12].

3.6 Line Developer management and connection tools

The LINE Frontend Framework, also known as LIFF, is a platform developed by LINE Corporation that helps developers create web applications that can work within the LINE application and chat. It uses modern web technologies like HTML, CSS, and JavaScript. The main function of LINE LIFF is to expose applications within specific areas of chats or the LINE application. Users can access these applications through buttons or links configured in the chat, without the need to install a new application. This makes it easier for users to connect with LINE applications and enables developers to develop and update their applications without requiring users to download and install new versions. LINE LIFF allows developers to create applications with various functionalities like displaying news, products, schedules, personal information, or connecting to other services like location sharing, e-commerce, hotel reservations, and various application forms. [13].

3.7 Related research

The development of an integrated marketing communication strategy for holistic promotion of agricultural tourism in Nan Province is to propose a comprehensive strategy that builds upon the existing marketing communication activities. The research findings suggest that to successfully promote tourism in Nan Province, the strategy should be all-encompassing. The proposed strategies include developing a centralized website that serves as a comprehensive information hub for complete tourist destinations, utilizing online social media platforms such as Facebook, Instagram, Twitter and LINE official account, organizing special events like product exhibitions or travel activity showcases, public relations through television programs, promoting sales through travel agencies like Agoda and Traveloka, creating landmarks for check-ins, encouraging tourists to capture photos, and YouTube advertising. All these activities will be incorporated under a unified strategy and plan to transition marketing communication into a new format. This approach aims to meet the real needs of consumers and expand the consumer base for tourism [14].

A new e-commerce platform has been developed for online product deposit through a collaborative website with portable devices. It consists of mobile applications for general users and a website for system administrators. The results of user satisfaction across all groups indicate that the system has been highly effective, with an average rating of 4.30 (x). This suggests that the presented system can be used to conduct online business, creating job opportunities and generating income. This is particularly beneficial for those interested in buying and selling or seeking additional income in the agricultural sector, providing them with the maximum possible outcome [15].

The purpose of developing a website for the Office of Behavioral Control in Surin Province through a systematic process is two-fold. First, it aims to improve the website's functionality and secondly, to evaluate user satisfaction with its usage. Based on the research findings, system administrators have given an average satisfaction rating of 4.98, which falls within the "very good" range. The standard deviation is 0.02. General users have also been given an average satisfaction rating of 4.86, which is also within the "very good" range. However, the standard deviation is 0.35 for the general users. Both the system administrators and general users found the website to be effective and easy to use within the defined scope of work. [16]

4. Research Methodology

4.1 Problem Definition

A researcher visited Surin Province to gather data from a group of farmers. Through their study of agriculture, product sales, marketing basics, and social media usage, they discovered that the main products of this group are jasmine rice, silk, and various silk-based processed products. Sales primarily occur through closed market systems or via middlemen. The most used social media platforms are Line and Facebook.

4.2 System Analysis

After collecting information during the field visit, the researcher analyzed the data and proposed a new marketing channel for farmers in Surin Province. The idea involves utilizing the popular social media application Line to sell products. This modern marketing platform could greatly benefit farmer groups in Surin Province. The platform aims to offer a convenient way for farmers to manage their stores and for buyers to easily find and purchase products from these groups. It involves two main players: sellers (farmers) and buyers.

Sellers:

1. Login: The seller can log in to their account to access their store.

2. Manage Store: The seller can add, delete, and modify existing product listings in their store.

3. View Order List: When customers place orders, the seller can view the list of orders.

4. Confirm Payment and Update Delivery Status: The seller can confirm payment and update the delivery status when products are shipped to customers.

5. View Summary Reports: The seller can view summary reports of all orders within their store.

Buyers:

1. Search for Stores or Products: Easily search for stores or products that you are interested in.

2. Log into Your Account: After finding what you want, log into your account.

3. Place Your Order: Once logged in, place your order.

4. Make Your Payment: After placing your order, you will receive an order summary and will need to make the payment to complete the transaction.

5. Check Your Delivery Status: When a tracking number becomes available, check the delivery status of your order.

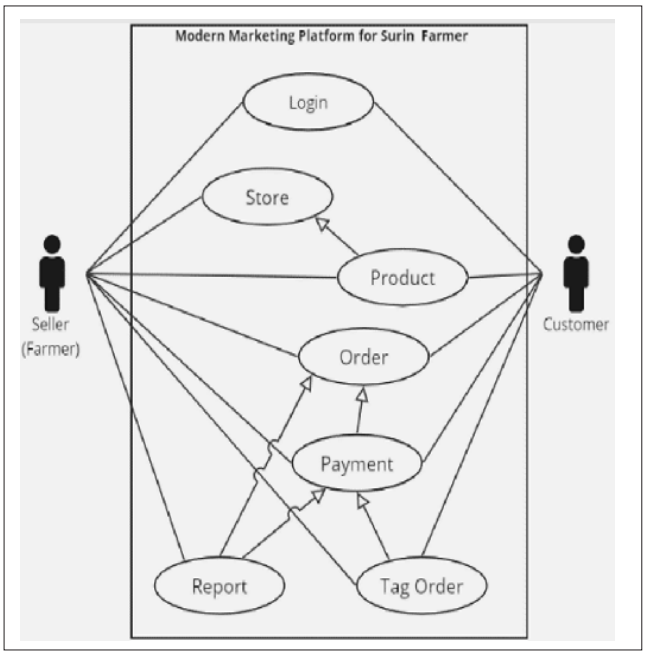

Figure 1. *Use Case Platform Overview.*

4.3 System Design

After obtaining details from data analysis, the researcher proceeded with designing a platform using a system design program. This platform can be accessed through the Line system and can connect to the website for managing store and product information, as well as ordering information. It also facilitates the issuing of various reports. Buyers can conveniently use the widely used Line system for their transactions.

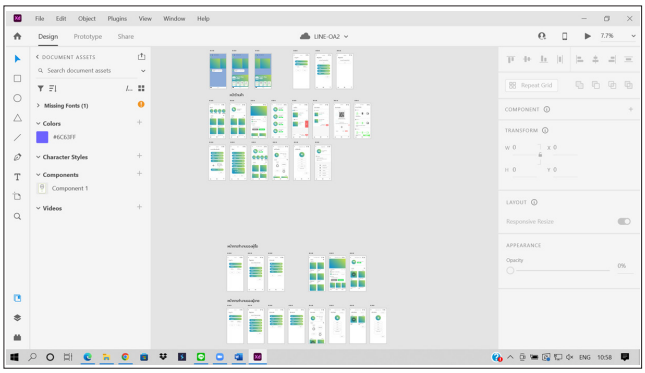

Figure 2. *User Interface Design.*

4.4 Development

1). To create a functional website, it's necessary to develop various components. One of these is the seller (farmer) section, which allows for the management of store and product information, as well as order processing. Additionally, various reports can be generated from this section. To create these components, Visual Studio Code software will be used, along with the Bootstrap framework for the User Interface section. On the server side, scripting languages such as PHP and JavaScript will be utilized, while HTML and CSS will be used on the user side. This system will be designed to run on the Windows operating system.

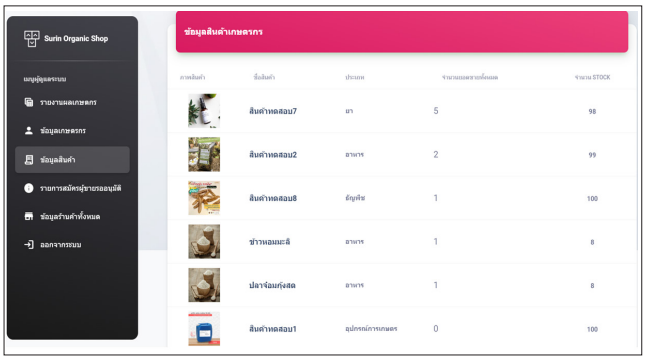

Figure 3. *Product Management.*

Figure 4. *Store Management.*

2). The Line application uses the LINE Frontend Framework (LIFF) to create Line OA components. This technology is used to develop the main functionality for both sellers (farmers) and buyers accessing the application. Using LIFF, users can search for products, find stores, place orders, and track all orders within the LINE application. To enable the Line Chatbot to work seamlessly with web applications, a necessary process involves connecting a Web Application and the Line Chatbot Platform.

Figure 5. *Part of use via Line.*

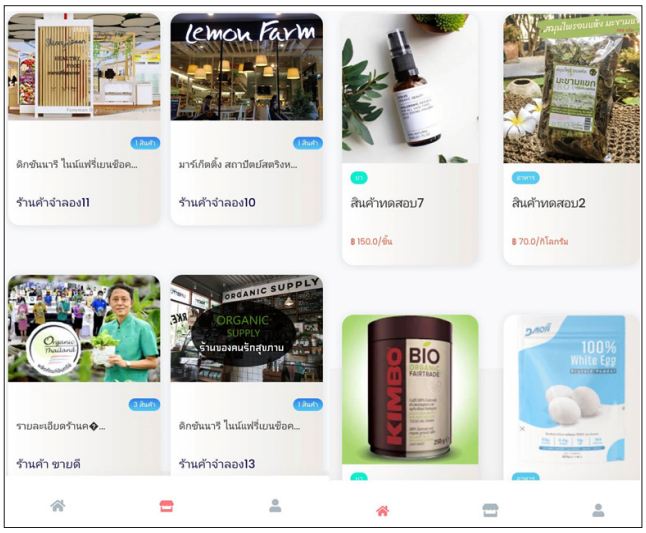

Figure 6. *Store and Product via Line.*

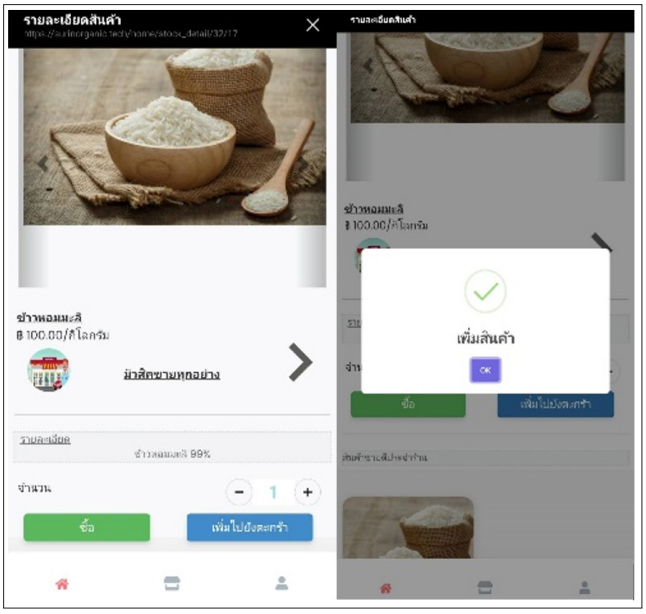

Figure 7. *Add product in cart.*

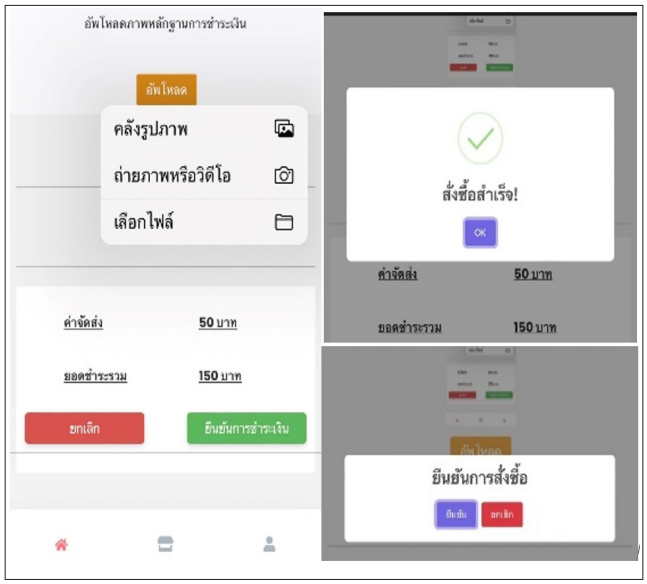

Figure 8. *Confirm order and payment.*

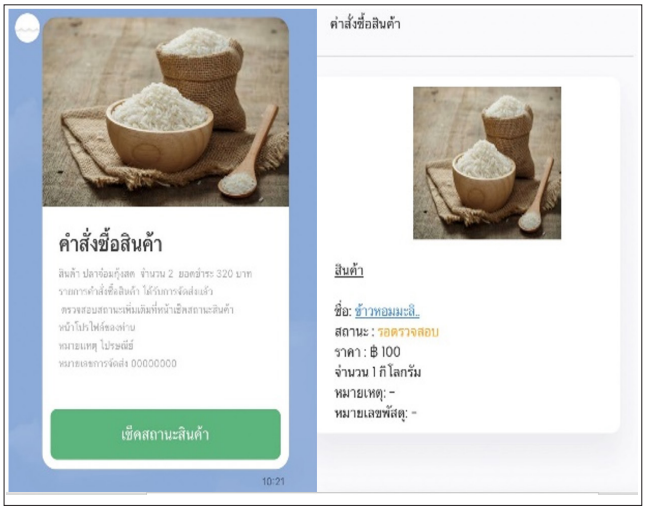

Figure 9. *Check product status.*

4.5 Testing

During system testing, the test is divided into two parts: 1) sellers (farmers) and 2) buyers. Both groups utilize the Black Box Testing method. The results indicate that the system operates within its specified limits and can be effectively used.

4.6 Implementation

When creating contemporary marketing platforms for farmer groups in Surin Province, we conducted a satisfaction assessment. We analyzed this data using the Likert Technique, employing descriptive statistics to determine the median value of the data through the mean (Mean) and measuring the distribution of the data through the standard deviation value (Standard Deviation) [17]. Here are the details of our analysis:

Score 5 indicates a very high level of satisfaction.

Score 4 indicates a high level of satisfaction.

Score 3 indicates a moderate level of satisfaction.

Score 2 indicates a fair level of satisfaction.

Score 1 indicates improved satisfaction results.

System users are rated using Likert's method, which consists of 5 levels of scores [17].

4.21 - 5.00 indicates a very good level.

3.41 - 4.20 indicates a good level.

2.61 - 3.40 indicates a medium level.

1.81 - 2.60 indicates a fair level.

1.00 - 1.80 indicates an improvement level.

To interpret the questionnaire results, calculate the average score for each class and apply basic statistics by determining the range (highest value minus lowest value). To find the width of the class rate, use the following formula.

Class interval = upper-class limit - lower-class limit. Use the collected data to analyze the statistical results by computing the mean and standard deviation (SD) [17].

Mean Formula

$$(\bar{x}) = \frac{\sum x}{n}$$

$(\bar{x})$ = Mean

$\sum x$ = Sum of all data points

n = Number of data points

Standard Deviation (SD) formula

$$SD = \sqrt{\frac{n\sum x^2 - (\sum x)^2}{n(n-1)}}$$

S.D. = Standard Deviation

n = Number of data point

x = Each of the values of the data

$\sum x$ = Sum of all data points

5. Data Collection

During the data collection phase, a sample group was chosen from the population. The sample group consisted of people

who were interested in buying and selling products from Surin Province through online channels. The sampling method used was random sampling, where individuals were selected without any specific criteria, but they had to be part of the overall population interested in the study. The group of selected samples included 20 farmers from Surin Province who were engaged in selling various agricultural products and 50 general consumers interested in purchasing products from the farmers. These consumers were part of the group that used the new-age marketing platform. Afterwards, an evaluation was conducted using a questionnaire to assess the usability and effectiveness of the platform among the group of farmers from Surin Province. The research team then analyzed and interpreted the evaluation results based on the statistics.

6. Performance results

6.1 System development results

A Modern Marketing Platform was created for the Surin Farmers Group using Visual Studio Code software. The website's User Interface section was developed with the Bootstrap framework, while PHP was used as a scripting language on the server side and JavaScript on the user side. HTML and CSS were utilized for the site's operation, which runs on the Windows operating system. LINE Frontend Framework or LIFF was employed to integrate Line OA, the technology used by the Line application. The platform involves two main players: sellers (farmers) and buyers.

Figure 10. *Login via Line.*

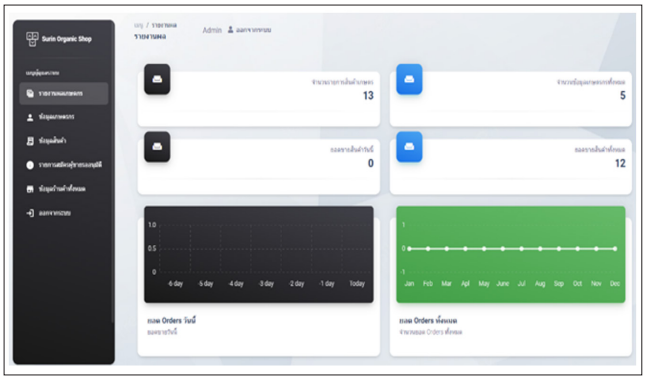

Figure 11. *Information Management.*

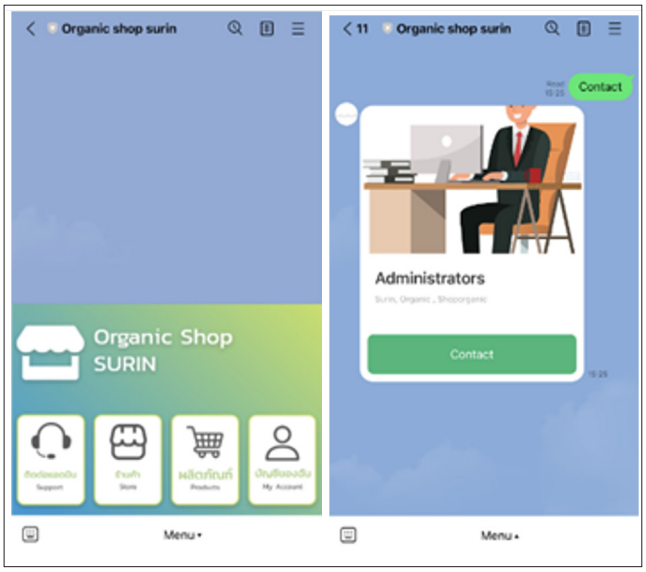

Figure 12. *Bayer use via Line.*

6.2 Satisfaction Assessment Results

To assess the level of satisfaction among the Surin Farmers Group who use Modern Marketing Platforms, separate the evaluation results into two parts: the results of the satisfaction evaluation from the sellers (farmers), as displayed in Table 1, and the results of the buyer satisfaction evaluation, as displayed in Table 2.

Table 1 shows that 20 sellers (farmers) are highly satisfied with the modern marketing platform, with an average rating of 4.32 and a standard deviation of 0.45.

Table 2 shows that 50 buyers are highly satisfied with the modern marketing platform, with an average rating of 4.40 and a standard deviation of 0.39.

Table 1. *Satisfaction Assessment Results of Seller (farmers) (n=20).*

Questions	$\bar{x}$	S.D.
System Capabilities	4.40	0.09
1. Exactness	4.39	0.61
2. Handily	4.28	0.67
3. Suitability	4.44	0.62
4. Ability content	4.50	0.51
Working According to Function	4.25	0.22
5. Easy to use commands	4.33	0.69
6. Errors protection	4.28	0.67
7. Working speed	3.94	1.06
8. Satisfaction	4.44	0.78
System Design	4.36	0.14
9. Suitability on display	4.39	0.50
10. Menu position	4.22	0.55
11. Color of letters and background	4.56	0.62
12. Explanatory texts	4.39	0.70
13. order of data on display	4.22	0.73
Security System	4.19	0.04
14. Checking login errors	4.22	0.81
15. Conditions for checking users	4.17	0.62
Average	**4.32**	**0.45**

Table 2. *Satisfaction Assessment Results of Buyer (n=50).*

Questions	$\bar{x}$	S.D.
System Capabilities	4.43	0.11
1. Exactness	4.52	0.58
2. Handily	4.33	0.62
3. Suitability	4.33	0.73
4. Ability content	4.52	0.58
Working According to Function	4.38	0.14
5. Easy to use commands	4.56	0.58
6. Errors protection	4.22	0.85
7. Working speed	4.41	0.69
8. Satisfaction	4.33	0.73
System Design	4.39	0.08
9. Suitability on display	4.44	0.64
10. Menu position	4.41	0.64
11. Color of letters and background	4.33	0.68
12. Explanatory texts	4.48	0.64
13. order of data on display	4.30	0.67
Security System	4.41	0.05
14. Checking login errors	4.44	0.51
15. Conditions for checking users	4.37	0.56
Average	**4.40**	**0.39**

7. Discussion and Conclusion

Based on the research findings, the following summary and discussion can be presented.

7.1 The study focused on creating Modern Marketing Platforms for the Surin Farmers Group. The system development cycle theory was employed as the guiding principle for the development process. The results demonstrated the platform's effectiveness and its potential for extensive use. These findings align with the research conducted by Thinnapat et al. [16], who applied a similar approach in developing the website for the Surin Probation Office. The use of system development tools proved valuable in creating a functional and practical system that met the users' needs. Similarly, a study by Jeeranun et al. [4] found that the Scheduling System with the Drag and Drop Technique at Sai Kaew Witthaya School in Surin Province effectively operated within the defined scope and objectives. This success is attributed to the clear steps involved in

the system development cycle. Furthermore, the Line application has introduced trading channels that provide convenience and promote sales for both farmers and buyers. In a study by Chutiphon et al. [15], they developed a new E-commerce platform for product preordering, which included a mobile app for general users and a website for system administrators. The research indicated that this platform has the potential to create job opportunities and generate income for those interested in pursuing business ventures.

7.2 The evaluation of user satisfaction with the Modern Marketing Platforms for the Surin Farmers Group has yielded positive results. Both the sellers (farmers) and the buyers (general users) expressed a high level of satisfaction with the system. Overall, both sample groups reported very high satisfaction levels, indicating that the system effectively meets their needs. The operations are based on the principles of the system development cycle theory. The process commences with field visits to study and collect initial data from groups of farmers. This aids in developing a system that caters to the needs of users and supports flexibility based on their regular usage. Similarly, as per the research conducted by Adisak et al. [14], guidelines for integrated marketing communication to promote Argo-tourism in Nan province require a successful integrated marketing communication approach. This approach should build upon existing marketing communication activities and lead to new formats that meet the actual needs of consumers.

The Modern Marketing Platform for Surin Farmer Group can function effectively within its defined scope and meet user requirements. However, it is important to promote additional aspects among the farming community to improve the efficiency of this marketing approach. One key aspect is to enhance knowledge related to marketing and public relations. This can be achieved by leveraging other social media platforms to establish networks with consumers, retailers, and supporters. Additionally, using data to make decisions on crop selection, overall management, and production planning could be beneficial in increasing sales in the future.

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