Development and Evaluation of a Mobile-Based Local Food Information System for Elderly Nutrition Support

Renuka Khunchamnan, Kewalin Angkananon*
Faculty of Management Sciences-Business Information System, Suratthani Rajabhat University, Surat Thani, Thailand

***Abstract*—This research aimed to: 1) study information needs regarding local foods and information systems for the elderly, 2) develop a local food information system for the elderly, and 3) evaluate system effectiveness. The quantitative study included 235 senior caregivers selected via purposive sampling. The research tools were an interview form (IOC = 0.98) and a questionnaire (Cronbach's alpha = 0.953). The results indicated that there were three key information needs: 1) Comprehensive and reliable content that includes dietary data, food types, and disease categorization, daily meal search features, disease-specific recommendations, and presentation with large-font images and succinct language. The system was developed on the LINE Official Account platform and is based on a web application. 2) User evaluation from 235 participants showed strong agreement with overall system efficiency. Usefulness received the highest rating, followed by LINE OA usability and efficiency. A gender comparison showed that there were statistically significant differences ($p < .01$) between females and males in terms of content and efficiency. 3) Linear regression analysis identified efficiency as the primary factor influencing usefulness, followed by system usability and functionality. A one-way ANOVA showed that users accessing LINE once per week had significantly higher usefulness scores than those using it every 2 to 3 days ($p < .05$).**

Keywords*—*Information system; LINE OA; elderly care system; local food; elderly nutrition

I. Introduction

The change in population structure towards an aging society is an important phenomenon that is occurring worldwide and is becoming increasingly apparent. History recorded a significant event in 2018 when, for the first time, the world's population aged 65 and over exceeded that of children under 5 [1]. In addition, it is estimated that between 2015 and 2050, the proportion of the world's population aged 60 and over will tend to increase from 12.3 per cent to 21.5 per cent [2]. The region with the fastest rate of elderly growth is East and Southeast Asia, especially Japan, South Korea and China. Since 2005, Thailand has entered the aging society with more than 10 per cent of the population aged 60 and over [3], according to the definition of the United Nations. Thailand has entered the aging society completely in 2025 with the population aged 60 and over exceeding 20 per cent or approximately 14.4 million people [4-5]. In 2035, it is predicted that Thailand will enter the advanced aging society fully with the elderly increasing by 28.55 per cent [6]. Such changes in the population structure have resulted in the issue of caring for the elderly becoming a major policy challenge in terms of the economy, society, and public health system [7]. Effective care for the elderly must integrate both physical and mental health promotion, as well as support for the elderly to be able to participate in social activities to their full potential. The key components of caring for the elderly consist of 6 main factors: hygiene, exercise, air, emotion, safety, and food [8].

Elderly people experience physiological changes that affect digestion, nutrient absorption, and energy metabolism, making nutrition a crucial factor in their well-being [9]. Thus, each older adult's energy and nutritional needs vary based on age, weight, height, physical activity, and health [10]. Nutrition for the elderly must focus on getting complete nutrients according to the 9 nutritional principles developed by [11], which must be adjusted to suit changing physiological needs [12]. Appropriate nutrition management can reduce the risk and severity of non-communicable diseases (NCDs), which are common health problems in the elderly [13]. Dietary guidelines advocate for modifying nutrient intake by decreasing the consumption of complex carbohydrates and saturated fats while increasing high-quality protein. Furthermore, an emphasis is placed on consuming low-glycemic-index vegetables, legumes, grains, and fruits, in addition to ensuring adequate hydration [14-15]. However, current social and lifestyle changes often lead the elderly and their caregivers to have difficulty accessing accurate and appropriate nutritional information, lack reliable sources of information, or have limited access to digital information [16]. Local food is a cultural heritage that passes on nutritional wisdom from generation to generation, presenting local identity through the use of ingredients and cooking methods that are consistent with the local ecosystem and resources [17]. A study in Japan found that the elderly who continued to consume traditional local food had a lower incidence of cardiovascular disease than those who turned to Western food [18]. Local Thai food also has outstanding health benefits due to the combination of herbs and spices with pharmaconutrient properties that help fight free radicals and have anti-inflammatory properties [19].

Southern Thai foods made with turmeric, galangal, fingerroot, and pepper have antioxidant and anti-inflammatory properties that benefit the elderly [20-21]. In [22], the authors also found that local foods improve the mental health of the elderly by promoting positive memories, cultural identity, and social interactions. Surat Thani Province is a province with geographical and cultural diversity, which results in a unique combination of food identities [23]. Khlong Prab Subdistrict, Ban Na San District, Surat Thani Province is considered an area that still strongly preserves the traditional way of life and consumption culture. Local food in Khlong Prab Subdistrict is

*Corresponding author.

diverse in terms of ingredients, cooking processes, and flavors, with local resources being the main ingredients [24]. Prominent ingredients include Satho, which is highly nutritious, especially calcium, phosphorus, and vitamin C [25], as well as other local foods such as Southern-style Khanom Jeen Nam Ya, Yam Pla Meng, Sour Fish Curry with Raw Bamboo Shoots, and local desserts with high nutritional value [26-27]. In [28], the authors found that local foods in Surat Thani Province, especially in Khlong Prab Subdistrict, contain high amounts of antioxidants and phytochemicals with anti-inflammatory properties, which help reduce the risk of chronic diseases. This supports [29] the finding that southern spices and herbs lower blood sugar and diabetes risk. According to [30], southern local meals contain more local vegetables than other areas, which boosts dietary fiber and vitamin consumption. The preservation and promotion of local food culture is very important in preserving cultural identity and local wisdom [31]. In Khlong Prab Subdistrict, there are operations at many levels, such as establishing a local food learning center, organizing a local food festival, and integrating knowledge about local food into the local curriculum of local schools [32]. In addition, there is the development of gastronomy tourism, which helps create added economic value and promotes the preservation of local food culture [33].

Currently, information technology has played a significant role in taking care of the health and promoting the quality of life of the elderly (Elderly Health Technology) [34]. Thailand's entry into a complete aging society has stimulated the development of health innovations and information technology that meet the specific needs of the elderly [35]. However, although there are currently various platforms providing health information on the Internet and information systems related to the care of the elderly, the elderly and caregivers still have problems accessing and applying this information in their daily lives [36]. Health information systems are an important tool for improving the efficiency of population health care, as evidenced by the success of the "Health Connect" system in the Republic of Singapore, which achieved impressive results in reducing hospital readmission rates among the elderly population by 30 per cent through a mechanism for monitoring health status and providing personalized nutritional advice [37]. In [38], the authors found that integrating the "Healthy Aging" application into the care of the elderly in Chiang Mai Province reduced malnutrition risk by 18% and increased self-care literacy. LINE is a very popular platform in Thailand, especially among the elderly. A recent survey found that 86 per cent of Thai elderly people regularly use LINE [52], making the development of an information system through LINE Official Account (OA) having a high potential to reach the target group. In [39], the authors stated that LINE OA is an appropriate platform for developing a health knowledge system for the elderly because it has a familiar, uncomplicated user interface and can be easily accessed via mobile devices.

Despite studies on the nutritional content of Thai indigenous cuisines and the development of health information systems for the elderly, the literature study discovered some key research gaps. In [40], the authors noted that most nutrition information systems for the elderly in Thailand have not systematically employed local food data, despite local meals being culturally acceptable and nutritious for Thai seniors. Most existing nutrition information systems for the elderly provide general information that does not take into account the differences in local contexts and cultures. In [41], the authors observed that older people typically reject nutritional advice that conflicts with cultural context and local resources. The research of [42] indicated that most health information systems are not designed with the limitations of digital technology use in mind for the elderly and are often developed on platforms that the elderly are not familiar with, resulting in barriers to access and use. The study of [43] found that there is a lack of research that systematically assesses the impact of information systems on local food consumption behavior in the elderly, resulting in a lack of empirical data that will lead to the development of more effective systems. Each elderly person has different nutritional needs according to their health status, but most information systems still provide general information that cannot be tailored to individual needs [44].

This research aims to fill the research gaps mentioned above by developing a local food information system for the elderly in Khlong Prab Subdistrict, Ban Na San District, Surat Thani Province, developed through the LINE OA platform. The information system integrates local food knowledge with information technology, presenting context-specific information based on the area with an interface design suitable for the elderly on a familiar platform, and evaluating the usability of the information system for the elderly. The developed information system can also provide recommendations appropriate to the health status of each elderly person. The developed system consists of important functions, including a basic health assessment form, a healthy menu tailored to the elderly's condition, a health food shop, frequently asked questions about nutrition for the elderly, and a graph showing the results of the health assessment, which allows users to continuously monitor their health development.

This research is the first to combine specialized Thai food information with elderly-specific mobile health technologies. Regional culinary knowledge from Khlong Prab Subdistrict is operationalized via LINE Official Account, a medium known to Thai elders, unlike generic nutrition platforms. The research presents a replicable model for indigenous food systems and personalized health care for cultural preservation and clinical needs. Traditional meals, health profiles, and age-appropriate digital design enhance community-based health informatics for older individuals. Senior nutrition knowledge and health improved. Using regional cuisine-friendly technology, politicians and healthcare experts help older Thais.

This introduction is followed by Section II on digital health systems and research technology acceptance frameworks. Section III covers participatory design and LINE OA system development. Section IV details caregiver interviews and system evaluations. Section V compares outcomes to literature. Section VI summarizes findings and goals. It provides research contribution and concludes with rural strategy or research applications.

II. Literature Review

A. Ban Khlong Prap Local Food Information System Development

The Ban Khlong Prap Local Food LINE OA development has numerous significant research needs, notably in the integration of digital technology with local food knowledge, which most research has not yet investigated (see Table I). It involves creating a system that combines health assessment findings with local dietary recommendations and an elderly-friendly user interface with cultural context and local language.

TABLE I. Literature Review

Authors (Year)	Key Findings	Research Gaps
Kim et al. [45]	The Chatbot system made 89.3% correct suggestions, and 76.8% of senior participants followed them.	AI gives generic dietary recommendations without local expertise. Integration of AI to assess and deliver tailored local food suggestions may improve the future Khlong Prap LINE OA and change consumption habit.
Singh & Kaur [46]	Traditional culinary knowledge and digital technologies assist older people accept and eat healthy meals.	While the idea is similar, it was not established on the LINE OA platform and was developed in Singapore. Khlong Prap LINE OA will use this approach to Thai Ban Khlong Prap, a local dish with distinct qualities.
Johnson & Martínez [47]	It discovered that simple, local language-supported systems like LINE were more popular in East Asia.	Platform acceptability was studied macroscopically, not locally. Southern Thai terminology and idioms may help the future Khlong Prap LINE OA adopt local language.
Sangchan & Lekcharoen [48]	The device reduces emergency response time by 35% by monitoring vital indicators and sending notifications.	Vital sign monitoring and emergencies are prioritized above food and nourishment. The Khlong Prap LINE OA may relate health data to local dietary suggestions for certain health issues.
Harris & Brown [49]	Messaging services like LINE are as effective as conventional health monitoring approaches but 40% cheaper.	The research did not address cuisine or local culture. The Khlong Prap LINE OA may use messaging platform cost-effectiveness to create a low-cost, high-efficiency system.
Thepat-as et al. [50]	System satisfaction was 87.5% and suggestion compliance increased 42.8% for elderly users.	Lacks food consumption and local expertise, but the Khlong Prap LINE OA will integrate local food knowledge and current nutritional values connected to old health.
Decha-adisai &Makmee [51]	It found substantial improvements in health literacy ($p<0.01$) and habits among elderly individuals.	Health literacy, not local cuisine. To preserve and promote food culture, Khlong Prap LINE OA will combine health literacy with local food knowledge.
Rangkuat & Wongwiseskul [52]	senior system users had significantly lower blood sugar levels ($p<0.05$) than the control group.	It focuses on diabetes and utilizes broad nutritional ideas, whereas the Khlong Prap LINE OA will cover many health conditions and link them to local foods with specific nutritional qualities that may prevent sickness. It found substantial improvements in health literacy ($p<0.01$) and habits among elderly individuals.
Tanaka et al. [53]	The strategy increased senior health care cooperation by 68% and reduced unnecessary medical visits by 23%.	Not culturally informed or local. The Khlong Prap LINE OA's technology and traditional knowledge may improve healthcare cooperation due to users' lifestyle and culture.
Zhang & Wong [54]	LINE is simpler for seniors, while WeChat has more functions.	Platform comparative study is not food-related. Khlong Prap LINE OA will bring Thai-specific food features to LINE's simplicity.

B. System-Design and Testing Theories

Information system building and testing in this research employ human-computer interaction and information systems success theories. TAM by [69] and the IS Success Model by DeLone and McLean [70] are used to assess design concepts from Shneiderman [71] and Nielsen [72]. UI Design Guidelines Two primary concepts make the Information System (IS) simple to use, effective, and user-focused. Eight Golden Rules by Shneiderman emphasizes uniformity across interface components like buttons, colors, and typefaces and offering users relevant feedback that puts them in control in his 2005 book Eight Screen Design Guidelines. Structure encourages error avoidance and makes error management straightforward and adjustable. Other important considerations are system and real-world compatibility, user autonomy and freedom, and consistency and standards. Nielsen [72] also emphasizes error avoidance, recognition over recall (making information available rather than forcing people to remember it), flexibility and efficiency, and simple design. Finally, the system must provide clear guidance and documentation to aid users in identifying, diagnosing, and correcting errors.

C. System Evaluation Framework

This research uses a synthesized assessment approach to evaluate system effectiveness and adoption. The main assessment framework is DeLone and McLean [70] Model of Information Systems Success. This prominent methodology measures complete, multidimensional IS success. Information Quality, System Quality, and Service Quality separately and jointly affect User Satisfaction and Intent to Use (or reuse) the system.

D. Technology Acceptance Model (TAM)

The TAM [69] is used to assess usability and user acceptance within the IS success framework. The robust TAM hypothesis predicts and explains technology user behavior. It highlights two core ideas as system acceptance drivers:

The degree to which a person feels a system will improve their work performance is called perceived usefulness (PU).

This study defines PU as a system that offers useful information, speeds up work, and simplifies chores. PEOU: How easy a person thinks the system will be to use. The perceived system learning, comprehension, and operation ease is included.

Davis [69] found that PU and PEOU directly affect a user's system use attitude, which predicts their actual usage intentions.

E. Synthetic Assessment Model

This study combines the DeLone and McLean [70] model with the TAM core components [69]. To establish IS success, this study's assessment questionnaire assesses system, information, and service quality, perceived usefulness, and ease of use. Nielsen's [72] 10 usability principles are crucial for UI design if you wish to expand on these criteria. These algorithms provide system status to inform users. Another important thing is to keep the system and the real world compatible. Users should also have power and freedom, and there should be stability and standards. Nielsen [72] also puts an emphasis on not making mistakes, recognizing knowledge instead of forcing people to learn it (making it easy to find instead of hard to remember), being flexible and efficient, and making things that are simple. Last but not least, the system needs to have clear help and instructions to help users find, analyze, and fix problems.

III. Research Methodology

This is a mixed-method research between qualitative and quantitative research. It uses triangulation techniques consisting of collecting data from primary sources, interviewing and asking for opinions from real users, and confirming information from experts.

A. Population and Samples

The population in this study was the elderly caregivers in Khlong Prab Subdistrict, Ban Na San District, Surat Thani Province, which consisted of 598 people [55]. For qualitative research, a purposive sample was selected, consisting of 14 elderly caregivers, divided into 10 family members or relatives, 2 village health volunteers, and 2 elderly caregivers in the community. In addition, there were 3 experts: a local public health officer and two local food experts. For quantitative research, a purposive sample was also selected, selecting 235 elderly caregivers in Khlong Prab Subdistrict. This sample size was calculated using the formula of [56] at a 95 per cent confidence level and an error of ±5%.

B. Research Instruments

Both the interview and questionnaire were developed according to research methodologies accepted in the academic circle and went through a quality control process according to standards. The interview research instrument has been tested for reliability by a panel of 3 experts in information systems. The test results show an index of consistency between the questions and the research objectives (IOC) at 0.98. As for the questionnaire, it was tested to collect data with a group of 30 people with demographic characteristics and contexts similar to the actual sample group. The data was then analyzed for reliability using the alpha coefficient calculation process according to Cronbach's principle, which showed a reliability of the entire questionnaire at 0.953. Both the interview and questionnaire were approved by the Human Research Ethics Committee of the Suratthani Rajabhat University. According to the certification document number SRU-EC 2024/150, which has a certification period from 23 December 2024 to 22 December 2025.

C. Data Collection

Data collection by the interview process was conducted by face-to-face conversation, lasting 45-60 minutes per informant at Khlong Prab Subdistrict Health Promotion Hospital. Audio recordings were recorded with the informant's consent, and important points were noted during the interview. After the interview, the audio recordings were carefully transcribed and the interview summary was returned to the informant for verification of completeness and accuracy. A purposive sample of 14 senior caregivers was chosen for qualitative study, which included 10 family members or relatives, 2 village health volunteers, and 2 elderly caregivers from the community. In addition, three specialists were present: a local public health officer and two local food experts.

D. Data Analysis

Data analysis in this study used various statistical methods as follows. For the background information of the informants, such as gender characteristics, education level, and frequency of using LINE communication applications, statistical analysis was performed in the form of frequency and percentage. For the opinion data, the mean and standard deviation were analyzed to reflect the level of opinion both in general and in each issue. For the data from the open-ended questions, the content analysis was used to categorize and summarize important points, and the frequency of issues with similar content was counted.

E. Developing Tools

The Khlong Prab Subdistrict Local Food Information System for the Elderly was developed using the following tools. Visual Studio Code is used for coding, along with Laravel Herd, which manages the development environment on macOS. This system uses the Laravel Framework as the main base for development, and is connected to the front-end via Inertia.js, which enables the efficient development of SPA applications. The user interface is developed using React, which provides fast response, and the Ionic Framework, which allows the system to display on multiple platforms. This information system supports usage via the LINE application with LINE LIFF and LINE Official Account technologies, allowing caregivers of the elderly to access information conveniently. The design uses Figma to create an interface and a suitable user experience, and the code is managed using the Git version control system, which allows the development team to work together efficiently.

F. Steps in Developing the System

The steps in developing the local food information system for the elderly in Khlong Prab Subdistrict are as follows:

1) Develop an information system via the Line OA platform

2) Write a program to calculate the health assessment of non-communicable chronic diseases. The assessor answers 7 questions as follows: i) Have you ever smoked? ii) Do you have diabetes? iii) What is your blood pressure level? iv) What is

your waist size? v) How tall are you? vi) How much do you weigh? vii) Do you have a history of diabetes in your relatives?

3) Then use the data to calculate the risk of 4 diseases: diabetes, hypertension, cardiovascular disease, and overweight. These questions in the disease assessment and the formula for calculating non-communicable chronic diseases refer to [10].

4) Recommend appropriate menus for users by displaying health menus according to the risk of various diseases and by meal, namely breakfast, lunch, afternoon, and evening. The information can be displayed as food names, pictures, and nutrition. This step is considered new knowledge that the research team has developed.

5) The researcher has collected menus from health food restaurants in Surat Thani Province to pin a map showing health restaurants with a menu, and can be pressed to go through Google Maps to the restaurant. With distance indication.

6) The researcher has written a program to display a health assessment graph, gender, age, risk group, and the most recommended food.

7) The researcher has developed a FAQ section with Line Liff. Displaying the menu in Rich Menu for users to use conveniently.

8) The researcher has developed a recipe for a local health food menu of Ban Khlong Prab Subdistrict, consisting of information on the name of the food, pictures, nutrition, and how to make it. This step is considered new knowledge that the research team has developed.

9) The researcher has collected recommended health menus for the elderly, separated by food type, consisting of information on the name of the food, pictures, restaurant address, and nutrition.

G. The usage of the Local Food Information System

The usage of the local food information system for the elderly in Ban Khlong Prab involves the following steps:

1) Logging in via Line (see Fig. 1).

a) Access the Line application and add friends by adding the ID: @*642*kxqcn.

b) Select the Home menu, then select the "Add Friends" menu, then select the "Search" menu.

c) The Line OA Elderly Food name appears

d) Line OA Elderly Food, a local food information system for elderly health care, consists of a login menu (https://elderlyfood.baanthammawat.com/?openExternalBrower=*1)*, a health assessment menu, a health menu, FAQs, and a graph of assessment results.

e) Click the menu link to start using the system. This will take you to the main page of the system, which has three main menus: Home, Overview, and Profile.

2) Health assessment (see Fig. 2): Health Assessment Users must complete seven health information questions. This assessment will be conducted using a series of questions for users to choose from. Once all information is complete, the system will assess the user's risk of various diseases.

3) Calculate the risk score for four diseases: i) Diabetes, ii) Hypertension, iii) Cardiovascular Disease, iv) Overweight (see Fig. 3)

4) Recommended healthy menus: After assessing, the system will recommend healthy menus, including foods to avoid, examples of appropriate menus to choose for breakfast, lunch, afternoon, and dinner.

5) Use the system by clicking the menu link. This opens the system's home page with three menus: Home, Overview, and Profile.

6) Health check: Health Checkup of Seven health details are required as mentioned above. Users will pick from a series of questions for this evaluation. Once all information is entered, the system will calculate illness risk.

7) Calculate four disease risk scores: i) Diabetes, ii) Hypertension, iii) cardiovascular disease, iv) Heavy weight, v) Healthy Menu Ideas.

8) After reviewing, the system will suggest healthy breakfast, lunch, afternoon, and supper meals, including items to avoid (see Fig. 4).

9) Khlong prab local cuisine: Learn about five local Khlong Prab menus: Yam Bai Mai/Khao Yam Bai Mai, Budu Nam with Butterfly Pea Rice, Ua Tai Pla, Kua Curry Paste, and Salak Loi Kaew. Details on each menu item, including ingredients and cooking processes, are shown (see Fig. 5).

*10)*Healthy food restaurant display: The Surat Thani Health Food Restaurant menu lists restaurants. Restaurants provide salads, appetizers, single meals, rice, noodles, and beverage options (see Fig. 6). A map, retail details, and contact information are also shown for the eatery. For navigation, users may connect to the restaurant (see Fig. 7).

*11)*Health assessment responses by gender, age, and risk are graphed (see Fig. 8).

*12)*FAQs—Frequently asked questions and answers.

IV. Results

A. The Need for Local Food Information and an Information System for Elderly Health Care

Analysis of the results of interviews with elderly caregivers to develop a local food information system in Khlong Prab Subdistrict, Ban Na San District, Surat Thani Province, is detailed as follows: A qualitative study interviewed 14 elderly caregivers in Khlong Prab Subdistrict, consisting of 10 family members/relatives (71.43%), 2 village health volunteers (VHV) (14.29%), and 2 community caregivers (14.29%). The survey by the authors identified the needs and challenges in preparing local food that is appropriate for the health of the elderly, as well as expectations for the development of an information system that will enhance knowledge and skills in caring for the elderly through local food.

B. Food Preparation Characteristics and Challenges

From the data analysis, it was found that most caregivers (12 people, 85.71%) emphasized the use of natural and local ingredients in cooking, especially local vegetables that are grown by themselves or found in the community. Interviewee

No. 1 said, "Mostly, I cook food that my mother likes and is easy to eat because my mother has a dental problem. I focus on soft meats, tom yum, sour curry, galangal curry, anything with lots of vegetables."

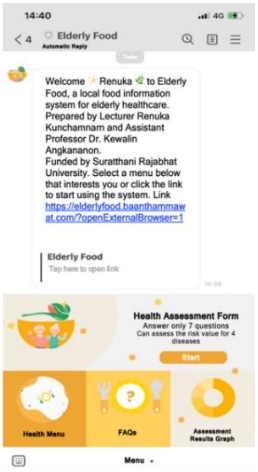

Fig. 1. Home.

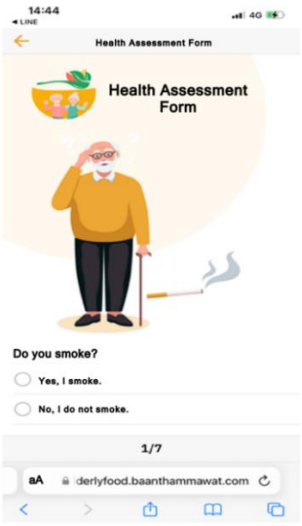

Fig. 2. Assessment form.

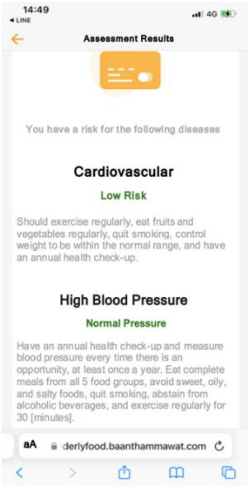

Fig. 3. Calculate results.

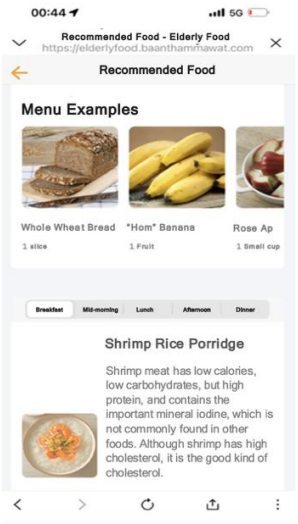

Fig. 4. Recommended menu.

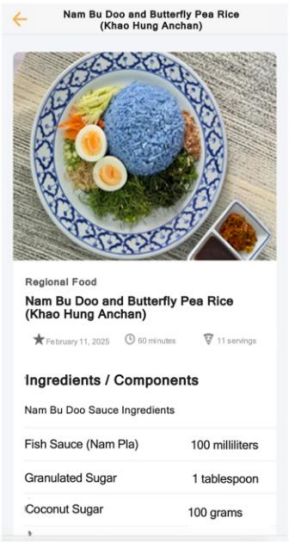

Fig. 5. Local menu.

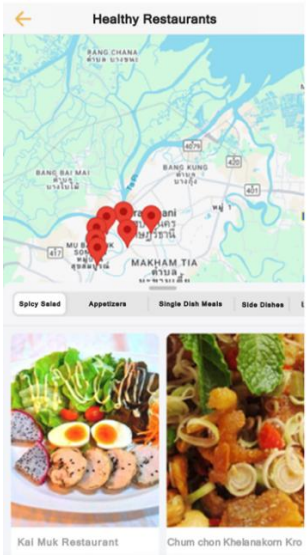

Fig. 6. Searching restaurant.

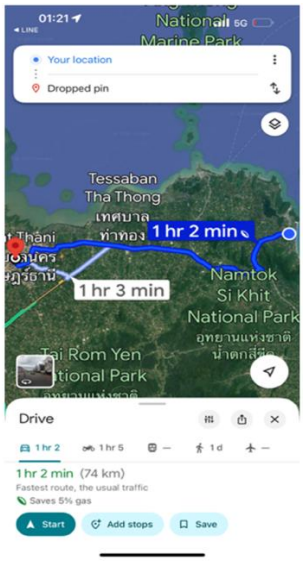

Fig. 7. Navigation.

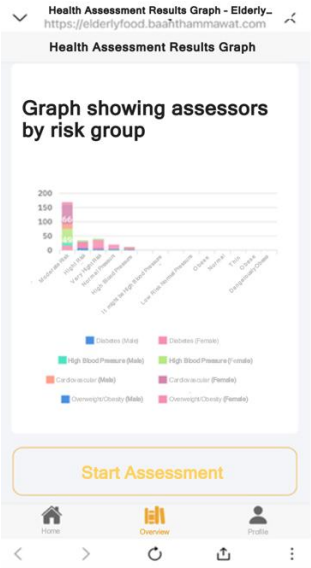

Fig. 8. Graph.

Almost all caregivers (13 people, 92.86%) adjusted their diet to suit the elderly's underlying diseases. Interviewee No. 9 added, "My mother has high blood pressure and diabetes, so I try to reduce sugar, salt, and oil, and season it lightly." Similarly, Interviewee No. 2 said, "My father likes to eat spicy food, but he has kidney disease. He has to be careful about salt, which makes the food bland and tasteless. He doesn't want to eat it, so he has to try to find ways to make it more appealing without using seasonings high in sodium."

Ten interviewees (71.43%) used local herbs in their cooking. Interviewee No. 3 said, "Most of them learned from listening to the elders in the community, learning from their mothers, and sometimes from the village health volunteers when they came to share knowledge in the village, such as using turmeric, ginger, galangal, and moringa leaves in cooking."

In terms of challenges, most caregivers (11 people, 78.57%) were unsure about interactions between food and medicines that the elderly were taking. Interviewee No. 6 said, "I am not sure if some foods are suitable for my mother's disease, such as sugar in some fruits, will affect my mother's diabetes, or some foods may be high in potassium, which is not good for the kidneys that are starting to have problems."

Nine caregivers (64.29%) faced problems with seasons and finding ingredients. Interviewee No. 6 said, "Some seasons it is difficult to find some local vegetables, such as during the dry season, sweet vegetables are hard to find. We have to buy vegetables from the market instead, but we are not sure about the chemicals."

C. Knowledge Sources and Limitations in Accessing Information

Almost all caregivers (13 people, 92.86%) received knowledge about local food from the wisdom passed down from their ancestors. Interviewee No. 11 said, "Khlong Prab's local food is very nutritious because most of it is natural and free of chemicals. Our local vegetables have bitter, sour, and astringent tastes, which have medicinal properties."

In addition, caregivers also received knowledge from village health volunteers (10 people, 71.43%), medical personnel (8 people, 57.14%), online media and social media (7 people, 50.00%), and television programs (5 people, 35.71%). However, all caregivers (14 people, 100%) had problems accessing information about local foods. Interviewee No.12 said, "Most of the information is knowledge that has been passed down from generation to generation. There are no clear records. Sometimes we don't know how reliable it is. There is no medical evidence to confirm it. When we want to search for more information, it's difficult."

Common problems included scattered information (14 people, 100%), conflicting information (12 people, 85.71%), different local names (11 people, 78.57%), lack of scientific evidence (10 people, 71.43%), and information not specific to the locality (9 people, 64.29%).

D. Need for Information on Local Food

All caregivers (14 people, 100%) wanted information on the medicinal properties and nutritional value of local food. Interviewee No. 9 said, "I want to know what benefits each local vegetable has, especially for diseases that are common among the elderly, such as diabetes, blood pressure, and high cholesterol. I also want to know which local foods are high in calcium, help with bones, and which foods help with the excretory and digestive systems."

In terms of the relationship with various diseases, almost all caregivers (13 people, 92.86%) wanted to know which local foods help prevent or alleviate which diseases; While 12 caregivers (85.71%) wanted information on appropriate cooking methods, and 11 caregivers (78.57%) wanted information on the amount and frequency of consumption, as well as precautions and interactions with medications. In terms of data classification, Interviewee No. 4 suggested that "It should be divided by type of food, such as local vegetables, pickled food, local curry, and it might also be divided by benefits for various

diseases. For example, food for diabetics, food for people with high blood pressure, or divided by season, because some things are only available during certain times."

The data classification that caregivers wanted the most was by type of food (14 people, 100 per cent), by properties (13 people, 92.86%), by disease (12 people, 85.7%), by season (10 people, 71.43%), and by cooking method (9 people, 64.29%).

All caregivers (14 people, 100 per cent) wanted information linking local food to disease care. Interviewee No. 3 said, "I really want it. I want information about what to eat for this disease, what to avoid, such as diabetes, what vegetables to eat to reduce sugar, or blood pressure, and what to eat to reduce blood pressure." In addition, all 14 caregivers (100%) wanted information on how to cook or modify local food to suit their underlying diseases. Interviewee No. 5 said, "I want it. I want local recipes that are modified to suit the elderly, such as reducing saltiness, but still having good taste, or using alternative ingredients that are more beneficial, such as using coconut sugar instead of granulated sugar, or using herbal salt instead of regular salt."

E. Information System for Elderly Food Development Needs

In terms of appropriate data presentation formats, most administrators (13 people, 92.86%) like images with short text. Interviewee No.10 said, "I like images with short text that are easy to understand. If it's a video, it should not be too long; 1-2 minutes is enough. If you want to know more, just click to read the details. I also like having pictures showing the cooking steps clearly." In addition, caregivers also preferred short videos (10 people, 71.43%), large text (9 people, 64.29%), audio commentary (8 people, 57.14%), and local languages (7 people, 50%). As for the features they wanted in LINE OA, all caregivers (14 people, 100%) wanted to search by disease and daily recommended menus. Interviewee 1 suggested that, "I want to have a daily recommended menu that is appropriate for the disease and ingredients that are easy to find in the local area." Other features that caregivers wanted included searching by food type (13 people, 92.86%) and FAQs (12 people, 85.7%). Analysis of the interview results of elderly caregivers in Khlong Prab Subdistrict revealed the need for a local food information system that meets the specific needs of the community. Such a system should emphasize ease of use, provide reliable data, have clear illustrations, and link local food to the care of elderly people with various chronic diseases.

1) Results of interviews with local health personnel and local food experts

The results of interviews with 3 experts: 1 local health personnel and 2 local food experts are as follows. From the analysis of the interview content, 8 main issues were found. All 3 experts (100%) agreed that the local food of Khlong Prab Subdistrict has high nutritional value. This is because it uses fresh, natural ingredients that are not stored for long periods of time, uses local herbs for seasoning, and has cooking methods that emphasize boiling, steaming, and grilling more than frying.

All experts (100%) offered five different forms of data classification: According to food type, the options are: 1) salad, 2) snacks, 3) one-dish dinners, 4) side dishes, and 5) noodle dishes. All experts (100%) desired the Information System for Elderly Local Food to include the following five features: 1) Food search by ailment, 2) Food search by type, 3) Daily suggested meal, 4) Frequently asked questions, and 5) Personalized guidance system. In terms of local food information needs, all experts (100%) wanted five types of information: 1) in-depth information on nutrients in local vegetables, 2) the relationship between local food and NCDs, 3) flavor modification to suit the elderly with various diseases, 4) medicinal properties of herbs, and 5) methods of storing ingredients. All experts (100%) identified five problems in finding information about local food: 1) Most information is transmitted by word of mouth, 2) Scientific information is difficult to access, 3) Information on the Internet has different reliability, 4) Lack of knowledge transfer, and 5) Lack of information on food modification to accommodate modern diseases.

In terms of data classification, all experts (100%) proposed five types of classification: 1) Salad, 2) Snacks, 3) One-dish meals, 4) Side dishes, and 5) Noodle dishes, according to food types. For the development needs of the Information System for Elderly Local Food, all experts (100%) wanted the system to have five features: 1) food search by disease, 2) search by type of food, 3) daily recommended menu, 4) frequently asked questions, and 5) personalized advice system. In terms of appropriate data presentation formats, all experts (100%) suggested using images with short text, 1–2-minute videos, explanatory audio, infographics, and using easy-to-understand language, including some local dialects. The interview results reflect a clear need to develop a local food information system for the elderly. The focus is on providing useful, easily accessible information that meets the specific needs of the elderly with various chronic diseases. Using this information to develop the system will help preserve local food wisdom and effectively promote the health of the elderly in the community.

2) Evaluation of the efficiency of the local food information system for elderly health care.

F. General Information of the Respondents

From Table II and Fig. 9, it was found that most respondents were male, accounting for 26.39 per cent, followed by female, accounting for 35.70 per cent.

TABLE II. GENDER

Gender	Frequency	Percentage
Male	62	26.38
Female	173	73.62
Total	**235**	**100**

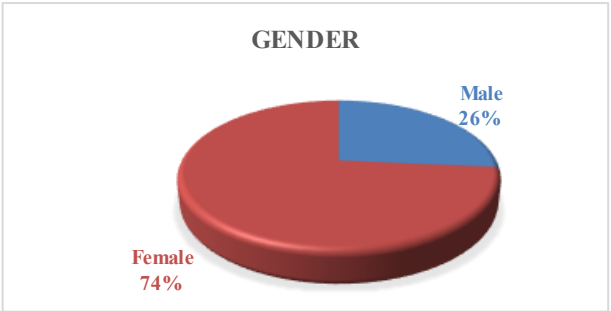

Fig. 9. Gender.

From Table III and Fig. 10, it was found that the respondents in the 18-30 age group had the highest proportion, accounting for 43 per cent, followed by the 51-60 age group, accounting for 35.70 per cent, while the 31-40 and 41-50 age groups had similar proportions at 11.10 and 10.20 per cent, respectively.

TABLE III. AGE

Age	Frequency	Percentage
18-30 years	101	43.00
31-40 years	26	11.10
41-50 years	24	10.20
51-60 years	84	35.70
Total	**235**	**100.00**

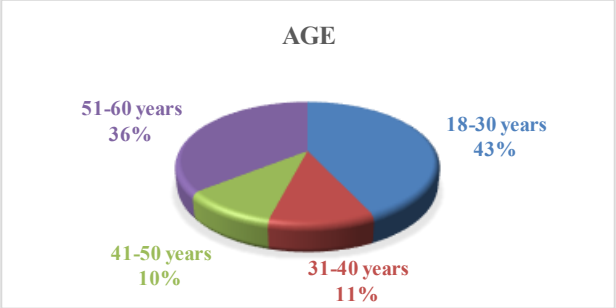

Fig. 10. Percentage of age.

TABLE IV. EDUCATION LEVEL

Education Level	Frequency	Percentage
Below Bachelor's Degree	110	46.81
Bachelor's Degree	123	52.34
Above Bachelor's Degree	2	0.85
Total	**235**	**100.00**

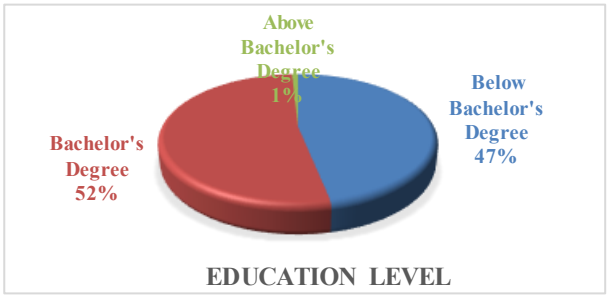

Fig. 11. Percentage of education level.

From Table IV and Fig. 11, it was found that most of the respondents had a bachelor's degree, accounting for 46.81 per cent, followed by those with lower than a bachelor's degree, accounting for 46.81 per cent, and the least was those with higher than a master's degree, accounting for 0.85 per cent.

From Table V and Fig. 12, it was found that most of the respondents used the LINE application every day, accounting for 54.47 per cent, followed by using the LINE application 2-3 days/time, accounting for 21.70 per cent, and using the LINE application once a week, accounting for 21.70 per cent, and the least used others, accounting for 2.13 per cent (rarely 1.40%, rarely used 0.73%).

TABLE V. INFORMATION SYSTEM FOR ELDERLY USAGE FREQUENCY

Line usage frequency	Frequency	Percentage
Every day	128	54.47
2-3 days/time	51	21.70
Once a week	51	21.70
Other	5	2.13
Total	**235**	**100.00**

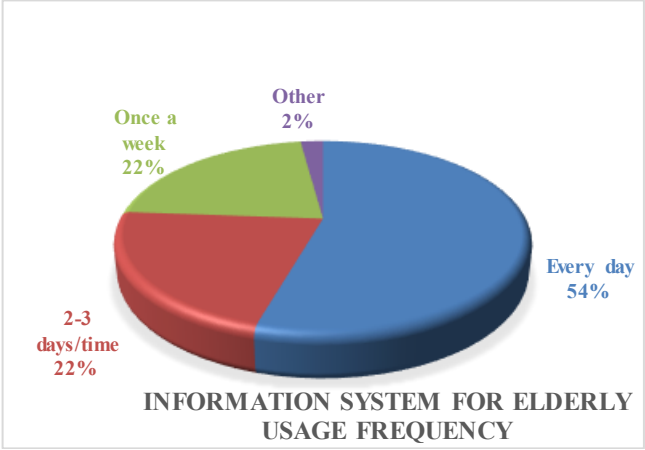

Fig. 12. Information system for elderly usage frequency.

G. System Performance Evaluation and Utilization

TABLE VI. OVERVIEW OF SYSTEM PERFORMANCE EVALUATION AND UTILIZATION

Aspect	Mean	S.D.	Opinion level
1. Content	4.41	0.72	Strongly agree
2. Functionality	4.40	0.68	Strongly agree
3. Usability of Healthy Food LINE OA	4.49	0.68	Strongly agree
4. Efficiency	4.46	0.64	Strongly agree
5. Utilization	4.60	0.57	Strongly agree
Total	**4.47**	**0.66**	**Strongly agree**

Table VI shows that most respondents rated their overall opinion on each aspect at the strongly agree level ($\bar{x}$ = 4.47). When considering each aspect individually, it was found that most respondents believed that the Healthy Food LINE could be utilized the most ($\bar{x}$ = 4.60), followed by the usability aspect of Healthy Food LINE OA ($\bar{x}$ = 4.49), and the least was the functionality aspect ($\bar{x}$ = 4.40).

Table VII revealed that the majority of respondents strongly agreed with all items ($\bar{x}$ = 4.41). When considering each item individually, most respondents believed that the Healthy Food LINE contains essential content for comprehensive elderly care ($\bar{x}$ = 4.50). This was followed by their belief that the Healthy Food LINE provides menu information suitable for elderly health and offers nutritional information on local food appropriate for elderly health care ($\bar{x}$ = 4.43). The least agreement was with the statement that the Healthy Food LINE has comprehensive information on local food ($\bar{x}$ = 4.32).

TABLE VII. CONTENT

Content	Mean	S.D.	Opinion level
1. The Healthy Food LINE contains complete local food information.	4.32	0.719	Strongly agree
2. The Healthy Food LINE provides food menus appropriate for elderly well-being.	4.43	0.745	Strongly agree
3. The Healthy Food LINE provides nutritional information on local cuisine suitable for elderly health management.	4.43	0.715	Strongly agree
4. The Healthy Food LINE content is appropriately written, easy to comprehend, and suitable for elderly users.	4.35	0.767	Strongly agree
5. Healthy Food LINE includes all necessary content for holistic elderly care.	4.50	0.669	Strongly agree
Total	**4.41**	**0.72**	**Strongly agree**

TABLE VIII. FUNCTIONALITY

Functionality	Mean	S.D.	Opinion level
1. The Healthy Food Information System is capable of managing local food data categories.	4.37	0.650	Strongly agree
2. The Healthy Food LINE allows adding, deleting, and modifying local food data.	4.28	0.760	Strongly agree
3. The Healthy Food LINE enables searching for local food information.	4.37	0.676	Strongly agree
4. The Healthy Food LINE can display information in a suitable format.	4.47	0.662	Strongly agree
5. The database system operates accurately.	4.50	0.669	Strongly agree
Total	**4.40**	**0.68**	Strongly agree

Table VIII revealed that the majority of respondents strongly agreed with all items ($\bar{x}$ = 4.40). When considering each item individually, it was found that most respondents believed that the Healthy Food LINE database system functions correctly ($\bar{x}$ = 4.50), followed by the Healthy Food LINE can present information in an appropriate format ($\bar{x}$ = 4.47), and the least was the Healthy Food LINE can add, delete, and modifying local food information ($\bar{x}$ = 4.28).

Table IX revealed that the majority of respondents strongly agreed with all items. When considering each item individually, it was found that most respondents believed that the Healthy Food LINE has clarity of text, colors, and background displayed on the screen ($\bar{x}$ = 4.57), followed by clarity of text, colors, and background displayed on the screen ($\bar{x}$ = 4.53), and the least was the navigation system design allows easy access to information ($\bar{x}$ = 4.41).

Table X revealed that the majority of respondents strongly agreed with all items. When considering each item individually, most respondents believed that retrieving various information can be done efficiently ($\bar{x}$ = 4.51). This was followed by their belief that the Healthy Food LINE can be used continuously for extended periods and can support multiple users simultaneously ($\bar{x}$ = 4.48). The least favorable opinion was regarding the accuracy of the display results from linking each page ($\bar{x}$ = 4.37).

TABLE IX. USABILITY OF HEALTHY FOOD LINE OA

Usability of Healthy Food LINE OA	Mean	S.D.	Opinion level
1. Screen design is easily accessible.	4.43	0.715	Strongly agree
2. Clarity of text, colors, and background displayed on the screen	4.53	0.668	Strongly agree
3. Menus are easy to understand and convey clear meanings.	4.57	0.646	Strongly agree
4. Navigation system design allows easy access to information.	4.41	0.707	Strongly agree
Total	**4.49**	**0.68**	Strongly agree

TABLE X. EFFICIENCY

Efficiency	Mean	S.D.	Opinion level
1. Page navigation and linking display correctly.	4.37	0.664	Strongly agree
2. Data retrieval is performed efficiently.	4.51	0.587	Strongly agree
3. The Healthy Food LINE supports continuous long-term usage.	4.48	0.649	Strongly agree
4. The Healthy Food LINE accommodates concurrent multi-user access.	4.48	0.669	Strongly agree
Total	**4.46**	**0.64**	Strongly agree

TABLE XI. UTILIZATION

Utilization	Mean	S.D.	Opinion level
1. System information is useful for elderly care.	4.61	0.530	Strongly agree
2. Elderly individuals can utilize system information in their daily routines.	4.58	0.567	Strongly agree
3. Food information in the system benefits elderly health management.	4.60	0.556	Strongly agree
4. The Health LINE system encourages using local ingredients in elderly cooking.	4.56	0.599	Strongly agree
5. The elderly can use various system information for healthy food preparation.	4.65	0.576	Strongly agree
Total	**4.60**	**0.57**	Strongly agree

Table XI revealed that the majority of respondents strongly agreed with all items. When considering each item individually, most respondents believed that the elderly can use various information from the system to prepare healthy meals ($\bar{x}$ = 4.65). This was followed by the belief that the information in the system is beneficial for elderly care ($\bar{x}$ = 4.61), while the least agreement was with the Healthy LINE system promoting the use of local food ingredients in elderly meal preparation ($\bar{x}$ = 4.56).

As shown by the majority of respondents (52.6%) who responded "the system is already good" or "excellent", the program is effective. Favorable comments like "the system is already good" and "excellent", which were provided by the majority of respondents (52.6%), imply that the program is successful. With 21.05% of replies, the food menu categories got positive comments and suggestions for growth, such as local item menus, vegetarian and vegan options, and various meals to

pique senior appetites. The least common proposals were for system and feature enhancements (5.26%), stating that LINE OA is most suited for elderly citizens, and for use in a variety of locations (5.26%), where users asked to expand use and data coverage to all provinces. Positive responses to its benefits indicate that the development satisfies the needs of the elderly. Positive responses to its advantages indicate that the innovation meets the demands of the elderly.

1) Comparison of differences between genders influencing opinions on various aspects.

TABLE XII. ANALYSIS OF T-TEST RESULTS COMPARING FEMALES AND MALES ON VARIOUS ISSUES

Independent Samples T-Test		Statistic	df	p
Content	Welch's t	3.391	146	<.001
Functionality	Welch's t	1.286	116	0.201
Usability of Healthy Food LINE OA	Welch's t	1.711	132	0.090
Efficiency	Welch's t	2.845	125	0.005
Utilization	Welch's t	0.903	113	0.368
Note. H_a $\mu_1 \neq \mu_2$				

From Table XII, the data analysis results using Welch's t-test, which is an appropriate test for cases where the variances of two groups are unequal, can be summarized as follows for the comparison between females and males on various issues. This study found statistically significant differences at the .01 level between females and males in the content aspect and the performance aspect. However, no significant differences were found in the functionality aspect, the usability aspect of Healthy Food LINE OA, or the utilization aspect.

2) Linear regression analysis results: From Table XIII, it was found that the model is statistically significant in predicting the dependent variable ($F = 104, p < .001$). All four independent variables have a high correlation with the dependent variable ($R = 0.803$). The model can explain 64.5% of the variance in the dependent variable (utilization) ($R^2 = 0.645$).

TABLE XIII. MODEL FIT MEASURES

			Overall Model Test			
Model	R	R^2	F	df1	df2	p
1	0.803	0.645	104	4	230	<.001

Note. Models estimated using sample size of N=235

3) Factors influencing LINE OA utilization: From Table XIV, it was found that the factor with the greatest impact on utilization is system performance efficiency ($\beta = 0.4377$), followed by system functionality ($\beta = 0.1255$) and Healthy Food LINE OA usability ($\beta = 0.1183$), respectively. Meanwhile, content design does not have a significant effect on LINE OA utilization.

4) One-Way ANOVA analysis: From Table XV, the test results showed a p-value of 0.042, which is below the 0.05 significance level, indicating a statistically significant difference in the mean utilization values between at least one pair of groups.

TABLE XIV. MODEL COEFFICIENTS – UTILIZATION

Predictor	Estimate	SE	t	p
Intercept	1.3690	0.1613	8.488	<.001
Content	0.0442	0.0477	0.929	0.354
Functionality	0.1183	0.0588	2.013	0.045
Usability of Healthy Food LINE OA	0.1255	0.0517	2.429	0.016
Efficiency	0.4377	0.0638	6.861	<.001

TABLE XV. ONE-WAY ANOVA (WELCH'S)

	F	df1	df2	p
Utilization	3.28	3	20.1	0.042

5) Post-Hoc test analysis: Once the overall differences were found in the ANOVA, a Tukey post-hoc test was performed to determine which frequency groups differed in the LINE application usage. The Tukey post-hoc analysis of the differences in the mean utilization values between LINE application usage groups using the Tukey post-hoc method revealed that only one pair showed a statistically significant difference: the 2-3 day/use group and the once-weekly group ($p = 0.008$). The once-weekly group had a higher mean utilization score than the 2-3 day/use group by 0.278 units. Comparisons between the other groups did not reveal any statistically significant differences ($p > 0.05$), indicating that utilization was not different between the dailyuser group and the other groups, nor between the infrequent user group and the other groups. This study suggests that frequency of LINE usage may not be the primary factor directly influencing utilization, except for those who use LINE 2-3 times per day and those who use it once per week. Other factors, such as usage patterns, purpose of use, or quality of content accessed, may influence utilization in the once-a-week group, rather than just frequency of use.

V. DISCUSSION

A. Discussion of Interview Results with Elderly Caregivers and Experts in Khlong Prap Subdistrict

Based on the analysis of interview data with elderly caregivers and experts in Khlong Prap Subdistrict, the research findings can be discussed in relation to relevant concepts and theories as follows:

B. Needs for Local Food Information for Elderly Health Care

The results of the study revealed that the majority of elderly caregivers prioritize the use of natural and local ingredients in cooking. This is consistent with the findings of [57] who examined the nutritional value of Thai local foods and discovered that many of them contain components beneficial to the health of the elderly, particularly the variety of local vegetables, the use of herbs and spices, and high-quality protein sources derived from fish. This point is a key strength of this research when compared to previous studies, such as the Chatbot

system by [45] or system by [50]. Local food context recommendations are limited by these algorithms, but accuracy and pleasure are high. The fact that caregivers in the area require local food information thus confirms the importance of developing a system that integrates local-specific knowledge. The researchers discovered and verified culturally unique dietary requirements via participatory design with caregivers, a crucial methodological addition.

C. Local Elderly Food and Health Promotion

All researchers agreed that Khlong Prab Subdistrict's local food is nutritious and contains five dishes with special properties for the elderly: local vegetable curry, turmeric fried fish/herb fried fish, shrimp paste chili dip with boiled vegetables, rice salad, and herbal tea. The research by [58] found that Khlong Prab Subdistrict's traditional diet is healthy and helps prevent and cure chronic illnesses in the elderly. Moreover, [59] revealed that 78.6% of the elderly in Khlong Prab Subdistrict routinely eat local cuisine, supporting the expert interview findings. Sour fish curry with raw bamboo shoots, shrimp paste chili dip with local vegetables, and stir-fried stink beans with shrimp were the most popular local dishes among the elderly. These nutritious and medicinal dishes provide health benefits. Other health systems prioritize vital sign monitoring, like [48], or diabetes management using broad nutritional ideas, like [52]. This focus on local foods with specific properties (e.g., local vegetable curry, turmeric fried fish) addresses a different need. Vital sign monitoring systems only collect physiological data. This system, on the other hand, gives actionable, culturally relevant dietary recommendations that can be used to make healthy meals every day, getting a utilization score of $\underline{x} = 4.65$ for "elderly people can prepare healthy meals". Thus, health data may be linked to local dietary recommendations in this study.

D. Integrating Local Wisdom with Modern Medical Knowledge

Science-based information is needed to blend local wisdom with contemporary medicine. This supports [60], who found that traditional Thai dietary patterns, which align with the Nine Nutritional Commandments (rich in fish, vegetables, fruits, whole grains, and herbs), were associated with a significantly reduced risk of noncommunicable diseases (NCDs). Furthermore, the research results align with the World Health Organization's [61] concept of active aging, which emphasizes holistic health promotion for the elderly, emphasizing optimal health, social participation, and security. This integration approach represents a theoretical contribution, advancing the TAM by demonstrating its applicability in integrating traditional food wisdom with digital health systems for elderly care in rural contexts. Developing a local food information system that meets the needs of caregivers and the elderly will promote access to accurate and useful information, a key factor in promoting activeness in communities. This integration approach is supported by [46], who found that using traditional culinary knowledge with digital technologies helps older people accept healthy meals. Furthermore, the Khlong Prap LINE OA system integrates local food knowledge with health literacy, filling a gap identified by [51], whose research noted that previous work often focused only on health literacy while lacking the dimension of local cuisine.

E. Development of an Information System that Meets the Specific Needs of the Community

All caregivers had trouble finding local food information, in the study. Information scattering and data conflicts the key issues. The participatory design framework systematically addressed these challenges through ethnographic interviews with elderly caregivers and local experts. A systematic data collection and organization method is needed to address these issues. This supports [62] suggestion that an information system that integrates local food and nutrition information for the elderly will connect local wisdom with modern technology, preserving food culture and promoting sustainable health. The Nine Nutrition Commandments for the Elderly by [63] emphasize adapting foods to the physiological changes and specific needs of the elderly and chronic non-communicable diseases of the elderly.

F. User-Friendly Information System Design

Most caregivers (92.86%) preferred pictures with brief text, followed by short films (71.43%) and big typefaces (64.29%). An information system design that is easy to use and appropriate for many users is needed. This is consistent with [64], who found that older adults in Khlong Prab Subdistrict used technology due to child support, family communication, health information, and local wisdom. This finding supports the decision to use the LINE platform, which aligns with [47], who found that simple, local language-supported systems like LINE were more popular in East Asia. It also corresponds with [54], who concluded that LINE is simpler for seniors. As a design contribution, the system provides a replicable model using accessible platforms (LINE OA) with user-centered design principles (pictorial content, large fonts, local language), achieving high satisfaction scores. The design of this system, therefore, directly meets user needs.

G. The Key Features of a Local Food Information System

Disease-specific foods (100%), daily dietary guidelines (92.86%), and often asked questions (85.71%) were the caregivers' search requests. According to the holistic approach to nutrition in the Thai old, a system that provides tailored recommendations and suitable options for the elderly's health state is needed. In [65], the authors promoted local food wisdom, nutritional knowledge and skills, and health care integration. In contrast to broad diabetes management systems that use general food guidelines, this method uses popular local food to give personalized advice for particular situations. This helps all the workers who want to focus on things that are good for people with certain diseases. This demand reiterates that a good system should not merely stop at vital sign monitoring or provide broad recommendations, but must be able to provide “tailored recommendations” according to the specific health conditions of the elderly.

6) Discussion of evaluation and development of the local food information system for elderly health: The local food information system for health care for the elderly at Ban Khlong Prab was established appropriately and met its aims, according to growth statistics. Its performance and usability were rated "strongly agree," indicating that the system satisfies consumers' requirements. These empirical findings provide quantitative

evidence demonstrating the effectiveness of the approach for researchers, policymakers, and system developers.

A. System Development based on the TAM

The TAM model was used throughout system development [66]. This approach assessed perceived functionality and usability. Evaluation shows "easy-to-understand menu" as key factor in high user satisfaction. "Clear communication" and "Clarity of text, colors, and background" indicate a clear, straightforward, accessible, and age-friendly user interface design. This validates the design contribution in developing elderly-accessible interfaces for resource-limited settings. The literature review found that people in this setting prefer LINE and accessible language.

B. System Efficiency and Utilization

The evaluation results for efficiency and utilization were high, particularly for "Elderly people can use the information from the system to prepare healthy meals" and "Information in the system is useful for caring for the elderly". This is consistent with [67] concept of local food being important to the health and culture of the community. This study extends on [49], which found messaging services successful and affordable. The LINE-based method works well in rural areas with few resources because it gets the same level of culture blending and user acceptance without the need for custom application creation. It demonstrates that this cost-effectiveness can be combined with the integration of 'local culture and cuisine' (a gap identified in [49]). This cultural integration may also be a factor in improving health care cooperation, which [53] identified as a limitation of systems that are not culturally informed.

C. Factors Influencing Utilization

The linear regression analysis revealed that the factor that had the highest influence on the utilization was system performance, followed by system functionality and the use of the healthy food OA line. These empirical findings provide quantitative evidence for prioritizing technical performance in elderly-focused digital health interventions, serving as a practical guideline for system developers. This finding is consistent with the research of [68] that indicated that system performance and ease of use are important factors in the acceptance and utilization of technology among the elderly.

VI. Conclusion and Future Work

This research is exclusive to Khlong Prab Subdistrict; however, the technique applies to other rural areas in Thailand with traditional food cultures. The framework bridges generic health literacy systems and culturally informed interventions by giving researchers a replicable method for integrating local food wisdom with evidence-based nutrition science, policymakers a cost-effective digital health solution using existing platforms, and system developers validated design specifications for elderly-accessible interfaces in resource-limited settings. The system uniquely combines: 1) evidence-based nutrition aligned with WHO active aging principles and the Thai Nine Nutritional Commandments, 2) preservation of local food wisdom validated by 78.6% elderly consumption rates, and 3) accessible delivery through a platform already familiar to users, resulting in significantly higher practical utilization than systems without cultural grounding. To gain acceptance and lasting influence, future work should spread this notion throughout Thailand, analyze health advantages, and integrate with established medical systems.

Contribution

1) Theoretically, the study shows how digital health solutions may respect cultural settings by making technology that is easy for seniors to use and preserving traditional knowledge. These tools could help people and keep culture alive.

2) The project uses food information made by the community and a study of older people's habits to come up with a new way to do things that uses the digital tools they already have. This plan could be used for similar projects in Southeast Asia.

3) The study shows how to make health information systems that work for Thailand's older people who are comfortable with technology, who have cultural standards, and who want preventive health care.

4) The results show that older people are more likely to use and connect with platforms that have useful information that is relevant to their area. This is beneficial for their health and helps keep traditional knowledge alive.

Research Applications

A. Benefits to Elderly Persons and Caregivers

1) Elderly persons and caregivers will benefit from access to reliable information on local foods that are beneficial to their health, which can be applied to meal planning appropriate for their health status.

2) Local food information systems will help build confidence among elderly persons and caregivers in self-management of their health through appropriate food selection and the preservation of familiar food cultures.

B. Benefits to Communities and Local Areas

1) Communities will benefit from collecting, organizing, and disseminating local food wisdom, which will preserve and revitalize the food culture that is a community identity.

2) Disseminating information on the nutritional value and health properties of local foods will foster pride in local culture and promote the continuation of knowledge from generation to generation.

C. Government Agency and Related Organization Benefits

1) To improve aged care, public health organizations and health-promoting hospitals may include local culinary knowledge in their health service systems.

2) Related organizations may reuse the local food information system development for health information systems.

D. Benefits to the Academic Community

1) This research will help build a collaborative network among researchers, academics, and practitioners in various

fields, such as nutrition, information technology, geriatric nursing, and community development.

2) The developed local food information system will serve as an important source of information for future research on local foods and their application to promoting the health of the elderly.

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