

The Application for Designing a Digital Brand Identity System for Innovative Food Products

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Abstract

This study aimed to develop a digital brand identity system, to design an application for designing a digital brand identity system in innovative food products, and to assess the effectiveness of this application and the design quality of a digital brand identity system in innovative food products. The study employed the developed an application for designing a digital brand identity system in innovative food products and the assessment forms for assessing the effectiveness and the design quality. The research sample consisted of 20 designers and entrepreneurs in a digital brand identity system in innovative food products, five experts in application design who assessed the effectiveness of the application, and five experts in data digital brand identity system design who assessed its design quality. The results showed that the researchers successfully developed a digital brand identity system and designed an application for designing a digital brand identity system in innovative food products. Additionally, the overall effectiveness of the application and its design quality were high. For further research, it is suggested that the application for the iOS operating system should be developed.

Keywords: *Application, Design, Identity, Digital brand, Food innovation.*

1. Introduction

1.1 Thailand's Food Industry

Thailand is one of the world's top food exporters, so the food processing industry plays an important role in driving the country's economy. Moreover, due to the government's determination to develop the country's economy with the Thailand 4.0 model, "food innovation" is crucial for changing from producing general food products to the production of innovative food products. It can be said that Thailand focuses on creating added value for the product itself (Chitanuwat, 2018). Nowadays, Thailand has entered an era in which technology advances rapidly, and people in the country live a hectic life. Importantly, Thailand is entering into an aging society. Therefore, the direction of food innovation focuses on functional food, healthy food, using food additives or nutritional extracts to produce high quality food, including food packaging, traceability, food safety, and food storage and transportation technologies. As a result, creating innovative food products requires cooperation among many sectors (Krimjai, 2016). The government has

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realized the importance of driving the country's economy through food innovation. Hence, “Food Innovation City or Food Innopolis” was established in order to promote food innovation through cooperation between the public and private sectors. Additionally, there are universities with professors and researchers in agriculture and food science both centrally and regionally that stimulate new business and improve existing enterprises and promote connections between new entrepreneurs and the large food industry both domestically and internationally. This allows the food industry to have more channels to develop innovative food products (Kaewthong & Kanchanapratum, 2018).

1.2 Digital Entrepreneurs and Food Innovation

Entrepreneurs of modern innovative product groups therefore rely on the concept of using useful innovation knowledge and create innovations that can be used to solve existing problems with entrepreneurs in the industrial sector and food processing. This aims to strengthen food innovation products and support the growing world population and food security under the trend of changes in the environment, economy, society, and new technology (National Innovation Agency (Public Organization), n.d.). Besides, another important part is branding or brand identity in the digital age. Using digital technologies to achieve business goals is therefore crucial (Foroudi et al., 2021; Tran, Taylor, & Wen, 2023).

1.3 Digital Branding

Digital branding is a strategy for creating a brand to be known online through various media and platforms. Consequently, an important goal in creating an online brand is an image that can make the target group remember the brand (Phinkieow & Tantivejkul, 2017). This is from the identity of the logo to a prominent profile on social media (Balmer, 2023; Zhu & Liu, 2023). These can only be achieved when a business first explores and analyzes its brand identity and plan marketing strategies to be most appropriate so that the brand can communicate to the real target group and receive other benefits from digital branding (Lencastre et al., 2023). In addition, using application capabilities as technology and tools to design digital brand identity systems (Noonpakdee, 2012) is necessary since it facilitates and is required for an agreement or contract between the designer or contractor and the digital entrepreneur or employer so that it does not cause communication problems and complex work processes which will lead to a waste of resources and time due to good service design (Creative Design Center, 2014; Creative Economy Promotion Agency (Public Organization), 2018).

1.4 Importance of Application Design

The application development is writing software for portable devices, such as smartphones or creating mobile applications. The developers will write a mobile application in order to take advantage of certain mobile devices that have specific features, such as applications for design work. The disadvantage of developing mobile applications is that the developers cannot reuse the source code of one operating system for another operating system. For example, the source code used to make an application for Android devices cannot be used with Windows Phone. Browser-based applications must have equipment-agnostic so that the browser can work on various mobile devices (Laten & Chadcham, 2017). Regarding the importance of application design, in addition to being used in the education field, it is important in terms of business and commerce. It is equally important to bring applications to support the use of operations and business. It is a matter of exchanging, presenting products, giving services, building a strong brand, and connecting with more customers. The benefits of designing an application are encouraging customer engagement and increasing satisfaction, such as instantly informing users of new product information or offers, standing out from the competition, delivering more specific promotions, reaching a group of younger customers, and connecting to users' email and social media accounts (Al-Shamaileh, & Sutcliffe, 2023).

2. Literature review

2.1 Mobile applications and digital technology

Today, science and technological advancements are important to human life and human development, and they are sciences that connect all fields of study. Technology is thus widely popular and used in work and daily life. The most advanced technology in the 21st century that people all over the world pay great attention to is information technology. Technology is natural science, and it is developed to different branches of science. It is used and applied to help work or solve various problems, resulting in materials, equipment, tools, machines, and knowledge or abstract things such as systems and processes to make human life easier and more convenient (Yodrak, 2018). Technology has an impact on society and the areas where technology is involved are in many forms. Technology has helped many societies achieve greater economic development, including the current global economy. As we know, technology has changed or developed over time, which depends on the evolution of the system or tools. Therefore, the term “evolution of technology” refers to changes that occur in systems or tools that occur in a complex manner and are continuously changing order due to various factors (Xia et al., 2023).

Technology results from the knowledge that humans use from the nature to create innovations to solve basic problems in life. At first, technology was used for the basic practices and activities, such as farming, irrigation, construction, making tools and equipment, making pottery, weaving, and so on. Later, the increase of population, the limitation of natural resources, the development of the relations with foreign countries are important factors in the adoption and development of technology (Ministry of Information and Communication Technology, 2016).

2.1.1 Mobile applications

Application program or application software, also called an application, is a computer program that is designed to support work or specific activities of users and is connected to mobile devices. In each operating system, many applications are created by developers so that they will meet the various needs of users (Kenny & Regan, 2021). In application design, it is determining the characteristics of the working system and considering, analyzing, and comparing system properties. Also, the application design must be considered in conjunction with system architecture design, components of input data, processing, data verification, and displaying the results (Meeboon, 2016)

The importance of developing successful mobile applications is consistent with AlFahl's (2023) research study regarding the usability of management information systems applications which discusses the widespread use of management information systems. Also, it was revealed that many applications can support businesses in their operations. The use of information systems in the business sector is having platforms for selling products and services online. Many major online retailers use these platforms to support electronic commerce (Ecommerce). These large platforms have many channels of access, including company websites and mobile applications so that they can manage many different tasks. The success of using mobile applications in the tourism industry is consistent with the research conducted by Stefanov et al. (2023). It was found that the necessity of using applications in the present era and in the future is at the heart of industrial development along with using technology for maximum benefit. In addition, it challenges users' capabilities and innovation in the digital age.

2.1.2 Digital technology

In the present era, advancements in science and technology continue to develop. This has resulted in the development of the quality of life of the world's population and the Thai population. People can receive news rapidly and immediately. Also, this develops the economy, society, and education continuously. The use of digital technology is therefore

necessary to our lives. It is not only used for entertainment or learning, but it can also be adapted and used in professional work processes effectively (Alkhazaleh et al., 2022).

In the past, Thailand had had continuous economic development from the “Thailand 1.0” model that focused on agriculture to “Thailand 2.0” which focused on light industry. Then it moved towards the model “Thailand 3.0” that emphasized heavy industry. However, under the current Thailand 3.0 model, it must face a major trap that cannot lead the country to develop further. Thus, it is an issue that the government must create a new model in order to reform the country's economy and lead the entire country to the “Thailand 4.0” model within 3-5 years (2016-2020).

The need for the use of digital technology in the food industry and the successful application of digital technology in food processing is consistent with the study conducted by Konfo et al. (2023) who reviewed recent advances in the use of digital technologies in agri-food processing and revealed the use of digital technology in agricultural food processing, the latest advances in digital technology in the areas of food safety certification and quality control, the preparation of examples of how digital technology increases efficiency and sustainability in agricultural food processing, and trends in the use of digital technology in agricultural food processing. Also, emerging trends, important technologies, and the important role of applications in the digital transformation era in the food industry need to be taken into account. This is in line with the research of Hassoun et al. (2023) who explored the digital transformation in the agri-food industry focusing on the recent applications and the role of the COVID-19 pandemic. In this study, new methods, solutions, and technological innovations are being explored, and one solution that is gaining a lot of attention is digital transformation. Therefore, research into digital transformation has increased rapidly in recent years. It shows that there has been an increase in the number of articles on digital transformation in agri-food systems over the past decade. Like other sectors, agriculture and the food industry have been faced with increasing digital transformation and the necessity of digital technology in the Urban Food group. This supports the study conducted by Mantravadi & Srari (2023) who mention about the role of digital technology in the food innovation product industry for access to healthy food and reduction of waste caused by contaminants or foreign substances, and possible solutions according to the Industry 4.0 policy.

Dr. Suwit Maesincee, Minister, Deputy Minister of Commerce, who was responsible for implementing the Prime Minister's policies, said that, as we all know, the important strategy under the leadership of the Prime Minister emphasized the development towards “stability, prosperity, and sustainability” by building “strength from within” driven by the concept “Sufficiency Economy Philosophy” through the “Pracharath” (i.e., people and the government) mechanism. In addition to solving various problems that have been accumulated for a long time, whether it is an illegal fishing problem, unreported and uncontrolled (IUU), International Civil Aviation Organization (ICAO) corruption, conflict, as well as dealing with economic conditions in the country affected by fluctuations in the world economy, agricultural crop prices that are falling, and a drought crisis, an important mission of this government is to drive and reform in order to deal with opportunities and the new threats in the 21st century. Many countries define a new economic model to create wealth in the 21st century. For example, the United States talks about “A Nation of Makers”, England is pushing for “Design of Innovation”, China has announced “Made in China 2025”, India is driving “Made in India”, South Korea sets the economic model to be “Creative Economy”, and so on.

Dr. Suwit Maesincee, Deputy Minister of Commerce, added that “Thailand 4.0” is therefore the development of new engines of economic growth by converting the country's existing comparative advantages, namely biological diversity and cultural diversity, into competitive advantages by using sciences, creativity, innovation, science, technology, and research and development. Then the comparative advantages are

expanded into five groups of technology and target industries, consisting of 1) Food, Agriculture & Bio-Tech, 2) Health, Wellness & Bio-Med, 3) Smart Devices, Robotics & Mechatronics, 4) Digital, IoT, Artificial Intelligence & Embedded Technology, and 5) Creative, Culture & High Value Services.

These five groups of technology and target industries will be a platform for creating many new startups including 1) Agritech & Foodtech, 2) Healthtech, Meditech & Spa, 3) Robotech, 4) Fintech, IoT, Edtech, E-Marketplace, & E-Commerce, and 5) Designtech, Lifestyle Business, Traveltech, & Service Enhancing.

“Thailand 4.0” is thus a weaving of core technologies at the upstream level in order to build strength for target industries in the midstream and various startups in the downstream by using the power of Pracharath (i.e., people and the government) in driving the country's economy. The main participants include the private sector, financial sector, banking, universities, and various research institutes, focusing on the aptitudes and strengths of each organization and having the government sector as the supporter. For example, the Food, Agriculture & Bio-Tech Group has the private sector, namely Mitr Phol Group, Thai Union Frozen Products Company, and Charoen Pokphand Group Co., Ltd. as the mainstay. Additionally, there is a financial sector consisting of the Bank for Agriculture and Agricultural Cooperatives (BAAC) and the Government Savings Bank for support. Also, Kasetsart University and research-intensive universities in various regions are leaders in research and development of new technologies together with foreign universities and research institutes such as Wageningen University, which is the number one research university in the Netherlands, Purdue University, the University of California, Davis, and Cornell University which have the government sector provide support, such as the Ministry of Finance and the Board of Investment of Thailand (BOI). One of the projects that is being pushed forward through the Ministry of Science and Technology is the establishment of a food innovation city (i.e., Food Innopolis) (Spokesperson's Office, Secretariat of the Prime Minister Government House, 2017).

2.2 Digital brand identity System

Brand identity is considered to be a step in the big umbrella of brand building. The identity of the brand is expressed in terms of the visual image of the brand, including the brand name, logo, tone of voice, colors, taglines, symbols, images, fonts, or visual appearance. These are the basic methods for perceiving differences among consumers.

In terms of marketing, the digital brand identity system is a form that is the identity of a product, service, or organization. It is designed to be consistent with business goals, and it is expressed in the form of brands and the use of trademarks. Also, brand identity is perceived through an image by creating a memorable relationship between the product or service and the customer group. The identity of an organization is linked to its image, digital brand meaning, and symbolism. The case studies of successful food product brands are, for example, digital brand identity systems in the food innovation product portfolios of Nestle, Danone, Yili, Kellogg's, and Tyson. These are the top brands in the high-value food innovation product category (Kusi et al., 2021; Sriwiboon, 2004). Later, Jean-Noël Kapferer, a global marketer and branding expert, invented Brand Identity Prism, which is a more detailed guide to creating brand identity, in order to make the brand image unified and memorable (Li et al., 2023). Moreover, it helps businesses build a strong identity, maintain, and clearly reflects the core values that the brand wants. It also helps in easily developing customer loyalty for the brand (Thammarak, 2016; Zheng et al., 2018).

2.3 Innovative food products

Innovative food products refer to products and services that emphasize the use of digital technology and innovation to create value and develop products so that they can meet the needs of the lifestyles of specific social groups (the National Innovation Agency (Public

Organization); Suphachaturat, 2017), including six categories. That is, natural and organic food is food that has been produced through agricultural production without using chemicals, chemical fertilizers, or any synthetic materials at all, including seeds that are not genetically modified. The production process does not use chemicals to eliminate pests, such as in vegetables, fruit, and meat. Faux food such as artificial meat and alternative meat is future food. Modern heirloom refers to local food with new value. For example, it is local food of the south, dried split gill mushrooms, shrimp paste, blue crab chili paste of Surat Thani province, and urban food such as urban food gardens which often have social objectives to be the key of food production areas, such as community gatherings or providing therapeutic benefits. Nootropic and medical food is food used under the supervision of a doctor. This aims to help patients receive correct and appropriate nutrition for diseases, for example, food that has medicinal properties, ivy gourd, wild bitter gourd, and piper sarmentosum. Digital foodscapes are increasingly populated by digital food influencers (Kaewthong & Kanchanapratum, 2018).

From the success stories of the food industry, innovation models used by the food industry indicate that different sectors are moving towards open models with a focus on external knowledge acquisition and the industry's ability to adapt to economic and social changes. Also, the open innovation models can be a complement to traditional models. In the next few years, there will be new challenges arising from new technological opportunities. The food industry may focus on new processing techniques, taking advantage of the latest discoveries in biotechnology or health food production to offer new and more innovative products. In addition, the use of new communication and information techniques is expected to be popular. Likewise, the use of new processing and packaging techniques for products will also be popular. Considering the government's first phase of the food processing industry development plan (2019-2027), a vision has been set in order to promote Thailand as the center of future food production (Future Food), both at the ASEAN and global levels, along with driving the economy focusing on upgrading the group of SME entrepreneurs and community enterprises. Also, this aims to encourage the use of technology and innovation to create added value for agricultural products and aims to promote entrepreneurs in the innovative food product group in terms of healthy food produced from organic ingredients, functional food and drink, food from biological processing, and environmentally friendly food packaging (Bigliardi et al., 2020).

2.4 Digital branding strategies in the food industry

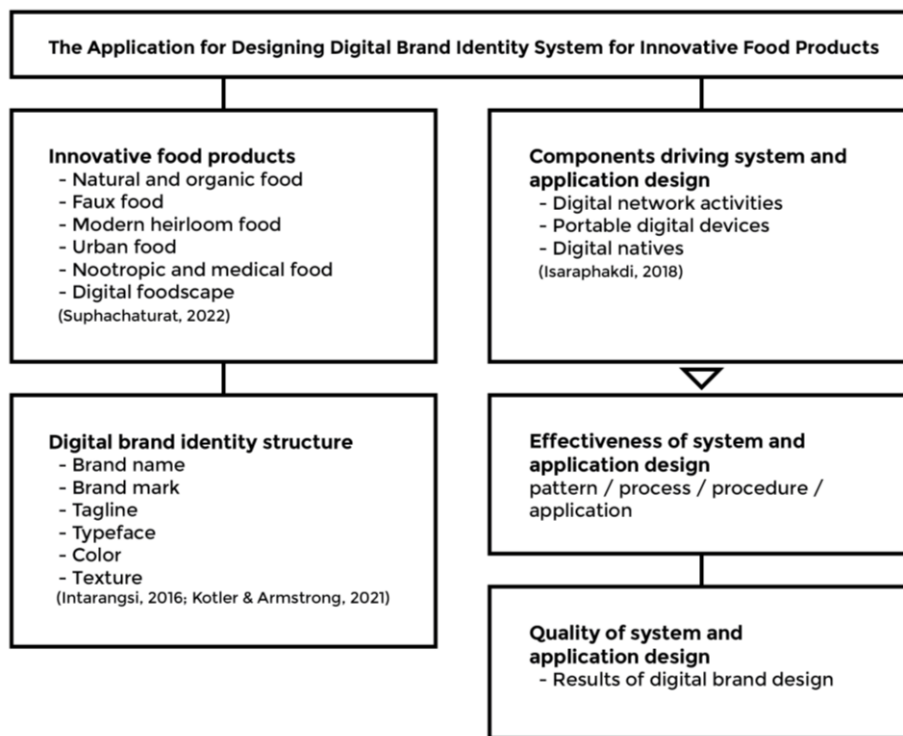
Technological developments are constantly changing consumer behavior in the era of communication and information distribution. Currently, most consumers have changed their time spent using digital media for various purposes, including kinds of information and searching for and purchasing products or services. There is a lot of research on digital marketing, and several studies have examined the relationship between digital marketing and the performance of the food innovation product industry, examining the relationship of digital marketing and digital brands, strategies through digital marketing, and strong branding. The technological revolution has made digital marketing a leading medium of information services and promotions as well as services to customers. This is because technology offers a number of features with the development of digital marketing and integration across all aspects of the business models. Recent research studies have examined business models related to digital marketing or digital marketing strategies in the past decade. Digital transformation has revolutionized marketing and industrial marketing. Future research would be conducted on digital marketing capabilities across industries, thematic research to investigate effective digital marketing, digital marketing focusing on the thematic study of effective digital marketing, the study of digital marketing requirements, and the research examining digital marketing strategies and tactics for small and medium-sized industries (Al-Shamaileh & Sutcliffe 2023).

Digital branding strategies in the food industry, which is one of the large industries, play a crucial role and importance in driving the country's economic system. In 2016, Thailand was the number one country in exporting goods and food products to ASEAN countries and became a country that exported goods and food products to all over the world, which was the 13th highest, accounting for 5.8% of the country's gross product value, or the economic value of Thailand of more than 830,000 million baht. This is due to the strength and foundation of Thailand that includes a diversity and quantity of raw materials. Moreover, it includes the experience and expertise of production entrepreneurs in effectively applying innovation and modern technology. Thailand's food industry will be able to grow and create increased value continuously. Entrepreneurs must focus on changing business models in order to develop innovation and technology in the food industry (Suradinkura 2022).

2.5 Conceptual framework

A conceptual framework of this present study, based on our recent literature review, is presented in Figure 1.

Figure 1. A conceptual framework of this present study.



2.6 Research objectives

- 1) To develop a digital brand identity system
- 2) To design an application for designing a digital brand identity system in innovative food products
- 3) To assess effectiveness of this application and the design quality of a digital brand identity system in innovative food products

3. Research method

3.1 Research procedure

In this research, the research procedure included four phases as follows.

Phase 1: Developing a digital brand identity system in innovative food products

The researchers studied and analyzed the practices of design system and developed a digital brand identity system design in order to be consistent with the problems of designers and communication among digital entrepreneurs. The system of digital brand identity consisted of the design process and procedure using the synthetic table tool as follows: 1) Discovering, 2) Researching, 3) Sketching, 4) Creating, 5) Presenting, 6) Developing ideas, 7) Developing design, and 8) Delivering.

As for discovering, it included defining terms of reference, writing creative briefs, bidding quotations, requesting for proposals, replying to proposals, and signing contracts. Researching included reviewing data, compiling data, analyzing data, brainstorming, determining idea concepts, and referencing. Sketching consisted of designing and sketching. For creating, it consisted of drawing and creating designs. Presenting consisted of presenting and receiving feedback. Developing ideas was verifying and developing ideas. Developing design included verifying and developing the design. Finally, delivering was delivering and having after design service.

Phase 2: Designing an application for designing a digital brand identity system in innovative food products.

The researchers followed the steps below.

1.1 The researchers studied, collected, and analyzed data about digital brand identity systems in innovative food products, consisting of:

1.1.1 There are 50 types of logos, divided into Abstract Logo Mark, Pictorial Mark / Logo Symbol, Wordmark / Logotype, Lettermark / Monogram, and Combination Mark (Rentschler et al., 2023; Wang et al., 2023).

1.1.2 There are five groups of colors, divided into Monochromatic colors, Analogous colors, Complementary colors, Triadic colors, Split-Complementary colors, and Rectangular Tetradic colors (Zhang et al., 2023).

1.1.3 There are 20 types of textures and surface colors, divided into Geometric textures, Natural textures, Free textures, and Abstract textures.

1.1.4 There are 20 types of letters or fonts, divided into Serif, Gothic, Script, and Display Type.

All of these above-mentioned components are shown in Figure 2 below.

Figure 2. The components of a digital brand identity system.



1.2 The researchers planned and designed a sketch of a digital brand identity system in innovative food products.

1.3 The researchers synthesized various data and used them to design the application for designing a digital brand identity system in innovative food products.

1.4 The researchers prepared and designed by using computer programs for designing the user interface and application, including Adobe Illustrator, Figma, and Android Studio.

Phase 3: Assessing the effectiveness of this application and the design quality of a digital brand identity system in innovative food products.

The researchers created and developed the application by using the five steps of ADDIE Model as a guideline as follows.

Step 1: Analysis Phase

The researchers analyzed tasks and determined the application design content both for the content and images used. Then the methods used in applications on the Android operating system were determined in order to make it complete and efficient (Boonchom et al., 2020).

Step 2: Design Phase

The researchers designed the content structure of the application. The presentation of the application included standard text-based display formats, text sizes, background images, positioning, headings, content, images, and tools for use and interaction with users of the application. Also, a storyboard was written to show the sequence of operations of the application (Buil et al., 2016). The program used to design the digital brand identity system was Adobe Illustrator, the program used to design the user interface was Figma, and the program used to design the application was Android Studio.

Step 3: Development

The researchers created and developed the application on the Android operating system according to the steps that were planned and designed above. The application was then verified by experts, and it was modified according to their recommendations. After that, it was tested with students who were not in the research sample of an actual study. The experiment was conducted individually with six people. While using and after using the application, the behavior of the users was observed. Additionally, the researchers interviewed these users in order to find the flaws of this application and use the results to improve and correct the flaws.

Step 4: Implementation

The researchers took the application that passed the initial quality check and tested it with the research sample group, which was a group of 10 designers and 10 digital entrepreneurs in innovative food products.

Step 5: Evaluation

The effectiveness of the application was assessed by five experts in application design.

Phase 4: Assessing the design quality of digital brand identity systems in innovative food products.

It was a quality criterion that evaluated the results from an assessment form that was validated by three experts in the fields of research and language and was used with five experts in design.

3.2 Research instruments

In this study, there were three main research instruments, consisting of 1) the application for designing a digital brand identity system in innovative food products, 2) the

assessment form for the effectiveness of an application for designing a digital brand identity system in innovative food products, and 3) the assessment form for the design quality of a digital brand identity system in innovative food products.

3.3 Data collection

1. The documents and related research were studied, analyzed, synthesized and summarized by using synthetic tables from five experts in design.
2. The data regarding the effectiveness of the application for designing a digital brand identity system in innovative food products were collected from the assessment form from five experts in application design.
3. The data regarding the design quality of a digital brand identity system in innovative food products were collected from the assessment form from five experts in design.

3.4 Data analysis

1. The digital brand identity system was synthesized by using synthetic tables to draw conclusions.
2. The researchers analyzed and found guidelines for designing the application for designing a digital brand identity system in innovative food products by studying, collecting, analyzing, and synthesizing data. The researchers then planned and designed a sketch of the application and used computer programs to design the user interface and the application.
3. The researchers analyzed the effectiveness of the application for designing the digital brand identity system in innovative food products by presenting the collected data using descriptive statistics including mean (\bar{x}) and standard deviation (S.D.).
4. The researchers analyzed the design quality of the digital brand identity system in innovative food products by presenting the collected data using descriptive statistics consisting of mean (\bar{x}) and standard deviation (S.D.).

4. Results and Discussion

In this section, the results of the study will be presented and discussed according to the research objectives.

1) To develop a digital brand identity system

The researchers successfully developed a digital brand identity system to be consistent with and solve problems of designers and communication among digital entrepreneurs along with the brainstorming of experts and concluding using the synthetic table tool as follows: Discovering, 2) Researching, 3) Sketching, 4) Creating, 5) Presenting, 6) Developing ideas, 7) Developing design, and 8) Delivering.

The system development is organizing a group of different components that work together for the same purpose. The digital brand identity system in innovative food products consisted of personnel, tools, materials, procedures, and the interaction of each component in a continuous relationship. As a result, this leads to the success according to the goals that have been set in accordance with the meaning of the system as noted by Good (1973), as cited in Kru Bannok, 2007, who gave the meaning of the system that it is the organization of all the parts in an orderly manner by clearly showing their interrelationships and the relationship of each part to the whole. Additionally, Semprevivo (1976), as cited in Kru Bannok, 2007), mentioned that a system is various components that work in connection with each other in order to produce a certain result or the interaction of all components in performing duties and operations.

From studying the problems and steps of the design proposal, digital entrepreneurs request to change the format as well as asking for a change in new ideas. The problem of misunderstandings between designers and entrepreneurs has existed for a long time and has negative effects in that the design does not meet the needs of employers or consumers, there is a waste of time, or there are mistakes in payment. These create bad attitudes between both parties and cause confusion for designers and a waste of resources, supplies, time, and ideas (Creative Design Center, 2014). The process of developing ideas is therefore an additional step to reduce problems and complexity, analyze the practices of digital brand identity design systems in innovative food products, conduct the development, and solve the problems between the designers and the digital entrepreneurs (Dai & Cao, 2023). Also, it includes a brainstorming session with experts to analyze and decide on the design process in eight steps. This is in line with the concept of Alina (2009) who studied the steps of brand identity design as follows. 1) Discovering is the study and survey of background information about the brand. 2) Researching is to find answers or representatives of the brand. 3) Sketching is the creation of several rough sketches to be used as options. 4) Creating is the design to the process of making prototypes with computer graphics programs. 5) Presenting is the presentation of work to entrepreneurs in order to select works. 6) Developing ideas is the use of suggestions to improve and modify the design. 7) Developing design is the development of ideas and models. 8) Delivering is the sending of data and information into the hands of entrepreneurs.

2) To design an application for designing a digital brand identity system in innovative food products

The researchers studied the process of designing and developing mobile applications for the Android operating system using the steps of ADDIE Model (1975), as cited in Sawatsaringkhan, 2023, and the System Development Life Cycle (SDLC) (Udomthanathera, 2019) consisting of 1) problem analysis, feasibility study, and a study of related documents and research, 2) analysis of application components, system development plan, creating flowcharts, 3) designing the user interface to meet needs, 4) developing the application and testing it as designed, and 5) deploying the application and improving it. As a result, Figure 3 below shows the user interface of the application for designing a digital brand identity system in innovative food products.

Figure 3. The user interface of the application for designing a digital brand identity system in innovative food products.



Data collection and data analysis are consistent with the research conducted by Boonchom et al. (2020) regarding the conceptual framework for developing mobile applications using the Android operating system for disseminating the cultural heritage of the lower southern region. The researchers collected data from sources related to digital brand identity systems in innovative food products. It was then categorized into product names, logos, taglines, colors, fonts, and textures, with the classification of headings that were completely linked to the contents (Bresciani & Ponte, 2017; Li et al., 2023; Zwaga & Boersema, 1983).

The system analysis and system design are also in line with Boonchom et al. (2020) in that the designers analyzed and designed a menu system for use as follows: 1) surveying, contracting, and studying data, 2) designing product names, logos, taglines, colors, fonts, styles, and techniques (Fajardo et al., 2016), 3) contacting and contact channels, 4) user manual design, service section, and work process (Creative Design Center, 2014), and 5) brand identity and brand structure (Leelayudthyothin & Boontore, 2022; Park et al., 2013).

3) To assess the effectiveness of this application and the design quality of the digital brand identity system in innovative food products

Table 1 below shows the results of the effectiveness of the system and the application for designing a digital brand identity system in innovative food products, and Table 2 shows the results of the design quality of a digital brand identity system in innovative food products.

Table 1. The results of the effectiveness of the system and the application for designing a digital brand identity system in innovative food products (N=5)

Assessment list	\bar{x}	S.D.	Meaning
1. Design	4.26	0.59	High
1.1 The font size is appropriate.	4.40	0.55	High
1.2 The categories of the topics used in the application are appropriate.	4.20	0.84	High
1.3 The images presented in the application are appropriate.	4.00	0.71	High
1.4 The use of colors is appropriate and beautiful.	4.00	0.00	High
1.5 The layout of the application components is easy to understand.	4.60	0.55	Highest
1.6 The arrangement of the components is suitable for use.	4.40	0.89	High
2. Effectiveness of the use			
2.1 Users can register and create work easily and conveniently.	4.35	0.80	High
2.2 Users can add workpieces conveniently.	4.00	1.00	High
2.3 Users can quickly access contents in the application.	4.20	0.45	High
2.4 Overall effectiveness of the application is appropriate.	4.40	0.89	High
	4.80	0.89	Highest

Assessment list	\bar{x}	S.D.	Meaning
Total	4.30	0.68	High

From Table 1, it was found that the overall effectiveness of the system and the application for designing a digital brand identity system in innovative food products was at a high level ($\bar{x}=4.30$, S.D.=0.68). Regarding the design, it was at a high level ($\bar{x}=4.26$, S.D.=0.59). When considering each aspect, that the layout of the application components is easy to understand was at the highest level ($\bar{x}=4.60$, S.D.=0.55). It was followed by that the font size is appropriate ($\bar{x}=4.40$, S.D.=0.55) and that the arrangement of the components is suitable for use. ($\bar{x}=4.40$, S.D.=0.89), respectively. As for the overall effectiveness of the use, it was at a high level ($\bar{x}=4.35$, S.D.=0.80). When looking into more details, that overall effectiveness of the application is appropriate was at the highest level ($\bar{x}=4.80$, S.D.=0.89). It was followed by that users can quickly access contents in the application ($\bar{x}=4.40$, S.D.=0.89) and that users can add workpieces conveniently ($\bar{x}=4.20$, S.D.=0.45), respectively.

For the effectiveness of the application for designing a digital brand identity system in innovative food products, it was at a high level. This is consistent with the research of Sueaprae and Lohakarn (2014) regarding the results of assessing the suitability of the application for learning on the Android operating system. It was revealed that, as for the media design, it was at a high level. In terms of effectiveness of use, it was at a high level. For the assessment of the application's effectiveness, it was also at a high level. This is because of the design and construction of the application. The researchers studied the theoretical concepts regarding applications, application design on Android mobile devices, creating flowcharts, and storyboards in order to set guidelines for presentation in which every step of the construction was under the supervision of experts.

Table 2. The results of the design quality of a digital brand identity system in innovative food products

Assessment list	\bar{x}	S.D.	Meaning
1. The components of the name can communicate digital brand identity	4.06	0.55	High
2. The components of the name are appropriate, beautiful, and suitable for use.	4.26	0.48	High
3. The components of the logo can communicate digital brand identity.	4.12	0.43	High
4. The components of the logo are appropriate, beautiful and suitable for use.	4.40	0.32	High
5. The components of fonts can communicate digital brand identity.			
6. The components of the fonts are appropriate, beautiful, and suitable for use.	4.30	0.32	High
7. The components of colors can communicate digital brand identity.	4.44	0.50	High
8. The components of colors are appropriate, beautiful, and suitable for use.			
9. The components of images can communicate digital brand identity.	4.16	0.37	High
10. The components of images are appropriate, beautiful, and suitable for use.	4.18	0.51	High

Assessment list	\bar{x}	S.D.	Meaning
11. The components of texts can communicate digital brand identity.	4.18	0.34	High
12. The components of texts are appropriate, beautiful, and suitable for use.	4.38	0.41	High
13. The overview of a digital brand identity system design	4.26	0.43	High
	4.26	0.43	High
	4.30	0.43	High
Total	4.25	0.42	High

From Table 2, it was found that the overview of the design quality of a digital brand identity system in innovative food products was at a high level ($\bar{x}=4.25$, S.D.=0.42). When considering each aspect, that the components of the fonts are appropriate, beautiful, and suitable for use was at a high level ($\bar{x}=4.44$, S.D.=0.50). It was followed by that the components of the logo are appropriate, beautiful, and suitable for use ($\bar{x}=4.40$, S.D.=0.32) and that the components of images are appropriate, beautiful, and suitable for use ($\bar{x}=4.38$, S.D.=0.41), that the components of typography can communicate digital brand identity ($\bar{x}=4.30$, S.D.=0.32), and that the overview of a digital brand identity system design was at a high level ($\bar{x}=4.30$, S.D.=0.43), respectively.

Below are the results of the design of digital brand identity using the application for designing of this present study.

Figure 4. The results of designing a digital brand identity system in innovative food products.



For the design quality of the digital brand identity system in innovative food products of digital brand identity designers in collaboration with entrepreneurs in innovative food products (10 works in total), overall, the components of the brand using both images and fonts, monochrome colors, natural textures, and gothic fonts are consistent with the research of Sowaphak and Simhong (2022) who found that the brand is the combination of images and fonts which are crucial components for making brand identity.

5. Conclusion and implications

In conclusion, the study on the Application for designing a digital brand identity system for innovative food products has demonstrated the development of the digital brand identity system, the design of the application for designing a digital brand identity system in innovative food products, and the assessment of this application and the design quality of a digital brand identity system in innovative food products. The results indicate that the effectiveness of this application is high. Most users are designers and digital entrepreneurs in innovative food products, and they can use this application easily, conveniently, and quickly, even if they have never used it before. Importantly, it is suitable for digital natives who grow up with information technology these days. Also, the design quality of a digital brand identity system is high. The designers and digital entrepreneurs in innovative food products are able to work together effectively, gain understanding, and have a good attitude during work.

The findings of this study have several implications for graphic designers, digital entrepreneurs, researchers, and the general public who are interested in technology and innovation in designing a digital brand identity system. Additionally, the research findings can be applied to tools or smartphones that help make design easier and faster, and promote new entrepreneurs who are starting a digital business, but there is no brand or a digital brand identity system yet. This is considered to be a good starting point and leads to the goals set.

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