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Foreword

Two S-Curve Industries in Thailand attracted the research interests of scholars for this issue: "Health Tourism" and "Food for the Future".

Wilaipan Jaiwilai et al. focuses on "The Promotion of Health Tourism in Thailand with International and Domestic Standards". The standards they reviewed cover the WellHotel Standards of GHA; STAR Facility Accreditation of GBAC; the standards of WTTC; and the Thai Standards of SHA, followed by recommendations for health tourism-related establishments in Thailand to obtain certification.

China ASEAN Studies, PIM (CASPIM) examines "Food for the Future: Partners & Opportunities in China" in terms of hot spots, current trends, market structure, government regulation, and the ecosystem in the Chinese market of healthcare food. Three business models are proposed based on 8 case studies: outsourcing in China; export of Thai products to China and joint venture. They are related to the broader issue of strategic choices between cooperation parterres based on their identity and incentives.

Another food for the future is discussed by Pithoon Thanabordeekij and Phuwit Kitiya in "Factors Affecting Purchase Intentions of Plant-based Food Products in Mueang Lampang". The multiple linear regression reveals that environmental concerns, subjective norms, and perceived consumers' effectiveness factors affect the purchase intention of plant-based food products in this less-developed area of Thailand.

Other scholars in this issue extend their vision to ASEAN neighbors in Lao PDR and Cambodia, exploring traditional sectors like agriculture as well as new areas like e-commerce through social media and cryptocurrency.

Chairat Burana et al. look at "Clean Agriculture Development in Lao PDR: Opportunities and Challenges for Food Safety and Market Access". Government statistics, key informant interviews, and field observations reveal the advantage of "Clean Agriculture" or "Organic Agriculture (OA)" in particular in the country. It is recommended that standards of OA, GAP, SNA, and PEP should be promoted for a bigger domestic and international market.

Synuon Kry and Veerisa Chotiyaputa investigate "The Perception of Cambodian Users Towards Cryptocurrency Exchange Application". The Unified Theory of Acceptance and Use of Technology 2 (UTAUT2) is applied in the analysis which revealed that habit, performance expectancy, and trust significantly influenced the adoption.

A similar TAM Model is also applied by Vorleak Chandara et al. in "Factors Influencing Behavioral Intention to Purchase Online On Facebook Platform: A Case Study in Phnom Penh City", in which they found perceived usefulness, perceived ease of use, brand ambassador, and electronic word of mouth had positive and significant effects on behavioral intention.

Prof. Dr. Tang Zhimin
Editor-in-chief

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The Promotion of Health Tourism in Thailand with International and Domestic Standards

Wilaipan Jaiwilai[1*], Chomphunut Singmanee[2], Wipada Kunaviktikul[3], Benjamas Suksatit[4], and Panitsiree Pangsapa[5]

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Abstract

Health tourism is increasingly popular with tourists. During the outbreak of COVID-19, tourists were focusing on the need for safety, especially in terms of service standards and cleanliness. This article, therefore, presents the health and safety standards that are certifiable for health tourism-related establishments, which is to say the certification standard for both Thailand and international countries, with the aim of being a guideline for health tourism establishments in the need to obtain certification, along with the requirements of each standard.

Keywords: Health Tourism, International Standards, Wellness Hotel, Global Healthcare Accreditation, GHA, GBAC STAR

Introduction

Tourism is an important income-generating industry in Thailand. In 2019, there were 39.7 million foreign tourists visiting the country, generating an estimated income of 1.93 trillion baht (Ministry of Tourism and Sports, 2020). For Thailand, health tourism is considered very important as it can bring an even higher income to the country. According to the ranking of the Global Wellness Tourism Institute (GWT), in 2015 -2020, Thailand was the 4th country for health-related tourism in Asia-Pacific Region after Japan, China, and India, followed by South Korea, Australia, Indonesia, Hong Kong, Malaysia, and Taiwan.

Due to the outbreak of COVID-19, in early 2020, the global tourism industry slowed down drastically. The subsequent waves of the epidemic, caused tourism to halt several times. However, in the midst of the crisis, Thailand was able to prove its efficiency in epidemic control and so gained global recognition. This fueled the tourists' desire to come to Thailand. In November 2021, the Thai government reacted energetically, implementing a variety of policies and measures to stimulate and promote the country's tourism by putting an emphasis on safety. These measures literally opened the country. And those standards still prevail now that the epidemic situation is stabilized (Wilaipan & Wipada, 2022).

More than ever, tourists are highly concerned about safety and health standards. Safe health tourism is therefore a form of tourism in Thailand that is a selling point. Thai identity in

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terms of culture, food, history, beautiful natural attractions, and the kindness of Thai people in helping each other is another selling point of tourism (Bangkok Biz News, 2020). This is a challenge for entrepreneurs to adapt and prepare for the situation that is known as the new normal. The Thai tourism industry has accepted new standards and it is ready to face unpredictable epidemics in the future. For the health tourism industry in Thailand to continue to grow and generate income for the country, it is necessary to develop and add value to the existing potential of health tourism. What is of great value from now on is that standards of cleanliness and safety procedures are recognized both nationally and internationally. Therefore, this can be used to benefit the health tourism industry. The study of health tourism data shows that there are still many operational problems, such as entrepreneurs lacking knowledge of health tourism management. Therefore, rehabilitation and adaptation to prepare the medical tourism business to have reliable and internationally accepted standards are extremely influential, starting with standards for infection prevention, which is a standard that is internationally accepted.

International Standards Related to Hotels and Health Resorts

Global Healthcare Accreditation (GHA) WellHotel Standards

The hospitality industry has observed significant growth in recent decades, with health tourism emerging as a prominent trend. This trend encompasses various businesses, including tourism hotels, food and beverage establishments, and recreational tourism services. Hotels and resorts, being crucial service providers, must adapt to the evolving medical tourism trend. The WellHotel movement focuses on delivering appropriate health services to health tourists by educating personnel and promoting health behaviors among service users. A WellHotel is defined as a hotel that provides wellness services to wellness travelers, regardless of how they engage with them. The movement prioritizes prevention to promote guests' well-being, and its Standard Operating Procedures (SOPs) ensure standardized work management across multiple hotel departments. The aim of WellHotel is to set environmental standards that enhance guest experiences while promoting hotel services and operations. It provides a framework for good practices across various service provider scenarios. According to the Medical Tourism Association, there are six categories of WellHotel areas, based on different hotel departments.

1. Human Resources: Hotel personnel plays a crucial role in providing services to healthy tourists. As such, it is imperative to provide adequate training to all hotel personnel at every level. Proper training is crucial in building positive relationships with customers, ensuring that they return for future services, and creating a positive image in the service industry.

2. Front Office: This department is responsible for managing customer service through several steps, and as such, it is essential to establish clear communication and cooperation among personnel. The primary focus of this cooperation should be on facilitating the safety and comfort of guests.

3. Housekeeping, Facility Engineering, and Maintenance: The quality of service in health tourism is often evaluated based on the environmental and physical characteristics of the service provider. As such, the quality of design structure, public spaces, and rooms plays an essential role in creating a positive impression. Safety is another critical aspect of health tourism, so service providers must prioritize the safety of their guests, and this, both before and during their stay. This involves conducting multiple safety assessments in order to identify and mitigate any hazards that could impact the guests' perception and experience of the service.

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4. Food and Beverage and Event Management: Health tourists may wish to have special menus such as meals free of gluten, sugar, or salt, meals prepared without oil, food without nuts, etc. These menus are required so to promote health and the adaptation faculty to a special diet.

5. Sales and Marketing: With increased competition in the tourism industry, the health tourism and hospitality sector had been exploring various channels to promote sales. To encourage repeat travelers, the information provided to customers must be informative and persuasive. Effective communication plays a crucial role in ensuring a positive experience and increasing guest satisfaction. Therefore, it is essential to ensure that personnel have access to the information they need to provide efficient and timely service.

6. Accounting and Finance: The fundamental nature of health services is to reduce unnecessary stress. Therefore, it is crucial to ensure that the payment process is clear from the beginning, as cultural differences and varying distances can cause misunderstandings or miscommunication. This is particularly important for tourists who come to receive services through package programs. Tour operators should provide clear information and transparency on the services and prices to ensure that customers are informed and aware.

Global Biorisk Advisory Council (GBAC) STAR Facility Accreditation

GBAC STAR is an internationally recognized certification standard for hygiene. It is widely accepted in the field of cleaning for epidemic prevention, management, and building rehabilitation. Due to the COVID-19 pandemic situation, this standard is particularly important to ensure hotels maintain strict cleaning protocols for infectious diseases. GBAC STAR requires a complete cleanliness control system, including premises and staff that are trained to effectively perform their cleaning duties. It is certified by the International Sanitary Supply Association (ISSA) in the USA, which was established in 1929. GBAC STAR is a standard certification given to service providers for buildings or facilities when these: 1) have established and maintained a cleaning, disinfection, and infectious disease prevention program to reduce the risks involved with infectious pathogens such as COVID-19, 2) have rules, regulations, or guidelines for proper cleaning, disinfection techniques, and actions to prevent biohazards and infectious diseases, and 3) have cleaning professionals trained for preparation and response in the event of an outbreak and infectious disease. GBAC STAR safety standards are divided into two categories:

The “GBAC STAR Facility” is a certification that the facility has biosafety-compliant methods, procedures, and facility maintenance.

The “GBAC STAR Service” accredits cleaning services companies to certify that they provide services and operate in accordance with international biosafety standards.

Benefits of GBAC STAR Standards

GBAC STAR certification, as a third-party accreditation program, offers several benefits. It validates that organizations and agencies meet a higher level of cleanliness, safety, and efficiency. By maintaining rigorous cleaning protocols for infectious diseases and applying best practices, it ensures the protection of building occupants, and the future outbreaks’ impacts are limited. The direct impact of GBAC STAR standards is on customers and users, who benefit from the assurance that the facility is sanitized according to the highest standards in the building’s entries and exits, creating trust in cleanliness, safety, and confidence. This standard brings efficiency to the cleaning system and comprehensive disinfection and prevention of infectious diseases, especially COVID-19, and is relevant to various organizations of all sizes, including stadiums, daycare, veterinary clinics, convention centers, sports and fitness clubs,

restaurants, churches and religious buildings, retail space, schools, hotels, grocery stores, commercial offices, elderly care facilities, spas, and doctor's offices. GBAC STAR certification also has a significant impact on the tourism and service industry, as it builds confidence among tourists and motivates their decision to travel to the area in the future. Moreover, GBAC STAR-rated facilities must be recertified annually, so to ensure that they continue to meet the latest standards and recognized best practices.

There are several establishments in Thailand that have obtained the GBAC STAR certification, including the Ao Nang Princeville Villa Resort and Spa, Patong Bay Hill Hotel, Tiger Muay Thai, and many more.

World Tourism Council International Standards for Health and Hygiene

The World Travel & Tourism Council (WTTC) is a London-based lobby that aims to support the sector to achieve effective recovery. Governments, health professionals, the private sector, and tourists are working together to make sure people feel safe and that rules are in common. Smoothly, the WTTC has created the future of safe travel, providing a meaningful experience for tourists that goes along with sustainable economic growth. The organization has created the two following specifications for industries related to travel and tourism.

1. The Service Industry. In order for hotels to be able to safely operate, requirements have been compiled based on information from the World Health Organization (WHO) and US Centers for Disease Control (CDC) and Prevention guidelines, so to ensure protocols are in place. Increasingly focusing on health and safety practices, the restaurant industry is developing new operations and operating models to comply with government and health authority guidelines. To operate their business responsibly, personnel must train their team on new guidelines. This includes measures such as social distancing, temperature checks, and wearing masks while providing service. Guidelines or agreements must also be created for partners to comply with government-mandated procedures, including product packaging, delivery time, store delivery, and product stewardship. Additionally, the industry is transitioning to digital receipts instead of paper ones. Cleaning and disinfection training is also necessary to ensure a safe environment. Employees must be educated on new sales skills, such as spacing and other adjustments.

2. The Aviation Industry. This industry is preparing for operations during future COVID-19 or other pandemic events by developing action plans and checklists for infection control, as well as special cleaning and disinfection plans. Airline personnel is ensuring flexibility to meet scheduling requirements while maintaining necessary certificates and suitability. Collaboration between governments, airports, and airlines is being undertaken to design new immigration terminals. Face masks are being implemented on flights based on risk guidelines, and boarding procedures are being reviewed to limit movement in the cabin as much as possible.

Thai Tourism Industry Standards on Health Safety

Thailand Safety and Health Administration (SHA)

The Thailand Safety and Health Administration (SHA) certification is a collaborative project between the Ministry of Tourism and Sports (2020) the Tourism Authority of Thailand, the Ministry of Public Health, including the Department of Disease Control, the Department of Health, and the Department of Health Service Support, as well as the government and private sectors in the tourism industry. Its main objective is to incorporate public health safety measures along with quality service standards in establishments to reduce the risk and prevent the spread of COVID-19, making tourism part of disease control measures. This certification aims to

provide both Thai and foreign tourists with a safe and enjoyable experience, ensuring the hygiene and safety of Thailand's tourism products and services. Hotels and businesses can register for SHA certification free of charge, and those who have already received the SHA standard and have at least 70% of their employees fully vaccinated can receive the "SHA Plus" or "SHA+" certification, which has even more stringent standards.

The Governor of the Tourism Authority of Thailand stated that the SHA certification is a standard that encourages entrepreneurs in the tourism industry to implement the measures recommended by the Ministry of Public Health to reduce the risk of COVID-19 transmission and ensure disease control measures for tourists. The certification is recognized by the World Travel & Tourism Council (WTTC), and SHA-certified establishments are considered to meet the Safe Travels Stamp standards, making it a valuable marketing tool, especially in international markets, to increase Thailand's safety standards and promote it as a safe destination

Therefore, establishments that promote health tourism, especially health spas, should focus on their services by providing training and developing their personnel's knowledge, competencies, and professional skills to meet various related standards. The following table shows the summarization of the main standards as mentioned above.

Table 1 The Summarization of the International and Domestic Standards

Types of Accreditation	Institution	Objectives	Main Targets	Standard Specification	Strength/ Uniqueness	Limitation/ Observation of the Standard
WellHotel standard	Global Healthcare Accreditation	To set environmental standards that affect service users, to create host experiences of hotel guests as well as to promote hotel services and hotel operations	1. Hotel, Hospital 2. Hotel and Spa 3. Spa hotels with rehabilitation programs, wellness, and beauty programs 4. Hotels with alternative medicine services 5. Hotels with Hotel Clinic	This standard sets a framework for the implementation of quality and standards in six dimensions.	WellHotel focuses on prevention, and promoting individuals' well-being. The standard that specifies work processes that involve multiple units concerning the Standard Operating Procedure: SOP)	Work process that links the work of multiple units to cover all individual needs.
GHA standard	World Medical Association, U.S.A.	To ensure the safety of Medical Travel and to standards specific to patients traveling for medical care	Medical services	This standard includes eighteen components.	It is a world standard that assures the safety of patient care and tourists as well as patient experience and hospitality covering processes before, during, and after treatment.	In the GHA standard, there are some GBAC Star requirements included, such as the facility's mission statement or conformity and compliance

Table 1 The Summarization of the International and Domestic Standards (Con.)

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GBAC STAR	ISSA-The Worldwide Cleaning Industry Association - Global Biorisk Advisory Council – GBAC - ISSA Worldwide Cleaning Service Association - SEA Consulting	To certify a place that is recognized in cleanness and is fully equipped in terms of readiness for the prevention, coping, and recovery of infectious diseases and the biological hazard situations such as the outbreak of the COVID 2019	Places, hotels, spa facilities, transportation (cars, planes, boats)	This standard focuses on the whole process covering a place and employees.	- Turnkey process, maintenance management, disinfection, and infectious disease prevention to reduce the risks associated with infection - Ongoing accreditation through the process of both internal and external audits - Regular personnel development	A standard that focuses only on in-depth security that is suitable for small and medium business entrepreneurs.
SHA STANDARD / SHA PLUS	Ministry of Tourism and Sports, Thailand	To upgrade the standards of entrepreneurs in the Thai tourism industry in the dimension of health safety, and reduce the risk of an epidemic of the coronavirus disease 2019 to drive entrepreneurs in the tourism industry to improve products and services in accordance with the disease control measures	1. Restaurant 2. Hotel or accommodation 3. Tourist attractions 4. Vehicles 5. Travel Agency 6. Health and beauty business 7. Department stores or shopping centers 8. Sports for tourism 9. Organizing events/meetings/theater 10. Souvenir shops and small shops	1. Hygiene of the building and equipment used in the building 2. Arrangement of cleaning equipment 3. Prevention for the spread of pathogens among employees.	- Hygienic building and equipment used in the building - Organizing cleaning equipment to prevent the spread of germs - Prevention for the spread of germs by employees.	- It is suitable for hotels that main customers are Thai tourists. - SHA must be a prerequisite for SHA Plus certification.

Health tourism in Asia more and more becomes a tourism market with high potential. According to the Global Wellness Institute, in 2017, Asian countries held a 15% share of the world's medical tourism market (Chusri & Lalitsasivimol, 2020) The main Asian countries that play an important role in providing health tourism services are Thailand, Singapore, India, the Philippines, and Malaysia, respectively.

Due to the growth of medical tourism in Thailand, the government has set policies to push and promote Thailand to become a center for health tourism which has been shown in the strategic plan and tourism policy. It is consistent with the research results in managing and elevating health tourism in sports, spas, food, and developing hotels that have received international standards of quality conducted by the authors. The situation of the epidemic of COVID-19 causes both negative and positive effects. In terms of positive effects, there is the creation of more healthcare trends for people, causing groups of tourists or service users to focus on health tourism which tends to increase in number.

In 2003, the Thai Government decided that Thailand must be a prominent center of medical services (medical hub) and center providing health services (Health hub) in Asia. After several constant actions, the country became a top touristic destination around the world with 39.7 million foreign tourists visiting in 2019 (Ministry of Tourism and Sports, 2020).

From now on, the whole world's population pay more attention to health care. And Global Wellness Institute has forecasted that the Asia-Pacific region will be the world's leading health-promoting tourism destination with different strengths.

However, while Thailand pushes its industry to increase its market share in medical tourism, other competing countries in Asia are moving in the same direction. Therefore, Thailand should create a unique identity of the country as a point of attraction for health tourists. With such branding, domestic tourism services would demonstrate local uniqueness, such as spa massage methods, and herbal massages, along with transferring knowledge to service personnel in the country to create more expertise that emphasizes holistic health promotion as well as care and prevention of health.

This may be an opportunity to turn the tourism sector into a sustainable force for the Thai economy, in line with the country's will to elevate Thailand to a high-quality touristic destination for both Thais and foreigners.

The private sector health service operators in Thailand shall focus on the popularity of health tourism, creating products and services that meet the diverse needs of Thais and foreigners who travel in search of health benefits. Creating an integrated cooperation for the progressive development of medical tourism in Thailand implies coordination between the legal dimension, hygiene safety measures, and encouraging the advancement of technology and medical innovations, so as to reach the development of a countrywide added value for medical tourism quality.

Recommendations for Driving Medical Tourism Standards in Thailand

1. The government should prioritize raising awareness among hotel and tourism service business operators on the importance of adopting international standards such as GHA WellHotel and Global Biorisk Advisory Council (GBAC STAR, 2021), in addition to local standards like the SHA, through training and education. This will help businesses to be proactive in marketing themselves as establishments that can accommodate high- quality tourists, ultimately leading to greater business success.

2. The government should facilitate network connections among entrepreneurs in the tourism industry for marketing and sales purposes. This can be achieved by organizing a group of hotel and travel service operators in Thailand to meet and exchange ideas with buyers who have specific needs, such as those interested in medical or wellness tourism. Additionally, the government should encourage the formation of regional networks to put research results into practice as a sales plan, allowing for a greater exchange of tourists throughout Thailand.

3. The government should encourage collaboration between research and educational institutions, such as universities and academic organizations, and entrepreneurs by creating an exchange platform. This will provide opportunities for networking and collaboration on research and innovation output. For example, health management courses could be offered for leaders or managers with specific interests, enabling them to stay up to date on the latest industry developments and implement best practices in their businesses.

4. The research findings should be applied to establishments that provide sports and spa services to bring about real changes in the tourism and service industry, including the development of spa prototypes, healthy food and beverage offerings, spa products, sports facilities, and various wellness activities in hotels. By incorporating Thainess into these offerings, entrepreneurs can add value to their products and impress tourists, leading to increased success in the industry.

5. To ensure the research conducted on health promotion tourism establishments is put into practice, researchers and relevant parties should present their findings to various agencies such as the Chamber of Commerce, Ministry of Public Health, and Ministry of Tourism and Sports. It is also important to involve relevant organizations like the Tourism Authority of Thailand (TAT) and the Thailand Convention and Exhibition Bureau (TCEB) to promote collaboration in different fields. By doing so, the tourism activities developed from the research output can cater to diverse groups of tourists while maintaining safety standards and providing value for their money and time. This will ensure that the tourism industry in Thailand continues to thrive and evolve according to the needs and expectations of visitors.

6. To enhance the overall tourism experience, it is recommended to develop facilities in tourist areas to cater to various needs. This includes the establishment of medical facilities and tourist information centers, with clear signposts in both Thai and international languages. Moreover, facilities such as ramps for the elderly and disabled, and clean and sufficient bathrooms, should also be provided. Such developments can be carried out through collaboration between the government and the private sector. By doing so, tourists can have access to convenient and safe travel options, leading to a more positive impression of Thailand as a tourism destination.

7. Providing budget support for health entrepreneurs to enhance their landscape architecture in an appropriate and harmonious way with the environment can help create a unique and distinct Thai ambiance. This will enhance the attractiveness of the tourist destination and increase its appeal to potential visitors.

8. Hotel operators should prioritize enhancing the customer experience by adjusting their strategies. This includes improving the physical environment of the hotel, the atmosphere in the hotel rooms, the quality of service provided by the hotel staff, and the process of taking care of customers from the moment they arrive until they leave the hotel.

9. To promote tourism activities, it is important to utilize technology as a tool for communication and connectivity among entrepreneurs and external tourists. This can increase the value of tourism by encouraging tourists to exchange feedback and experiences and develop new knowledge and skills. Additionally, a unique identity can be created through such platforms or applications, which can be a major attraction for tourists. For instance, developing an application for health tourism activities can cater to the needs of various groups of tourists, while ensuring their safety and meeting international standards. This can significantly enhance the overall tourism experience, making it worth the time and money spent by tourists.

After studying various literature, research, articles, and ideas related to hotel and health resort standards, it is found that both domestic and international standards have different specifications with various main goals. Each standard places importance on different aspects. Therefore, business operators in the tourism and service industry must adapt quickly to survive. They can do this by choosing a standard for certification that aligns with their establishment's goals and is appropriate and consistent with the requirements of each standard. This will maximize the benefits for business owners in raising the standard of their tourism establishments, which will in turn increase tourists' confidence in hygiene and encourage them to use the services more. Therefore, there is a need for Thailand to continue developing and raising standards in health, hygiene, safety, and environmental sustainability. Furthermore, laws related to research and plans to bring products or services derived from research to these standards in the future should also be developed.

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Food for the Future: Partners & Opportunities in China

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Abstract

This research focuses on one of the important sectors of "Food for the Future": "Functional Food". Government policies and platforms such as Food Innopolis have nurtured innovative entrepreneurs and products which may spearhead the international market. The functional food market in China is attractive due to its market size and growth momentum. The hot spots, current trends, market structure, the position of Thai players, government regulation, and the ecosystem in the Chinese market constitute both challenges and opportunities. Three business models are proposed based on 8 case studies of Chinese players and discussions with experts in Thailand: outsourcing in China; export of Thai products to China and joint venture. They are related to the broader issue of strategic choices between cooperation parterres based on their identity and incentives.

Keywords: Food for the Future, Functional Food, China, Thailand, Entry Mode

Introduction

"Food for the Future" is one of the 12 "S Curve Industries" in Thailand (Office of National Higher Education Science Research and Innovation Policy Council, 2020). It is also closely related to the sectors in the Bio-Circular-Green (BCG) model (Asia-Pacific Economic Cooperation, 2022). The industry attracts more attention recently because of its impacts on the Thai economy, and strong growth potential (Thailand Board of Investment, 2021). This research focuses on one of the important sectors of "Food for the Future" the "Functional Food".

After an introduction to the definition of functional food and its situation in Thailand, the article illustrates the opportunities of functional food in the Chinese market, China's industrial policy and regulatory framework on functional food, and its ecosystem and potential partners. The conclusion on business models for cooperation between Thai and Chinese players is drawn based on the insights from 8 case studies of Chinese firms and discussions with experts in Thailand.

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One on the S Curve

As one of the 12 "S Curve Industries" picked up by the Thai government to lead the Thai economy in the future, the "Foods for the Future" industry may include functional food, medical food, organic food, and novel food (Figure 1). "functional food" is the food with selected, enhanced or reduced ingredients to promote health by preventing disease or restoring functions of the human body. The market size of functional food in Thailand is expected to be ฿76.5 billion in 2021 with an annual growth rate of 4% from 2018 to 2022, compared with a market size of $255.6 billion and an annual growth rate of 12.4% of the world in the same period (Krungthai Macro Research, 2019). This indicates a large potential and growth opportunity in the world market for Thailand.

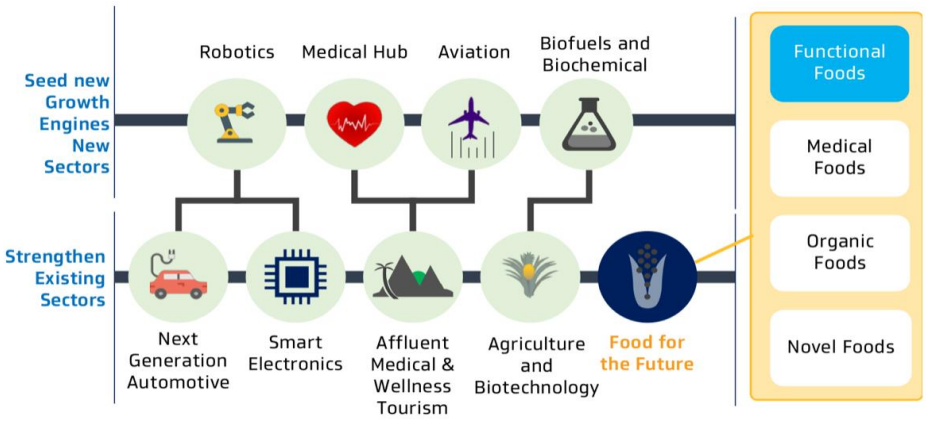

Figure 1 Functional Foods and Food for the Future

Source: Krungthai Macro Research (2019)

Functional food is well promoted by government policies and platforms such as Food Innopolis, with observable achievements in R&D, innovation, and commercialization. These achievements are displayed as 48 Thai brands of "food for the future" showcased by DITP (Department of International Trade Promotion) of Thailand in ThaiFex 2022[2]. They can be divided into 3 groups (Table 1): functional food (21 brands); and two very closely related novel foods due to their health-promoting functions: "alternative protein" (20 brands), and CBD (cannabidiol) infused food (7 brands).

As illustrated in Table 1, 21 cases of functional food include 3 brands with "function enhancement", such as "dried mango mixed with probiotics", and "complete nutrition on-the-go, healthy meal in a bottle"; 3 brands with "function reduction", such as "allergen-free vegan egg", and "natural sea salt with 40% less sodium content"; 14 brands with "selected ingredient" such as low "Low Gl functional flour for diabetes patients", "ketogenic egg white noodles", and "weevil larvae for omega 3 & amino acids". The "alternative protein" group includes "soybean vegan Mozzarella cheese", "German sausage from cricket powder", and "crab meat roll from young green jackfruit and mushroom"; etc. The "CBD (cannabidiol) infused food group" includes "hemp-based milk", "malva nut drink with cannabidiol", etc. These products represent the direction and technology capability of the industry in Thailand which may spearhead the Chinese market.

[2] ThaiFex is the Asia's leading food and beverage trade show conducted annually in Bangkok.

Table 1 Food for the Future in ThaiFex 2022

Category	Sub-Group	Example
Functional Food (21)	With function enhancement (3)	Probiotics added
	With function reduction (4)	Low sodium, Low sugar
	Selected ingredient (14)	Gl flour, Weevil larvae
Alternative Protein Plant-Based (20)	Meat (7)	Cab Krob, Sausage
	Seafood (4)	Shrimp, Crab meat
	Egg/Dairy (2)	Cheese, Egg
	Snack (4)	Beans hips
	Powder (3)	Protein powder
CBD Infused Food (7)	Drink (6)	Hemp-based milk
	Oil (1)	Hemp seeds oil

Source: Compiled by CASPIM research team based on ThaiFex 2022 brochure

Opportunities in the Chinese Market

The equivalent of functional food in China is called "healthcare food" (保健食品). The market size reached ¥394.7 billion in 2022. Although the annual growth in 2022 was 2.95% due to the COVID-19 pandemic, the period between 2013 and 2022 saw an average annual growth of 10.5% (Figure 2).

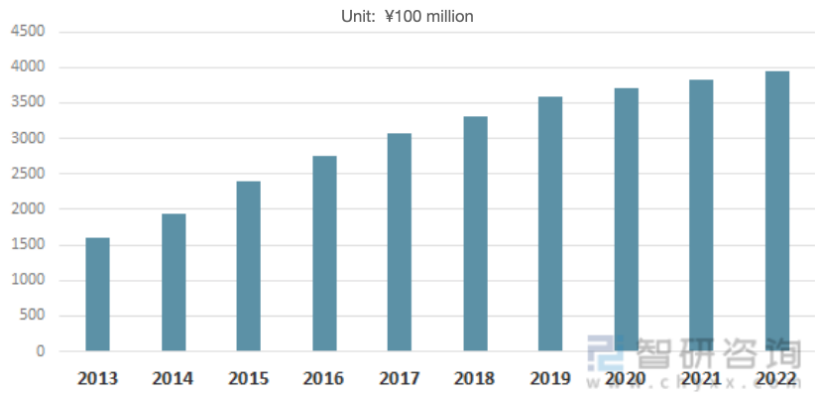

Figure 2 Market Size of Healthcare Food in China 2013-2022

Source: Chyxx (Intelligence Research Group) (2023)

The functional food market in China started in the 1980s. It developed together with the higher disposable income of Chinese consumers and their changing behavior for a high-quality life. In the post-COVID era, it is expected the market size will reach ¥436.6 billion by 2026 (TMO, 2022).

Vitamins and Food Supplement is the largest segment, followed by Traditional Herb and Child Health Care (Figure 3). In terms of growth rate from 2012 to 2020, however, two segments show large potential, which is Sports Nutrition (28.57%), followed by Weight Management (10.7%). These two segments have a bright future from their experience in the USA (Figure 4).

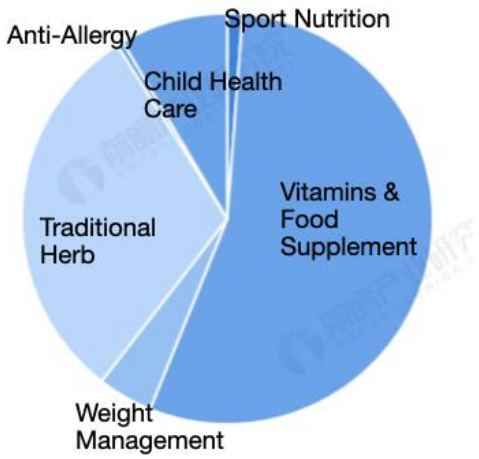

Figure 3 Segments in Functional Food in China

Source: Qianzhan (2020)

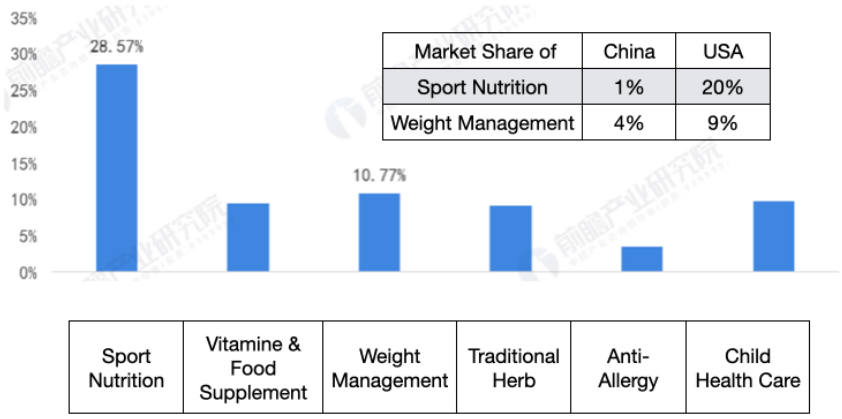

Figure 4 Annual Growth in Segments of Functional Food in China 2012-2020

Source: Qianzhan (2021)

Judging from the number of newly launched products, the hot spots in the Chinese functional food industry in 2021 include anti-fatigue; brain food and memory enhancement; beauty care; weight management and body fat reduction; digestion and bowel health; eye protection; and sleep improvement (Table 2). Table 2 illustrates the category, representative products, and producers.

Table 2 Hot Spots of Functional Food in China

Hot Spots	Product Image	Product	Companies
Anti-fatigue		红牛饮料 Red Bull Energy Drink 东鹏特饮饮料 Eastroc Beverage	北京红牛 Red Bull Beijing 东鹏特饮 Eastroc Beverage
Brain Food Memory Enhancing		六个核桃 Walnut Milk	养元智汇 Yangyuan Zhihui
Beauty Care		阿胶糕/枣 Colla Asini Pudding & Colla Asini Jujube 汤臣倍健胶原蛋白粉、口服液 Collagen Powder & Drink Lumi 胶原蛋白肽液态饮 Collagen Pepetide Drink	东阿阿胶 Dong-E-E-Jiao 汤臣倍健 BY-Health 雷霆生物 LCTV
Weight Management Body Fat Reduction		初吉代餐饼干 Meal Replacement Cookie FfIt8 蛋白棒 Protein Bar 代餐奶昔 Meal Replacement Milkshake 奇亚籽麦片 Chia Cereal 奇亚籽酸奶 Chia Yogurt	思瑞食品 Sirui Food 康比特 CPT 衡美食品科技 HengMei Wonderlab 良品铺子 BESTORE 光明乳业 Bright Dairy
Digestion & Bowel Health		活性乳酸菌饮品 Activated Lactobacillus Drink 双歧杆菌发酵乳 Bifidobacterium fermented milk 益生菌发酵乳 Probiotics fermented milk 益生菌固体饮料 Probiotics Powder Solid Beverage 猴菇饼干 Cookie with Lion's Mane Mushroom	味全 Weichuan 绿雪生物 Lvxue Biology 君乐宝 Junlebao 华润江中 CR JiangZhong
Eye Protection		新希望养眼牛奶 Eyes Care Milk Buff 护眼软糖 Buff X Eye Gummy	新希望乳业 New Hope Dairy 霸符科技 Buff
Improve Sleeping		梦梦水 Dream Dream Water 晚上好牛奶 NOPA Good Night Milk 睡前一小时蛋白饮品 Protein Drink Before Sleep BUFF X 睡眠软糖 SLEEP Gummy	旺旺食品 Wang Wang Food 蒙牛 Mengniu 君乐宝 Junlebao 霸符科技 Buff

Source: Compiled by the CASPIM research team

These hot spots also show the following trend in recent years: 1) expansion from the traditional senior citizen and child care segment to the youth market; 2) more specialization in diversified functions; 3) catering to the need for convenience and portability and 4) adoption of new natural materials such as plant-based products (Chyxx (Intelligence Research Group), 2023). The hot spots in China show some resemblance with the "food for the future" showcased in Table 1. The new trend in China also posed challenges as well as opportunities for cooperation between the two countries.

Among the top 10 brands of functional food In China in 2023, 6 are from China and 4 are from overseas (Table 3). It shows the acceptance of foreign brands. On the other hand, the functional food market is quite competitive In China with few dominating players. For example, there are no brands with a market share of more than 10% in China in 2021 (TMO, 2022). Acceptance of foreign brands and lack of dominating brands are positive for the entry of Thai newcomers.

Table 3 Top Brands of Functional Food in China 2023

Brand/Firm in Chinese	Brand/Firm in English	Country of Origin
汤臣倍健	BY-Health	China
同仁堂	Tong Ren Tang	China
安利	Amway (Nutrilite)	USA
东阿阿胶	Dong-E-E-Jiao	China
钙尔奇	Caltrate	USA
养生堂	Yang Sheng Tang	China
健安喜	GNC	USA
善存	Centrum	USA
21 金维他	SUPER-VITA	China
三精	Sanchine	China

Source: Industrial Research Institute (AskCI) (2023)

The opportunity for Thailand is even bigger looking at the gap in market share between Thailand and other top international players in China. China imported $5.2 billion of functional food in 2021 (China Chamber of Commerce for Import & Export of Medicines &Health Products, 2022), with the largest source country of the USA (20%), Australia (14%), and Germany (9%) (Figure 5). The market share of Thailand is only 4%, after Indonesia (8%), Japan (7%), and Malaysia (5%) in Asia. At the moment, the well-known Thai brands in China are Brand's Essence of Chicken, Nin Jiom Herbal Candy, and Kamagra Oral Jelly which do not reflect the recent achievement of Thailand in functional food discussed above in section 1.

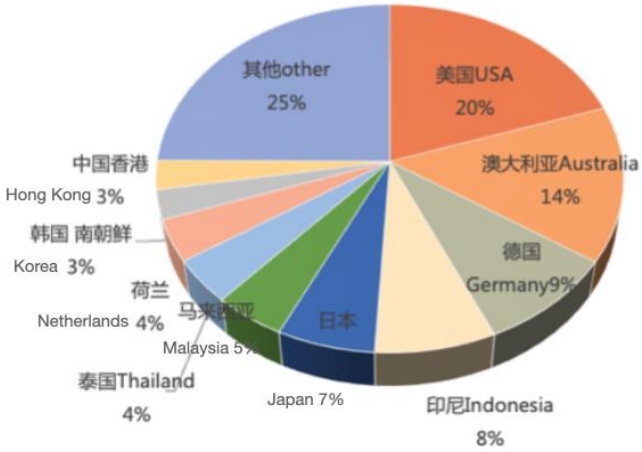

Figure 5 Source Country/Region for Functional Food in China 2021

Source: China Chamber of Commerce for Import & Export of Medicines & Health Products (2022)

Industrial Policy & Regulatory Framework in China

One hurdle for Thai exporters to enter the Chinese market is its strict regulation. Regulation of functional food in China started in 1996 when the industry experienced a period of "wild growth" from 1990 to 2005. The regulation system took shape in the period of "rectifying and consolidation" from 2006 to 2015 when foreign brands entered with Chinese partners. The growth momentum resumed from 2016 until the spread of the COVID- 19 pandemic. Under further improved regulation and with more domestic R&D and innovation, there is a transition from "made in China" to "Chinese Brand", and "Brands acquired by China" (Table 4).

Table 4 Development of the Functional Food Industry in China

Periods	Feature	Major Characteristics
1990-2005	Wild Growth	The concept of healthcare & nutrient food became popular Regulation was loose Lack of quality lowered consumer confidence
2006-2015	Rectifying & Consolidation	A regulation system taking shape Foreign brand's entry with Chinese partners
2016-Now	Rapid Growth	The regulation further improved. Rapid growth until the COVID-19 pandemic Domestic R&D & innovation. From "made in China" to Chinese brand" and "Brands acquired by China"

Source: ompiled by the CASPIM research team

A clearer management system for "functional food" finally emerged in 2016, covering "Healthcare Food" and "Normal Food" with some health benefits." Healthcare Food" is defined as a category of food with auxiliary health care function, or as a supplement for minerals & vitamins. It requires a "Registration" or "Notification" process for production and marketing (Table 5). In the case of "Normal Food" on the other hand, it can not claim healthcare

functions with the logo of "Healthcare Food". But it may claim to use the ingredients in the catalog of healthcare food materials.

China Food and Drug Administration (CFDA) was abolished in 2018. The functional food industry is managed by a trio party system under the State Council (Figure 6). They include:

1) NHC (National Health Commission) for food safety; 2) SAMR (State Administration for Market Regulation) for registration and regulation; and 3) GACC (General Administration of Customs of PRC) for Customs duty and Customs procedure, including registration of overseas firms exporting to China.

Table 5 Definition and Regulation Requirement for Functional Food in China

Definition of Healthcare Food	
A Category Of Food	With auxiliary health care function
	Or as supplement for minerals & vitamins
Not for treatment of diseases	
Without acute, subacute or chronic hazards	

Category	Sub-Category	Rule
Healthcare Food 保健食品	Registration 注册	With the the proof of the healthcare functions claimed
	Notification 备案	With the proof of ingredients according to the catalogue of health care food materials
Normal Food 一般食品	No regitration and notification process as the healthcare food. But they can not claim the heathcare functions with the logo of Healthcare Food. But it may claim using the ingredients in the catalogue of healthcare food materials	

Source: China Food and Drug Administration (2016)

A foreign exporter may choose between the format of "General Trade" or "Cross Border E-commerce" of international trade. Besides the differences in process, taxation, and cost, one benefit for functional food exporters is they may bypass the time-consuming process of "registration" or "notification" by exporting the product as "normal food" in cross-border e-commerce. They may test the market first, and then go through the "registration" or "notification" process later if necessary (TMO, 2022).

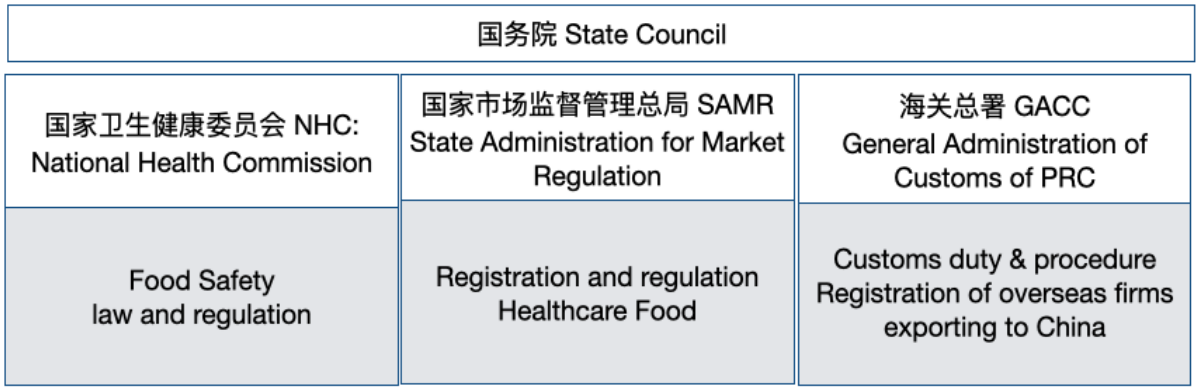

Figure 6 Regulatory Framework of Functional Food in China

Source: Compiled by the CASPIM research team based on documents from NHC, SAMR, and GACC of China

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Eco System & Potential Partners

The ecosystem of functional food in China can be described in 3 parts: 1) Up Stream (raw material producers and processors); 2) Mid Stream (OEM producers, brand operators, and producers with brands); 3) Down Stream (distributors in drug stores, direct sales, and e-commerce) (Figure 7). A database is built up with 60 selected players in these sectors, spreading into 16 provincial units in China (Figure 8)[3].

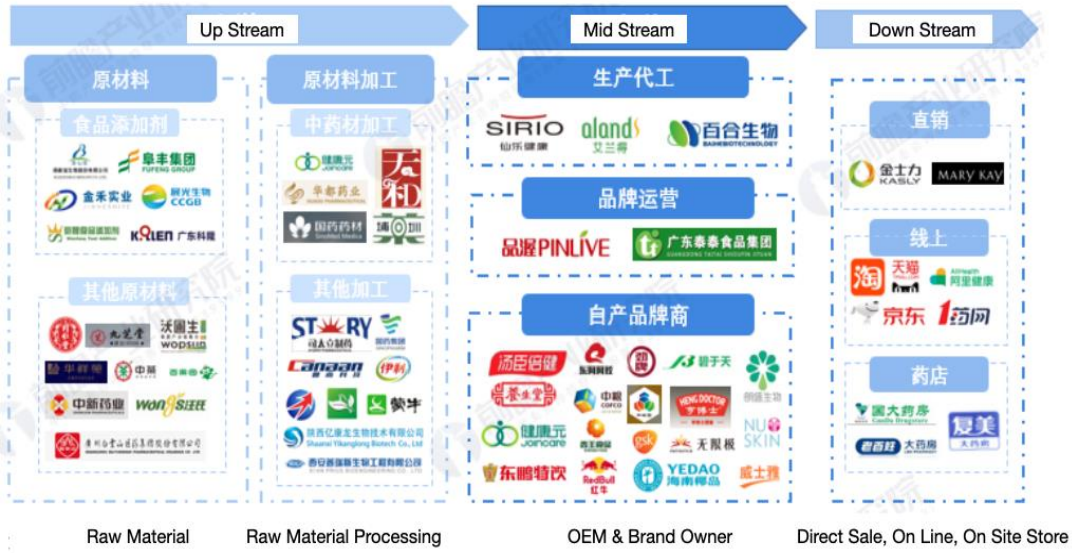

Figure 7 The Eco System of Functional Food in China

Source: Adapted from Qianzhan (2021)

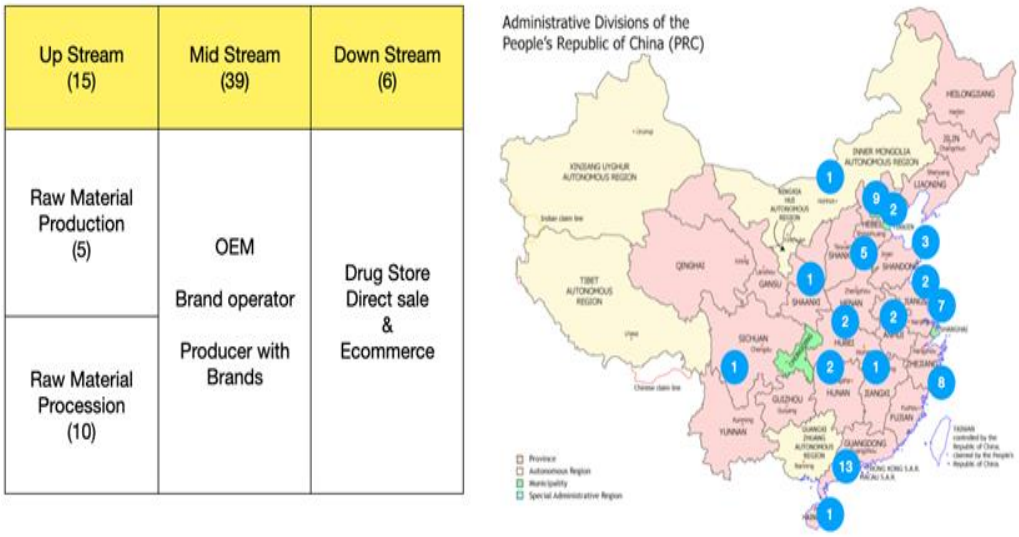

Figure 8 A Database for Potential Partners in China (60)

Source: Compiled by the CASPIM research team

[3]The detailed list of the Chinese partners is available from the author.

Insights from Case Study

To have a better understanding of the capacity and intention for the cooperation of Chinese partners, 8 case studies are conducted (Table 6). Table 6 records their background, advantage, and business models applied or proposed for cooperation with Thai partners. The case studies are complemented by discussions with experts from the Thai Food Processor Association, and Food Innopolis of Thailand.

The insights from case studies and discussions with experts reveal the following:

Firstly, from the Chinese side, There is certain international exposure in terms of export (either as OEM or producer with own brand), and joint R&D with oversea partners. The modes of entry range from branches to support sales, joint ventures (JV), or technical assistance in a royal project in Thailand.

One advantage of the Chinese partners is their R&D capacity. They may include patents acquired, number of R&D personnel, overseas research lab, and production-learning and research integration in universities. Some even have post-doctor research stations with Thai candidates.

Secondly, from the Thai side, Thailand has a dynamic "food for the future" sector with many innovations of SMEs supported by government infrastructure like Food Innopolis. Their advantages include unique ingredients, new products (such as Alternative Protein and CBD Infused Food), product design, and packaging. This is the industry with the highest potential for a two-way exchange of products and technology between the countries. However, some Thai exporters are frustrated by the registration or notification process of the Chinese side.

Table 6 Case Study of Chinese Firms in Functional Industry

Code	Background	Advantage	Business Model for Cooperation
FBOA	Export for more than 20 years; OEM of nutritional, herbal, vitamins soft gel products for USA, Europe, Indonesia, Cambodia, Vietnam & Malaysia	Lower cost due to production scale and supply chain network; The technology of production and quality control process	OEM for Thai brand owners: Combine Thai ingredients (e.g. herb extracts) with other materials in China; Deliver the soft gels in bulk for repackaging in Thailand
FINF	Set up in 1992; Entered Thailand in 2018 for Health, Beauty, and Household products; 10 branches overseas	R&D: 200+ team, 600+patens, R&D center in Cambridge; Own raw material production base; Channels: with 1 mil+ member	Local branch for marketing and direct sales; Cooperation for local FDA approval and clinical trial; Local production base with Thai material; Post-doctor stations for Thai Ph.D.
FDXC	Producing & marketing for traditional pastry and bread dated back to 1773	Export to Europe, USA, and Australia; Traditional brands with new and healthy products, such as new flavors with lower sugar content	Distributor or agents in Thailand

Table 6 Case Study of Chinese Firms in Functional Industry (Con.)

Code	Background	Advantage	Business Model for Cooperation
FSYS	Set up in 2015; Producing & marketing healthy food of bamboo dishes	Export to Japan and Korea; Trendy Healthy food; Continuous new product development such as prepackaging dishes	Distributor or agents in ASEAN; Import material from Laos and Vietnam
FMTN	Set up in 2020; JV between Heilongjiang Hua Yuan, HK, and Australia; Producer of alternative protein	Source of special bean seed; Receipt for bean-based meat, seafood, and dairy product; Lower price for the mass market	Provide special material and receipts for Thai partners; OEM for Thai brands
FMFS	Set up in 2019; Production and technology provider for alternative protein 3.0	Sales in Singapore; Molecule cleavage technology; R&D with leading universities	Partners for export of processed materials, or prepared dishes
FGAF	The Academy was set up in 1956; Research and promote the plantation and commercialization of Camellia	The variety has a higher yield And bears fruits earlier; Better healthy property; And is easy to store.	Joint research; Joint plantation providing technology and machine for processing, and buyback of output
FLCB	Biopharmaceutical Institute; Set up in 2013; Producing nutrition emulsion for cancer patients	Micro-jet homogeneity technology; The platform of Production-Research-Teaching Integration	JV with Thai universities; or enterprises under universities; Bridging government-to-government cooperation between two countries

Source: Compiled by the CASPIM research team

Thirdly, three business models may be adopted for cooperation between China and Thailand:

1) Outsource in China: for example, to use lab service in China, or to manufacture products of functional food in China for a Thai brand owner.

2) Export Thai products based on the advantage of traditional herbs or new technology or innovative concepts in Thailand, if possible, through cross-border e-commerce.

3) Joint venture: for example. A joint research establishment for FDA approval and clinical trial in Thailand, or a joint plantation for raw materials in Thailand for functional food with the Chinese partner providing investment, technical assistance, and market for output.

Conclusions

Functional food is a fast- growing market in the world. Government policies and platforms have nurtured innovative entrepreneurs and products in Thailand which may spearhead the international market. The functional food market in China is attractive due to its market size and growth momentum. The hot spots, current trends, market structure, the position of Thai players, government regulation, and the ecosystem in the Chinese market constitute both challenges and opportunities. Three business models are proposed based on the case study of Chinese players and discussion with experts in Thailand: outsourcing in China; export of Thai products to China and joint venture.

The study of the business model for cooperation between Thailand and China in functional food may also provide lessons to understand the generic strategic choice for cooperation between partners of the two countries:

In general, it is important to understand first the identity and incentive of parterres of cooperation. They may be divided into three groups:

1. Those of SMEs or large enterprises to expand their market in Thailand, China, or ASEAN; to expand their operation scale; or to upgrade technology and human resource.
2. Those research institutes to upgrade technology & human resource, boost research output, or acquire more resources for research.
3. Those of government organizations to fulfill their KPI (Key Performance Indicator) for evaluation.

In response to the above three groups of incentives for cooperation. There might be four groups of strategic choices:

1. Trade Partner in goods and services targeting markets in Thailand, China, or ASEAN. The Thai partner may be the brand owner; a part of the supply chain; or the marketing/ sales partner
2. Investment Partner targeting a location in Thailand, China, or ASEAN. The Chinese partner may provide capital; technology or equipment; raw materials or components, and market access;
   1) Research Partner for a joint research facility; or joint research project; and
   2) Government Partner for policy exchange and coordination.

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Factors Affecting Purchase Intentions of Plant-Based Food Products in Mueang Lampang

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Abstract

The world is facing climate change problems, which have many causes to contribute to them. One is meat production, which contributes to large amounts of greenhouse gases that cause global warming. There has been reduced consumption in developed countries and a growing market in Thailand. It led to the recommendations for reducing meat consumption and moving toward plant-based consumption. This study looked at the effects of each factor on the purchase intention of plant-based food products in Muaeng Lampang, a smaller and less developed area, than in cities such as Chiang Mai or Bangkok. The result reveals that environmental concerns, subjective norms, and perceived consumers' effectiveness factors affect the purchase intention of plant-based food products. The firms that produce plant-based products should communicate to consumers clearly and truthfully about how their products are better for the environment than those from animals. Also, promote the consumers' engagement program. Consumers are a part of helping and improving the environment.

Keywords: Plant-based Product, Purchase Intentions, Mueang Lampang

Introduction

Background of the Study

Today, the world faces many problems from climate change, with rising temperatures, rising sea levels, and more extreme weather situations like drought and heavy rains. It causes a severe shortage of food supplied, especially in African countries, where biodiversity is destroyed (Foundation Myclimate, n.d.)

For many years scientists have found the causes of climate change, and the leading cause is human activities that emit greenhouse gas, carbon dioxide, methane, and nitrous oxide (European Commission, n.d.). One human activity contributing to climate change is meat production, which accounts for more than 50% of world greenhouse emissions (Goodland & Anhang, 2009). The methane is released during production. The deforestation of farming areas also releases Carbon Dioxide. To lower the emission of these gas, the Intergovernmental Panel

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on Climate Change (IPCC) recommends that people reduce their consumption of meats, which could reduce greenhouse gas emissions by up to 50% (Gerken & Rowlatt, 2021).

Because of this, the consumption of meat products decreased, especially in developed countries, like the U.K., which found a 17% decrease. Many people have started to consume alternatives like plant-based foods, and the market for these products sees an increase in market value. The global market of plant-based meat grew up by 40% between 2017-2019, and have been forecasted that the market will increase from under 5 billion U.S. Dollars to 30 billion U.S. Dollars in 2030 (Dent, 2019) and 300 billion U.S. Dollars in overall plant-based products (Bloomberg Intelligence, 2021).

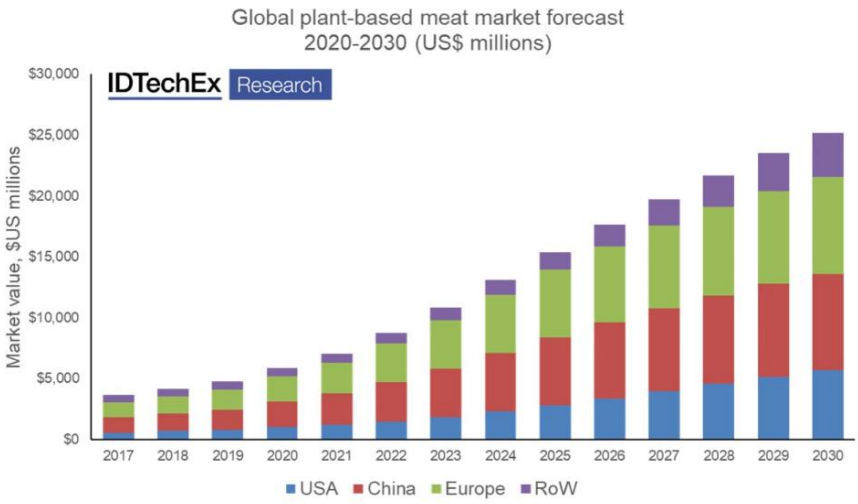

Figure 1 Global Plant-based Meat Market Forecast 2020-2030

Source: IDTechEx report plant-based and cultured meat 2020-2030

In the meantime, the market in Thailand is also growing, with a market valued at 28 billion Thai baht in 2019, and it has been forecasted to grow to 45 billion baht in 2024. The survey in 2021 also shows that up to 27% have been trying to increase consuming these products (GlobalData, 2021). However, it is the survey overall country and only goes into other areas with different cultures and characteristics.

This study examines how local areas like Mueang Lampang purchase intentions on plant-based foods. These will come with the recommendation to the companies to improve their strategies to market their product in Mueang Lampang and other areas in Thailand.

Research Objective

To determine the factors affecting the purchase intention of plant-based food products in Meung Lampang.

Literature Review

This sector contains all relevant theories and variables used to examine the purchase intention of plant-based food products.

Introduction of Relevant Theories and Variables

Theory of Planned Behaviour

The Theory of Planned Behaviour or TPB (Ajzen, 1991) is a theory that extends from the theory of reasoned action or TRA (Ajzen & Fishbein, 1980). Accounting to the TRA, an individual's behavioral intention is under volitional control. People will do that behavior if they have a positive attitude toward that behavior and believe that other people will have a positive impact if he or she is doing so or have a positive from subjective norms. Attitudes are believed to what likely consequences or other attributes of behavior. They come from the sum individual's behavioral beliefs, which each one will multiply with their expected outcome. If it comes positively, it will result in that person having a positive attitude (Sutton, 2001). Subjective norms mean believing in what a particular person or group of people of this individual think on how they will approve and support his or her behaviors. He or she will do things if he or she receives positive pressure from others. However, this model must be revised to predict behavior because people might only do those behaviors with positive motivation. The results in an extension of this theory by adding perceived behavioral control, which is a degree of control over those behaviors. The higher degree of control, the more likely that person will engage in those behaviors (Yeon & Chung, 2011). For example, if that person has more resources such as skill, time, or money, he or she will have a higher degree of control which means more chance to do those behaviors.

A TPB has been used in previous studies of purchase intention on more environmental products, including organic meat (Nguyen et al., 2021; Yeon & Chung, 2011) and plant-based food products (Kopplin & Rausch, 2021), these studies can predict the consumers' purchase intentions, and this study included variables from those studies.

Environmental Concerns

Environmental concerns are an attitude toward events or behavior that have the impact of environmental consequences (Weigel, 1983). It has been focussed on previous research for purchasing greener products and plant-based food. They suggested a degree of concern for the environment and their support of solving the issue (Rhead et al., 2015), and the degree of concern might differ in areas (Milfont et al., 2006).

Animal Welfare Concern

Concerns for animal welfare are also essential as they represent consumers' attitudes. It is referred to as animal welfare concerns covering social and nutritional aspects, such as the well-being of animals and farming practices. It also expands to food quality and safety (Harper & Makatouni, 2002).

Health Consciousness

Health consciousness is a variable that reflects a person's perception of the health problem and takes care of their health (Gould, 1988; Kraft & Goodell, 1993; Newsom et al., 2005). People concerned about their health have higher knowledge of nutritional information, making them good consumers of health-related products (Latvala et al., 2012; Mullee et al., 2017). Craig (found that a vegetarian or plant-based diet could improve consumers' health, such as lower cholesterol, blood pressure, and the chance of heart disease.

Perceived consumer effectiveness

Perceived consumer effectiveness is related to perceived behavioral control in which how they feel their behavior controls their performance (Rothbaum et al., 1982). Perceived consumer effectiveness estimates consumers' abilities to contribute to substantially related outcomes through specific behaviors (Hanss & Doran, 2019). It evaluates their belief in themselves on that practical issue rather than an object.

Subjective Norm

Subjective norm is imposed by comprehending social pressure from external factors, such as people in society, for an individual to behave in a certain way and their motivation to comply with people's views (Ham et al., 2015).

Relationship Between Relevant Variables and the Research Hypothesis

Environmental Concerns and Purchase Intention

According to Chan (2001), the purchase intention of green products was determined by ecological knowledge and ecological effect at different degrees. Ecological effects tended to have more effect than ecological knowledge to purchase intention. Arısal and Atalar (2016) and Lee (2008) suggested that environmental concerns influenced purchase intention on green products, especially regarding food-related products. Rosenlöw and Hansson (2020) and Shen and Chen (2020) found that environmental concerns significantly affect the purchase intention of plant-based food products.

Hypothesis 1: Environmental concern has a positive impact on purchase intention.

Animal Welfare Concern and Purchase Intention

According to Janssen et al. (2016), animal welfare concern was the most substantial reason people decided to follow a vegan diet. People affected by animal aspects tended to have a favorable view of animal welfare concerns as they believed that switching to plant-based food products would contribute less to animal suffering. That view also led to positive purchase intention. However, Kopplin and Rausch's (2021) research suggested that animal welfare concerns did not significantly contribute to purchase intention, despite significantly contributing to a vegan diet.

Hypothesis 2: Animal welfare concern has a positive impact on purchase intention.

Health Consciousness and Purchase Intention

According to Bryant (2019), health consciousness was linked to a greater perception of vegan products, especially among people with higher health knowledge, who believed that vegan products were healthier than meat and prevented some diseases (Lea et al., 2006). That perception increased the purchase intention of these products (Wen & Li, 2013).

Hypothesis 3: Health consciousness has a positive impact on purchase intention.

Perceived Consumers' Effectiveness and Purchase Intention

Perceived consumer effectiveness is an essential factor in influencing consumer purchase intention. Previous studies suggested that consumers tended to have high purchase intention if they had high perceived consumer effectiveness (Ellen et al., 1991; Berger & Corbin, 1992; Roberts, 1996; Lee & Holden, 1999), which, according to Roberts (1996), to archive that, consumers needed to believe that their actions would affect environment. However, the availability and price of products were barriers that caused lower perceived consumer effectiveness and purchase intention (Lee & Holden, 1999; Rosenlöw & Hansson, 2020).

Hypothesis 4: Perceived consumer effectiveness has a positive impact on purchase intention.

Subjective Norms and Purchase Intention

As subjective norms referred to how a particular person or group of people of those people expected their actions, they were also an essential factor for purchase intention, as they

received some recommendations for opportunities to try the product from friends or families (Rosenlöw & Hansson, 2020).

Hypothesis 5: Subjective norms has a positive impact on purchase intention.

These five variables were extracted to study the purchase intention of plant-based food products, including environmental concerns, animal welfare concerns, health consciousness, perceived consumer effectiveness, and subjective norms. All five variables are expected to positively influence the purchase intention of plant-based food products. The following section describes the method used to test these hypotheses.

Methodology

This section presents the approach employed for studying the effect of each factor on the purchase intention of Plant-based food products in Mueang Lampang. The Department of Provincial Administration reported that, in 2020, the population of Mueang Lampang was 223,116 people. Using Taro Yamane's sample size calculation (Yamane, 1973) to determine the sample for this study, the calculated values are about 400 people.

Conceptual Framework

This paper is based on the Theory of Planned Behaviour (TPB) (Ajzen, 1991), used to expand and predict consumers' purchase intention. It explains, which has attitude, which represents three variables: environmental concerns, animal welfare concerns, health consciousness, subjective norm, and perceived behavior, which presents as perceived consumer effectiveness. This study will look at each of these independent variables that affect the purchase intention of plant-based food products in Mueang Lampang to make a recommendation for the firms.

Based on the literature review, a framework for the current study is shown in Figure 2. This framework describes the hypothesized relationships among environmental concerns, animal welfare concerns, health consciousness, social norm, perceived behavior, and purchase intention.

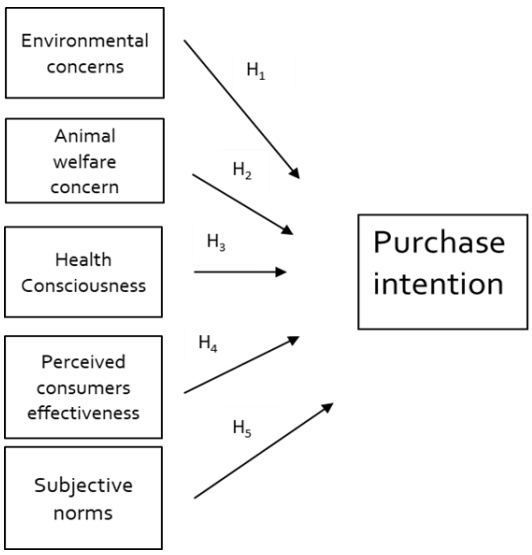

Figure 2 Conceptual Framework Adapted from Kopplin and Rausch (2021), Lea et al. (2006), Lee (2008), and Miguel et al. (2020)

Hypothesises of this study are:

H_1: Environmental concern has a positive impact on purchase intention

H_2: Animal welfare concern has a positive impact on purchase intention

H_3: Heath consciousness has a positive impact on purchase intention

H_4: Perceived consumer effectiveness has a positive impact on purchase intention

H_5: Subjective norms have a positive impact on purchase intention.

The target population of this study was people who lived in Mueang Lampang. Accounting The Department of Provincial Administration reported that, in 2020, the population of Mueang Lampang was 223,116 people. Using Taro Yamane's sample size calculation (Yamane, 1973) to determine the sample for this study, the minimum required sample size was 400.

Research Instruments and Data Collection

This study performed a quantitative research method, using survey questionnaires to collect data from the sample. The simple random sampling method was used to collect the data. The questionnaires were used to conduct the survey and collect the data. A questionnaire consists of 2 parts: the screening and the main question. A survey was conducted through various places within the city.

Elements in the questionnaire were derived from the available literature review. Necessary modifications were made to make it suitable for the Thailand context.

Table 1 Sample Questionnaires

Screening	Variable Questions	Reference
- Required age at 18 years old or more. - Are you Vegetarian/ vegan or not? - Consume Plant-based Food Products Before.	Environmental concerns - I am concerned about the country's environment. - I am concerned about how human actions affect the environment. - I am concerned about future environmental development. - I am concerned that the food they consume will affect the environment.	Kopplin and Rausch (2021), Miguel, Coelho, and Bairrada, (2020). Nguyen et al., (2021).
	Animal welfare concerns - I care about the welfare of animals. - Animals must not suffer. - My food must be produced so that animals have not experienced pain.	Kopplin and Rausch (2021) Miguel Coelho, and Bairrada, (2020).
	Health Consciousness - I take care of my health. - I eat in a way that expresses care for my body. - I lead a healthy lifestyle.	Kopplin and Rausch (2021). Martinelli and de Canio (2021).

Table 1 Sample Questionnaires (Con.)

Screening	Variable questions	Reference
	Perceived consumers effectiveness - Purchasing plant-based foods saves valuable environmental resources. - I can protect the environment when purchasing plant-based foods - I can decrease environmental problems with the purchase of plant-based foods.	Kopplin and Rausch (2021).
	Subjective norms - My family expects me to buy plant-based foods. - People who are important to me expect me to buy plant-based foods. - My friends expect me to buy plant-based foods.	Kopplin and Rausch (2021). Miguel Coelho, and Bairrada, (2020).
	Purchase intention - I will buy plant-based foods in the future. - I intend to buy plant-based foods instead of animal-based products in the future. - I will buy plant-based foods if I see them at the place where I regularly buy food.	Kopplin and Rausch (2021) Miguel Coelho, and Bairrada, (2020).

Five-point Likert scales were used in the questionnaires, ranging from (1) strongly disagree to (5) strongly agree based on each variable.

Data Analysis

First, all the questions will be tested for reliability analysis, Cronbach's alpha coefficients, which required coefficients at 0.7 after collecting the data (Tavakol & Dennick, 2011) then used multiple linear regression to perform statistical analysis.

Research Finding and Discussion

Demographic Profiles

The survey collected general information: age, gender, and salary of respondents. There are 488 out of 521 respondents whose information can be taken into the analysis as they are not vegetarian or vegan but used to take plant-based food products before. These respondents consist of 5.5 percent aged 18 to 21 years old, 37.3 percent aged 22 to 30 years old, 27.3 percent aged 31 to 49 years old, 18.0 percent aged 50 to 59 years, and 11.9 percent aged 60 years and above. Regarding gender, 37.5 percent are male, and 62.5 percent are female. Finally, in terms of their salary, 13.1 percent earn less than 5,000 baht per month, 20.5 percent earn between 5,000 and 10,000 baht per month, 27.7 percent earn between 10,001 and 15,000 baht per month, 16.4 percent earn between 15,001 and 20,000 baht per month, 16.4 percent earn between 20,001 and 30,000 baht per month, 3.9 percent earn between 30,001 and 40,000 baht per month, 1.6 percent earn between 40,001 and 50,000 baht per month, and 0.4 percent earn more than 50,000 baht per month.

Relationship in Relevant Variables and Research Hypothesis

First, all the questions were tested for reliability using Cronbach's alpha coefficients, which required coefficients at 0.7 after collecting the data. All items were passed using this test.

Table 2 Cronbach's Alpha Scale Reliability Results

Variables	Cronbach's Alpha (n = 488)	Items	Means
Environmental Concerns	0.905	E1	4.19
		E2	4.12
		E3	4.06
		E4	4.00
Animal Welfare Concerns	0.827	A1	3.99
		A2	4.00
		A3	3.90
Health Consciousness	0.931	H1	4.28
		H2	4.20
		H3	4.06
Perceived Consumers Effectiveness	0.919	P1	3.71
		P2	3.74
		P3	3.74
Subjective Norms	0.941	S1	3.61
		S2	3.52
		S3	3.50
Purchase Intention	0.935	PI1	3.92
		PI2	3.81
		PI3	3.85

Source: Author's calculation

Linear regression was employed to find the coefficient, t-value, and p-value. For hypotheses to be accepted that they supported that factor has a significant effect on purchase intention of plant-based food products, the p-value must be less than 0.05 for a 95 percent confidence level. Based on findings in Table 4 suggests that factors that have a significant effect on the purchase intention of plant-based food products are environmental concerns ($\beta = 0.160$, $p < 0.001$), Perceived consumers effectiveness ($\beta = 0.502$, $p < 0.001$), and subjective norms ($\beta = 0.328$, $p < 0.001$), and as their coefficient show the positive value that means they have a positive effect on purchase intention. At the same time, animal welfare concerns and health consciousness do not significantly affect the purchase intention of plant-based food products.

Table 4 Summary of Hypotheses Testing

No.	Hypothesis Path	Beta(β)	t-value	p-value	Hypo Thesis Supported
H_1	Environmental Concerns → *Purchase Intention*	0.160	4.300	0.000	Yes
H_2	Animal Welfare Concerns → *Purchase Intention*	-0.078	-1.702	0.089	No
H_3	Health Consciousness → *Purchase Intention*	0.016	0.363	0.717	No
H_4	Perceived Consumers' Effectiveness → *Purchase intention*	0.502	10.346	0.000	Yes
H_5	Subjective Norms → *Purchase Intention*	0.328	8.101	0.000	Yes

Source: $R^2 = 0.715$, the significant level at 0.05, p-value < 0.05

Conclusions and Policy Recommendation

This study aims to identify the factors that affect the purchase intention of plant-based food products in Mueang Lampang and make recommendations for the firms to market the products. The result of the analysis reveals that environmental concerns affect the purchase intention of plant-based food products, inconsistent with Rosenlöw and Hansson (2020) and Shen and Chen (2020), the firms should communicate to consumers clearly and truthfully about (1) how their products are better for the environment, and consumers are a significant contributor to save the environment, and (2) identify that how consuming plant-based product can reduce animal suffering on factory and farming.

Subjective norms also have an impact on purchasing intention. The firms should make products so tasty, give an excellent experience to consumers, and have promotions to encourage them to share how good the products are, like sharing it on social networks reaching friends, families, or other people, so they buy the products because of them. Consumers will buy the products if they have been recommended or influenced by their family members, friends, and essential People.

This research offers a view of purchase intention from an area. In the future, it should study the areas to find the big picture of purchase intention of plant-based food products in our country and use more advanced analysis tools.

Acknowledgment

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Clean Agriculture Development in Lao PDR: Opportunities and Challenges for Food Safety and Market Access

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Abstract

This paper aims to analyze the situation of clean agriculture in Lao PDR, to identify the problem, potential, and opportunities for its development. Key informant interviews of 15 experts and 35 farmers are conducted together with field observations in 4 villages of 3 districts in Xiengkhuang province, to gather production information and opinions on clean agriculture. Government plan of action for clean agriculture development, production, and distribution channel of Organic Agriculture (OA) are reviewed. It is concluded that the crop production in Laos is clean agriculture by default, with the advantages of clean water, less and non-chemical farming in practice. In order to expand the domestic and international market of clean agriculture, especially the OA products in Lao PDR, standards of OA, GAP, SNA, and PEP should be promoted.

Keywords: Lao PDR, Agriculture, Sustainable, Clean Agriculture

Introduction

The Lao PDR is located in Southeast Asia, sharing its borders with Cambodia, Myanmar, the People's Republic of China, Thailand, and Vietnam. Overall, the country extends about 650 miles (1,050 km) from northwest to southeast and has a 236,800 sq km land area. The population of about 7.169 million in 2019. Agriculture expansion and land use are limited by mountainous topography, only 10% of the country's land area is used for agricultural production (Government of the Lao PDR, 2015). Moreover, agricultural land is dispersed, especially in the northern mountains. About 50% of the agricultural area cultivated the annual crops, the balance being used for perennial crops (such as coffee trees) or grasslands. Very rare areas along the Mekong River and its tributaries have large contiguous cropped land, notably in the Vientiane plain, and in central and southern riverine plains in Sayabouri, Khammouane, Savannakhet, and Champasak provinces. There are around 11 million hectares [ha] of the forest in Lao PDR. The biodiversity and wildlife in Lao PDR are quite abundant in, although there is continuous encroachment on its forest and wildlife resources from poaching, mining, hydropower development, shifting cultivation, and commercial plantations. It is estimated that

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21% of the land area is concessioned and leased, with the majority designated for mining-related activities. An estimated 446,249 hectares are used for plantations. Rice is the main crop in the Lao People's Republic, accounting for 50% of the country's agricultural output. About 960,000 hectares of rice are cultivated during the rainy season, most of it for subsistence purposes. Due to the limited irrigated area, only 4% of the wet season area is cultivated in the dry season. The lowland rice area accounts for 75% of the rice area, mainly concentrated in the four provinces of Xayaburi, Khammuang, Savannakhet, and Champasak. Upland rice is mainly distributed in mountainous areas, especially in the northern part of Lao PDR. Other important crops are maize, cassava, bananas, and coffee, which are cultivated both for subsistence and commercial. The livestock sector accounts for 18% of agricultural gross domestic product (GDP) and is an important contributor to household and national income, with most farming households owning some of their livestock either as household savings or for commercial sale.

Research Objectives

To provide an overall picture of clean agriculture development in Laos, this research sets three specific objectives as follows: 1) analyze the clean agriculture situation in Lao PDR; 2) identify the problem and potential for clean agriculture development in Lao PDR; and 3) identify opportunities to make investment and possibilities to advance.

Literature Review

Similar to all Southeast Asian countries, the agricultural sector in the Lao PDR needs to adapt to rapid environmental, social, and economic changes on multiple fronts. There is pressure to reduce the sector's environmental impact on land, water, and biodiversity and its impact on human health.

Agricultural products must also be competitive with those of other producers of the countries in the region, and the sector must adapt to ensure food sovereignty and sustainable production, taking into account the skills, preferences, and cultural needs of the population. However, since the 1975 revolution, agricultural strategies and policies developed by the Ministry of Agriculture and Forestry (MAF) have been largely based on increasing agricultural productivity to meet unrealistic targets, relying heavily on the increased use of chemical applications and mechanization (Stockholm Environment Institute), (SEI), (Annual Report, 2023).

Research undertaken by the National Agriculture and Forestry Research Institute (NAFRI) at the request of the MAF has clearly shown that the country's production objectives are unattainable which is supported by Korea Rural Economic Institute (KREI). First, because of its bio-geophysical conditions; second because farmers don't have access to vital infrastructure, including irrigation, road networks, and fair markets; and third because agricultural production in Lao PDR has not been able to compete with Thailand, China, or Vietnam in terms of bulk production, meaning that the price of goods produced in Lao would continue to be undercut by its larger neighbors.

The KREI, NAFRI, in partnership with the Food and Agriculture Organization of the United Nations (FAO), has helped the government turn towards more sustainable goals and priorities. The ensuing consultations led the government to commission NAFRI to develop a policy framework for Clean Agriculture, Green and Sustainable Agriculture (GSA) – a plan

which reflects a shift in outlook within Lao's Ministry of Agriculture and Finance and the government as a whole.

The work was successful in large part because of the long-term engagement with government agencies, which supported a relationship, based on trust and enabled NAFRI personnel to credibly present a body of research in a way that matched the priorities of government stakeholders. Additionally, it meant that NAFRI could use its extensive understanding of the organizational framework and institutional culture. partnership with international organizations, particularly the FAO, as well as funding from KREI core support designated for quick reaction and strategic partnership helped to achieve agreement. The policy framework for clean, green, and sustainable agriculture has now been formally adopted by the Lao PDR government, and it is currently being utilized to guide the creation of national and provincial policies. The MAF will use it as the basis for developing particular policy actions. It is a guiding document owned by the Department of Policy and Legal Affairs. As a result of the new framework, government planning organizations will be able to operate independently from foreign agriculture policy, opening the door for change that is appropriate for the nation's particular situation. This may enable Lao PDR to take the lead in Southeast Asian agriculture in the future and influence regional agricultural policy for more sustainable outcomes.

Methodology

Desk Reviews

Official reports such as the development strategy of the crop sector 2025 and vision 2030, from the central, provincial, districts, and related projects, were collected and reviewed to investigate the situation of clean agriculture in Lao PDR. Previous related research papers were also reviewed to understand the history of the clean agriculture movement, especially on the product distribution channels and access to the market.

Key Informant Interviews

Key informant interviews focus on gathering knowledge, experiences, and opinions from key persons in clean agriculture sectors such as senior officers from the Department of Agriculture (DOA), Provincial Agriculture and Forestry Office (PAFO), District Agriculture and Forestry Office (DAFO), and leaders of farmers groups, agri-business manager, and consumers. Totally, 15 key people were interviewed. In addition, 35 farmers were interviewed using semi-structured interviews for production information including the constraints and opinions to develop clean agriculture.

Fieldworks

Fieldwork and field observations were carried out mainly in Xiengkhuang province. Based on the consultation with the Head of PAFO, clean agriculture farms and villages were identified. The Authors visited four villages in three districts to observe production fields and interview farmers.

Data Analysis

This research used a qualitative approach as the main methodology to collect primary data and information from stakeholders including farmers engaging with clean agricultures. Descriptive statistics were applied and results were illustrated by tables, figures, and charts.

Results and Discussion

Clean Agriculture Development Movement in Lao PDR

The Official Announcement of Clean Agriculture Development in Lao PDR

In 2006, the 8th Party Congress of Lao People's Revolution Party, Resolution 9th, endorsed clean agriculture as a strategic policy direction for the agriculture and forestry section. Towards implementing the policy Directions, the Department of Agriculture (DOA) has developed legal and regulations, in particular, DOA Strategy 2025 and Vision 2030 with slogan modernization, clean, safety, quality, stability, sustainability, and commercialization.

Plan of Action for Clean Agriculture Development in Lao PDR

The goal of clean agriculture development is to change farming techniques into clean agriculture principles like OA and GAP, improve clean agriculture, create standards for various forms of clean agriculture, and push for alignment with global standards. The government of Laos (GoL) set nine supporting projects for this action plan 1) Clean agriculture standard development project, registration for prohibited plants in Lao PDR, registration for site-based crops and GI products; 2) Clean agriculture demonstration project; 3) Internationally and regionally accepted clean agriculture certification project; 4) Cash crop standards development project; 5) Crop production standard development project; 6) Clean agriculture product regulation project; 7) Clean agriculture infrastructure development project; 8) Clean agriculture capacity and system control development project; and 9) Market-oriented vegetables and fruit crop promotion project.

Development of Organic Agriculture in Lao PDR

In the 1990s, NGOs introduced the concept of "sustainable agriculture and organic farming" into Lao PDR3. The word "organic" is well known since the collaborative project between HELVETAS and DOA launched the PROFIL4 project in 2014. It is claimed that 80% of farming in Laos is organic by default5. With support from external donors such as HELVETAS, Switzerland, JICA, SDC/ADB, and OXFAM in the Mid 2000s, the Lao organic standard was approved in 2005, Lao certification Body (LCB) was established in 2008, and LCB started organic inspection/ certification service in 2009. According to the Organic Agriculture Standards issued by MAF/Decision No. 1666/MAF. DOA, dated 30 December 2005, OA is defined as "a farming system (and product) that does not use chemical inputs all along the production process".

In 2015, GoL sets four action plans to develop OA in Lao PDR as shown in Table 1: Action plan and project toward 2025 for OA development in Lao PDR.

Table 1 Action Plan and Project toward 2025 for OA Development in Lao PDR

Improving legislation and human resource on OA production	1) Improving OA standard in accordance with ASEAN Standard of Organic Agriculture (ASOA) (2016-2017)
	2) Development of certification system in line with the ISO/IEC 17065(2016-2020)
	3) Integration of services of OA certification (2016-2020)
Technical extension and production development	1) Developing OA model farms in central, northern, middle and southern parts (2016-2020)
	2) Promoting OA production in Lao PDR (2016-2020)
	3) Developing technical manuals and training course on OA (2016-2020)
	4) Training farm advisor for OA in Lao PDR (2016-2020)
	5) Developing training center for OA (2016-2020)
	6) OA disseminating and advertising (2016-2020)
	7) Promoting OA business (2016-2020)
Domestic market development and export	1) Developing OA value chain in Lao PDR (2016-2020)
Quality management of OA produces and products in domestic market and export	2) Developing OA value chain for export (2016-2020)

Source: Strategic Plan for national organic agriculture development 2025, vision forwards 2030, DOA, MAF, 2016

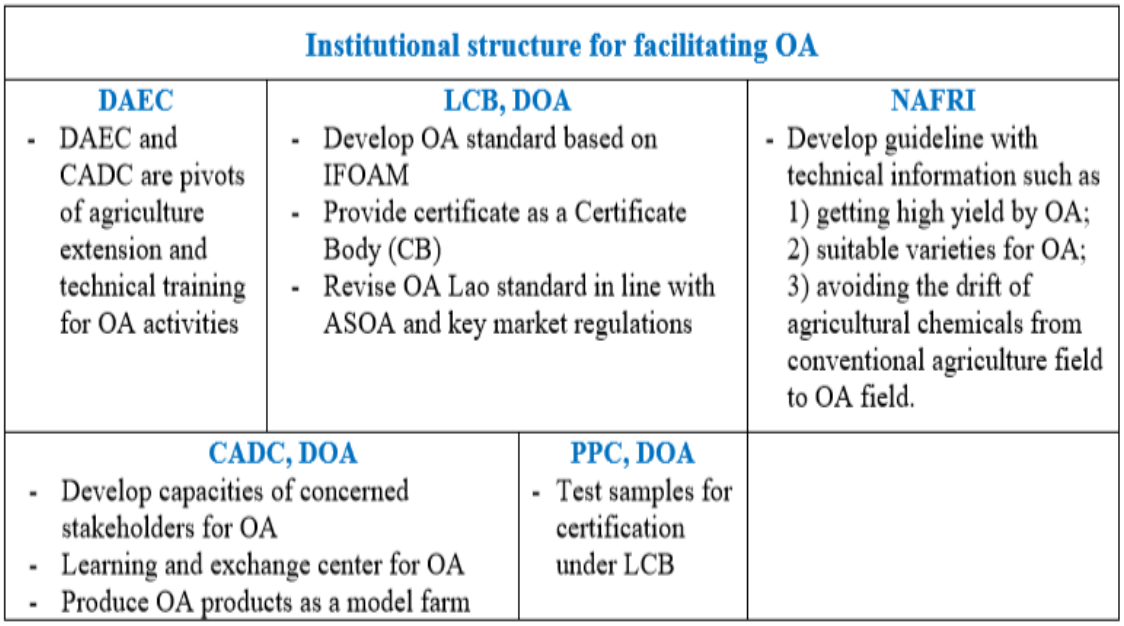

Figure 1 Government Stakeholders with Key Roles in OA

Source: Illustrated by authors, Strategic plan for national organic agriculture development 2025, vision towards 2030, DOA, 2016

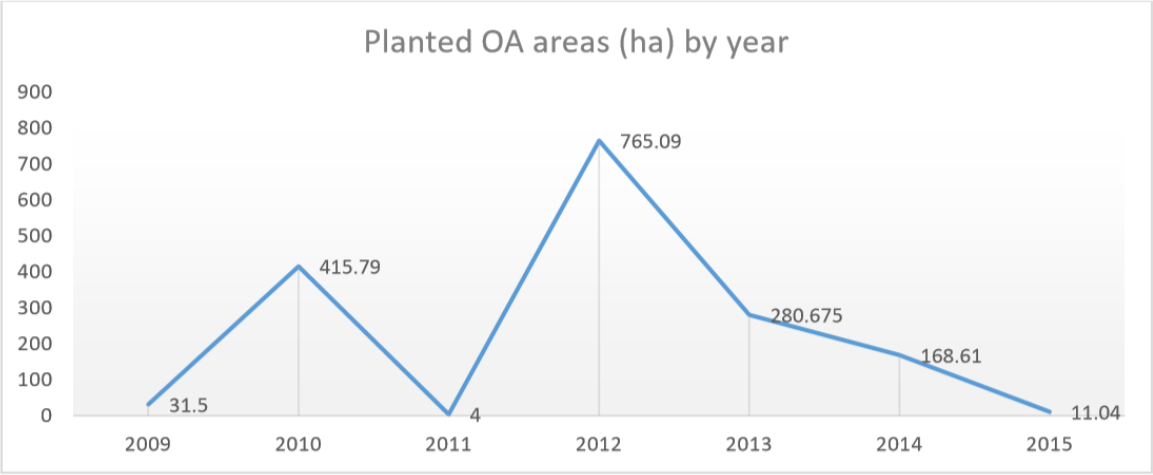

Figure 2 OA Planted Areas

Source: Illustrated by authors, Strategic plan for national organic agriculture development 2025, vision towards 2030, DOA, 2016

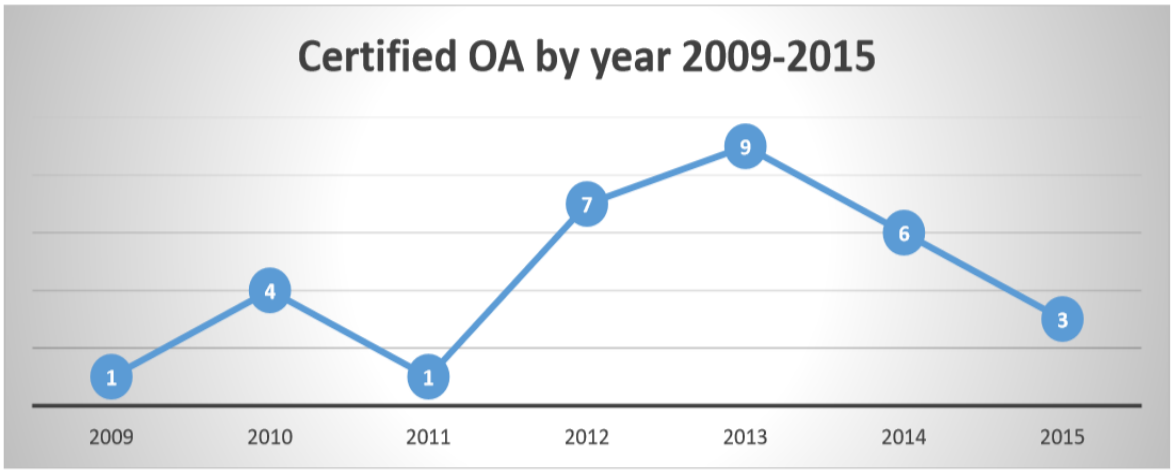

Figure 3 Certified OA Producers/Entrepreneurs by the Year

Source: Illustrated by authors, Strategic plan for national organic agriculture development 2025, vision towards 2030, DOA, 2016

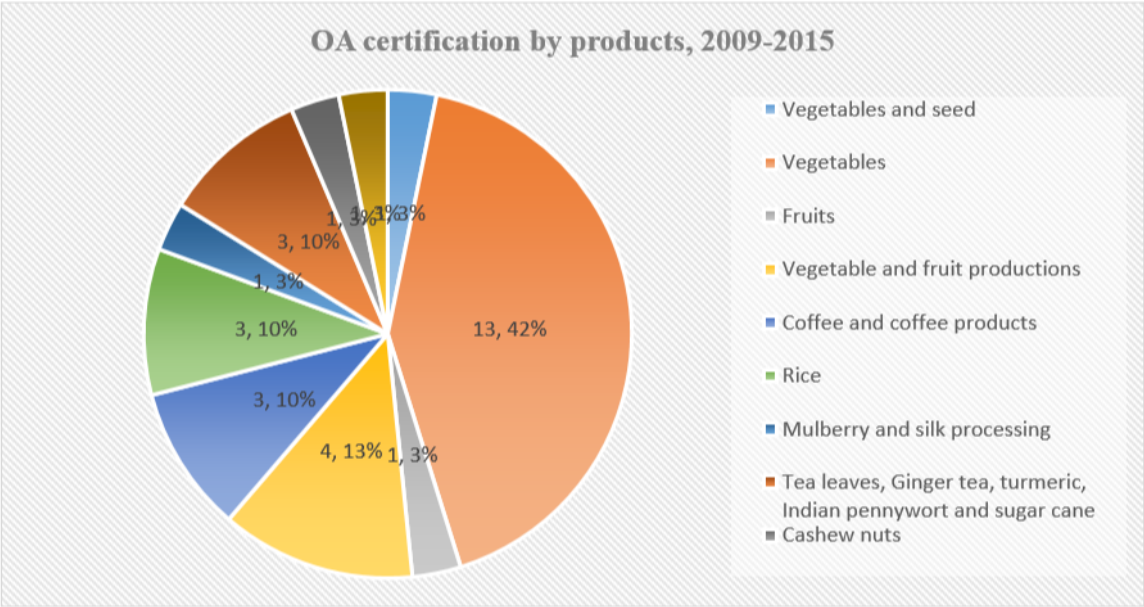

Figure 4 Organic Certifications by-Products, 2009-2015

Source: Illustrated by authors, Strategic plan for national organic agriculture development 2025, vision towards 2030, DOA, 2016

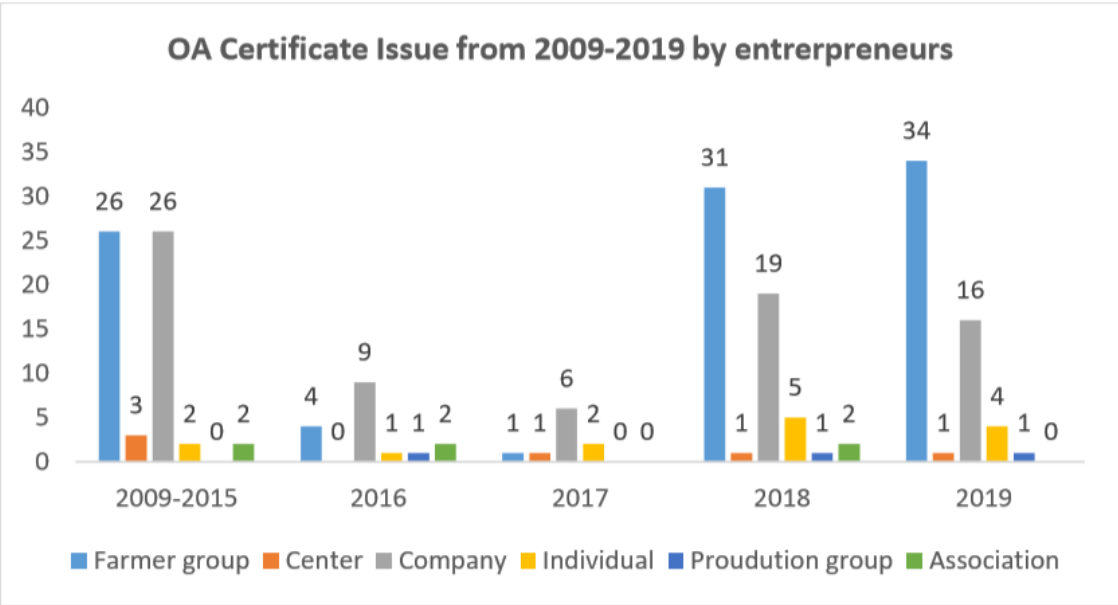

Figure 5 OA Certificate Issue from 2009-2019 by Entrepreneurs

Source: Illustrated by authors, DOA, Five-year plan (2015-2020) implementation report, 2019
Note: There are 201 Certified OA entrepreneurs in 2019; Average production: 132,002 tons/ year.

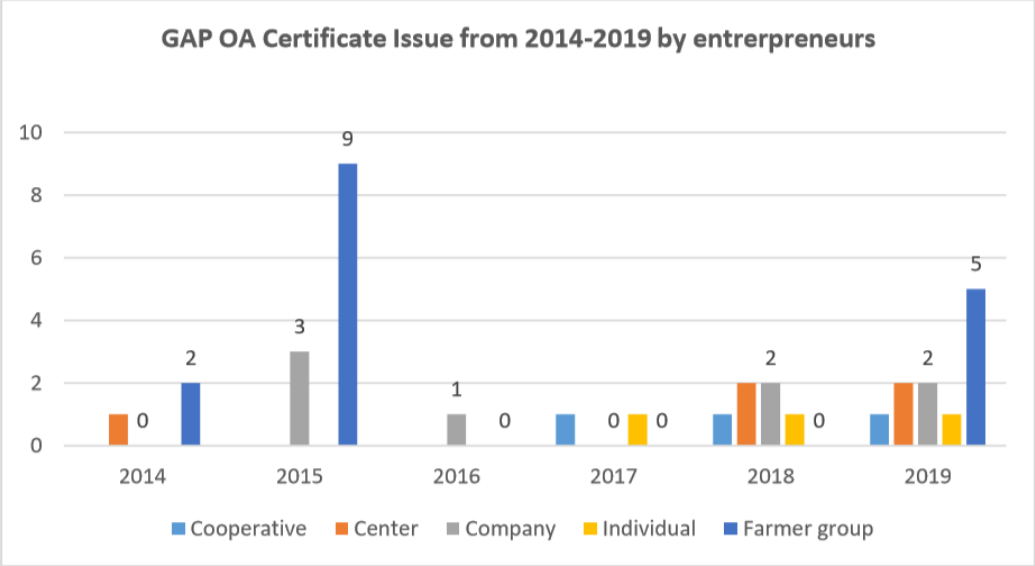

Figure 6 GAP Certificate Issue from 2014-2020

Source: Illustrated by authors, DOA, Five-year plan (2015-2020) implementation report, 2019
Note: There are 35 Certified GAP entrepreneurs in 2019

Clean Agriculture Product Distribution Channel in Vientiane's Capital

Vientiane Capital of Laos consists of nine districts: Chanthabouly, Hadxayfong, Naxaithong, Pak Ngeum, Sikhottabong, Sisattanak, Xaythany, Sangthong, and Xaysettha. The main cultivation of organic vegetables is in seven districts, Hadxayfong, Naxaithong, Pakngum, Sikhottabong, Sisattanak, Xaythany, and Xaysettha. According to 2020 statistics, the urban population in Vientiane's capital is 863,000 people

In the wet market, most of the retailers in the organic market were the same farmers who produced organic vegetables. The percentage in the arrow showed the proportion of supply from one actor to another. There were two main channels for farmers to sell their organic vegetables to customers. The first channel was from farmers to the organic market which covered approximately 90% of the total output. The second channel was via the collectors who sell vegetables to the wet market and convenience stores, which accounted for less than 10% of the total production of farmers. The organic vegetable sold in the wet market was not recognized as an organic vegetable because they were mixed with chemical-used vegetable. Retailers in the wet market bought organic vegetables in case not enough supply during the rainy season. Farmers also sold their organic vegetables to Export Companies according to the request.

In Vientiane's capital city, the convenience store is another distribution channel for organic vegetable farmers. The convenience stores buy products from three sources collectors, imports from Thailand, and farmers. Export Company occasionally buys when they do have not sufficient output as the order. Farmers can sell a small volume of vegetables from smallholders. Export Company sells 100% of their output to Importers/Distributors.

Approximately, 50-60% of imported organic vegetables were supplied to the supermarket and the rest is supplied to restaurants.

Since 2020, with the impacts of COVID-19, clean agriculture production flows in three main channels, especially channel 2 had been dramatically changing due to locking down, social distancing, self-guaranine, and so on bringing new normal in people's consumption behaviors.

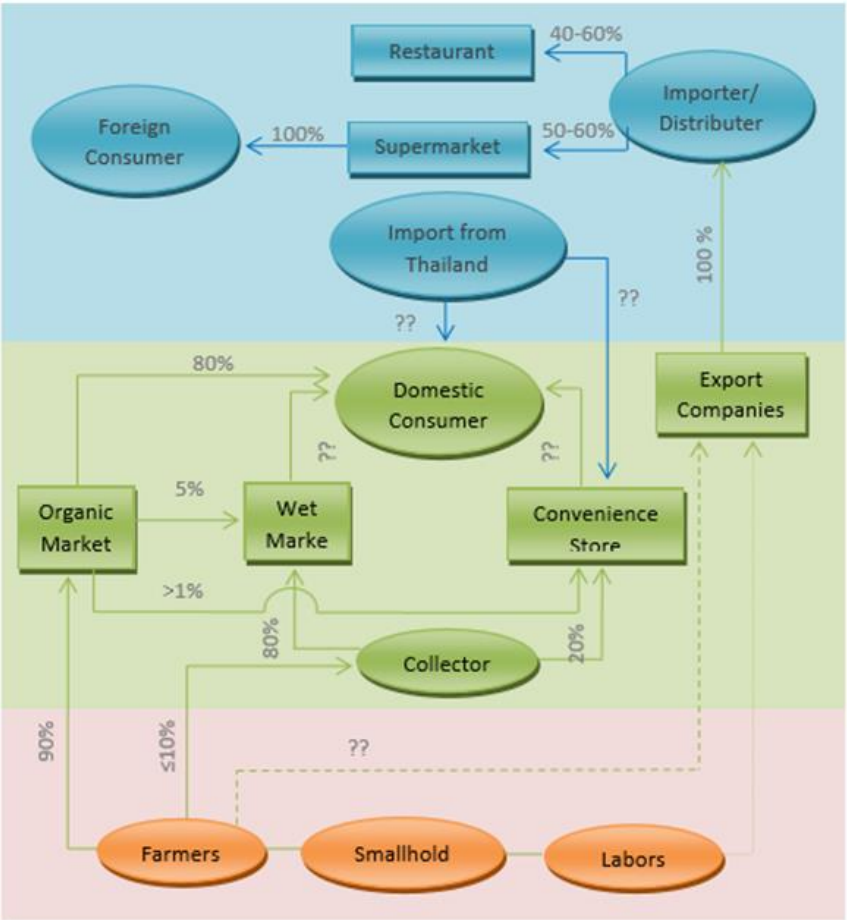

Figure 7 Value Chain of Organic Vegetables in Vientiane Capital (2016)

Source: Piya and Thongkhoun (2016)

Clean agriculture products especially in Vientiane capita, it mainly distributed via three channels: 1) farmers bring their products to sell in the organic market which is rotated to fixed six places every day based on schedule (e.g. ITEC: Wednesday and Saturday); 2) Farmers supply their organic vegetable products to agri-business agents such as home delivery and online middle man; and 3) farmers support their clean vegetables to the supermarket. Due to farmers' supply capacity with curtain volume ensuring standard and variety of vegetables, Lao clean vegetable products in a modern supermarket is a smaller amount than the imported from a neighboring country.

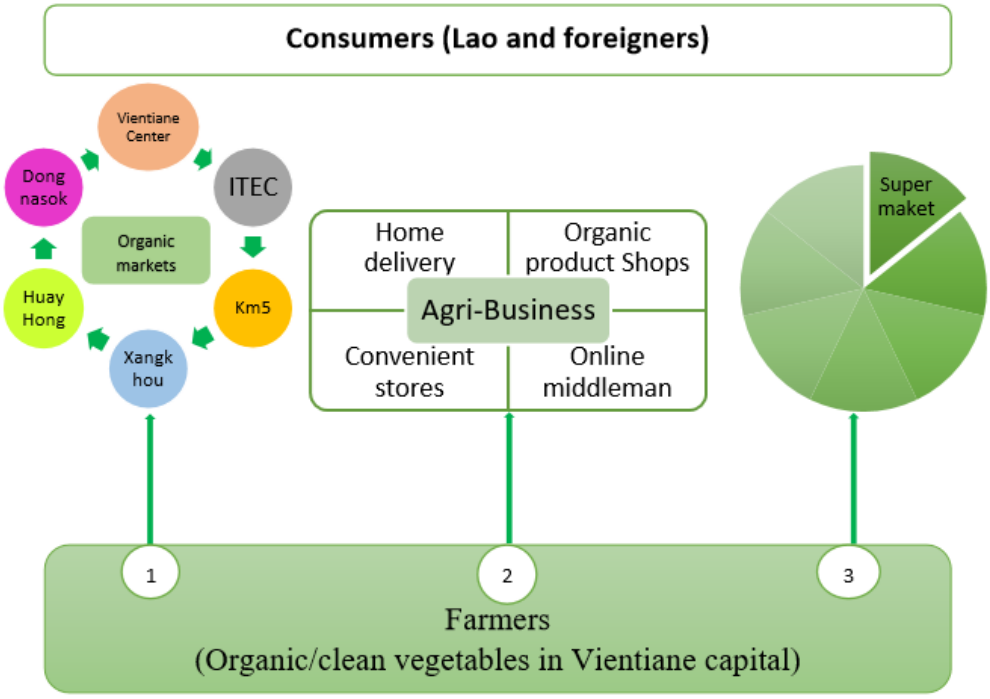

Figure 8 The Consumers of Clean Agriculture

Source: DOA. (2020)

Conclusion

Crop production in Laos especially in rural areas is clean agriculture by default. This becomes an opportunity for Lao PDR to develop its full potential. Lao PDR still has an abundance of natural resources such as large cultivatable land, clean water, and less and non-chemical farming is practicing. The use of chemical fertilizers in Lao PDR is 12 kg per hectare on average and most remote areas use no chemical fertilizers. A previous study suggested that a poor understanding of organic agriculture and limited access to organic products are barriers to organic consumption. In order to expand the market, information, trust, and availability should be improved. Currently, clearly, differentiated standards among OA, GAP, SNA, and PEP are not yet declared. Therefore, with clear product standards, trust between consumers and farmers can strengthen. In addition, product diversity and availability at all times are important to supply to demand.

Piya and Thongkhoun (2016) suggested that Lao PDR have many opportunities to export vegetable organic vegetable to the USA, European Union (EU), and Japan since there are a lot of demands from restaurant especially Thai and Indian restaurants. The export of organic vegetable has benefited from the General System Preference and Normal Trade Relation that the EU and Japan and the USA allows zero tariffs for the import of organic vegetable from Lao PDR. The export of organic vegetables to ASEAN countries also benefits from ASEAN Free Trade Agreement.

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The Perception of Cambodian Users Towards Cryptocurrency Exchange Application

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Abstract

This research aimed to investigate the factors that influenced the adoption of Cryptocurrency Exchange Applications (CEA) in Cambodia, specifically in terms of behavioral intentions and user behaviors towards users. An empirical study was conducted, utilizing an established technology acceptance model, namely the Unified Theory of Acceptance and Use of Technology (UTAUT), along with its extension, the Unified Theory of Acceptance and Use of Technology 2 (UTAUT2). Trust was also included as an external variable under the UTAUT2 model to provide additional insights into the study. A quantitative method was employed, with 400 respondents through Google survey questionnaires from Crypto- and Blockchains-Community Social Media Channels in Cambodia. The obtained results were analyzed using the advanced license program, "Smart-PIs 4.0", generating support for each construct model. PLS-SEM was also used to measure the reliability and validity of hypothesized variables. The study revealed that Habit (HT), Performance Expectancy (PE), and Trust (TR), except Effort Expectancy (EE), Facilitating Conditions (FCs), Hedonic Motivation (HM), Perceived Value (PV), and Social Influence (SI) significantly influenced the adoption of Cryptocurrency Exchange Application in Cambodia. The author also discussed the theoretical and managerial implications, limitations, and recommendations for future research. The findings of this study provided valuable insights for individuals and organizations involved in the adoption of cryptocurrency and related applications in Cambodia. This study was limited by legal considerations; however, it was observed that the government of Cambodia has expressed a favorable stance toward the legalization and regulation of cryptocurrencies and underlying blockchain technology.

Keywords: Crypto-Exchange Application, Cryptocurrency, Perception, Users

Introduction

In terms of cryptocurrency, Cambodia has adopted a restrained stance. In 2019, the National Bank of Cambodia (NBC) implemented a directive that prohibited all cryptocurrency

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transactions in the country, with financial institutions and payment processors enforcing this ban. This restriction only prohibits institutional investment or regulation, as an individual investment is permissible (Standard Insights, 2022). Recently, NBC has also alerted the public to cryptocurrency investment fraud and released guidelines for digital currency service providers, requiring anti-money laundering and customer due diligence provisions. Despite this cautious approach, the government intends to develop its own Central Bank Digital Currency (CBDC) as announced by NBC in 2019, which could have significant implications for Cambodia's payment systems. Local payment processors, such as Wing Money and TrueMoney, and international exchanges such as Binance and Kucoin, are significant players in the country's cryptocurrency industry. While local payment processors have instituted Know Your Customer (KYC) protocols, international exchanges are accessible for their ease of use and global reach. In November 2022 (Standard Insights, 2022), a survey of 500 Cambodians was conducted, revealing that 10.63% had experience with cryptocurrency. In contrast, 21.25% of respondents remained unfamiliar with this type of currency, while 68.12% reported not using it. Notably, while the Cambodian Riel was the more prevalent currency, over half (56.17%) of those surveyed utilized US dollars. Only a small fraction (0.57%) of individuals conducted transactions using cryptocurrency.

To date, the Cambodian government has displayed a positive outlook toward the legitimization and control of cryptocurrencies and related blockchain technology. This can be seen in the proactive actions taken by the Securities of Exchange Regulator of Cambodia (SERC) to establish partnerships with private entities, including Binance, to maximize the efficacy of legislative policies. In June of 2023, Binance and SERC entered a memorandum of understanding to collaborate on the formation of digital assets regulations in Cambodia (Khmer Times, 2022). To this end, SERC intends to benefit from Binance's proficiency and practical know-how in the field to craft its own regulatory framework for the digital asset industry.

Research Objectives

This study is focused on examining the perceptions of Cambodian Crypto-Exchange application users regarding the use of crypto-exchange applications in the field of cryptocurrency trading and investing. Specifically, it aims to investigate the views of Cambodian Crypto-Exchange application users with respect to the market's evolution between 2017 and 2021. There are two key objectives of this study:

1. To analyze user demographics, financial status, and perception of investing and trading on Crypto-Exchange applications.
2. To examine the market trends and factors that drive users to utilize Crypto-Exchange applications.

Literature Review

This paper provided an overview of crypto-exchange applications, blockchain, and cryptocurrency, followed by an examination of the current theories looking into the acceptance of IT systems and the intentions to use crypto-exchange applications. Technically, the UTAUT (Venkatesh et al., 2003) illustrated the degree of acceptance when utilizing a new IT, and UTAUT2 was designed to specifically assess user intentions from a consumer-oriented point of view (Venkatesh et al., 2012).

Perception, Cryptocurrency, and Crypto-Exchange Application

Digital currency has emerged as a game-changer in the banking industry, providing customers with access to financial services anytime and anywhere. Its success depends largely on how users perceive it. Perception was defined as "the process by which an individual selects, organizes, and interprets stimuli to create a meaningful and coherent picture of the world". Based on this definition, it can be inferred that perception plays a critical role in shaping users' expectations and experiences of Crypto exchange applications. Several studies have investigated the impact of user perception on the adoption and usage of Crypto-exchange applications. According to Kim and Widdows (2019), there is a positive relationship between users' perceived usefulness, perceived ease of use, and their intention to use the applications. In other words, users are more likely to adopt and use the applications if they perceive them as being useful and easy to use. Cryptocurrency is a digital or virtual currency that uses cryptography for security and operates independently of a central bank. It is a decentralized means of exchanging value, where transactions are recorded on a public ledger called the blockchain. Blockchain technology is a shared database that uses security technologies, such as cryptography, hash, and digital signature, to create, record, store, and verify transaction data without the need for a third-party intermediary. It provides the structure to realize various applications based on a distributed network with ensured reliability and integrity of transactions. In 2008, Satoshi Nakamoto initiated the thought of a digital currency based on a peer-to-peer (P2P) structure, leading to the debut of Bitcoin, the world's first cryptocurrency, on January 3rd, 2009. The crypto-exchange application works based on the combination of blockchain technology and other existing software technologies to implement smart contracts, in which it functions automatically in the form of a digital-technological base solution by using the existing traditional financial concept. The dawn of smart contracts has revolutionized numerous applications in various industries such as FinTech (Financial Technologies), sharing economies, healthcare, science, government, and law. One of the main applications of smart contracts is crowdfunding.

Performance Expectancy (PE)

Performance Expectancy (PE) is seen as the individual's perception of the benefit they will get from using a specific technology in their activities (Tai and Ku, 2013; Venkatesh et al., 2012). This idea conveys the extent to which somebody regards their performance to the utilization of technology (Chiao-Chen, 2013). Previous investigations have demonstrated a connection between performance desire and conduct intention that is varied by age and gender, with more youthful individuals and male individuals appearing to be somewhat more cognizant of the use of new technology (Venkatesh et al., 2003; Yousafzai & Yani-de-Soriano, 2012). It has also been composed that individuals who have higher educational backgrounds are more inclined to adopt new technology than those with less education (Krueger, 1993; Wozniak, 1984; Welch, 1970; Lleras-Muney & Lichtenberg, 2002). From the perspective of a consumer, when they believe that the services giving cryptocurrency trade, exchange and exchange are quicker and more available than other applications they will be more likely to utilize the service. Because of this, this study theorizes that a higher level of performance expectation will bring about a higher adoption intention of the crypto-change application services. Thus, the hypothesis of this research is that:

H1. PE significantly affects BI to adopt CEA.

Effort Expectancy (EE)

Effort Expectancy (EE) is defined as the ease with which efforts result from using new technology (Plouffe et al., 2001; Venkatesh et al., 2003). This research suggests that if users find the crypto-exchange application easy to learn and use, as well as easy to navigate, it may influence their intention to continue using it. It has been noted by scholars that gender, age, and educational level play a role in the link between effort expectancy and behavior intention with higher education users more likely to use and accept new technology than those without (Venkatesh et al., 2003; Pijpers & van Montfort, 2005; Al-Gahtani et al., 2007). This leads to the following hypothesis:

H2. EE significantly impacts the BI to adopt CEA.

Social Influence (SI)

Social influence (SI) has a role to play in a user's intent to use a given technology (Venkatesh et al., 2003). Studies have found that if a person's acquaintances use mobile apps for payments, they are likely to do the same (Khalilzadeh et al., 2017). Beyond that, gender, age, experience, and educational level can also be seen to have a positive effect on the connection between social influence and an individual's behavioural intention to adopt an innovation (Venkatesh et al., 2003). Therefore, it is predicted that if individuals within a user's social circle are using a crypto-exchange application (CEA) or the application is recommended to them by someone they trust, their proclivity to use the technology will be greater than that of individuals in the same position without such an influence. So, social influence plays an important function in BI to adopt CEA.

Therefore, the hypothesis can be proposed that:

H3. Social Influence (SI) has a significant effect on BI's adoption of CEA.

Facilitating Conditions (FCs)

Facilitating conditions refer to the resources or support systems that are present to assist users in the implementation of new technology (Venkatesh et al., 2003, 2012). Research has indicated that people, particularly women, find the transition to new, more complicated technology harder (Plude & Hoyer, 1985; Henning & Jardim, 1977; Venkatesh & Morris, 2000). Users who have more experience with the technology can gain better knowledge and more comfort in using it (Alba & Hutchinson, 1987). FCs thus denote the level of control a user has over the technology and can positively influence their behavioral intention of adopting it (Ajzen, 1991). It can thus be stated that:

H4. FCs have a significant effect on the BI to adopt CEA.

Hedonic Motivation (HM)

Hedonic motivation (HM) is the feeling that users observe when using a certain technology to be entertaining and enjoyable (Brown & Venkatesh, 2005; Venkatesh et al., 2012). In a study, the UTAUT2 model was employed and it was revealed that hedonic motivation has a substantial impact on customer's intention to use Airbnb services (Lin et al., 2017). Furthermore, in the customer context, hedonic motivation has been a pivotal factor that determines technology acceptance and use (Brown & Venkatesh, 2005; Childers et al., 2001). However, it is also noteworthy that the effect of hedonic motivation on behavioral intention varies with age, gender, and experience as users differ with respect to innovativeness, novelty-seeking, and the perception of the novelty of a given technology. When customers first take up a specific technology, they become more aware of its originality (Holbrook & Hirschman,

1982). With an escalation in their familiarity, users tend to use the technology for utilitarian enjoyment where age and gender conclusively influence their utilization of the pioneering technology. Consequently, the hypothesis is reasonable to conjecture that:

H5. HM significantly impacts the BI to accept CEA.

Perceived Value (PV)

Perceived Value (PV) is the idea of an individual's cognitive weighing of the benefits of using a crypto-exchange application versus the costs, such as device costs, service costs, and transaction costs (Baptista & Obleira, 2015; Brown & Venkatesh, 2005; Dodds et al., 1991; Venkatesh et al., 2012). Studies have shown that cost/price plays a major role in user behavior toward a given product or service (Zeithaml, 1988). If the perceived value outweighs the monetary cost, users are more likely to adopt new technology. Additionally, differences in price preferences have been observed between men and women, and younger and older individuals (Bakan, 1966; Deaux & Lewis, 1984). Thus, the following hypothesis is proposed:

H6. PV significantly impacts BI toward CEA adoption.

Habit

Habit is seen as behavior that is performed regularly to reach particular goals or meet desired expectations (Orbell et al., 2001; Venkatesh et al., 2012). Recent analysis has suggested that habitual practice is an influential and reliable factor for predicting future trends in the use of technology (Kim & Malhotra, 2005). A study has unveiled that recurrent utilization of social media sites has an affirmative effect on individuals' willingness to share their experiences of consuming a new application (Herrero & San Martin, 2017). Thus, necessary to highlight that the intervention of habit can come from people's everyday utilization of smart devices or frequent employment of mobile applications in daily tasks. Habit has been confirmed to have a positive influence on the intention to use and adoption of the actual use of technology (Venkatesh et al., 2012). Yet, some reports point out the negative nature of habit on the intention to use and adoption of net applications . In line with these findings, it has been suggested that users' frequent usage of mobile cryptocurrency programs for trading/investing in cryptocurrency will significantly impact their intention and adoption to go on utilizing the applications in the future. As such, the following hypothesis is framed in order to examine these variables: H7a. Habit (HT) significantly affects BI toward CEA adoption.

H7b. Habit (HT) positively affects UB toward CEA adoption.

Trust

Trust is defined as the trustworthiness, dependability, genuineness, secrecy, durability, and capacity of one's feelings toward a specific individual, company, or program (Eisenstadt, 1995). Research has shown that customers are more likely to use online banking when conventional banking channels are trusted. It is presumed that an individual's interaction with IT systems will enhance their perceived trust. Additionally, trust is related to traceability, in that users can experiment with the technology before deciding whether or not to use it (Bennett & Bennett, 2003). Sahoo and Pillai (2017) highlighted that an individual's trust in a banking application should drive their intention to make use of it, as it is a key element of customer satisfaction on the internet. This suggests that users' trust in a trading/investing application for cryptocurrencies could greatly affect their objective to keep bringing it into use in the future. Trustworthiness plays a crucial role in determining how frequently people will make use of a cryptocurrency exchange application. Hence, the following hypothesis has been proposed:

H8. Trust (TR) has a significant impact on the adoption of CEA.

Behavioral Intention (BI)

Behavioral intention conveys an individual's likelihood of exploiting something in any given context. Thus, understanding the new system, its services, attributes, and what other people think about the new system are critical elements that sway users' intention to adopt or not to adopt the new system and utilize it (Wang et al., 2006):

H9. BI will notably influence Use Behavior to embrace CEA.

Research Methodology

Sampling and data collection

The survey questionnaire items were designed to measure a respondent's perception based on the constructs embedded in the proposed conceptual model, using a 5-point Likert Scale (Johns, 2010) ranging from "1" = strongly disagree to "5" = strongly agree. The survey was composed of two sections, written in English, and given to respondents. Section one contained questions about demographic information, knowledge of cryptocurrency, and usage experience. Section two contained questions that related to the concepts of the proposed model.

In February 2022, a pilot study was executed to identify any shortcomings present in a questionnaire. A group of 40 individuals were selected for the pilot study following the validation of the questionnaire. Several recommendations were provided concerning the phrasing and general organization of the questionnaire. These suggestions were evaluated, and a number of changes were implemented. Data from the pilot survey were not included in the primary survey.

To obtain responses, a total of 250 links were circulated through crypto users and social media channels via Telegram and Facebook. The survey received 430 responses which were subjected to refining, ultimately leading to 400 responses suitable for analysis. Only respondents who had experience with cryptocurrency exchange mobile applications aged between 21 and 50 years were included in the analysis.

This research employed the random sampling method with various selection techniques in which sample members were selected by chance. In addition, this research utilized a simplified formula to calculate sample sizes suggested by Yamane (1973). This formula was used to calculate the sample sizes Where, n = number of samples, N = total population, and e = error acceptance (5%) as follows:

$$n = \frac{N}{1+N\,(e)^2}$$

The study population in this research was cryptocurrency investors and traders in Binance's cryptocurrency community, making up 6000 people in Cambodia (Binance, 2022). According to Yamane (1973), the sample used in this study was 375 samples using the formula for calculating the sampling group with a 95% confidence level. The calculated sample size was 375 samples by adding 25 sample collection cases to prevent possible mistakes. Therefore, the sample size was approximately 400 respondents suitable for this study.

Data Analysis

Data analysis is the step after data were collected from 400 respondents within cryptocurrency communities in Cambodia. Descriptive analysis was used to convert data into descriptive information to help the researcher comprehend, interpret, organize, describe, and

manipulate the data collection. The method employed in information investigation was Partial Least Squares Structural Equation Modeling (PLS-SEM). The resulting data set was used to interpret and draw a conclusion by using license SmartPLS4 professional software with one-month license number: PRO-S7ABB7C98X-6B468BC5BB084C6E8636401D81BA1048784 as the primary software for data analysis in this research (Ringle et al., 2015).

Research Results

Descriptive Statistics for the Demographic Factors

A demographic analysis of the 400 respondents was conducted to have a better understanding of the survey results. The descriptive statistic for these respondents is presented in the table below.

Table 1 Demographic Results

Demographic	Items	Frequency	Percentage
Gender	Male	294	73.5
	Female	105	26.25
	Not specific	1	0.25
Age (In the year)	21-30	279	69.75
	31-40	96	24
	41-50	19	4.75
Marital Status	Single	298	74.50
	Married	91	22.75
	Divorced	11	2.75
Educational Level	High School Diploma	70	17.50
	Bachelor's Degree	272	68.00
	Master's Degree	58	14.50
Occupation	Student	125	31.25
	Business Owner	25	5.75
	Private Sector	125	31.25
	Government Sector	25	5.75
	Self-employed	98	24.5
	Others	6	1.5
Monthly Income (USD)	Less than 250	123	30.75
	251-500	92	23
	501-1,000	145	36.25
	1,001-2,000	39	9.75
	More than 2,000	1	0.25
Frequency of Use	Daily	232	58
	Weekly	77	19.25
	Monthly	65	16.25
	Yearly	26	6.5
Average of trading volume (USD)	$250 or less	203	51.13
	$251- $500	129	32.49
	$501-$1000	48	12.09
	$1001-$2000	7	1.76
	More than $2000	10	2.52

Source: The author's calculation

Reliability Analysis

Sekaran and Bougie (2016) reported that a Cronbach's Alpha score of 0.80 or above suggests excellent reliability, while scores ranging between 0.70 and 0.80 imply good reliability, with 0.60 to 0.70 indicating fair reliability and scores below 0.60 representing poor reliability. Hence, a Cronbach's Alpha score (α' >0.60) is acceptable.

Table 2 Understanding of Cronbach's Alpha

Level of Reliability	Cronbach's Alpha Ranges
Poor reliability	Less than 0.6
Fair Reliability	0.60< α' <0.70
Good Reliability	0.70< α' <0.80
Very Good Reliability	0.80< α' <0.95

Source: Sekaran and Bougie's (2016) book, Research Methods for Business: A Skill Building Approach, equips the reader with the necessary proficiency to undertake productive research.

The findings, as presented in Table 3, demonstrate that composite reliability falls between 0.796 to 0.874, exceeding the preferred value of 0.5 and thereby indicating the internal consistency of the model. Additionally, to ensure the indicators for variables showed convergent validity, Cronbach's alpha was utilized. As shown in Table 4.10, the results of Cronbach's Alpha Coefficient range from 0.62 to 0.808, indicating acceptable levels of reliability and validity for all ten factors. Based on the findings, it can be concluded that all ten factors are reliable, with an average variance extracted (Pvc.) greater than 0.5.

Table 3 The Measurement Model (n = 400)

Constructs	Items	Factor Loading	Composite Reliability	Cronbach's Alpha	AVE
Behavioral Intention (BI)	BI1	0.772	0.855	0.745	0.663
	BI2	0.833			
	BI3	0.836			
Effort Expectancy (EE)	EE1	0.736	0.874	0.808	0.635
	EE2	0.827			
	EE3	0.815			
	EE4	0.807			
Facilitating Conditions (FCs)	FC1	0.749	0.853	0.77	0.592
	FC2	0.808			
	FC3	0.75			
	FC4	0.768			
Hedonic Motivation (HM)	HM1	0.739	0.796	0.62	0.566
	HM2	0.804			
	HM3	0.712			
Habit (HT)	HT1	0.816	0.815	0.659	0.595
	HT2	0.763			
	HT3	0.732			

Table 3 The Measurement Model (n = 400) (Con.)

Constructs	Items	Factor Loading	Composite Reliability	Cronbach's Alpha	AVE
Performance Expectancy (PE)	PE1	0.586	0.841	0.745	0.573
	PE2	0.848			
	PE3	0.809			
	PE4	0.759			
Perceived-Value (PV)	PV1	0.753	0.818	0.671	0.6
	PV2	0.788			
	PV3	0.782			
Social Influence (SI)	SI1	0.734	0.811	0.689	0.518
	SI2	0.754			
	SI3	0.741			
	SI4	0.647			
Trust (TR)	TR1	0.785	0.853	0.771	0.593
	TR2	0.798			
	TR3	0.763			
	TR4	0.731			
Use Behavior (UB)	UB1	0.711	0.833	0.732	0.555
	UB2	0.803			
	UB3	0.711			
	UB4	0.751			

Source: The author used SmartPLS4 software for calculation.

Table 4 displayed the correlation coefficients between the various constructs, with the diagonal values representing the square root of the average variance extracted (AVE). The Fornell-Larcker criterion specified that the AVE of each construct would be higher than the correlations between that construct and other constructs in the model, indicating adequate discrimination validity.

Overall, the data suggested that most of the constructs had adequate discrimination validity, with the AVE for each construct being higher than its correlations with other constructs.

Table 4 Discrimination Validity: Fornell-Larcker Criteria

Constructs	BI	EE	FCs	HM	HT	PE	PV	SI	TR	UB
BI	**0.814**	-	-	-	-	-	-	-	-	-
EE	0.681	**0.797**	-	-	-	-	-	-	-	-
FCs	0.708	0.785	**0.769**		-	-	-	-	-	-
HM	0.676	0.75	0.808	**0.753**	-	-	-	-	-	-
HT	0.724	0.738	0.798	0.767	**0.771**	-	-	-	-	-
PE	0.69	0.773	0.725	0.694	0.715	**0.757**	-	-	-	-
PV	0.696	0.687	0.772	0.761	0.749	0.695	**0.775**	-	-	-
SI	0.685	0.783	0.805	0.784	0.76	0.735	0.761	**0.72**	-	-
TR	0.681	0.659	0.751	0.704	0.686	0.588	0.767	0.681	**0.77**	-
UB	0.768	0.674	0.698	0.691	0.713	0.672	0.703	0.728	0.663	**0.745**

Source: Effort Expectancy (EE), Facilitating Conditions (FCs), Performance Expectancy (PE), Trust (TR), Behavior Intention (BI), Use Behavior (UB), Hedonic Motivation (HM), Habit (HT), Perceived Value (PV), Social Influence (SI)

Structural Model

PLS-SEM was employed to evaluate the consistency and accuracy of hypothesized variables. The provided data is related to a statistical analysis conducted on the relationship between various variables and the adoption of a Crypto-exchange application in the Cambodian market. The data includes the standard error, beta, t-value, hypotheses, p-value, and the result of the analysis conducted for ten hypotheses (H1-H9). This is illustrated by the following:

Table 5 Summary of Structural Model Results

Hypotheses		Std. Error	Beta	t-value	P-value (2-sided)	Result
H1	PE -> BI	0.072	0.216	3.006	0.003	Accepted
H2	EE -> BI	0.072	0.065	0.908	0.364	Rejected
H3	SI -> BI	0.067	0.04	0.594	0.553	Rejected
H4	FCs -> BI	0.081	0.038	0.467	0.641	Rejected
H5	HM -> BI	0.069	0.018	0.259	0.796	Rejected
H6	PV -> BI	0.075	0.086	1.153	0.249	Rejected
H7a	HT -> BI	0.07	0.234	3.331	0.001	Accepted
H7b	HT -> UB	0.059	0.33	5.617	0	Accepted
H8	TR -> BI	0.066	0.217	3.309	0.001	Accepted
H9	BI -> UB	0.063	0.529	8.453	0	Accepted

Source: R2 for BI is 0.637 percent and R2 for UB is 0.642 percent.

A bootstrapping procedure was conducted with 999 bootstrap subsamples to evaluate the significant effect of variables. The R2 refers to the connection of the latent variable of BI and UB. The statistical results found that EE (β=0.065, p=0.364) and FCs (β=0.038, p=0.641), HM (β=0.069, p=0.796), PV(β=0.086, p=0.249), and SI (β=0.04, p=0.553) showed an insignificantly direct effect toward BI to use Crypto-exchange application. However, BI (β=0.529, p=0.000) and HT(β=0.33, p=0.000) had a considerable relationships toward UB and PE (β=0.216, p=0.003) with TR (β=0.217, p=0.001) were significantly direct effects on BI.

The extension of UTAUT2 of the two (2) variables HM (β=0.069, p=0.796), and PV(β=0.086, p=0.249) demonstrated negative relationships toward BI whereas HT had a significant positive influence and impact on both the Behavioral Intention and Use Behavior of Crypto-exchange adoption in Cambodia market.

Results of the Structural Analysis

The structural analysis revealed that there was an insignificant effect of EE, FCs, HM, PV, and SI on the intention to adopt the Crypto-Exchange Application. In contrast, PE, TR, and BI had a positive impact on both BI and UB. Interestingly, HT had a very significant effect on the BI and UB of the Crypto-Exchange Application in the Cambodian market. Consequently, all the variables were accepted except EE, FCs, HM, PV, and SI.

The summary of research variables is as follows:-

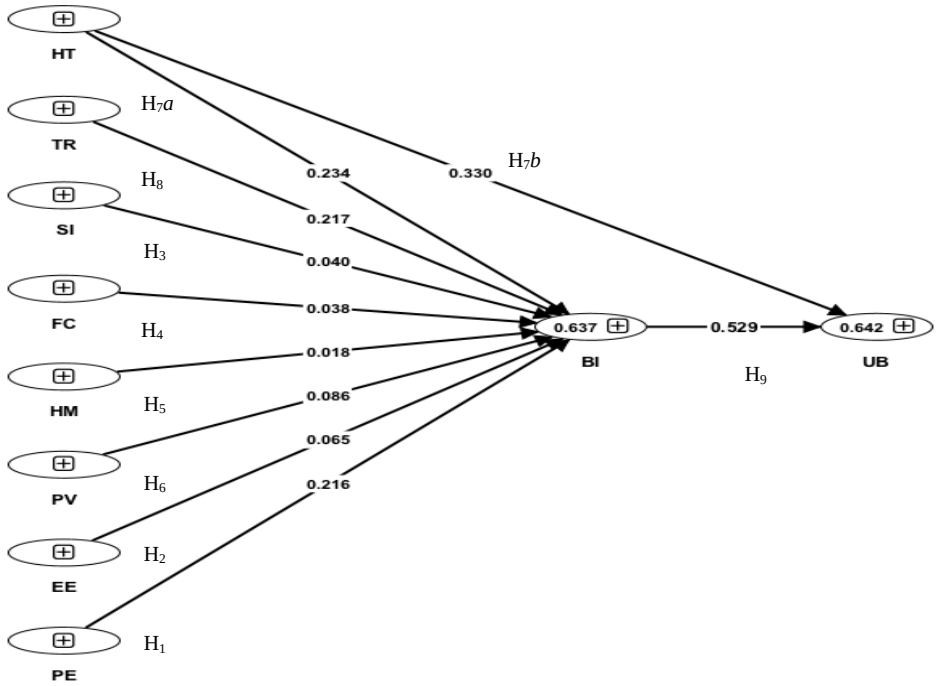

Figure 1 Graphical Representation of the Model. Author's Compilation

Discussion

The application of UTAUT2 to Crypto exchange application-based trading has revealed insightful results. In particular, Habit was highlighted as the strongest predictor of intention to use Crypto-Exchange applications for trading and investing, indicating the habitual nature of consumers' usage of the application. Performance Expectancy (PE) was also a significant predictor, implying that users perceived benefits from the application and its functions. These findings are consistent with previous research (Venkatesh et al., 2012).

The results from this structural analysis illuminated the importance of Performance Expectancy (PE), Trust (TR), and Behavioral Intention (BI) in driving Behavioural Intent (BI) and User Behaviour (UB) toward the adoption of the Crypto-Exchange Application in the Cambodian market. The significance of PE and TR has been noted in prior studies, as both are believed to be critical to positive user experience and to the determination of user intent when making adoption decisions. It is clear that users find it important that the application is beneficial to use, and that they trust the application to operate in a secure and reliable manner. The results also uncovered the effects of Habit (HT), and while it may seem counterintuitive that habit could affect user intent and behavior toward a new technology, it is important to consider that in the case of the Crypto-Exchange Application, users may have existing habits or behaviors associated with the use of prior financial applications, and these habits can influence the adoption of the new application. This suggests that leveraging user habits may be beneficial for facilitating the adoption of the Crypto-Exchange Application. In contrast, the results showed an insignificant effect of Effort Expectancy (EE), Facilitating Condition (FCs), Hedonic Motivation (HM), Perceived Value (PV), and Social Influence (SI) on the user's intent and behavior, suggesting that these features may not be as important in facilitating the adoption of the Crypto-Exchange Application. This can be attributed to the fact that most of the users may already be familiar with the basic features of the application, thus reducing the perceived importance of the aforementioned features.

Overall, the findings of the application of UTAUT2 to Crypto-Exchange applications for trading and investing in the Cambodian market revealed that Habit (HT) and Performance Expectancy (PE) significantly predicted user behavior and intention toward adoption, similar to findings in previous studies. Trust was also found to be an important factor. However, contrary to prior research, Effort Expectancy (EE), Facilitating Conditions (FC), Hedonic Motivation (HM), Perceived Value (PV), and Social Influence (SI) were found to be insignificant in influencing users' behavior and intention. This could be due to users' prior familiarity with the application's basic features.

Empirical Implication

Perceived Value (PV) and Social Influence (SI) on user intent, can be deduced that the development priorities should aim to increase Performance Expectancy (PE) and Trust (TR) as these are the primary drivers of user intent and behavior. The empirical implication of this study is that Performance Expectancy (PE) and Trust (TR) are the primary drivers of user intention and behavior toward the adoption of Crypto-Exchange Applications. Furthermore, user habits can also impact user intent in adoption decisions, indicating the importance of leveraging existing habits to facilitate adoption. Additionally, the development priorities should be focused on increasing Performance Expectancy (PE) and Trust (TR) as these are the factors driving user intent and behavior. The results of this study provide important insights into the Crypto-Exchange application adoption process, indicating which factors contribute the most to user intentions and behavior. These findings can help organizations craft effective strategies for promoting and facilitating the adoption of the application and improving user experience.

In particular, it has highlighted the importance of Performance Expectancy (PE), Trust (TR), and Habit (HT) in driving user intent as well as the insignificant effects of Effort Expectancy (EE), Facilitating Condition (FCs), and Hedonic Motivation (HM), Perceived Value (PV) and Social Influence (SI). Going forwards, this suggests that organizations should emphasize the development of mechanisms to ensure user experience and trust for business Crypto-Exchange applications.

Research Limitation

The research had several limitations which might have affected the findings. First, the researchers used a quantitative methodology which only allowed for a limited scope of investigation. The use of a qualitative approach might have revealed different results and perspectives on the factors likely to affect the intention to adopt the Crypto-Exchange Application. Second, the research primarily relied on self-reported data from Cambodian consumers which could have been biased or inaccurate. Lastly, the research did not consider possible external factors such as cultural or political influences as well as law and regulation that could have affected the results. These external factors could have affected the findings and should have been taken into account.

In conclusion, the research has revealed the effect of EE, FCs, HM, PV, and SI on the intention to adopt the Crypto-Exchange Application can be insignificant in the Cambodian market. In contrast, PE, TR, and BI have a positive effect while HT has a very significant effect on BI and UB. Despite the useful findings, there are some limitations that may impact the overall results of the research. Further research is needed to more accurately determine the effects of the variables.

Recommendation for Future Research

The findings from this study provided a basis for further research in the Cryptocurrency exchange application field. For example, it would be beneficial to study the effect of variables like PE, TR, BI, and HT on the adoption of crypto-exchange applications in other markets, such as in the ASEAN region. It would also be important to look further into the effects of the rejected variables, particularly EE, FCs, HM, PV, and SI, that had no influence on the adoption in the Cambodian market. In addition, researchers can leverage an advanced regression model to examine the interactions among the factors that influence users' adoption of the Crypto-Exchange application. Moreover, future research can use primary data to study variables that were not included in this study, such as the level of financial sophistication of the users and their perception of the Crypto-exchange application.

Finally, given the dynamic nature of the Crypto-exchange application, longitudinal studies may be done over time to observe the evolution of the users' intention to adopt this technology over time.

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Factors Influencing Behavioral Intention to Purchase Online on Facebook Platform: A Case Study in Phnom Penh City

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Abstract

The objective of this study was to analyze factors affecting behavioral intention online shopping on Facebook in Phnom Penh City by structuring the TAM Model with brand ambassador, brand awareness, and electronic word of mouth as the predictive variables. The study employed the quantitative method by conducting a survey questionnaire with 385 respondents who were experiencing online shopping via Facebook in Cambodia. After conducting hypothesis testing by using the multiple regression analysis, the study found that perceived usefulness, perceived ease of use, brand ambassador, and electronic word of mouth had positive and significant effects on behavioral intention. However, brand awareness was not statistically significant on behavioral intention. Within these limitations, the study suggests that the next researcher should integrate other theories such as the Theory of Planned Behavior, the extension of TAM (UTAUT), and the Diffusion of Innovation Theory (DOI) into this conceptual model so that the determinants can be further elaboration. The study also suggests the next research employ a qualitative approach in order to dig deep insight into these factors. Furthermore, the target respondents who live in the provinces should be focused on the next study as well. Finally, the research serves as a reference for the next researchers who wish to conduct a study on a similar topic.

Keywords: Technology Acceptance Model, Brand Ambassador, Brand, Awareness Electronic Word of Mouth, Online Shopping

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Introduction

During and after COVID-19, online activities have been increasing accompanied by an increase in Internet adoption. According to KEMP, there are around 11.44 million internet users, which stood at 78.8 percent of the total population in Cambodia as of January 2022. The same report also showed that Facebook users reached 11.60 million and they use Facebook for different purposes, namely staying in touch with friends and sharing information to a less extent for entertainment, online business, and self-expression for education, for recruitment, and for online shopping. In Cambodia, Facebook launched its shops in order to make shopping seamless and allow small business owners to connect to global brands. Even though there is an increasing number of online shoppers via Facebook, little is known about their purchase intention in Cambodia. Therefore, this study attempts to analyze the factors that influence consumer behavioral intention to do online shopping via Facebook in Phnom Penh City by applying the Technology Acceptance Model (TAM).

Research Objectives

The main objectives of the study are:

1. To study the factors that influence consumer behavioral intention toward online shopping of Facebook users in Phnom Penh City by applying the technology Acceptance Model (TAM).

2. To analyze the effect of Perceived Usefulness, Perceived Ease of Use, Brand Ambassador, Brand Awareness, and E-WOM on the behavioral intention of online shoppers in Facebook, based in Phnom Penh City.

Literature Review

Technology Acceptance Model

The Technology Acceptance Model (TAM) has been used in the study of online shopping in different countries (Cheema et al., 2013; Lim et al., 2016)

Davis et al. created the TAM Model as a conceptual framework for studying computer usage behavior. The Model states that the key characteristics that drive the intention to use technology are perceived usefulness and perceived ease of use. According to Davis et al. (1989), perceived ease of use (PEU) refers to the extent to which a potential user expects the target system, such as online shipping, to be simple to use, whereas perceived usefulness (PU) refers to the potential user's subjective likelihood that using a convinced system, such as online shopping, will advance his or her action.

Hypothesis Development

Since TAM Model is very useful in predicting online shopping, this study proposes the integration of the variables in TAM with other predictors, namely brand ambassador (BAm), brand awareness (BAw), and electronic word of mouth (E-WOM) in order to predict the online shoppers' intention to purchase on Facebook.

Behavioral Intention

The study proposes the behavioral intention of online shoppers on Facebook as a dependent variable. Cited beh. It measures the strength of the individual's intention to perform

the behavior, specifically used to anticipate a voluntary act such as online shopping and willingness to adopt a certain system.

Perceived Usefulness

As earlier mentioned, (Davis, 1989) defines perceived usefulness as the degree to which a person believes that using a particular system, namely online shopping, would enhance his or her job performance. Perceived usefulness has direct and indirect positive effects on users' behavioural intention (Davis et al., 1989; Schepers & Wetzels, 2007; Blagoeva & Mijoska, 2017) Thus, the study proposes the following hypothesis.

H1: Perceived usefulness has a positive and significant effect on the behaviour intention to adopt online shopping on Facebook.

Perceived Ease of Use

Perceived ease of use is defined as the degree to which a person believes that using a particular system would be free of effort (Davis, 1989). Perceived ease of use has been found to positively influence the behaviour intention to use online shopping (Ramadania & Braridwan, 2019). Therefore, the study proposes the following hypothesis.

H2: Perceived ease of use has a positive and significant effect on the behaviour intention to adopt online shopping on Facebook.

Brand Ambassador

A brand ambassador (BAm) is a representative of the brand and company by using their reputation to gain trust and recognition from people (Goutam, 2013). The previous study found that brand ambassador is the essential factor that have directly influence on consumer purchasing intention (Kuncoro et al., 2021). As a result, the study proposes the third hypothesis as the following.

H3: Brand ambassador has a positive and significant effect on the behaviour intention to adopt online shopping on Facebook.

Brand Awareness

The brand awareness is defined as the elementary step for the happening of interaction among the organizations and customers (Rossiter & Percy, 2017). Brand awareness is the key element, which influences the consumer behaviour, and that in turn makes the consumer set the brand preferences (Rossiter & Percy, 2017). Brand awareness is the essential factor that have directly influence on consumer purchasing intention (Kuncoro et al., 2021). Thus, the study proposes the following hypothesis.

H4: Brand awareness has a positive and significant effect on the behaviour intention to adopt online shopping on Facebook.

Electronic Word of Mouth (E-WOM)

Electronic word-of-mouth is a form of word-of-mouth that takes place in cyberspace and involves messages sent or received about goods or services that customers may encounter through online forums or chat (Lee et al., 2013). Independent source such as Facebook is more influential than company-controlled sources of EWOM, such as customer testimonials on a firm website (Nasiruddin et al., 2016). EWOM has a significant effect on behavioural intention on online advertising.

Methodology

Conceptual Framework

According to the above literature review of theoretical framework of TAM Model such as perceived ease of use and perceived usefulness and other influential factors that influence behavioral intention to purchase online on Facebook, namely brand ambassador, brand awareness, and EWOM, the researcher has proposed the following conceptual model by extending the three variables into TAM to study the factors influencing behavioral intention to do online shopping via Facebook in Phnom Penh City, Cambodia. perceived usefulness, perceived ease of use, brand ambassador, brand awareness, and electronic worth of mouth were assigned as the Independent variables, whereas the Behavioral Intention to purchase on Facebook was assigned as the dependent variable

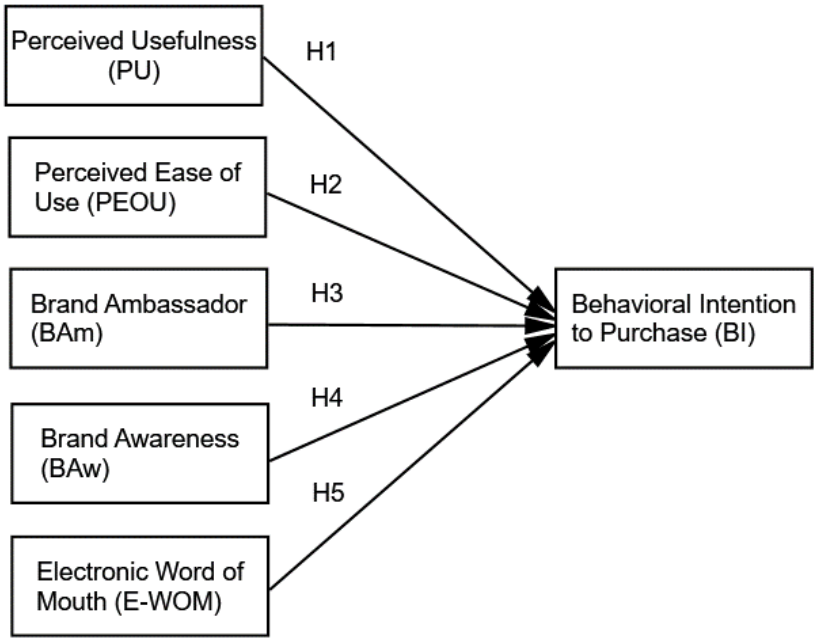

Figure 1 Proposed Conceptual Model on Intention to Shop Online Via Facebook

Research Design

The study employed a correlational study of the Quentitative Methods. Prior to testing the above hypotheses, the study described the data in terms of demographic factors and users' frequency. Also, the study checked the Cronbach's Alpha, level of agreement and association of all constructs. Finally, the study ran a multiple regression analysis in order to test the null hypotheses.

Sample Size

The target population can be people, organizations, events, objects, settings, texts and so forth (Schindler, 2019). Thus, the population in this study was the 9.78- million-Facebook users in Cambodia (Napoleoncat, 2021); however, since this research focused on online shopping, the target population was online shoppers on Facebook in Phnom Penh only. Population parameters were summary descriptors of variables of interest in the population, and they were estimated by using sample statistics, which were the basis of inferences about population (Schindler, 2019). Because the population is unknown, the sample size was calculated by using the formula of (Cochran, 1963) as the following:

$$n = \frac{Z^2 Pq}{e^2}$$

Figure 2 Sample Size Determination Formula

- n is the desired sample size
- Z is standard normal deviation, set at 1.96 corresponding to 95% confidential level
- P is the percentage of the population estimated to have a particular characteristic. In this case, it is unknown so 50% is used.
- q equals to 1-P
- e refers to a degree of accuracy desired, set at 0.05

The above formula showed that the sample size was around 385 respondents which were selected by using multi-stage random sampling, which a sample drawn from a population using smaller and smaller groups at each stage (Bhandari, 2021). In the first stage, the study selected Facebook users based on gender, age, occupation, educational status, and income level. In the second stage, the study selected individual users from each group randomly.

Furthermore, the study also used the snowball sampling technique to reach the required sample size. In snowball sampling the study asked Facebook friends who had already participated in the survey to recommend other friends who were online shoppers (Schindler, 2019).

Research Tools

The study designed the questionnaire into five sections. The first section screened whether the respondents were online shoppers on Facebook or not. The second section focused on personal information the respondents such as gender, age, educational qualification, occupation, and range of monthly salary. Section three was the filtering questions which focused the types of products purchased online, brand ambassador, and E-WOM. Section four focused the measurement of constructs with five-point Likert scale (Allen & Seaman, 2007). In this section, the study adapted measurement of behavioural intention from (Blagoeva & Mijoska, 2017), perceived usefulness form (Blagoeva & Mijoska, 2017), perceived ease of use from (Bigné-Alcañiz et al., 2008; Blagoeva & Mijoska, 2017) , brand ambassador from (Fadila et al., 2021), brand awareness from (Ahmed et al., 2017), and electronic worth of mouth from (Al-Ja'afreh & Al-Adaileh, 2020). Section five was designed to seek comments or suggestions from the respondents. Last but not least, all the questions were designed in two languages; that is, Khmer and English versions.

Validity and Reliability Of The Research Tool

To maintain the validity of the instrument, the study used an index of item-objective congruence (IOC) developed by (Rovinelli & Hambleton, 1977). The result shows that each item ranged from 0.6 to 1, exceeding 0.5 as suggested by (Rovinelli & Hambleton, 1977); therefore, each item met the criteria of the Index of IOC. In order to maintain internal consistency, the study also conducted reliability test. The result showed that the Cronbach Alpha of the six variables ranged from 0.756 (Perceived Usefulness) to 0.830 (Brand Awareness). Thus each variable had high reliability, exceeding the requirement of (Nunnally, 1994).

Data Collection Method

Normally, there are two types of data which are known as primary and secondary data. The primary data are collected in order to find out the solutions in research (Schindler, 2019). Secondary data referred to all the collected and existing data that has been found or conducted in the research already in online databases, books, and journal articles (Schindler, 2019). For this study, researchers used both primary and secondary data. Since this research employed a quantitative study, the researcher used communication as a method for collecting data. The 385 respondents who were online shoppers were requested to fill in the questionnaire, which was designed in the Google form and distributed to those online shoppers either through email, Facebook, and other social media. First, the researcher searched for Cambodian online shoppers especially those who had Facebook accounts, and the user accounts were classified based on those who had experience purchasing online products the via Facebook platform and currently live in Phnom Penh City. Secondly, the researcher contacted close friends with Facebook accounts to help distribute questionnaires to their friends (friends of friends), via E-mail, and other social network applications.

Research Results

The following table shows the result of the demographic factors. According to the table, the study claimed to have picked the right respondents since all of them did online shopping at least once within a month; and most of them shopped two or three times a week. Moreover, the majority of online shoppers on Facebook were women; these male and female respondents fell between 15 to 24 age gaps; most of them were undergraduate students and company employees; a large proportion of them had an annual income between 2001 USD to 6000 USD and preferred to buy food & beverage on Facebook.

Table 1 Demographic of the Online Shoppers

Demographic	Category (n = 385)	Frequency	Percentage
Usage frequency	Everyday	124	32.2
	Two to three times a week	153*	39.7
	Once a week	55	14.3
	Twice a month	31	8.1
	Once a month	22	5.7
Gender	Male	136	35.3
	Female	249*	64.7
Age gap	15-24 years old	169*	43.9
	25-34 years old	167	43.4
	35-44 years old	29	7.5
	45-54 years old	20	5.2
Educational Background	High school	14	3.6
	Associate's degree	32	8.3
	Bachelor's degree	272*	70.6
	Master's degree	61	15.8
	Doctoral degree	6	1.6

Table 1 Demographic of the Online Shoppers (Con.)

Demographic	Category (n = 385)	Frequency	Percentage
Occupational Status	Currently unemployed	34	8.8
	Business owner	28	7.3
	Government officer	85	22.1
	Private/company employee	220*	57.1
	Others	18	4.7
Annual income	Equal or under 2000 USD	75	19.5
	Between 2001 to 6000 USD	140*	36.4
	Between 6001 to 9000 USD	72	18.7
	Between 9001 to 12000 USD	44	11.4
	Between 12001 to 18000 USD	33	8.6
	Between 18001 to 24000 USD	10	2.6
	Equal or over 24001 USD	11	2.9
Types of products	Clothes	66	17.1
	Cosmetic products	57	14.8
	Shoes	33	8.6
	Bags	20	5.2
	Food & Beverage	149*	38.7
	Books	12	3.1
	Other	48	12.5

* Indicate the highest occurrence among each variable

Level of Agreement

Table 2 Level of Agreement

Variable	Min.	Max.	Mean*	Std. Dev.	Level of agreement
Perceived Usefulness (PU)	1.67	5.00	4.289	0.60959	Strongly agree
Perceived Ease of Use (PEOU)	1.67	5.00	4.127	0.608	Agree
Brand Ambassador (BAm)	1.67	5.00	3.973	0.685	Agree
Brand Awareness (Baw)	1.67	5.00	3.905	0.683	Agree
Electronic Word of Mouth (EWOM)	1.75	5.00	4.117	0.576	Agree
Behavioral Intention (BI)	2.00	5.00	4.095	0.636	Agree

Source: 2.60-3.39 as Neutral; 3.40-4.19 as Agree; and 4.20-5.00 as Strongly agree (Armstrong, 1987)

The above table showed that Perceived Usefulness has the highest mean, which regarded as strongly agree, while the mean scores of Perceived Ease of Use, Brand Ambassador, Brand Awareness, Electronic Word of Mouth, and Behavioral Intention were 0.608, 0.685, 0.683, 0.576, and 0.636, respectively, and these variables were perceived by the respondents as the "agree level".

Correlation Analysis

Table 3 Pearson Correlation Matrix of Variable

Variable		1	2	3	4	5	6
1	Perceived Usefulness (PU)	1					
2	Perceived Ease of Use (PEOU)	0.621**	1				
3	Brand Ambassador (BAm)	0.323**	0.352**	1			
4	Brand Awareness (BAw)	0.343**	0.400**	0.573**	1		
5	Electronic Word of Mouth (EWOM)	0.393**	0.423**	0.430**	0.367**	1	
6	Behavioral Intention (BI)	0.558**	0.562**	0.387**	0.342**	0.467**	1

** Correlation is significant at the 0.01 level (2-tailed).

The study used correlation analysis in order to identify the degree of relatedness between each variable. The correlation analysis could help the study to determine the level of association between two or more variables (Black, 2016). According to the above table, the association of the all variables were positively correlated with 0.323, correlation between PU and BAm, as the lowest value and 0.621, correlation between PU and PEOU, as the highest value.

Variance inflation factor

Table 4 Collinearity Statistics

Model	Tolerance	VIF
Perceived Usefulness (PU)	0.587	1.703
Perceived Ease of Use (PEOU)	0.553	1.809
Brand Ambassador (BAm)	0.61	1.639
Brand Awareness (BAw)	0.62	1.613
Electronic of Word of Mouth (EWOM)	0.711	1.407

Prior to running a multiple regression analysis, the study ran the variance inflation factor (VIF) to check if independent variables are highly correlated, which may interrupt the result of the regression analysis. According to (O'brien, 2007), VIF and tolerance are "both widely used measures of the degree of multicollinearity of the independent variable with other independent variables in a regression model". The VIF goes above 10, the regression coefficients are poorly

estimated because multicollinearity exists, and the VIF is near or above 5, there is a problem with multicollinearity in a multiple regression model (Akinwande et al., 2015). The following table showed the VIF ranged from 1.407 to 1.809. Therefore, multicollinearity did not exist in this study since the VIF of all independent variables was lower than 5 (Akinwande et al., 2015).

Multiple Regression Analysis

Table 5 Multiple regression analysis

Predictors	**Unstandardized Coefficients**		**Standardized Coefficients**	**t.**	**Sig.**
-	B	Std. Error	Beta	-	-
(Constant)	0.377	0.222		1.702	0.090
PU	0.291	0.052	0.279	5.567	0.000**
PEOU	0.277	0.054	0.264	5.119	0.000**
BAm	0.112	0.046	0.12	2.445	0.015*
BAw	0.001	0.045	0.001	0.025	0.980
EWOM	0.213	0.05	0.193	4.246	0.000**

*Correlation is significant at the 0.05 level (2-tailed).
**Correlation is significant at the 0.01 level (2-tailed).

The result of the model summary showed that the R squared was 0.441 and the adjusted R squared was 0.434 as the three variables were added to the TAM model. Furthermore, as R was 0.664 and R square was 0.441, the 44.1 percent of the variability in the dependent variable (Behavioral Intention) was explained by the regression model.

At the same time, Table 4.5 showed that four predictors statistically affect Behavioural Intention; in other words, Perceived Usefulness, Perceived Ease of Use, Brand Ambassador, and Electronic of Word of Mouth influenced Behavioral Intention at a standardize regression weight $\beta = 0.279$, $\beta = 0.264$, $\beta = 0.12$, and $\beta = 0.193$, respectively. However, Brand Awareness was not statistically significant since the p-value =0.980 was greater than 0.05.

Results of Hypothesis Testing

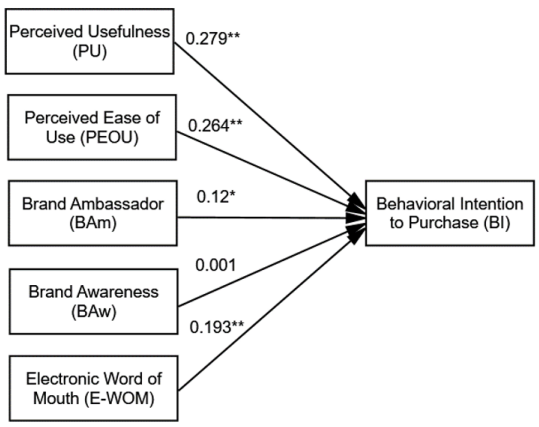

Figure 3 Summary of Hypothesis Testing

According to the above figure, the impact of Perceived Usefulness, Perceived Ease of Use, Brand Ambassador, and Electronic Word of Mouth on Behavioral Intention of online shopping on Facebook were all supported since the p-value was smaller than 0.05 (p-value < 0.05). In contrast, the influence of Brand Awareness on Behavioral Intention of online shopping on Facebook was not supported since the p - value was greater than 0.05 (p-value > 0.05).

Discussion

The proposed Conceptual Model, namely TAM was statistically significance in the study of in online shopping on Facebook in Phnom Penh City. The adjusted R squared in the proposed research model was dropped from 0.441 to 0.434, which was around 0.007. This result was logical and consistent with Render and Stair. Furthermore, this result was in line with the study of online shopping conducted by Ha and Stoel, which explained 68.6 percent of the total variance in intention; and the study of online shopping in Thailand conducted by (Phetnoi et al, 2021) which explained 65.6 percent of the variance in purchase intention.

Moreover, the study found Perceived Usefulness statistically affected behavioral intention to shop online on Facebook. The result of this study was consistent with (Juniwati, 2014; Cho & Sagynov, 2015; Blagoeva & Mijoska, 2017; Phetnoi et al., 2021). In contrast, the result of this study was not in line with (Ashraf et al., 2014; Rahmaningtyas et al., 2017). Therefore, this study showed that online shopper thought that purchasing via Facebook were beneficial because it was more likely to improve their buying habits and lifestyle and save their time.

For Perceived Ease of Use, the study found that this predictor had a positive and significant effect on the behavior intention to shop online on Facebook. This result was consistent with (Cho & Sagynov, 2015; Moslehpour et al., 2018; Suleman et al., 2021). However, the result was contradict with (Cheng & Yee, 2014). As a result, the finding of this study illustrated that the ease of use of the Facebook caused consumers' willingness to purchase the products online.

For Brand Ambassador, the result showed that it had a positive and significant effect on behavior intention to shop online on Facebook. This result was in line with (Fadila et al., 2021; Wang & Hariandja, 2016; Nurunnisha et al., 2021). In contrast, the result contradicted (Nisa & Pramesti, 2020). Therefore, the finding of this study showed that the brand ambassador on the Facebook pushed consumers' willingness to purchase the products online.

For Electronic Word of Mouth (EWOM), the study found that it had a significant effect on behavior intention of online shopping on Facebook. It was hard to reject this result since it was in line with a majority of the studies(Heryana & Yasa, 2020; Al-Ja'afreh & Al-Adaileh, 2020). Thus, the finding of this study confirmed that the EWOM on the Facebook influenced consumers' willingness to purchase the products online.

For the brand awareness, the study found that this predictor did not have a significant effect on behavior intention of online shopping on Facebook. in Phnom Penh City. However, this result was not in line with (Mokhtar et al., 2018). The result of this study can be accepted even though it was contradict with the previous study because online shoppers decided to buy products on Facebook regardless of the brand. Although they are aware of the brand on Facebook, this does not necessarily influence their purchasing decision. They may prefer to go to the physical store if they want to purchase a certain brand.

Conclusions

The objective of this study is to analyze factors affecting purchase decision of online shopping on Facebook in Phnom Penh City. Likewise, the study attempts to structure the TAM Model with Brand Ambassador, Brand Awareness, and E-WOM as the predictive variables, which directly influence behavioral intention of customers online shopping in Facebook, based in Phnom Penh City. The reason that this study was conducted because little is known about online shoppers' behavioral intention, especially in Cambodian context.

After conducting hypothesis testing, by using the multiple regression analysis, the study found that Perceived Usefulness, Perceived Ease of Use, Brand Ambassador had, and Electronic of Word of Mouth had a positive and significant effect Behavioral Intention. However, Brand Awareness was not statistically significant since the p-value is greater than 0.05.

Suggestions

Based on the demographic information, shopping frequency, and results of hypothesis testing, the study provides the following suggestions:

The original TAM and the integration of two more predictors, such as Brand Ambassador and Electronic Word of Mouth, are very usefulness in explaining online shopping Behavioral Intention on Facebook in Phnom Penh City. However, Brand Awareness does not significantly influence Behavioral Intention. Therefore, the study suggests to remove the Brand Awareness from the proposed conceptual model.

Gender, age gap, educational background, and occupational status are important information; however, the study cannot make an inference based on this result since the study has not conducted inferential statistics for these demographic factors. The study suggests to run demographic factors as moderating variables, which can be either interact between perceived usefulness and behavioral intention or brand ambassador and behavioral intention.

Online sellers or e-commerce participants on Facebook have been increasing during and after COVID-19. They shall pay close attention to the factors such as Perceived Usefulness, Perceived Ease of Use, Brand Ambassador, and Electronic Word of Mouth while boosting their Facebook pages constantly every weekend. The online sellers or e-commerce participants shall either invite the celebrities to join boosting their Facebook pages or write a persuasive online review of each product on their pages. They shall consider using digital marketing tactics or hiring someone who is specialized in producing a content marketing.

The results of this study mainly come from the experiences of online shoppers. Therefore, the study suggests online shoppers to take advantage of online shopping on Facebook by frequently read the instruction, product description or product features on online review prior to making purchase on Facebook. This can avoid misunderstanding or ordering the wrong products.

Limitations

This study suggests the next research employ a qualitative approach in order to dig deep insight into the behavioural factors that influence individuals' intention to shop online on Facebook. Furthermore, the target respondents who live in the provinces should be focused into the next study as well.

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Introductions for Manuscript Preparation

Manuscript Printing

The submitted manuscript must have the following specifications:

1) It must be 10 – 15 pages in length, printed on one side of A4 paper, with the margins (top, bottom, left, and right) of 1 inch (2.54 cm.). Set to single columns.
2) Manuscript should be as concise and precise as possible.
3) Abstract printed in 1 column.
4) All contents and references are printed in 1 column with 1 cm of indentation.
5) The simplified font is Times New Roman, with details as specified below:

Format Requirements for Each Component of the Manuscript	Font Size	Labeling
Title	18 (CT)	bold
Author's Name (Name/Surname)	12 (CT)	bold
Author's Affiliation / E-mail	9 (LJ)	First-page footer
Abstract Title	14 (LJ)	bold
Abstract Content (Single column)	12 (LJ)	regular
Keywords Title	14 (LJ)	bold
Keywords	12 (LJ)	regular
Topics	14 (LJ)	bold
Content	12 (LJ)	regular
References Head	14 (LJ)	bold
References (Alphabetically (A – Z))	12 (LJ)	regular
Table Title (On top of the table)	12 (LJ)	bold
Table Content (On top of the table)	12 (LJ)	regular
Figure Title; Chart Title (Under the figure or chart)	12 (CT)	bold
Figure Content; Chart Content (Under the figure or chart,)	12 (CT)	regular
Source Head (Under the table/ the figure/ chart)	9 (LJ)	bold
Source Content (Under the table/ the figure/ chart)	9 (LJ)	regular

Components of the Article

1. Manuscript title
2. Name of every Author, with identification of affiliation office or university and country
3. Corresponding Author E-mail, identify only the e-mail of main author or the manuscript coordinator
4. Abstract must have the length of not more than 300 words, and must have Keywords of 3-5 words or phrases.
5. Content of manuscript
   5.1 Research article comprises: Introduction, Research Objective (s), Literature Review, Methodology, Results, Discussion, Conclusions, and Recommendations (If any)
   5.2 Academic article comprises: Introduction, Content, Conclusions, and Recommendations (If any)
6. References, using the format of APA (7th edition)
7. Figures, Charts, Tables, or other illustrations must be numbered, with correct reference of their sources. They must be clear, and distinctive, and not violate the copyright of the others.

The Examples of Presentation of Tables, Figures, and Charts

Table 1 Title of Table …
"Table 1" printed in Times New 12 point font face, bold letters, left alignment
"Title of Table…" printed in Times New 12 point font face, normal letters

List (Each topic printed in Times New 12 point font face, bold letters, in the center of the table and in the center of each line)	**Number**	**Percentage**
Content (Times New 12 point font face, normal letters, in the center of the table and in the center of each line)	1	70
Content (Times New 12 point font face, normal letters, in the center of the table and in the center of each line)	2	30
Total	**4**	**100**

Sources or Remarks: Details……..

"Sources or Remarks:" printed in Times New 9 point font face, bold letters, left alignment
"Details…" printed in Times New 9 point, normal letters

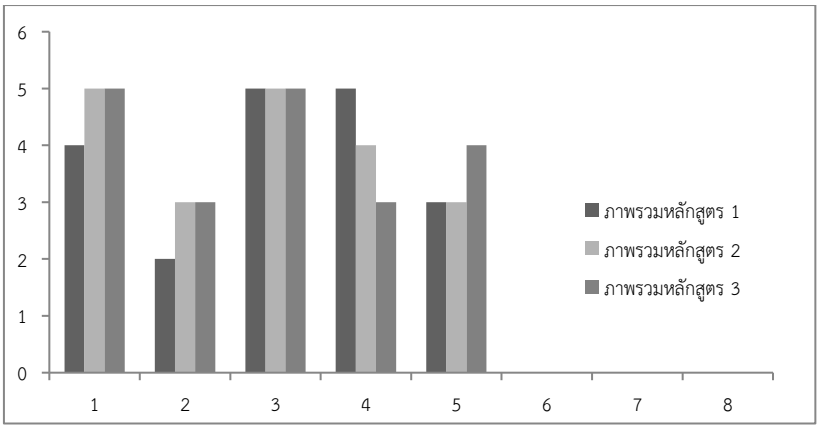

Figure 1 Name of Figure, Chart…

Sources or Remarks: Details……..

"Figure 1" printed in Times New 12 point font face, bold letters, center of the page
"Name of Figure, Chart..." printed in Times New 12 point font face, normal letters
"Sources or Remarks:" printed in Times New 9 point font face, bold letters, left alignment
"Details…" printed in Times New 9 point, normal letters

As such, Tables, Figures, Charts, and Equations can be printed in one column, depending on the size, clarity, and appropriateness.

Quotations

Printed in Times New 12 point font face.

1. Quotations in the Contents

Format	Quotation (In front of the sentence)	Quotation (At the end of the sentence)
One author	Coghlan (1993)	(Coghlan, 1993)
Two authors	Mohsen and Mohammad (2011)	(Mohsen & Mohammad, 2011)
Three or more authors	Burkart et al. (1997)	(Burkart et al., 1997)
Organization	Ministry of Education (2020)	(Ministry of Education, 2020)
Organization using abbreviation	First quotation: National Institute of Development Administration (NIDA, 2018) Next quotation: NIDA (2018)	First quotation: (National Institute of Development Administration [NIDA], 2018) Next quotation: (NIDA, 2018)
Quotation from the document (Specify page number)	Shaw (2017, p. 172) or Shaw (2017, pp. 172-180)	(Shaw, 2017, p. 172) or (Shaw, 2017, pp. 172-180)
Quotation from interviews	J. M. Sun (Personal communication, August 18, 2021)	(Sun, J. M., Personal communication, August 18, 2021)

2. References at the End of the Article

All documents that have been quoted must be listed in the References at the end of the article. The list must be alphabetically ordered based on the reference sources and surname of the author. The reference format should follow that of APA (7th edition).

2.1 Format of Reference Based on Number of Authors

Authors	Reference at the End of Article
One author	Surname,/ First alphabet of name being a capital letter.
Two authors	Surname,/First alphabet of name being a capital letter.,/&/Surname of second author,/First alphabet of name being a capital letter.
3-20 Authors	Surname,/First alphabet of name being a capital letter.,/Surname,/First alphabet of name being a capital letter.,/Surname,/First alphabet of name being a capital letter.,/(Number 1-19 authors),/&/Surname,/First alphabet of name being a capital letter. (Number 20 author)
21 Authors or more	Surname,/First alphabet of name being a capital letter.,/(Number 1-19 authors),/./././Surname,/First alphabet of name being a capital letter. (The last author)

2.2 Format of Reference Based on Documents

2.2.1 Journals

1) Journal (Printed)

Surname,/First alphabet of name being a capital letter./(A.D. year)./Article title./*Journal title*,/ ///////*Volume*(No.),/first page-last page of article in the journal.

Kraikunasai, J., Chongcharoen, K., Ngudgratoke, S., & Pukchanka, P. (2017). A causal model of administrative factors affecting educational quality in vocational school. *Panyapiwat Journal, 9*(2), 171-184.

2) Journal (Electronic)

Surname,/First alphabet of name being a capital letter./(A.D. year)./Article title./*Journal title*,/ ///////*Volume*(No.),/first page-last page of article in the journal./http://doi.org/xxxx or URL

Waehayee, N. (2014). Relationship between strategic performance based budgeting system and law on the budgetary procedures. *Jurisprudence Journal Naresuan University, 7*(2), 152-178. http://doi.org/10.14456/nulj.2014.9

Sittichai, O., & Silcharu, T. (2021). Guidelines for creating competitive advantage for processed food industry cluster. *Panyapiwat Journal, 13*(2), 12-26. https://so05.tci-thaijo.org/index.php/pimjournal/article/view/240994

2.2.2 Books

1) Book (Printed)

Surname,/First alphabet of name being a capital letter./(A.D. year)./*Book title*/(Edition)./Publisher. ***** In case of no publication date, put n.d. * In case of first edition, do not specify the edition. * In case of no specification of publisher, put n.p.

Ritcharoon, P. (2016). *Principles of measurement and evaluation.* House of Kermyst.

Yamane, T. (1967). *Statistics: An introductory analysis* (2nd ed.). Harper and Row.

2) Book (Electronic without DOI)

Surname,/First alphabet of name being a capital letter./(A.D. year)./*Book title*/(Edition)./URL ***** In case of no publication date, put n.d. * In case of first edition, do not specify the edition. * In case of no specification of publisher, put n.p.

Department of Primary Industries and Mines. (2017). *Benchmarking industrial logistics performance index supply chain performance index logistics scorecard.* https://dol.dip.go.th/files/article/attachments/dol/3e30ca4fc9f964feeb57fce3fc602c04.pdf

3) Chapter in a Book

Surname,/First alphabet of name being a capital letter./(A.D. year)./Title of chapter or article./ ///////In/First alphabet of editor's name being a capital letter/Surname/(Ed. or Eds.),/*Book* ///////*title*/(pp./page numbers)./Publisher.

Chin, W. W. (1998). The partial least squares approach to structural equation modeling. In G. A. Marcoulides (Ed.), *Modern methods for business research* (pp. 295-336). Lawrence Erlbaum Associates.

2.2.3 Thesis

1) Thesis (Printed)

Surname,/First alphabet of name being a capital letter./(A.D. year)./*Title of thesis*/[Master's thesis ///////or Doctoral dissertation]./Name of educational institution.

Seangsri, W. (2009). *An analysis and development of school network administration model in northeastern rural area* [Doctoral dissertation]. Chulalongkorn University.

2) Thesis (Electronic)

First Format

Surname,/First alphabet of name being a capital letter./(A.D. year)./*Title of thesis*/[Master's thesis ///////or Doctoral dissertation]./Name of website./URL

Lin, Q. (2020). *the influence of music teachers' competence on job performance-moderator role of interactive behavior* [Doctoral dissertation]. Panyapiwat Institute of Management Library. http://elibrary.pim.ac.th/Record/833578

Second Format

Surname,/First alphabet of name being a capital letter./(A.D. year)./*Title of thesis*/(UMI number or ///////other numbers)/[Doctoral dissertation or Master's thesis,/Name of university]./Name of ///////database.

Lope, M. D. (2014). *Perceptions of global mindedness in the international baccalaureate middle years programme: The relationship to student academic performance and teacher characteristics* (Order No. 3682837) [Doctoral dissertation, University of Maryland]. ProQuest Dissertations and Theses Global.

2.2.4 Research Report

Surname,/First alphabet of name being a capital letter./(A.D. year)./*Title*/(Report No. if given)./ ///////Publisher./http://doi.org/xxxx or URL

National Cancer Institute. (2019). *Taking time: Support for people with cancer* (NIH Publication No. 18-2059). U.S. Department of Health and Human Services, National Institutes of Health. https://www.cancer.gov/ publications/patient-education/takingtime.pdf

2.2.5 Electronic Media

Surname,/First alphabet of name being a capital letter./(A.D. year,/month/date)./*Article title*./ ///////Name of website./URL ***** In case of no publication date, put n.d. * In case of only A.D. year appears, put only A.D. year * In case of the author's name and the website name being the same, cut the website name

Minister of Tourism and Sport. (2020, January 9). *Bangkok flea markets: Adventurous shopping experience.* Tourism Thailand. https://www.tourismthailand.org/Articles/ bangkok-flea-markets-adventurous-shopping-experience

Millburn, J. F. (2021). *How to start a successful blog in 2021*. The minimalists. https://www.the minimalists.com/blog/

2.2.6 Articles/documents presented in academic conference (Proceedings)

Surname,/First alphabet of name being a capital letter./(A.D. year)./Title of article./In/First ///////alphabet of the editor's name being a capital letter./Surname/(Ed. or Eds.),/*Name of* ///////*conference topic*./*Name of conference*/(pp./page numbers)./Name of database./ ///////https://doi.org/xxxx or URL

Phinitchai, S., Nawaratana, N., & Tanthanuch, J. (2021). Distributional-based analysis for health care insurance claim data. In *Globalization revisited: Building organization resilience with digital transformation. The 4th PIM International Conference* (pp. 715-725). Panyapiwat Institute of Management. https://conference.pim.ac.th/zh/wp-content/ uploads/2021/03/I-Social-Sciences-and-Humanities-Part-1.pdf

2.2.7 Documents for the Conference

Surname,/First alphabet of name being a capital letter./(A.D. year,/month/date)./Topic of ///////conference./In/First alphabet of the Chair Person's name being a capital letter./Surname/ ///////(Chair),/*Name of conference*/[Symposium]./Name of conference organizer,/Place of ///////conference.

Wasi, N., Poonpolkul, P., & Thephasdin na Ayudhya, C. (2021, September 30). Policy design for coping with aging society. In N. Wasi (Chair), *Future world money: Developing Thai digital currency* [Symposium]. BOT Symposium 2021: Building a Resilient Thailand. Bank of Thailand. https://www.pier.or.th/conferences/2021/symposium/

2.2.8 Interview Documents

Surname,/First alphabet of name being a capital letter./(A.D. year,/month/date of the interview). ///////Interviewed by/First alphabet of the interviewer's name being a capital letter./Surname ///////[Tape recording]./Position of interviewee (If any),/Place of interview.

Chearavanont, S. (2021, September 30). Interviewed by N. Wanakijpaiboon [Tape recording]. Executive Chairman of Charoen Pokphand Group, Bangkok.

2.2.9 Newspapers

1) Newspaper (Printed)

Surname,/First alphabet of the author's name being a capital letter./(A.D. year,/month/date)./ ///////Topic or article title./*Name of newspaper*,/first page-last page.

Sriwattanachai, R. (2014, October 24). The prefabricated generation of seasoning sauce market. *POST TODAY*, B3-B4.

2) Newspaper (Electronic)

Surname,/First alphabet of the author's name being a capital letter./(A.D. year,/month/date)./ ///////Topic or article title./*Name of newspaper*./URL

Bangkok post and reuters. (2021, October 8). UK eases travel rules for countries including Thailand. *Bangkok Post*. https://www.bangkokpost.com/thailand/general/2194651/uk-eases-travel-rules-for-countries-including-thailand

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