



# The 7<sup>th</sup> International Conference

**Vol.4**

Management, Business Administration,  
Social Sciences & Humanities

**May 8 – 9, 2026**

Royal Phuket City Hotel, Mueang Phuket District, Phuket, Thailand  
Organized by King Mongkut's Institute of Technology Ladkrabang,  
Prince of Chumphon Campus, Chumphon, Thailand



The 11<sup>th</sup> National Conference and The 7<sup>th</sup> International Conference  
on Informatics, Agriculture, Management, Business Administration, Engineering,  
Sciences and Technology (IAMBEST 2026)

**Organized by:**

King Mongkut's Institute of Technology Ladkrabang, Prince of Chumphon Campus and University  
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**Published by:**

King Mongkut's Institute of Technology Ladkrabang Prince of Chumphon  
Campus, Chumphon 17/1 Moo 6 Chumco Pathio Chumphon 86160 Thailand  
86160  
Tel: (+66) 77 506 - 410

## MESSAGE FROM THE EXECUTIVE VICE PRESIDENT KMITL-CHUMPHON

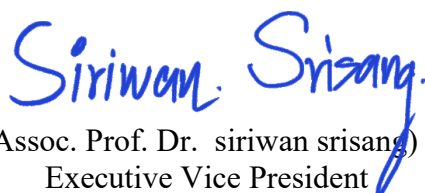
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The 7<sup>th</sup> International Conference on Informatics, Agriculture, Management, Business Administration, Engineering, Science, and Technology (IAMBEST 2026), along with the 11<sup>th</sup> National Conference on Informatics, Agriculture, Management, Business Administration, Engineering, Science, Technology, Social Sciences, and Humanities, are well-know conferences for academics, experts, and many researchers. The conferences are hosted by the King Mongkut's Institute of Technology Ladkrabang Prince of Chumphon Campus (KMITL-Chumphon), In collaboration with various university networks and professional associations in Thailand. During 8-9 May 2026 at Royal Phuket City hotel, Phuket, Thailand. The aim of these conferences is to provide an exchange stage for ideas, knowledge, and research among researchers from various fields. The continued development of research fosters the exchange of knowledge, connections, collaboration, and integration among one another. All of the above contributes to the development of the community, society, and country.

As the chairman of IAMBEST 2026 by KMITL-Chumphon, I sincerely thank all committee members for your time and determination in organizing this wonderful conference. I thank all attendees and guests for sharing your research, innovation and technology. This conferences are grateful and success. I wish that the exchange of ideas and sharing of knowledge from this conference will provide you with another step to advance your knowledge and technology and to benefit your communities and countries.

Best wishes to all of you.



(Assoc. Prof. Dr. siriwan srisang)  
Executive Vice President  
KMITL, Prince of Chumphon Campus  
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**IAMBEST**  
KMITL PRINCE OF CHUMPHON  
8-9 MAY 2026



**Dr. David L. Hyten Jr.**  
University of Nebraska-Lincoln (USA)

# Keynote Speaker

**Topic: Genomic Tools to Accelerate Soybean Improvement in an Era of Climate Volatility**



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16:00-18:30	Organizing committee and session chair meeting		
Day 2: Opening Day		Sat 9 May 2026	
International Session		National Session	
<b>Sessions</b>	<b>(2) Sci. and Agri.</b>	<b>(1) Management and B.A.</b>	<b>(3) Tech.</b>
<b>Chairperson</b>	K. Eawsakul P. Nittayacharn	A. Jansuri R. Taweephol	C. Rattanamechaikul S. Ketkaew
<b>Room</b>	Hay Room	Nakha Room	Bon Room
08:30-10:30	S52, S54, S61, S68, S78, A41, A42, A83	MB21, MB27, MB37, MB96, MB117, MB143	IS01, T7, T28, T55, T87, T89, T113, T70
10:30-10:50			
10:50-11:10			
11:10-12:00			
12:00-13:00			
<b>Sessions</b>	<b>(3) Soc. Sci. &amp; Humanities</b>	<b>(4) Info., Eng. and Tech.</b>	<b>(5) Soc. Sci. &amp; Humanities</b>
<b>Chairperson</b>	N. Chanthap R. T. Palayon	S. Saisorn W. Duanthongsuk	M. Subongkod R. Dangwilailux
<b>Room</b>	Hay Room	Raya Room	Maithon Room
13:00-15:30	SS4, SS13, SS56, SS80, SS111, SS112	I95, T20, T64, E10, E24, E29, E39, E63, E69	SS34, SS36, SS128, SS129, SS130, SS131, SS132, SS134
15:30-15:45			
<b>Sessions</b>	<b>(3) Soc. Sci. &amp; Humanities</b>	<b>(5) Eng.</b>	<b>(9) Eng.</b>
<b>Chairperson</b>	N. Chanthap R. T. Palayon	S. Chuayboon N. Srisang	T. Archevapanich N. Ruttanadech
<b>Room</b>	Hay Room	Raya Room	Bon Room
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**Note:** Each oral presentation is allocated for 15 min.

## PROGRAM CONFERENCE

### Program IAMBEST2026: Poster Presentation

Day 1: Registration Day		Fri 8 May 2026	
15:30-17:00	Registration and installation of poster and soft file presentation (ppt or pdf format)		
16:00-18:30	Organizing committee and session chair meeting		
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(1) Agri.		(4) Sci. and Agri.	
<b>Sessions</b>	(2) Sci.	(5) Soc. Sci. & Humanities	
<b>Chairperson</b>	P. Phansak N. Suwannarat	K. Bunya-atichart P. Narkthewan	M. Subongkod R. Dangwilailux
<b>Room</b>	Foyer	Foyer	Foyer
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15:30-15:45			
18:30-21:00			
Coffee Break		Coffee Break	
Banquet & Awarding (Ballroom1)		Banquet & Awarding (Ballroom1)	

Note: Each poster presentation is allocated for 10 min.

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# Oral Presentation

# Purchasing Behavior for Plant Factory Vegetables of Consumers in Supermarkets in Bangkok Metropolitan Area

Bhawat Chiamjinnawat<sup>1</sup>, Kanokwan Tammaroopa<sup>2, a)</sup> and Wareerat Srichum<sup>3</sup>

## Author Affiliations

<sup>1,2</sup>School of Agriculture and Cooperatives, Sukhothai Thammathirat Open University, Bangkok, 10510, Thailand

<sup>3</sup>Horticultural Research Institute, Department of Agriculture, Bangkok, 10900, Thailand

## Author Emails

<sup>a)</sup>Corresponding author: kanokwan.tam@stou.ac.th

**Abstract.** A survey research design was employed. The sample consisted of 400 consumers who had purchased plant factory vegetables from supermarkets in Bangkok, determined using Cochran's formula and selected through multi-stage random sampling. Data were collected using structured questionnaires and analyzed using descriptive statistics, including frequency, percentage, mean, and standard deviation. The results showed that most respondents were female, aged 31–40 years, held a bachelor's degree, were married, worked in the private sector, and had a monthly income of 20,001–30,000 baht. Reliable product quality and nutritional value were the main reasons for purchasing plant factory vegetables, with microgreens being the most frequently purchased type. Consumers typically purchased these products every 2–3 weeks, with an average spending of 201–300 baht per purchase. The overall consumer decision-making process was at a high level (mean = 3.70), with need recognition ranking highest (mean = 3.81). Attitudes toward the marketing mix were also at a high level (mean = 3.84), with price identified as the most influential factor. These findings provide useful insights for agribusiness entrepreneurs and retailers in designing effective marketing strategies and improving product positioning for plant factory vegetables in urban markets.

**Index Terms—** Purchasing Behavior, Decision-Making Process, Marketing Mix, Plant Factory Vegetables, Supermarkets

## I. INTRODUCTION

The current increase in the global population has led to a growing demand for food (Chittrakul et al., 2020). Vegetables are widely consumed due to their high nutritional value, as they provide essential vitamins and minerals necessary for human health. Consequently, vegetable consumption has increased significantly. Farmers have expanded vegetable cultivation extensively, and exports to international markets generate substantial income (Saensuk, 2018). Vegetables are economically important commodities, with rising demand in both domestic and international markets. This trend is largely driven by changing consumer behavior, as individuals across all age groups have become more health-conscious and increasingly prefer nutritious foods. In Thailand, demand for fresh vegetables has risen by approximately 3.50 million tons per year, partly due to urban expansion, where most residents are consumers rather than producers of vegetables. Additionally, the growth of the tourism industry has further stimulated market demand (Phuengsomya, 2019). Rapid population growth resulting from rural-to-urban migration for employment and economic opportunities, together with evolving consumer preferences, has required the agricultural sector to adopt more efficient and standardized production systems to meet both

quantitative and qualitative demands. However, climate variability has adversely affected crop growth and increased the incidence of pests and diseases. In response, plant factories—also referred to as indoor vertical farming systems (Chutimanukul, 2023)—have emerged as an alternative approach to address rising food demand. Vertical farming refers to an agricultural production system in which crops are cultivated in vertically stacked layers within controlled environments using technologies such as hydroponics, aeroponics, or aquaponics. This system allows producers to regulate environmental factors including temperature, humidity, lighting, and nutrient supply, enabling continuous crop production throughout the year regardless of external climate conditions. Compared with conventional farming systems, vertical farming can increase productivity per unit area, reduce land use, and improve production efficiency (Jürkenbeck et al., 2019; Aborujilah, 2025). Recent international studies have highlighted the potential of plant factory systems and vertical farming as innovative solutions for sustainable urban food production. Plant factories operate under highly controlled environments using artificial lighting and advanced monitoring technologies to optimize crop growth and ensure consistent production throughout the year. These systems have been recognized for their ability to improve resource-use efficiency, reduce environmental impacts, and support resilient urban food systems.

Aborujilah, (2025). In addition, several studies have examined consumer perceptions of vertically farmed vegetables. Research conducted in multiple countries found that many consumers respond positively to vertically farmed produce when they are informed about its production process and safety benefits. However, unfamiliarity with the technology may lead some consumers to perceive these products as less natural, which may influence purchasing decisions. Furthermore, consumer attitudes toward vertically farmed vegetables have been found to vary according to socio-demographic characteristics such as income, education level, and health consciousness. Consumers with higher income levels or those who frequently purchase organic vegetables tend to have more positive attitudes and a greater willingness to pay for vegetables produced in plant factory systems. These systems enable year-round production in controlled, closed environments, resulting in high-quality produce that often commands premium prices. With advanced air filtration systems that prevent contamination by pathogens and insects, chemical pesticides and herbicides are unnecessary, ensuring clean and safe produce free from chemical residues. As a result, plant factory vegetables have gained interest among retailers and entrepreneurs, particularly in supermarkets, which serve as an important distribution channel attracting health-conscious consumers (Sramanee, 2021). Despite the technological advantages of vertical farming systems, consumer acceptance remains a crucial factor influencing market development. One important determinant affecting consumer acceptance of innovative food production systems is trust in food technology. Consumer trust refers to the level of confidence that individuals have in the safety, reliability, and transparency of food production technologies. When consumers perceive that new technologies can produce safe and hygienic food products, their willingness to purchase such products tends to increase. Conversely, uncertainty regarding production processes may lead to skepticism toward technologically produced food (Siegrist & Hartmann, 2020). Another factor influencing consumer attitudes toward vertically farmed products is the perception of sustainability associated with this production system. Sustainability perception refers to consumers' beliefs that a particular production method contributes to environmental protection, efficient resource utilization, and long-term food security. Vertical farming is often promoted as a sustainable agricultural innovation because it can reduce water consumption, minimize pesticide use, and decrease land requirements compared with conventional agriculture.

At present, consumers are able to purchase fresh vegetables from supermarkets located near their residences. In selecting fresh vegetables, consumers often consider elements of the marketing mix, as individual needs and preferences differ. Fresh vegetables are capable of responding effectively to diverse consumer demands. Retail outlets that offer a wider variety of fresh vegetables tend to gain greater popularity. Moreover, stores that implement attractive marketing strategies are more likely to capture consumer attention and encourage patronage. Poolkerd (2019) stated that consumer behavior continuously changes

in response to economic conditions and environmental factors. Therefore, ongoing study of evolving consumer

behavior is essential to provide guidance for farmers and agribusiness entrepreneurs in adjusting their marketing strategies to align with current market demands. Similarly, Kotler et al. (2014) explained that consumer purchasing decision behavior is influenced by multiple factors, including

internal factors such as gender, age, occupation, income, and marital status, as well as external factors such as the marketing mix. From a theoretical perspective, consumer purchasing behavior can be explained through the interaction between internal consumer characteristics and external marketing stimuli. According to marketing theory, the marketing mix—including product, price, place, and promotion—serves as an important set of controllable factors that influence consumer perceptions and purchasing decisions. Consumers evaluate product attributes, pricing fairness, accessibility, and promotional communication when deciding whether to purchase a product. Therefore, analyzing consumer attitudes toward the marketing mix provides valuable insights into how marketing strategies can influence purchasing behavior in retail markets. In the context of plant factory vegetables, the marketing mix may play an important role in shaping consumer acceptance of these relatively new agricultural products. For example, product attributes such as safety, freshness, and pesticide-free production may enhance perceived value, while pricing strategies and promotional communication can influence consumers' willingness to purchase premium vegetables produced using advanced agricultural technologies.

Although previous studies have examined vertical farming technologies and consumer perceptions of vegetables produced in controlled environments, research focusing on consumer purchasing behavior and marketing-related factors remains limited. Several studies have investigated consumer attitudes toward vertically farmed vegetables and their willingness to pay for such products; however, most of these studies have been conducted in Europe and other developed regions. These studies highlight that consumer perceptions of safety, quality, and naturalness significantly influence acceptance of vertically farmed produce. Nevertheless, limited empirical research has examined how consumer characteristics and marketing mix factors influence purchasing behavior of plant factory vegetables in emerging urban markets such as Bangkok. In particular, studies integrating consumer behavior theory with marketing mix analysis in the context of plant factory vegetables remain scarce. Therefore, this study aims to address this gap by examining consumers' characteristics, purchasing behavior, and attitudes toward the marketing mix of plant factory vegetables in supermarkets in the Bangkok Metropolitan Area.

Based on the aforementioned significance, the researcher aims to examine personal factors, including gender, age, marital status, educational level, occupation, and average monthly income, as well as consumers'

purchasing behavior of plant factory vegetables in supermarkets in Bangkok Metropolitan Area. The findings of this study are expected to serve as guidelines for production planning and management, as well as for designing marketing plans and promotional strategies. Ultimately, the results may contribute to the development of vegetable products that are more closely aligned with consumer needs and preferences.

## II. METHODOLOGY

This study employed a survey research design. The research procedures were conducted as follows:

### 1. Population and Sample

The population of this study comprised consumers who purchased plant factory vegetables from supermarkets in the Bangkok Metropolitan Area. As the exact population size was unknown, the sample size was determined using Cochran's (1973) formula for an unknown population. The maximum acceptable error was set at one-tenth of the population standard deviation, with a statistical significance level of 0.05. The calculated minimum sample size was 384 respondents. Therefore, this study employed a total sample of 400 consumers. Data collection was conducted using a multi-stage sampling technique as follows:

Stage 1: Simple random sampling was employed by drawing lots to select 5 districts out of the 50 districts in Bangkok Metropolitan Area. The selected districts were Chatuchak, Bang Kapi, Din Daeng, Phaya Thai, and Pathum Wan.

Stage 2: Quota sampling was applied because the exact population frame was unknown. The sample size was equally allocated across the selected districts. From the total sample of 400 respondents, 80 respondents were assigned to each district.

Stage 3: Purposive sampling was then used to select respondents who had previously purchased plant factory vegetables from supermarkets. Data were collected from consumers shopping at supermarkets, including Tops, Tesco Lotus, Big C, Foodland, Villa, Siam Paragon, Emporium, and The Mall.

The sampling procedure is well-explained, combining multi-stage random sampling with purposive selection of actual buyers, which enhances the relevance of the data. Data were collected using self-administered questionnaires distributed to consumers in supermarkets.

### 2. Research Instrument for Data Collection

2.1 The research instrument used in this study was a structured questionnaire. The questionnaire was divided into three parts as follows:

Part 1: Personal factors, including gender, age, educational level, occupation, and income. These items were structured as multiple-choice questions.

Part 2: Purchasing behavior and the decision-making process regarding plant factory vegetables among consumers in supermarkets within the Bangkok Metropolitan Area. This section employed Likert-scale questions, in which respondents selected one response that best reflected their level of agreement. The responses were measured using a five-point

Likert scale, ranging from 1 = very low, 2 = low, 3 moderate, 4 = high and 5 = very high.

Part 3: Attitudes toward the marketing mix factors, including product, price, place (distribution). This section also employed Likert-scale questions, in which respondents selected one response that best represented their opinions or perceptions. The responses were measured using a five-point Likert scale, ranging from 1 = very low, 2 = low, 3 moderate,

4 = high and 5 = very high.

### 2.2 Instrument Validation and Reliability Testing

The instrument was examined for content validity by calculating the Index of Item-Objective Congruence (IOC). Three experts evaluated the questionnaire, yielding an average IOC value of 0.67. Following expert review, the questionnaire was revised in accordance with their recommendations. The revised instrument was then pilot-tested with 30 respondents who were not part of the study sample. The results were analyzed to determine reliability using Cronbach's alpha coefficient. The reliability coefficient was 0.967, indicating an excellent level of internal consistency. This result suggests that the questionnaire was highly reliable and appropriate for use with the actual sample.

### 3. Data Analysis

The data obtained from the questionnaires were analyzed using descriptive statistics as follows:

Part 1: Personal characteristics of the sample and consumers' purchasing behavior of plant factory vegetables in supermarkets within the Bangkok Metropolitan Area were analyzed using frequency and percentage.

Part 2: Purchasing behavior and the decision-making process regarding plant factory vegetables among consumers in supermarkets within the Bangkok Metropolitan Area were analyzed using frequency, percentage, arithmetic mean, and standard deviation (S.D.).

Part 3: Marketing mix factors were analyzed using arithmetic mean and standard deviation (S.D.).

## III. RESULTS AND DISCUSSION

### Results

The study on consumers' purchasing behavior of plant factory vegetables in supermarkets within the Bangkok Metropolitan Area yielded the following results:

The results of the analysis of personal characteristics of the 400 supermarket consumers are presented in Table 1.

Based on Table 1, the findings indicate that among the 400 respondents, the majority were female (68.0%). Most participants were aged between 31-40 years and 41-50 years, with comparable proportions (37.0% and 35.0%, respectively), suggesting that the respondents were predominantly middle-aged working adults. In terms of educational attainment, most respondents held a bachelor's degree (61.0%). Regarding marital status, over half were married (54.0%). Concerning occupation, the majority were private sector employees (57.0%). In addition,

most respondents reported a monthly income between 20,001 and 40,000 Baht (69.0%).

TABLE I  
DEMOGRAPHIC CHARACTERISTICS OF  
SUPERMARKET CONSUMERS

Variable	Frequency (n)	Percentage (%)
<b>Gender</b>		
Male	128	32.0
Female	272	68.0
Total	400	100.0
<b>Age</b>		
30 years or below	20	5.0
31–40 years	148	37.0
41–50 years	140	35.0
51–60 years	76	19.0
61 years and above	16	4.0
Total	400	100.0
<b>Educational Level</b>		
Lower than bachelor's degree	92	23.0
Bachelor's degree	244	61.0
Higher than bachelor's degree	64	16.0
Total	400	100.0
<b>Status</b>		
Single	136	34.0
Married	216	54.0
Widowed/ Divorced/ Separated	48	12.0
Total	400	100.0
<b>Occupation</b>		
Government officer/State enterprise employee	60	15.0
Private sector employee	228	57.0
Business owner/Trader	88	22.0
Others	24	6.0
Total	400	100.0
<b>Salary</b>		
20,000 Baht or below	76	19.0
20,001–40,000 Baht	276	69.0
40,001 Baht and above	48	12.0
Total	400	100.0

The empirical findings on consumers' purchasing behavior and decision-making processes related to plant factory vegetables in supermarkets are presented in the following section.

The results pertaining to vegetable purchasing behavior among the 400 respondents are summarized in Table 2.

TABLE II  
VEGETABLE PURCHASING BEHAVIOR  
OF SUPERMARKET CONSUMERS

Variable	Frequency (n)	Percentage (%)
<b>Reasons for Purchasing Vegetables from Plant Factories</b>		
Convenience	116	22.2
Reliable quality	228	43.8
Wide product selection	100	19.2
Reasonable price	76	14.6
Total	400	100.0
<b>Frequency of Purchasing Vegetables from Plant Factories</b>		
Daily	16	4.0
Every 2–3 days	48	12.0
Once a week	92	23.0
Every 2–3 weeks	96	24.0
Once a month	80	20.0
Occasionally	48	12.0
Others	20	5.0
Total	400	100.0
<b>Reasons for Consuming Vegetables from Plant Factories</b>		
Nutritional value	216	32.1
Personal preference	176	26.2
Health concerns	168	25.0
Social trends	112	16.7
Total	400	100.0
<b>Types of Vegetables Commonly Purchased from Plant Factories</b>		
Leafy salad vegetables	96	24.0
Microgreens	176	44.0
Culinary vegetables	100	25.0
Medicinal plants	28	7.0
Total	400	100.0

<b>Reasons for the Higher Prices of Vegetables from Plant Factories</b>		
Requires intensive crop management	292	33.7
Certified free from chemical residues	192	27.9
Multiple levels of intermediaries	148	21.5
Branding and well-designed packaging	116	16.9
<b>Total</b>	<b>400</b>	<b>100.0</b>
<b>Average Expenditure per Purchase</b>		
< 100 baht	24	6.0
100–200 Baht	108	27.0
201-300 Baht	128	32.0
301-400 Baht	92	23.0
401-500 Baht	40	10.0
> 500 Baht	8	2.0
<b>Total</b>	<b>400</b>	<b>100.0</b>

Table 2 presents the findings from 400 respondents. The results indicate that the primary reason for purchasing vegetables from plant factories was perceived product quality and reliability (43.8%), highlighting the importance of product standards and credibility in the consumer decision-making process. Regarding purchase frequency, most respondents reported buying vegetables approximately once every two to three weeks (24.0%). In terms of consumption motives, nutritional value was identified as the most important factor (32.1%). The most popular type of vegetable purchased was leafy greens consumed at the young stage (microgreens) (44.0%). Furthermore, respondents perceived that the main factor contributing to the higher price of plant factory vegetables was the complexity of cultivation and maintenance processes (33.7%). As for purchasing expenditure, the majority reported spending between 201–300 Baht per purchase (32.0%).

The results of the analysis of the purchasing decision-making process for plant factory vegetables among 400 consumers in supermarkets are shown in Table 3. Table 3 presents the findings from a sample of 400 respondents. Overall, consumers' purchasing decision-making process was at a high level ( $\bar{x} = 3.70$ ), indicating that consumers tend to systematically and consistently recognize, evaluate, and decide to purchase vegetables produced by plant factories. When examined by dimension, all aspects were rated at a high level. The highest mean score was observed for need recognition ( $\bar{x} = 3.81$ ). Consumers expressed a strong intention to purchase plant factory vegetables available in supermarkets whenever possible, and when they had a need to consume vegetables, they preferred products from plant factories. This reflects product

acceptance and perceived value. The second highest mean was found in evaluation of alternatives ( $\bar{x} = 3.79$ ). Key determinants of purchase decisions included confidence in product quality, standards, and safety, as well as consideration of value for money. For information seeking ( $\bar{x} = 3.68$ ), consumers reported examining product details and comparing quality prior to making purchase decisions, suggesting a rational and information-based decision-making process. In the purchase decision stage, consumers emphasized purchasing convenience, special promotions, and the ability to trace production systems and certification standards. This indicates that convenience factors and marketing incentives continue to play a significant role in influencing purchasing decisions. Regarding post-purchase behavior ( $\bar{x} = 3.55$ ), consumers demonstrated a tendency to repurchase after their initial trial and to recommend the products to others, as well as to maintain continued purchasing intentions in the future.

The results of the study on consumer attitudes toward the marketing mix of plant factory vegetables in Bangkok, based on a sample of 400 respondents, are shown in Table 4.

TABLE III  
PURCHASING DECISION-MAKING PROCESS FOR PLANT FACTORY VEGETABLES OF SUPERMARKET CONSUMERS

Variable	$\bar{x}$	S.D.	Level
Need Recognition	3.81	0.592	High
Information Seeking	3.68	0.888	High
Evaluation of Alternatives	3.79	0.759	High
Purchase Decision	3.68	0.850	High
Post-Purchase Behavior	3.55	0.749	High
<b>Average</b>	<b>3.70</b>	<b>0.644</b>	<b>High</b>

TABLE IV  
CONSUMERS' ATTITUDES TOWARD THE MARKETING MIX OF PLANT FACTORY VEGETABLES IN BANGKOK METROPOLITAN AREA

Variable	$\bar{x}$	S.D.	Level
Product	3.70	0.758	High
Price	4.00	0.528	High
Place	3.69	0.687	High
Promotion	3.97	0.776	High
<b>Average</b>	<b>3.84</b>	<b>0.495</b>	<b>High</b>

Table 4 presents the findings from a sample of 400 respondents regarding consumers' attitudes in the Bangkok Metropolitan Area toward the marketing mix of plant factory vegetables. Overall, consumers exhibited a high level of positive attitudes ( $\bar{x} = 3.84$ ), reflecting favorable perceptions and satisfaction with all four elements of the marketing mix. When considered by dimension, price received the highest mean score ( $\bar{x} = 4.00$ ). This indicates that consumers hold

positive attitudes toward price appropriateness, particularly in terms of its consistency with product quantity and quality, as well as its competitiveness relative to other distribution channels. Clear price labeling further enhances transparency in purchasing decisions. These findings suggest that consumers place substantial importance on value for money and price clarity. This was followed by promotion ( $\bar{x} = 3.97$ ), indicating that marketing communication activities significantly influence consumer perceptions. Advertising and public relations efforts emphasizing the nutritional benefits of consumption, promotional campaigns during festive periods, distribution of product brochures, and point-of-sale signage all contribute to consumer awareness. Continuous communication appears to play a crucial role in enhancing product recognition and stimulating purchase decisions. In terms of product ( $\bar{x} = 3.70$ ), consumers demonstrated positive attitudes toward product attributes. They perceived that product shelf life was clearly displayed, supply was sufficient and consistent, labeling provided comprehensive information, and packaging was appropriate and durable. Additionally, the vegetables were regarded as fresh, clean, certified to meet quality standards, and available in a diverse range of varieties. These aspects collectively reinforce consumer confidence in product quality. Finally, place (distribution) ( $\bar{x} = 3.69$ ) also received a high level of positive evaluation. Consumers perceived that products were systematically arranged, appropriately temperature-controlled, and distributed through conveniently located outlets with adequate parking facilities. Moreover, retail locations were easily accessible. These findings underscore the importance of accessibility and convenience in shaping favorable consumer attitudes toward plant factory vegetables.

## Discussion

1. The findings on the demographic characteristics of the sample revealed that the majority of respondents were female rather than male, aged between 31–40 years, held a bachelor's degree, were married, employed as private-sector employees, and earned a monthly income between 20,001–25,000 baht and 25,001–30,000 baht. This distribution may be explained by the fact that women typically assume primary responsibility for food-related decisions within the household, thereby making them more likely than men to purchase vegetables. Furthermore, individuals aged 31–40 years are generally in the family formation stage and may have children, which corresponds with the higher proportion of married respondents in the sample. Consequently, this group tends to place greater emphasis on selecting nutritious foods, such as vegetables, to maintain their own health and that of their family members. The predominance of respondents with a bachelor's degree may also contribute to higher levels of knowledge and awareness regarding the nutritional benefits of vegetables and healthy food choices, thereby increasing their likelihood of purchasing and consuming vegetables. In addition, the majority of respondents were employed in the private sector, resulting in regular monthly incomes within the range of 20,001–30,000 baht. This income level indicates sufficient purchasing

power to afford higher-quality food products. Moreover, private-sector employees typically reside in urban or peri-urban areas where fresh markets and supermarkets are conveniently accessible, thereby facilitating the purchase of vegetables produced by plant factories as an easily accessible consumption option.

These findings are consistent with the study entitled Factors Influencing Consumers' Purchasing Behavior of Organic Vegetables in Nonthaburi Province by Sookchoknitiphokin (2019), which reported that the majority of respondents were female, aged 31–40 years, single, held a bachelor's degree or equivalent, and had a monthly income of 25,001–35,000 baht. Similarly, the study conducted by Paochu et al. (2023) on factors affecting the purchase of organic vegetables among consumers in Surat Thani Province found that most consumers were female, aged 24–33 years, single, held a bachelor's degree, were employed as private company staff, and had an average monthly income of 10,001–20,000 baht.

2. The study on consumers' purchasing decisions regarding plant factory vegetables in supermarkets within the Bangkok Metropolitan Area revealed that respondents primarily chose plant factory vegetables due to their perceived reliability in quality. The frequency of purchase was generally 2–3 times per month. The principal reason for consumption was their nutritional value, and the most commonly purchased products were leafy greens, particularly microgreens. Respondents also perceived that plant factory vegetables were relatively high in price because they are difficult to cultivate and involve higher production costs. The average expenditure per purchase ranged from 201–300 baht. These findings may be explained by consumers' emphasis on food safety and trustworthy production sources. Plant factory vegetables are typically cultivated using controlled-environment technologies, such as hydroponics or closed plant factory systems, which minimize chemical residues and enhance safety standards. Such characteristics align with the preferences of modern health-conscious consumers. The purchasing frequency of 2–3 times per month suggests that plant factory vegetables are not necessarily used as primary cooking ingredients on a daily basis; rather, they may be selected for specific meals or special occasions. This pattern may also be attributable to their relatively high price, leading consumers to moderate purchases in accordance with their monthly budgets. With regard to consumption motives, respondents reported prioritizing nutritional value. Microgreens, in particular, are rich in vitamins, minerals, and antioxidants at levels often higher than those found in mature vegetables. Health-conscious consumers therefore tend to purchase these products for fresh consumption or for use as garnishes to enhance both the value and quality of meals. Moreover, consumers demonstrated an understanding that the higher price of plant factory vegetables reflects elevated production costs associated with advanced technologies for controlling temperature, light, water, and nutrients, as well as additional costs related to packaging and transportation to preserve freshness. The average expenditure of 201–300 baht per purchase indicates a willingness to pay for product quality,

particularly when associated with health and safety considerations.

These findings are consistent with the study entitled *Marketing Mix Factors Affecting Consumers' Purchasing Behavior of Organic Vegetables: A Case Study of Rimping Supermarket in Chiang Mai Province* by Jaikham (2016), which reported that respondents consumed organic vegetables primarily for health reasons, with a frequency of 3–4 times per week, typically during the evening, and with an average expenditure of 101–200 baht per purchase. The study also found that the consumers themselves were the primary decision-makers, and that Rimping Supermarket could utilize these findings to formulate marketing strategies and positioning. Similarly, Boonma et al. (2019), in their study on factors influencing consumers' purchasing decisions regarding hydroponic vegetables in Nakhon Pathom

Province found that behavioral characteristics based on the 6W1H framework (Who, What, Why, Who participates, When, Where, and How) indicated that purchases were primarily motivated by perceived quality, cleanliness, and safety. Regarding the purchasing decision-making process for plant factory vegetables in supermarkets, the overall level was high. The dimension receiving the greatest importance was need recognition, followed by evaluation of alternatives, information search, purchase decision, and post-purchase behavior, respectively. This suggests that consumers deliberately consider plant factory vegetables when experiencing a need for vegetable consumption and intentionally choose those available in supermarkets. Consumers reported examining product details prior to purchase, thereby ensuring quality, certification standards, safety, and convenience of access. Furthermore, after their initial consumption experience, many consumers reported repeat purchases on a regular basis.

These findings are consistent with consumer behavior theories, which explain that consumer purchasing decisions generally follow a sequential process beginning with need recognition and continuing through information search, evaluation of alternatives, purchase decision, and post-purchase behavior (Kotler & Keller, 2016). The results are also supported by previous empirical studies, which indicate that consumers purchasing premium or technologically produced vegetables tend to emphasize product quality, safety, and certification standards, as these attributes enhance consumer trust and encourage repeat purchases (Siegrist & Hartmann, 2020; Jürkenbeck et al., 2019). Similarly, these findings are consistent with the study by Donkhwa (2019), entitled *Marketing Mix Factors*

*Affecting Consumers' Behavior in Purchasing Organic Vegetables in Nakhon Ratchasima Province*, which reported that respondents rated necessity and consumption needs within the marketing mix at a high level, indicating that the recognition of the need for safe and high-quality vegetables plays an important role in influencing consumer purchasing behavior.

3. The study on consumers' attitudes toward the marketing mix of plant factory vegetables in the Bangkok Metropolitan Area revealed that the overall level of attitudes was high. Among the four elements of the marketing mix, price was considered the most important factor, followed by promotion, product, and place (distribution), respectively. This can be explained by the fact that, when purchasing plant factory vegetables, consumers place importance on consistent product availability and sufficient supply in supermarkets. They also value clear product information, including the display of product age and detailed labeling. In addition, consumers carefully consider whether the price is appropriate relative to quantity. Proper product placement—organized categorization and ease of product search—also plays a significant role. Furthermore, advertising and public relations efforts highlighting the nutritional benefits of plant factory vegetables, as well as promotional signage at the point of sale, contribute to shaping positive consumer attitudes. The findings provide important implications for marketing strategies in the plant factory vegetable market. Since price was the most influential factor affecting consumer attitudes, entrepreneurs and retailers should adopt pricing strategies that balance product value with consumer affordability while clearly communicating product benefits (Specht et al., 2016). Marketing strategies should also emphasize product differentiation and key attributes such as safety, freshness, and pesticide-free production through effective promotional activities (Kotler & Keller, 2014). In addition, consumer education regarding production processes, food safety, and environmental benefits can enhance trust in plant factory vegetables. Improved consumer knowledge has been shown to strengthen perceptions of product safety and sustainability, thereby increasing purchase intentions (Siegrist & Hartmann, 2020).

These findings are consistent with the study on consumer behavior in online fresh vegetable purchasing by Wongming (2017), which reported that overall satisfaction with marketing mix factors influencing online fresh vegetable purchasing decisions was at a high level. The most influential factor was the reason for purchase decision, followed by distribution channels, product factors, price factors, emotional aspects in purchasing decisions, and marketing promotion factors. All dimensions were found to have high levels of satisfaction.

#### IV. CONCLUSION

The study entitled *Consumer Purchasing Behavior of Plant Factory Vegetables in Supermarkets in the Bangkok Metropolitan Area* aimed to: (1) examine the demographic characteristics of consumers purchasing plant factory vegetables in supermarkets in the Bangkok Metropolitan Area; (2) investigate consumers' purchasing decisions regarding plant factory vegetables in supermarkets in the Bangkok Metropolitan Area; and (3) analyze consumers' attitudes toward the marketing mix of plant factory vegetables in the Bangkok Metropolitan Area. This research employed a quantitative approach using a structured questionnaire as the research instrument, and the data were

analyzed using descriptive statistics. The findings can be summarized as follows:

#### 1. Demographic Characteristics of supermarket consumers

The majority of respondents were female, aged between 31–40 years, held a bachelor's degree, were married, employed as private-sector employees, and had a monthly income ranging between 20,001–25,000 baht and 25,001–30,000 baht.

#### 2. Purchasing Decisions of Consumers Regarding Plant Factory Vegetables in Supermarkets

##### 2.1 Purchasing Behavior

The results indicated that respondents chose plant factory vegetables primarily due to their perceived reliability in quality. The purchase frequency was generally 2–3 times per month. The main reason for consumption was nutritional value. The most popular products were leafy vegetables, particularly microgreens. Respondents perceived that the relatively high price of plant factory vegetables was attributable to the difficulty of cultivation and maintenance. The average expenditure per purchase ranged from 201–300 baht. These findings suggest that plant factory entrepreneurs and retailers should emphasize product quality, nutritional benefits, and transparent pricing to strengthen consumer confidence and encourage repeat purchases. However, this study was limited to consumers in supermarkets within the Bangkok Metropolitan Area, which may restrict the generalizability of the results. Future research should expand the study area and examine additional factors influencing purchasing behavior, such as consumer trust in food technology and sustainability perceptions.

##### 2.2 Purchasing Decision-Making Process

The overall level of the purchasing decision-making process was high. When considered by dimension, all aspects were rated at a high level. The highest mean score was observed in need recognition, followed by evaluation of alternatives, information search and purchase decision, and post-purchase behavior, respectively. From a practical perspective, these findings imply that plant factory entrepreneurs and retailers should strengthen marketing communication strategies and provide clear, accessible product information to facilitate consumer decision-making and enhance purchasing confidence. Nevertheless, this study was limited to consumers purchasing plant factory vegetables in supermarkets within the Bangkok Metropolitan Area, which may restrict the generalizability of the findings to other geographical areas or retail formats. Therefore, future research should expand the scope of investigation and incorporate additional variables that may influence the consumer decision-making process, such as consumer trust in food technology and perceptions of sustainability associated with plant factory production systems.

#### 3. Attitudes Toward the Marketing Mix of Plant Factory Vegetables

The findings revealed that consumers in the Bangkok Metropolitan Area exhibited a high level of positive attitudes toward the marketing mix of plant factory vegetables. Price was regarded as the most important factor, followed by promotion, product, and place (distribution),

respectively. These results indicate that value for money and price transparency are primary determinants of purchasing decisions. Meanwhile, marketing communication activities, product quality, and accessibility serve as supporting factors that enhance overall consumer perception and satisfaction. In terms of managerial implications, the findings suggest that plant factory entrepreneurs and supermarket retailers should place greater emphasis on developing suitable pricing strategies while enhancing promotional communication to clearly convey the value and distinctive characteristics of plant factory vegetables. However, the present study focused only on consumers purchasing plant factory vegetables in supermarkets within the Bangkok Metropolitan Area, which may limit the generalizability of the results. Therefore, future research should broaden the study context to other geographical areas and investigate additional determinants that may influence consumer attitudes, such as trust in food production technologies, perceptions of environmental sustainability, and willingness to pay for premium vegetable products.

#### ACKNOWLEDGMENT

The researcher gratefully acknowledges the consumer respondents in Bangkok Metropolitan Area for their cooperation in completing the questionnaires, which contributed significantly to the completeness and validity of the data. Appreciation is also extended to the distinguished faculty members of Sukhothai Thammathirat Open University for their academic guidance, constructive recommendations, and continued support throughout the research process, which enhanced the rigor and quality of this study.+++++

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# Causal factors influencing destination perceived value and tourists' behavioral intentions toward gastronomy tourism

Juksana Phokeawkritsana<sup>1)</sup> and Chanyaphak Lalaeng<sup>1,a)</sup>

Author Affiliations

<sup>1)</sup>King Mongkut's Institute of Technology Ladkrabang, Prince of Chumphon Campus, Chumphon, 86160, Thailand,

Author Emails

<sup>a)</sup>Corresponding author: chanyaphak.la@kmitl.ac.th

**Abstract.** This study aims to examine the causal relationships among tourism image, food storytelling, authenticity, destination perceived value, and tourists' behavioral intention in the context of gastronomy tourism in Phuket Province, Thailand. The sample consisted of 260 Thai tourists participating in gastronomy tourism activities, selected using simple random sampling. Data were collected through a structured questionnaire and analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM).

The results indicate that tourism image has a significant positive effect on destination perceived value, while authenticity also positively influences perceived value, albeit with a smaller effect size. In contrast, food storytelling does not have a significant direct effect on destination perceived value. Furthermore, destination perceived value has a strong positive effect on tourists' behavioral intention and serves as a mediating variable in the relationships between tourism image and behavioral intention, as well as between authenticity and behavioral intention. However, destination perceived value does not mediate the relationship between food storytelling and behavioral intention.

These findings highlight the central role of destination perceived value as a key mechanism in explaining tourists' behavioral intentions in gastronomy tourism. Tourism image and authenticity emerge as primary drivers of value creation, whereas food storytelling functions as a supporting factor rather than a direct determinant of perceived value. This study contributes to the gastronomy tourism literature by clarifying the relative importance of image, authenticity, and storytelling, and offers practical implications for destination management and sustainable gastronomy tourism development.

**Index Terms**— gastronomy tourism, tourism image, food storytelling; authenticity, destination perceived value, behavioral intention

## I. INTRODUCTION

Gastronomy tourism has been recognized as an important form of tourism that contributes to destination value creation through food as a cultural and social element reflecting local identity. Local cuisine functions as a medium through which destination image, meanings, and values are communicated to tourists, thereby influencing how destinations are perceived [1], [2].

Phuket Province is one of Thailand's prominent gastronomy tourism destinations, characterized by its local cuisine shaped by Chinese, Peranakan, and Malay influences and closely linked to the historical and social context of the area. Local food in Phuket plays a significant role in shaping destination image and conveying symbolic meanings associated with the destination, rather than serving merely as a complementary tourism activity.

From a theoretical perspective, destination image is a key determinant of tourists' perceptions of a destination. Both cognitive and affective images influence tourists' evaluations and attitudes toward destinations [3], [4]. In addition, food storytelling and perceived authenticity of local cuisine contribute to credibility, meaningfulness, and

perceived legitimacy of the destination, which are central concepts in cultural and heritage tourism studies [5], [6].

These factors influence destination perceived value, which can be conceptualized through functional, emotional, and social dimensions [7], [8]. Previous studies have demonstrated that higher levels of perceived value are positively associated with tourists' behavioral intentions, such as willingness to pay, revisit intention, and positive word-of-mouth [9], [10].

Nevertheless, empirical studies that integrate destination image, food storytelling, and authenticity in explaining destination perceived value and tourist behavioral intentions within the context of gastronomy tourism in Phuket Province remain limited. Therefore, this study aims to examine the structural relationships among these constructs based on the proposed conceptual framework, contributing to gastronomy tourism literature and providing practical implications for destination management and policy development.

## II. LITERATURE REVIEW AND HYPOTHESIS

Concept of Gastronomy Tourism (GT)

Gastronomy tourism, also referred to as food cultural tourism, is a form of tourism in which food plays a central

role in shaping travel experiences by linking cuisine with local culture, identity, and ways of life. Tourists engage with destinations through activities such as tasting local dishes, participating in food festivals, and visiting food production sites, allowing them to experience cultural meanings embedded in food [1]. Gastronomy tourism has emerged as a global phenomenon that contributes positively to national economies and supports the preservation of cultural heritage [2], [3]. Food often serves as a key travel motivator and a core component of tourism consumption through which tourists interpret local culture [4]. Moreover, local cuisine enhances destination differentiation, strengthens destination image, and influences tourists' perceived value and behavioral responses, thereby contributing to sustainable tourism competitiveness [5], [6].

#### Concept of Destination Perceived Value (DPV)

Destination perceived value refers to tourists' overall evaluation of the worth of a destination based on a comparison between benefits received and costs incurred, such as money, time, effort, and risk [7]. The concept was later expanded to include subjective dimensions, emphasizing that value is not only functional but also emotional and social in nature [8], [9]. Sweeney and Soutar [10] developed the PERVAL scale, which conceptualizes perceived value through functional, emotional, and social dimensions. In tourism research, these dimensions have been widely adapted to destination contexts, where perceived value plays a central role in shaping satisfaction, place attachment, and behavioral intentions such as revisit intention and word-of-mouth [6], [11].

#### Concept of Tourist Behavioral Intention (TBI)

Tourist behavioral intention refers to an individual's likelihood to engage in future behaviors toward a destination following tourism consumption [12], [13]. In tourism research, behavioral intention is widely regarded as a key predictor of destination loyalty and long-term performance. Commonly examined dimensions include willingness to pay, revisit intention, and recommendation intention [14]–[16]. Empirical studies consistently indicate that destination image, perceived value, and tourist satisfaction positively influence behavioral intentions, leading to repeat visitation and positive word-of-mouth.

#### Tourism Image (TI) and Destination Perceived Value (DPV)

Tourism image refers to tourists' overall beliefs, impressions, and feelings toward a destination shaped by information sources and social influences [17], [18]. Prior research conceptualizes tourism image as a multidimensional construct consisting of cognitive and affective components [19], [18]. These dimensions are widely recognized as critical determinants of tourists' evaluations and behavioral responses [20], [21].

Empirical evidence consistently shows that destination image significantly influences destination perceived value. A favorable image enhances value perceptions by reinforcing benefit–cost evaluations [22]. Studies further demonstrate

that destination image serves as a key antecedent of perceived value, which subsequently affects loyalty-related outcomes [16], [23]. Recent research also confirms the mediating role of perceived value between destination image and behavioral outcomes [24]. Accordingly, this study proposes:

H1: Tourism image positively influences destination perceived value in the context of gastronomy tourism.

#### Food Storytelling (FS) and Destination Perceived Value (DPV)

Storytelling refers to the use of structured narratives to convey cultural meanings and destination identity through links among stories, places, and communities [25], [26]. In tourism research, storytelling is recognized as an effective mechanism for shaping tourists' evaluations by communicating symbolic and cultural value beyond tangible attributes.

Empirical studies indicate that storytelling positively influences destination perceived value [27]–[29]. Accordingly, this study proposes:

H2: Food storytelling positively influences destination perceived value in the context of gastronomy tourism.

#### Authenticity (AUT) and Destination Perceived Value (DPV)

Authenticity refers to tourists' perceptions that food, narratives, and cultural elements are consistent with original traditions and ways of life without excessive commodification [30], [31]. Authenticity has been conceptualized as a multidimensional construct encompassing objective and existential aspects [31].

Empirical evidence confirms that authenticity positively influences destination perceived value across tourism contexts [32]–[35]. Accordingly, this study proposes:

H3: Authenticity positively influences destination perceived value in the context of gastronomy tourism.

#### Destination Perceived Value (DPV) and Tourist Behavioral Intention (TBI)

A growing body of research confirms the positive relationship between destination perceived value and tourist behavioral intention [36]–[39]. Perceived value has been consistently identified as a key determinant of revisit intention, willingness to pay, and positive word-of-mouth [6], [40]. Accordingly, this study proposes:

H4: Destination perceived value positively influences tourists' behavioral intention in the context of gastronomy tourism.

#### Mediating Role of Destination Perceived Value (DPV)

Prior studies indicate that destination perceived value functions as a key mediating mechanism linking destination-related attributes to behavioral intentions [41]–[44]. Accordingly, this study proposes:

H5: Gastronomy tourism image positively influences tourists' behavioral intention through the mediating role of destination perceived value.

Empirical evidence also supports the mediating role of

perceived value in the relationship between storytelling and behavioral outcomes [27], [45], [46]. Thus:

H6: Food storytelling positively influences tourists' behavioral intention through the mediating role of destination perceived value.

Finally, authenticity has been shown to influence behavioral intention indirectly through perceived value [47]–[49]. Therefore:

H7: Authenticity positively influences tourists' behavioral intention through the mediating role of destination perceived value.

From the study of these theories, the researcher developed a conceptual framework to illustrate the relationships between all variables and links them to hypotheses, as shown in the fig. 1

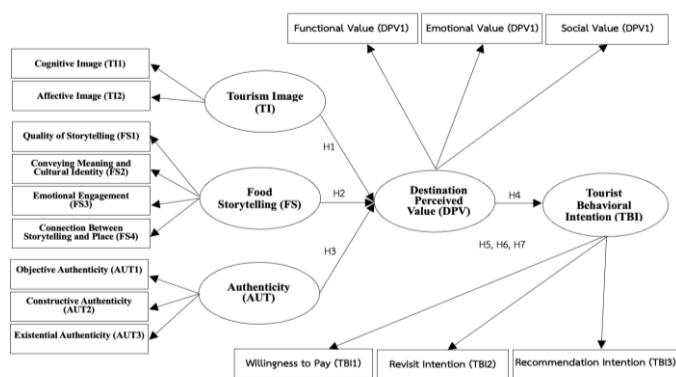


Fig. 1. Conceptual Framework Showing Proposed Hypothesis.

### III. METHODOLOGY

#### Data Collection and Sampling

The population of this study consisted of Thai tourists participating in gastronomy tourism in Phuket Province, including visits to local food production sites, local food festivals, traditional restaurants, and food tourism activities involving food and beverage tasting integrated with cultural and historical learning. The unit of analysis was at the individual level.

Regarding sample size determination for causal structural equation modeling with latent variables, it has been suggested that an appropriate sample size should be at least 10–20 times the number of observed variables or exceed 200 based on the Hoelter index [51], [52]. In this study, there were 15 observed variables, indicating that a suitable sample size should range between 200 and 300 respondents. Accordingly, a sample of 260 respondents was employed, selected using probability sampling through simple random sampling.

#### Measure of Constructs

The development and validation of the research instruments were based on the proposed conceptual framework and operational definitions. Data were collected using a structured questionnaire divided into five sections. Section 1 measured gastronomy tourism image, comprising two dimensions: cognitive image and affective image.

Section 2 assessed food storytelling, consisting of four dimensions: story quality, cultural meaning and identity transmission, emotional engagement, and story–place connection. Section 3 measured authenticity, including objective authenticity, constructive authenticity, and existential authenticity. Section 4 evaluated destination perceived value, consisting of functional value, emotional value, and social value. Section 5 measured tourists' behavioral intention, represented by willingness to pay, revisit intention, and recommendation intention.

All measurement items were assessed using a five-point Likert-type scale ranging from 1 (strongly disagree / not at all) to 5 (strongly agree / very much). The items were adapted and modified from validated instruments in previous studies to ensure their appropriateness for the gastronomy tourism context.

#### Data Analysis

To validate the proposed research model, this study employed partial least squares structural equation modeling (PLS-SEM), also referred to as composite-based structural equation modeling. PLS-SEM is widely used in exploratory and predictive research due to its flexibility and robustness compared with covariance-based SEM [53]. The PLS path model analysis was conducted using SmartPLS version 4 (SmartPLS GmbH, Bönningstedt, Germany).

The analysis followed a two-step approach. First, the measurement model was evaluated by examining indicator reliability, internal consistency reliability, convergent validity, and discriminant validity. Indicators with factor loadings below 0.70 were removed. Reliability was assessed using Cronbach's alpha and composite reliability, while convergent validity was evaluated using the average variance extracted (AVE), with values above 0.50 indicating acceptable validity. Discriminant validity was examined by comparing the square root of AVE for each construct with its inter-construct correlations.

In the second step, the structural model was assessed to test the proposed hypotheses. The significance of path coefficients was evaluated using a bootstrapping procedure with 5,000 resamples at a 95% confidence level, providing robust estimates for hypothesis testing.

### IV. RESULTS

#### Evaluation of the Measurement Model

The descriptive statistics indicate that the mean values of all observed variables range from 3.77 to 4.14, suggesting a relatively high level of agreement among respondents. The standard deviations are moderate, indicating acceptable variability in responses.

All indicator loadings exceed the recommended threshold of 0.70, demonstrating strong indicator reliability. Convergent validity is further confirmed, as the Average Variance Extracted (AVE) values for all latent constructs range from 0.78 to 0.90, exceeding the minimum criterion of 0.50 [54]. These results indicate that the observed variables adequately represent their corresponding latent constructs.

In terms of internal consistency reliability, Cronbach’s alpha, rho\_A, and composite reliability values for all constructs are above 0.70, confirming satisfactory reliability. Overall, the results support the reliability and convergent validity of the measurement model, indicating that the constructs are appropriate for subsequent structural model analysis, as shown in Table I.

TABLE I

DESCRIPTIVE STATISTIC, NORMALITY ASSESSMENT, AND VALIDITY OF VARIABLES

Validity	Mean	SD.	Loading	R <sup>2</sup>	CA	P <sub>A</sub>	P <sub>C</sub>	AVE
TI1	3.79	0.58	0.90	0.81	0.81	0.83	0.91	0.84
TI2	3.99	0.42	0.93	0.87				
FS1	3.83	0.47	0.95	0.90	0.95	0.95	0.96	0.88
FS2	3.85	0.50	0.95	0.91				
FS3	3.92	0.44	0.89	0.79				
FS4	3.83	0.47	0.96	0.92				
AUT1	3.87	0.56	0.94	0.88	0.91	0.93	0.94	0.86
AUT2	3.88	0.53	0.92	0.85				
AUT3	3.86	0.46	0.91	0.83				
DPV1	3.77	0.58	0.81	0.66	0.86	0.86	0.91	0.78
DPV2	4.02	0.41	0.94	0.89				
DPV3	4.09	0.46	0.89	0.80				
TBI1	4.07	0.52	0.96	0.93	0.94	0.95	0.96	0.90
TBI2	4.05	0.45	0.94	0.88				
TBI3	4.14	0.55	0.94	0.89				

Discriminant Validity

The discriminant validity assessment using the Fornell–Larcker criterion. The square roots of the Average Variance Extracted (AVE) for all constructs, shown on the diagonal, are higher than the corresponding inter-construct correlations. This indicates that each construct shares more variance with its own indicators than with other constructs, thereby confirming adequate discriminant validity among tourism image (TI), food storytelling (FS), authenticity (AUT), destination perceived value (DPV), and tourist behavioral intention (TBI). As shown in Table 2.

TABLE II

DISCRIMINANT VALIDITY

Fronell-Larcker criterion					
Variables	TI	FS	AUT	DPV	TBI
TI	0.919				
FS	0.599	0.941			
AUT	0.660	0.580	0.928		
DPV	0.880	0.583	0.660	0.887	
TBI	0.446	0.291	0.361	0.564	0.951

Evaluation of the Structural Model

The predictive relevance of the model assessed using the cross-validated redundancy and communality (Q<sup>2</sup>) measures. All endogenous constructs exhibit Q<sup>2</sup> values greater than zero, indicating that the model has predictive relevance [52].

Specifically, destination perceived value (DPV) shows a strong level of predictive relevance (Q<sup>2</sup> = 0.816), followed by tourism image (TI) and authenticity (AUT), while tourist behavioral intention (TBI) demonstrates moderate predictive relevance. The positive Q<sup>2</sup> values confirm that the model is capable of accurately predicting the endogenous constructs. As shown in Table 3.

TABLE III

PREDICTIVE RELEVANCE (Q-SQ)

	Cross-validated redundancy Q-sq	Cross-validated communality Q-sq
TI	0.793	
FS	0.412	
AUT	0.496	
DPV	0.816	0.779
TBI	0.326	0.197

The goodness-of-fit (GOF) results of the proposed model. The Average Variance Extracted (AVE) values for all constructs range from 0.84 to 0.90, indicating strong convergent validity. The endogenous constructs show satisfactory explanatory power, with R<sup>2</sup> values of 0.78 for destination perceived value (DPV) and 0.31 for tourist behavioral intention (TBI).

The overall GOF value, calculated as the square root of the product of the mean AVE (0.86) and the mean R<sup>2</sup> (0.55), is 0.69. This value exceeds the recommended threshold for a large effect size, suggesting that the proposed model demonstrates a strong overall fit and adequately explains the relationships among the constructs. As shown in Table 4.

TABLE IV

GOODNESS-OF-FIT (GO) RESULTS

Variables	AVE	R-sq
TI	0.84	
FS	0.88	
AUT	0.86	
DPV	0.86	0.78
TBI	0.90	0.31
Mean value	0.86	0.55
Multiply of mean value	0.48	
GOF	0.69	

Path Analysis and Hypothesis Testing

the results of the path analysis and hypothesis testing. The findings indicate that tourism image (TI) has a strong and significant positive effect on destination perceived value (DPV) ( $\beta = 0.77, t = 12.28, p < 0.001$ ), supporting H1, with a large effect size ( $f^2 = 1.36$ ). In contrast, food storytelling (FS) does not have a significant direct effect on DPV ( $\beta = 0.05, p > 0.05$ ), leading to the rejection of H2. Authenticity (AUT) shows a positive and significant effect on DPV ( $\beta = 0.12, t = 2.50, p < 0.05$ ), supporting H3, although the effect size is small.

Destination perceived value (DPV) has a significant positive influence on tourist behavioral intention (TBI) ( $\beta = 0.56, t =$

11.89,  $p < 0.001$ ), supporting H4, with a moderate effect size ( $f^2 = 0.46$ ). Regarding mediation effects, DPV significantly mediates the relationships between tourism image and TBI (H5) and between authenticity and TBI (H7). However, the indirect effect of food storytelling on TBI via DPV is not significant, resulting in the rejection of H6. Overall, the results highlight the central mediating role of destination perceived value in linking tourism image and authenticity to tourists' behavioral intentions. As shown in Table 4.

TABLE V  
RESULTS OF PATH ANALYSIS AND HYPOTHESIS TESTING

Path	B	STDEV	t-test	Sig	$f^2$	
H1: TI->DPV	0.77	0.06	12.28	0.00	1.36	Yes
H2: FS->DPV	0.05	0.04	1.23	0.22	0.00	No
H3: AUT->DPV	0.12	0.05	2.50	0.01	0.03	Yes
H4: DPV->TBI	0.56	0.05	11.89	0.00	0.46	Yes
H5: TI->DPV->TBI	0.43	0.05	8.50	0.00		Yes
H6: FS->DPV->TBI	0.03	0.02	1.23	0.22		No
H7: AUT->DPV->TBI	0.07	0.03	2.41	0.02		Yes

When considering the variance of the endogenous variables explained by the exogenous variables ( $R^2$ ), the results showed that digital transformation (DT), innovation capability (IC), competitive performance (CP), and business performance (BP) accounted for 79.6%, 68.8%, 42.6%, and 75.0% of the variance, respectively, as illustrated in Fig. 2. These findings indicate that the structural model demonstrates a strong explanatory power, particularly for DT and BP, which are explained at a high level. The structural model illustrates the relationships among tourism image (TI), food storytelling (FS), authenticity (AUT), destination perceived value (DPV), and tourist behavioral intention (TBI). The results show that destination perceived value (DPV) is strongly explained by its antecedents, with an  $R^2$  value of 0.787, indicating substantial explanatory power. Among the predictors, tourism image (TI) exerts a strong positive effect on DPV, while authenticity (AUT) has a weaker but statistically significant influence. In contrast, food storytelling (FS) does not show a significant direct effect on DPV.

Furthermore, DPV has a strong positive impact on tourist behavioral intention (TBI), with an  $R^2$  value of 0.318, suggesting moderate explanatory power. This indicates that tourists' willingness to pay, revisit intention, and word-of-mouth intentions are largely driven by their perceived value of the destination. Overall, the model highlights destination perceived value as a key mediating construct linking tourism image and authenticity to tourists' behavioral intentions, while the direct contribution of food storytelling appears limited in this context.

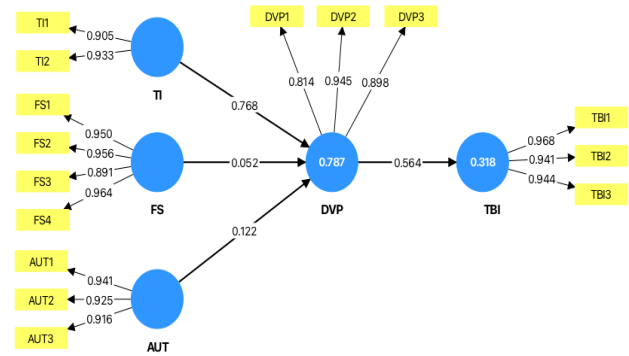


Fig. 2. Measurement Model

## V. DISCUSSION

This study aimed to examine the causal relationships among tourism image, food storytelling, authenticity, destination perceived value, and tourists' behavioral intentions in the context of gastronomy tourism. The findings can be summarized as follows.

First, tourism image was found to have a significant positive effect on destination perceived value. This result is consistent with destination image theory proposed by [54] Echtner and Ritchie (1993) and [3] Baloglu & McCleary (1999), who conceptualized tourism image as comprising both cognitive and affective dimensions that play a crucial role in shaping tourists' value evaluations and decision-making. The finding also aligns with empirical studies by [55] Ramseook-Munhurrun et al. (2015) and [4] Chen and Tsai (2007), which demonstrated that a favorable destination image enhances tourists' perceptions of value. In the context of gastronomy tourism, this result suggests that the destination's culinary image, cultural attractiveness, and overall reputation serve as primary determinants of tourists' perceived value, supporting [24] Kotler's (2003) destination marketing perspective that image is a key driver of perceived value in tourism products and services.

Second, the results indicate that food storytelling does not have a significant direct effect on destination perceived value. This finding is inconsistent with some previous studies, such as [32] Lim (2018) and [31] Feng et al. (2024), which reported positive effects of storytelling on perceived value. However, this inconsistency may be explained by the specific context of gastronomy tourism, in which tourists may place greater emphasis on the overall destination image and the authenticity of local food rather than on narrative content alone. From a theoretical perspective, this result suggests that food storytelling may function as a supporting factor rather than a primary driver of value creation, meaning that storytelling may influence perceived value only when it is integrated with a strong destination image or reinforced by authenticity perceptions.

Third, the findings support the hypothesis that authenticity has a positive effect on destination perceived value. This result is consistent with authenticity theory in tourism,

particularly the work of [5]MacCannell (1973) and [6]Wang (1999), who argued that authenticity enhances the meaning and credibility of destinations. The finding is also in line with prior empirical studies by [34] Lee et al. (2016), [35]Su et al. (2021), and [56]Kovačić et al. (2023), which confirmed that authenticity strengthens perceived value in cultural tourism contexts. Nevertheless, the relatively small effect size indicates that authenticity functions more as a reinforcing factor than a decisive determinant of perceived value, which is consistent with [6]Wang's (1999) view that authenticity is subjectively perceived and may vary in importance depending on tourists' motivations and contextual factors.

Fourth, the results confirm that destination perceived value has a significant positive effect on tourists' behavioral intentions. This finding supports perceived value theory proposed by [7]Zeithaml (1988) and [8]Sweeney and Soutar (2001), as well as extensive tourism research demonstrating that perceived value influences revisit intention, willingness to pay, and positive word-of-mouth ([15]Chen & Chen, 2010; [57] Rasoolimanesh et al., 2023; [41] Li et al., 2025).

Finally, the mediation analysis reveals that destination perceived value plays a mediating role in the relationships between tourism image and tourists' behavioral intentions, as well as between authenticity and tourists' behavioral intentions. These findings are consistent with prior studies by [42] Mohammed Ahmed (2023), [43] Atasoy and Eren (2023), and Jiang (2024), which identified perceived value as a key mechanism linking destination-related perceptions to behavioral outcomes. In contrast, destination perceived value does not mediate the relationship between food storytelling and tourists' behavioral intentions. This result highlights the limited role of storytelling in the gastronomy tourism context and suggests that storytelling may require the presence of complementary factors, such as a strong destination image or perceived authenticity, to effectively influence tourists' behavioral intentions.

## VI. IMPLICATIONS OF THE RESEARCH

The findings provide important practical implications for destination managers, policymakers, and stakeholders involved in gastronomy tourism. First, the strong influence of tourism image on destination perceived value suggests that relevant agencies should prioritize systematic destination image management. Marketing communications should emphasize not only food quality but also cultural diversity, local identity, and the destination's overall reputation as a gastronomy tourism destination.

Second, the findings highlight the importance of preserving the authenticity of local food and cultural heritage. Destination managers should actively support local communities, traditional food producers, and authentic culinary environments in order to avoid excessive commodification, which may undermine tourists' perceived value of the destination.

Third, although food storytelling does not directly influence destination perceived value, it should not be

disregarded. Instead, storytelling should be strategically employed as a supportive tool that reinforces destination image and authenticity. High-quality food narratives that are consistent with local culture can enhance destination credibility and meaning in the minds of tourists.

Finally, given the strong effect of destination perceived value on tourists' behavioral intentions, tourism authorities should design gastronomy tourism products and services that enhance functional, emotional, and social value. Such efforts can effectively encourage revisit intention, willingness to pay, and positive word-of-mouth, thereby supporting the sustainable development of gastronomy tourism destinations.

## ACKNOWLEDGMENT

The aforementioned project has been reviewed and approved according to the Standard Operating Procedures by Ethical Committee of Research Institute. The Research Ethics Committee of King Mongkut's Institute of Technology Ladkrabang has exempted the following study which is to be carried out in compliance with the international guidelines for human research protection as Declaration of Helsinki, The Belmont Report, CIOMS Guideline, International Conference on Harmonization in Good Clinical Practice (ICH-GCP) and 45CFR 46.101(b). [Study code: EC-KMITL\_68\_146]

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# The Roles of Social Capital, Knowledge Management and Government Support on Organizational Management Capability and Sustainable Performance of Community Beekeeping Enterprises in Thailand

Waraporn Sangkhaphan<sup>1,a)</sup> and Chanyaphak Lalaeng<sup>1,b)</sup>

Author Affiliations

<sup>1</sup>King Mongkut's Institute of Technology Ladkrabang, Prince of Chumphon Campus, Chumphon, 86160, Thailand,

Author Emails

<sup>a)</sup>67206019@kmitl.ac.th

<sup>b)</sup>Corresponding author: chanyaphak.la@kmitl.ac.th

**Abstract.** This study investigates the effects of social capital, knowledge management, and government support on organizational management capability and sustainable performance of community-based beekeeping enterprises in Southern Thailand. Although prior research has examined agricultural enterprises, limited studies have explored the integrated roles of internal resources and external institutional support in shaping organizational capability and sustainability, particularly within community-based enterprises. Data were collected from 250 respondents, including group leaders, committee members, and core beekeeping members, using a simple random sampling technique. The data were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM). The results indicate that knowledge management and government support have significant positive effects on organizational management capability, whereas social capital does not exhibit a significant direct effect. Organizational management capability significantly influences sustainable performance and mediates the relationships between knowledge management and sustainable performance, as well as between government support and sustainable performance. However, no mediating effect was found for social capital. These findings highlight the critical role of organizational capability as a mediating mechanism that transforms knowledge-based and institutional resources into sustainable outcomes. This study contributes to the literature by extending capability-based perspectives in the context of community enterprises and provides practical implications for policymakers and practitioners to enhance sustainable development.

**Index Terms**—social capital, knowledge management, government support, organizational management capability, sustainable performance, beekeeping enterprises

## I. INTRODUCTION

Over the past decade, beekeeping has received increasing attention as a promising agricultural activity due to its economic value and ecological contributions. The global honey market was valued at approximately USD 8.9 billion in 2023 and is projected to exceed USD 15.5 billion by 2032, reflecting an average annual growth rate of around 6–7% [1]. Honey and other bee-derived products are widely utilized in food, nutraceutical, and cosmetic industries, reflecting the growing demand for natural and health-oriented products. In addition to its economic benefits, beekeeping plays a crucial ecological role, as bees are responsible for pollinating nearly 75% of global food crops, thereby supporting agricultural productivity and biodiversity [2].

In Thailand, agriculture remains a key sector supporting rural livelihoods and grassroots economic development, accounting for approximately 8–10% of the national GDP [3]. To strengthen local economies, the government has promoted community enterprises as a strategic mechanism for enhancing income generation and value-added agricultural production. Among various agricultural activities, beekeeping is considered a viable option due to its relatively low investment requirements, compatibility with other farming activities, and potential for product diversification. Thailand produced approximately 11,758 tons of honey in 2023 and ranked among the top honey-producing countries worldwide [4]. In addition, the country exported bee products valued at over 600 million baht, highlighting the growing economic importance of this sector [5].

Despite these opportunities, community-based beekeeping enterprises continue to face structural challenges, including

limited managerial capability, insufficient knowledge integration, and inadequate institutional support. Previous studies have primarily focused on production efficiency, product quality, and marketing aspects, while limited attention has been given to organizational and capability-related factors influencing long-term sustainability.

Furthermore, existing research has rarely examined how internal organizational resources, such as social capital and knowledge management, interact with external institutional support to influence organizational capability and sustainable performance. In particular, the mediating role of organizational management capability remains underexplored in the context of community-based enterprises.

Therefore, this study aims to fill this research gap by investigating the roles of social capital, knowledge management, and government support in enhancing organizational management capability and sustainable performance. It also examines the mediating role of organizational capability in linking these factors to sustainability outcomes.

## II. LITERATURE REVIEW AND HYPOTHESIS

### Social Capital (SC)

Social capital has been widely recognized as a critical resource that facilitates cooperation, trust, and collective action within organizations and communities. Coleman [6] introduced social capital as a form of social structure that enables individuals to achieve goals that would otherwise be difficult to accomplish. Later, Putnam [7] emphasized that social capital consists of networks, norms, and trust that enhance social coordination and cooperation for mutual benefit. These foundational perspectives highlight the importance of social relationships as valuable resources for organizational development.

Nahapiet and Ghoshal [8] further conceptualized social capital in organizations through three interrelated dimensions: structural, relational, and cognitive capital. Structural capital refers to the overall network of relationships among individuals, relational capital reflects trust and reciprocity within these relationships, and cognitive capital involves shared norms and values that facilitate collective understanding. These dimensions enable knowledge exchange, cooperation, and value creation within organizations.

Empirical research has consistently demonstrated that social capital enhances organizational performance by improving communication, strengthening collaboration, and facilitating knowledge sharing among members [9], [10]. In community-based organizations, strong social networks and trust relationships help mobilize collective resources and improve organizational effectiveness.

### Knowledge Management (KM)

Knowledge management refers to the processes through which organizations create, store, share, and apply knowledge in order to enhance learning, innovation, and performance. The knowledge-based view of the firm, proposed by Grant [11], suggests that knowledge represents one of the most strategically significant resources for achieving sustainable competitive advantage.

Nonaka and Takeuchi [12] further developed the knowledge

creation theory, emphasizing that organizational knowledge emerges through continuous interaction between tacit and explicit knowledge. Their well-known SECI model (Socialization, Externalization, Combination, and Internalization) explains how knowledge is created and transferred within organizations.

Knowledge management practices are typically categorized into four main processes: knowledge creation, knowledge storage, knowledge sharing, and knowledge application [13]. These processes enable organizations to transform individual expertise into collective knowledge that supports innovation and organizational learning. Previous studies have found that effective knowledge management significantly improves organizational capability, operational efficiency, and long-term sustainability [14], [15].

### Institutional Support (IS)

Institutional support refers to external assistance provided by government agencies, development institutions, or supporting organizations that enhance the capacity of enterprises to operate

and compete effectively. Institutional theory, introduced by Meyer and Rowan [16] and later expanded by DiMaggio and Powell [17], explains how organizational behavior is influenced by institutional environments, including regulatory systems, policies, and social expectations.

For small and community-based enterprises, institutional support often includes training programs, financial assistance, technical advisory services, and market access facilitation. Such support mechanisms help organizations overcome resource constraints and strengthen their operational capabilities.

Empirical studies indicate that institutional support plays a significant role in promoting organizational development, innovation, and sustainable performance [18], [19]. Government policies and institutional programs are therefore considered essential drivers of enterprise sustainability.

### Organizational Management Competency (COMC)

Organizational management competency refers to the ability of an organization to effectively plan, coordinate, and manage resources in order to achieve its objectives. From the resource-based view (RBV) proposed by Barney [20], organizational capabilities are strategic resources that enable firms to achieve sustained competitive advantage.

Management competency typically includes capabilities related to planning, coordination, leadership, information management, and problem-solving. Mintzberg [21] emphasized that effective management involves coordinating organizational activities, allocating resources, and guiding decision-making processes. Similarly, Teece [22] highlighted the importance of dynamic capabilities, which enable organizations to adapt to environmental changes and maintain competitiveness.

Previous research suggests that organizations with strong management competency are better able to coordinate resources, respond to environmental challenges, and improve overall organizational performance [23].

### Sustainable Organizational Performance (SOP)

Sustainable organizational performance refers to the ability of an organization to achieve long-term success while balancing economic, social, and environmental objectives. The concept is commonly explained through the Triple Bottom Line (TBL) framework introduced by Elkington [24], which evaluates organizational performance based on three dimensions: economic, social, and environmental outcomes.

Porter and Kramer [25] further emphasized the concept of shared value, suggesting that organizations can simultaneously enhance economic performance while addressing social and environmental challenges. In the context of community enterprises, sustainable organizational performance also involves the ability to maintain long-term self-reliance and resilience.

Empirical studies indicate that organizations integrating sustainability practices into their management strategies tend to achieve stronger long-term performance and community impact [26]–[28].

Social capital has been widely recognized as an important resource that facilitates cooperation, trust, and coordination among organizational members. Strong social networks and shared norms encourage collaboration, information exchange, and collective problem-solving within organizations. In community-based organizations, social capital helps members coordinate activities and mobilize resources effectively, which strengthens managerial capability and organizational effectiveness. Therefore, higher levels of social capital are expected to enhance the ability of organizations to manage operations and coordinate internal activities.

H1: Social capital positively influences organizational management competency.

Knowledge management enables organizations to systematically create, store, share, and apply knowledge to improve learning and innovation. Effective knowledge management practices facilitate knowledge transfer among members, enhance organizational learning, and support better decision-making processes. In community enterprises, the ability to manage knowledge resources is particularly important because it allows organizations to utilize members' experience and expertise in improving operational processes and managerial practices. Consequently, knowledge management is expected to strengthen organizational management competency.

H2: Knowledge management positively influences organizational management competency.

Institutional support refers to external assistance provided by government agencies, development institutions, or supporting organizations that help strengthen the operational capacity of enterprises. Such support may include training programs, financial assistance, technical guidance, and market access facilitation. For community enterprises that often face resource limitations, institutional support plays an important role in improving managerial capability and organizational development. Therefore, stronger institutional support is expected to enhance organizational management competency.

H3: Institutional support positively influences organizational management competency.

Organizational management competency reflects the ability of organizations to effectively plan, coordinate, and manage resources to achieve strategic objectives. Organizations with strong managerial capability are better able to allocate resources efficiently, coordinate collective activities, and adapt to environmental changes. Such capabilities contribute to improved organizational outcomes and long-term sustainability. Therefore, stronger organizational management competency is expected to enhance sustainable organizational performance.

H4: Organizational management competency positively influences sustainable organizational performance.

Organizational capabilities often act as mediating mechanisms that translate organizational resources into performance outcomes. Social capital strengthens collaboration and trust among members, which enhances management capability and ultimately contributes to improved organizational performance. Therefore, organizational management competency is expected to mediate the relationship between social capital and sustainable organizational performance.

H5: Social capital positively influences sustainable organizational performance through the mediating role of organizational management competency.

Similarly, knowledge management improves organizational learning and innovation processes, which strengthen managerial capability and enhance organizational performance. Thus, organizational management competency is expected to mediate the relationship between knowledge management and sustainable organizational performance.

H6: Knowledge management positively influences sustainable organizational performance through the mediating role of organizational management competency.

Finally, institutional support provides external resources and capacity-building opportunities that strengthen organizational capability and managerial effectiveness. Through improved management competency, institutional support can indirectly enhance sustainable organizational performance.

H7: Institutional support positively influences sustainable organizational performance through the mediating role of organizational management competency.

From the study of these theories, the researcher developed a conceptual framework to illustrate the relationships between all variables and links them to hypotheses, as shown in the fig.1

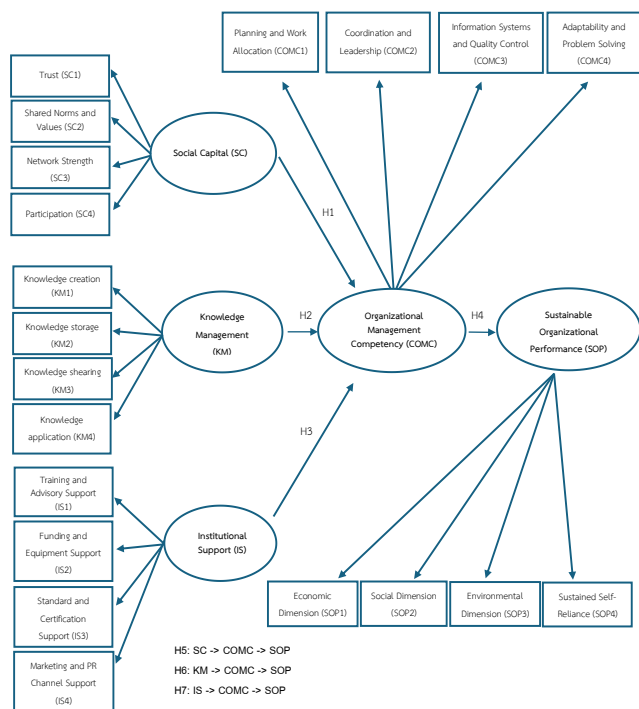


Fig. 1. Conceptual Framework Showing Proposed Hypothesis.

### III. METHODOLOGY

#### Data Collection and Sampling

The population of this study comprised personnel involved in community-based beekeeping enterprises in Southern Thailand. The target respondents included group presidents or managers, board members, heads of production and quality control, heads of marketing and finance divisions, as well as core beekeeping members or field leaders who were directly involved in organizational operations.

The sampling frame was developed from official records of registered community-based beekeeping enterprises obtained from relevant government agencies. Questionnaires were distributed to the identified enterprises via postal mail to ensure formal outreach and coverage across geographically dispersed areas. Respondents were then invited to complete the questionnaire through an online platform (Google Forms), which facilitated efficient data collection and response management. This approach ensured broader coverage and improved response reliability in geographically dispersed communities.

A total of 250 valid responses were obtained and used for data analysis. Regarding sample size determination for structural equation modeling with latent variables, prior studies suggest that an appropriate sample size should be at least 10–20 times the number of observed variables or exceed 200 based on the Hoelter index [29], [30]. In this study, there were 20 observed variables, indicating that a suitable sample size should range between 200 and 400 respondents. Therefore, the sample size of 250 respondents was considered adequate for the analysis.

#### Measure of Constructs

The development and validation of the research

instruments were based on the proposed conceptual framework and operational definitions.

Data were collected using a structured questionnaire divided into six sections. Section 1 gathered general demographic information of the respondents. Section 2 measured social capital of community-based beekeeping enterprises in Thailand. Section 3 assessed knowledge management practices of community-based beekeeping enterprises in Thailand. Section 4 evaluated institutional support, including support from relevant institutions and supporting agencies. Section 5 measured community organizational management capability of community-based beekeeping enterprises in Thailand. Section 6 assessed sustainable performance of community-based beekeeping enterprises in Thailand.

All measurement items were assessed using a five-point Likert-type scale ranging from 1 (strongly disagree / not at all) to 5 (strongly agree / very much). The items were adapted and modified from validated instruments in previous studies to ensure their suitability and contextual relevance for each community enterprise.

#### Data Analysis

To validate the proposed research model, this study employed partial least squares structural equation modeling (PLS-SEM), also referred to as composite-based SEM. PLS-SEM is widely applied in exploratory and predictive research due to its flexibility and robustness, particularly in comparison with covariance-based SEM [31]. The PLS path model analysis was conducted using SmartPLS version 4 (SmartPLS GmbH, Bönningstedt, Germany).

The analysis followed a two-step approach. In the first step,

the measurement model was evaluated by examining indicator reliability, internal consistency reliability, convergent validity, and discriminant validity. Indicators with factor loadings below 0.70 were removed to ensure adequate measurement quality. Internal consistency reliability was assessed using Cronbach's alpha and composite reliability. Convergent validity was evaluated using the average variance extracted (AVE), with values exceeding 0.50 indicating acceptable validity. Discriminant validity was assessed by comparing the square root of AVE for each construct with the corresponding inter-construct correlations.

In the second step, the structural model was evaluated to test the proposed hypotheses. The significance of path coefficients was assessed using a bootstrapping procedure with 5,000 resamples at a 95% confidence level, providing robust and reliable estimates for hypothesis testing.

### III. RESULTS

#### Evaluation of the Measurement Model

Table I presents the descriptive statistics, reliability, and validity assessment of the measurement model. The mean values of all observed variables range from 3.87 to 4.32,

indicating a relatively high level of agreement among respondents. The standard deviations are moderate, suggesting an acceptable level of variability in the responses.

Regarding indicator reliability, all factor loadings exceed the recommended threshold of 0.70, with most values above 0.80, demonstrating strong indicator reliability. These results indicate that the observed variables are well correlated with their respective latent constructs.

Convergent validity is further supported, as the Average Variance Extracted (AVE) values for all constructs range from 0.55 to 0.79, exceeding the minimum threshold of 0.50. This suggests that the constructs adequately explain the variance of their corresponding indicators.

In terms of internal consistency reliability, Cronbach's alpha values range from 0.73 to 0.91, while composite reliability values exceed 0.70 for all constructs, confirming satisfactory reliability. Overall, these results indicate that the measurement model demonstrates adequate reliability and convergent validity, supporting its suitability for subsequent structural model analysis.

TABLE I  
DESCRIPTIVE STATISTIC, NORMALITY ASSESSMENT, AND  
VALIDITY OF VARIABLES

Validity	Mean	SD.	Loading	R <sup>2</sup>	CA	AVE
SC1	4.04	0.44	0.91	0.83	0.90	0.77
SC2	3.87	0.62	0.90	0.81		
SC3	4.09	0.52	0.86	0.74		
SC4	3.94	0.50	0.82	0.67		
KM1	4.01	0.52	0.87	0.76	0.88	0.74
KM2	3.98	0.52	0.79	0.62		
KM3	4.08	0.47	0.87	0.76		
KM4	4.00	0.36	0.91	0.83		
IS1	4.03	0.46	0.71	0.50	0.73	0.55
IS2	3.96	0.60	0.75	0.56		
IS3	4.17	0.53	0.63	0.40		
IS4	4.16	0.48	0.86	0.74		
COMC1	4.03	0.49	0.73	0.53	0.77	0.59
COMC2	4.09	0.47	0.82	0.67		
COMC3	4.17	0.39	0.69	0.48		
COMC4	4.15	0.41	0.82	0.67		
SOP1	4.32	0.55	0.93	0.86	0.91	0.79
SOP2	4.26	0.47	0.89	0.79		
SOP3	4.27	0.40	0.86	0.74		
SOP4	4.28	0.42	0.87	0.76		

#### Discriminant Validity

The discriminant validity assessment using the Fornell-Larcker criterion. The square roots of the Average Variance Extracted (AVE) for all constructs, shown on the diagonal, are higher than the corresponding inter-construct correlations. This indicates that each construct shares more variance with its own indicators than with other constructs, thereby confirming adequate discriminant validity among social capital (SC), knowledge management (KM), institutional support (IS), community organizational management competency (COMC) and sustainable organizational performance (SOP). As shown in

Table 2.

TABLE II  
DISCRIMINANT VALIDITY

Variables	Fornell-Larcker criterion				
	SC	KM	IS	COMC	SOP
SC	0.878				
KM	0.867	0.864			
IS	0.053	0.052	0.748		
COMC	0.312	0.336	0.559	0.76	
SOP	0.141	0.104	0.298	0.286	0.894

#### Evaluation of the Structural Model

The predictive relevance of the structural model was assessed using cross-validated redundancy and communality (Q<sup>2</sup>) measures. All endogenous constructs exhibit Q<sup>2</sup> values greater than zero, indicating that the model possesses adequate predictive relevance

Specifically, knowledge management (KM) demonstrates the highest level of predictive relevance (Q<sup>2</sup> = 0.762), followed by social capital (SC), suggesting strong predictive capability for these constructs. Institutional support (IS) and community organizational management capability (COMC) exhibit moderate levels of predictive relevance, indicating their meaningful contribution to the model's predictive performance.

Although sustainable organizational performance (SOP) presents a relatively lower Q<sup>2</sup> value (Q<sup>2</sup> = 0.093), it remains above the minimum threshold of zero. This suggests that the model retains acceptable predictive power for this construct, despite its comparatively lower explanatory strength. This

result may reflect the influence of additional external factors not captured in the present model.

Furthermore, the positive cross-validated communality values for COMC and SOP provide additional support for the measurement model's predictive accuracy. Overall, the consistently positive Q<sup>2</sup> values confirm that the structural model demonstrates sufficient predictive relevance in explaining the endogenous constructs, as shown in Table 3.

TABLE III  
PREDICTIVE RELEVANCE (Q-SQ)

	Cross-validated redundancy Q-sq	Cross-validated communality Q-sq
SC	0.752	
KM	0.762	
IS	0.331	
COMC	0.385	0.382
SOP	0.093	0.073

The AVE values for all constructs range from 0.55 to 0.79, exceeding the recommended threshold of 0.50 and indicating satisfactory convergent validity. Regarding explanatory power, community organizational management capability (COMC) shows a moderate R<sup>2</sup> value of 0.40, while

sustainable performance (SOP) presents a lower R<sup>2</sup> value of 0.08.

The mean AVE is 0.72 and the mean R<sup>2</sup> is 0.24. The resulting GOF value is 0.42, which exceeds the recommended threshold of 0.36, indicating a strong overall model fit, as shown in Table 4.

TABLE IV  
GOODNESS-OF-FIT (GO) RESULTS

Variables	AVE	R-sq
SC	0.771	
KM	0.747	
IS	0.731	
COMC	0.559	0.409
SOP	0.799	0.082
Mean value	0.721	0.245
Multiply of mean value	0.177	
GOF	0.420	

#### Path Analysis and Hypothesis Testing

The results of the path analysis and hypothesis testing are presented in Table V. The findings indicate that social capital (SC) does not have a significant effect on community organizational management capability (COMC) ( $\beta = 0.067$ ,  $t = 0.729$ ,  $p > 0.05$ ), leading to the rejection of H1.

In contrast, knowledge management (KM) has a positive and significant effect on COMC ( $\beta = 0.250$ ,  $t = 2.567$ ,  $p < 0.05$ ), supporting H2. Institutional support (IS) also demonstrates a strong and significant positive effect on COMC ( $\beta = 0.543$ ,  $t = 10.987$ ,  $p < 0.001$ ), supporting H3.

Furthermore, community organizational management capability (COMC) has a significant positive effect on sustainable organizational performance (SOP) ( $\beta = 0.286$ ,  $t = 4.648$ ,  $p < 0.001$ ), supporting H4.

Regarding the mediation effects, the indirect effect of social capital on sustainable performance through COMC is not significant ( $\beta = 0.019$ ,  $t = 0.676$ ,  $p > 0.05$ ), resulting in the rejection of H5. However, knowledge management demonstrates a significant indirect effect on sustainable performance via COMC ( $\beta = 0.072$ ,  $t = 2.189$ ,  $p < 0.05$ ), supporting H6. Similarly, institutional support has a significant indirect effect on sustainable performance through COMC ( $\beta = 0.155$ ,  $t = 4.107$ ,  $p < 0.001$ ), supporting H7.

Overall, the results highlight the mediating role of community organizational management capability in linking knowledge management and institutional support to sustainable performance, as shown in Table 5.

When examining the variance of the endogenous constructs explained by their respective antecedents (R<sup>2</sup>), the results indicate that community organizational management capability (COMC) achieves an R<sup>2</sup> value of 0.409, reflecting moderate explanatory power. In contrast, sustainable performance (SOP) yields an R<sup>2</sup> value of 0.082, suggesting limited explanatory capacity within the current model. These findings imply that while the proposed antecedents meaningfully explain variations in managerial capability, sustainable performance is likely influenced by additional

structural and contextual determinants beyond those specified in the model.

TABLE V  
RESULTS OF PATH ANALYSIS AND HYPOTHESIS TESTING

	B	SD.	t-test	Sig	
H1: SC -> COMC	0.067	0.092	0.729	0.466	No
H2: KM -> COMC	0.250	0.097	2.567	0.010	Yes
H3: IS -> COMC	0.543	0.049	10.987	0.000	Yes
H4: COMC -> SOP	0.286	0.062	4.648	0.000	Yes
H5: SC -> COMC -> SOP	0.019	0.029	0.676	0.499	No
H6: KM -> COMC -> SOP	0.072	0.033	2.189	0.029	Yes
H7: IS -> COMC -> SOP	0.155	0.038	4.107	0.000	Yes

The structural model delineates the relationships among social capital (SC), knowledge management (KM), institutional support (IS), community organizational management capability (COMC), and sustainable performance (SOP). Consistent with the resource-based view (RBV) and capability-based perspectives, the results demonstrate that organizational capability functions as a critical transformation mechanism through which intangible resources and institutional conditions are converted into performance outcomes.

Institutional support emerges as the most influential determinant of COMC, underscoring the importance of formal structures, policy frameworks, and external resource facilitation in strengthening managerial systems within community enterprises. Knowledge management also exerts

a significant positive effect, reinforcing the theoretical argument that knowledge integration and organizational learning enhance dynamic managerial capability. Conversely, social capital does not exhibit a statistically significant direct effect on COMC, suggesting that relational resources alone may be insufficient to generate managerial capability without complementary structural or knowledge-based mechanisms.

Furthermore, COMC demonstrates a significant positive effect on sustainable performance, supporting the proposition that managerial capability constitutes a strategic capability that enhances long-term sustainability outcomes. However, the relatively low R<sup>2</sup> value for SOP indicates that sustainable performance is multidimensional and may depend on broader environmental, market, and policy-related contingencies not fully captured in the present framework.

Overall, the findings emphasize the pivotal mediating role of community organizational management capability as a capability-building mechanism that links knowledge-based and institutional resources to sustainable performance. This reinforces the theoretical proposition that organizational capability operates as an intermediate strategic asset translating resource inputs into sustainability-oriented outcomes.

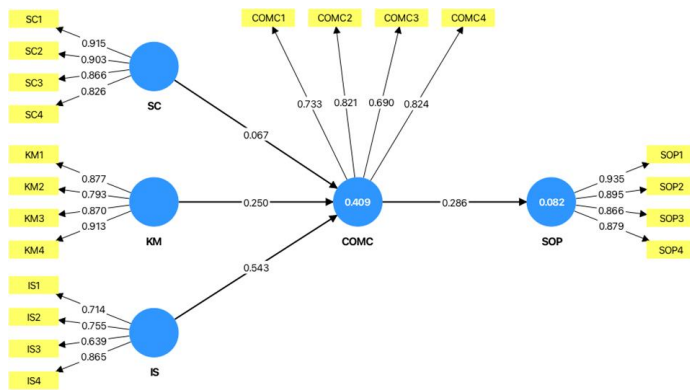


Fig. 2. Measurement Model

#### IV. Discussion

This study examined the relationships among social capital, knowledge management, institutional support, community organizational management capability, and sustainable organizational performance in community-based beekeeping enterprises in Southern Thailand. The findings provide several theoretical and practical insights into how internal resources and external institutional factors influence sustainable organizational outcomes.

First, the results indicate that social capital does not significantly influence community organizational management capability. This finding contrasts with classical social capital theory, which suggests that social networks, trust, and shared norms enhance cooperation and collective action within organizations. Coleman [32] and Putnam [33] emphasized that social capital facilitates cooperation and collective coordination through trust and social networks. Similarly, Nahapiet and Ghoshal [34] argued that social capital enables knowledge exchange and collaboration among organizational members, thereby strengthening organizational capability. However, the present findings suggest that social relationships alone may not be sufficient to develop structured managerial capability within community-based enterprises. Recent studies have also suggested that social capital often exerts indirect effects on organizational outcomes through mediating mechanisms such as innovation capability or organizational learning rather than directly influencing performance [35], [36]. This implies that although social relationships are valuable for fostering cooperation within communities, they must be supported by structured management systems and knowledge processes in order to generate organizational capability.

Second, the results demonstrate that knowledge management significantly enhances community organizational management capability. This finding supports the Knowledge-Based View proposed by Grant [37], which regards knowledge as a critical strategic resource for organizational capability and competitive advantage. Similarly, Nonaka and Takeuchi [38] emphasized that organizational knowledge creation processes enable organizations to develop learning capability and innovation capacity. Recent empirical studies also confirm that knowledge management practices significantly improve organizational performance and innovation capability in small and medium-sized enterprises [39], [40]. In addition, research has shown that

knowledge management contributes to performance through the development of dynamic capabilities that enable organizations

to effectively integrate and utilize knowledge resources. Teece [41] explained that dynamic capabilities allow organizations to transform knowledge resources into organizational capability and performance outcomes. Therefore, in community-based beekeeping enterprises, structured knowledge sharing, technical training, and learning networks appear to play a critical role in strengthening organizational management capability.

Third, institutional support was found to be the strongest predictor of community organizational management capability. This finding highlights the important role of institutional environments in shaping organizational capacity. Institutional theory explains that regulatory frameworks, normative expectations, and legitimacy structures influence how organizations develop managerial systems and operational capability. DiMaggio and Powell [42] and Scott [43] explained that institutional environments shape organizational behavior and capacity through regulatory and normative pressures. In the context of rural community enterprises, institutional support such as government training programs, financial assistance, and technical guidance helps reduce operational uncertainty and enhance managerial capability. Recent studies on SMEs also confirm that external institutional support and policy frameworks significantly improve organizational resilience, competitiveness, and sustainability [44]. Therefore, institutional support appears to play a crucial role in strengthening the managerial structures of community-based enterprises.

Fourth, the findings indicate that community organizational management capability significantly improves sustainable organizational performance. This result aligns with the Resource-Based View proposed by Barney [45], which emphasizes that organizational capabilities are strategic resources that enable firms to achieve sustained competitive

advantage. Effective managerial capability enables organizations to coordinate resources, manage operations efficiently, and adapt to environmental changes. Recent studies also suggest that organizational capabilities and dynamic capabilities significantly enhance firm performance and sustainability in SMEs [46], [47]. In community-based enterprises, management capability supports sustainable outcomes by improving economic performance, strengthening social collaboration, and promoting environmentally responsible production practices.

Regarding mediation effects, the results indicate that organizational management capability mediates the relationships between knowledge management and sustainable performance as well as between institutional support and sustainable performance. This finding supports the dynamic capabilities perspective proposed by Teece [41], which suggests that organizational resources contribute to performance primarily through the development of organizational capabilities. However, the mediating effect was not found in the relationship between social capital and sustainable performance, suggesting that social capital alone may not directly translate

into sustainable outcomes without structured managerial capability.

## V. IMPLICATIONS OF THE RESEARCH

The findings of this study provide several important implications for practitioners and policymakers involved in the development of community-based beekeeping enterprises. First, the significant influence of knowledge management on community organizational management capability indicates that community enterprises should prioritize the development of systematic knowledge management practices. Activities such as technical training, knowledge-sharing among members, and collaborative learning can help enhance managerial capability, improve operational coordination, and strengthen the overall effectiveness of community enterprises.

Second, the strong effect of institutional support highlights the crucial role of government agencies and development institutions in strengthening the managerial capacity of community enterprises. Policymakers should continue to provide targeted support through training programs, technical advisory services, financial assistance, and market access facilitation. Collaboration among government agencies, universities, and agricultural extension services can further support the transfer of knowledge and technology related to beekeeping practices, product quality management, and sustainable production systems.

Third, the findings emphasize the importance of strengthening community organizational management capability in order to achieve sustainable organizational performance. Community enterprise leaders should focus on improving managerial processes such as planning, coordination, information management, and problem-solving. Strengthening these capabilities can enhance organizational efficiency and support long-term sustainability.

From a broader policy perspective, promoting community-based beekeeping enterprises also supports Thailand's Bio-Circular-Green (BCG) Economy Model, which emphasizes the sustainable use of biological resources. Beekeeping contributes to agricultural sustainability by supporting pollination services and biodiversity conservation. Consequently, policy initiatives that encourage pollinator-friendly agricultural practices, knowledge transfer, and sustainable bee product certification can enhance both rural livelihoods and environmental sustainability.

## ACKNOWLEDGMENT

The authors would like to express their sincere gratitude to King Mongkut's Institute of Technology Ladkrabang, Prince of Chumphon Campus for their support of this research. The authors also gratefully acknowledge all community-based beekeeping entrepreneurs who generously participated in the survey and provided valuable information for this study.

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# Development of a Model of Factors Affecting the Financial Planning of Civil Servants in the Office of the Attorney Region 8: The Mediating Role of Financial Behavior

Thitimon Pankaew<sup>1</sup> and Chanyaphak Lalaeng<sup>1,a)</sup>

Author Affiliations

<sup>1</sup>King Mongkut's Institute of Technology Ladkrabang, Prince of Chumphon Campus, Chumphon, 86160, Thailand,

Author Emails

<sup>a)</sup>Corresponding author: chanyaphak.la@kmitl.ac.th

**Abstract.** This study aims to develop a model of “Factors Affecting Financial Planning of Civil Servants in the Office of the Attorney General Region 8: The Mediating Role of Financial Behavior.” The research seeks to identify factors influencing financial planning and to develop a conceptual framework based on a comprehensive literature review, with financial behavior considered as a mediating variable. This study employs a documentary research approach by synthesizing relevant concepts, theories, and previous studies to develop an integrated conceptual framework. The findings from the literature synthesis indicate that financial literacy and financial motivation play significant roles in promoting appropriate financial behavior. Meanwhile, financial technology adoption and work–life balance values contribute to individuals’ financial decision-making and long-term financial planning. In addition, financial behaviors such as saving, expenditure control, and investment function as important mechanisms linking these factors to effective financial planning. The results lead to the development of a conceptual framework that can serve as a guideline for future empirical research on financial planning among public sector personnel.

**Index Terms**—Financial planning, Financial behavior, Financial literacy, Financial technology, Work–life balance

## I. INTRODUCTION

Thailand is entering a Complete Aged Society, with the proportion of the population aged 60 years and over exceeding 20 percent of the total population, and it is projected to become a Super-Aged Society by 2033. This demographic transition has resulted from a continuous decline in the birth rate and an increase in life expectancy, leading to a reduction in the proportion of the working-age population while the number of older persons has increased significantly [1] [2]. Under this context, financial security after retirement has become an important issue at both the household and public policy levels, as retirement income must be sufficient to support long-term living expenses.

Although civil servants have a pension system as the principal mechanism for post-retirement income security, changes in economic conditions, such as rising inflation, increasing living costs, and higher healthcare expenses in old age, may render retirement income insufficient for maintaining an adequate standard of living. Therefore, personal financial planning is of crucial importance in ensuring long-term financial security [3].

In addition, Thailand’s household debt remains at a high level, with a value of approximately 16.3–16.4 trillion baht, or around 87–89 percent of gross domestic product (GDP), reflecting the financial fragility of Thai households [4]. At

the same time, the development of financial technology, such as mobile banking, internet banking, and e-wallets, has significantly transformed the way people conduct financial transactions. These technologies enhance convenience in financial management; however, access to technology alone cannot guarantee that individuals will exhibit appropriate financial behavior if they lack financial literacy and self-discipline [5].

In the context of civil servants in the Office of the Attorney Region 8, who must perform their duties under heavy workloads and strict legal frameworks, work–life balance may influence individuals’ financial decision-making behavior, as work-related stress and responsibilities may affect patterns of spending, saving, and future financial planning [6].

Therefore, studying the factors affecting the financial planning of civil servants in the Office of the Attorney Region 8, with financial behavior considered as a mediating variable, is important for understanding the mechanisms that lead to long-term financial security. Furthermore, the findings can serve as guidelines for promoting appropriate financial behavior and financial planning among public sector personnel.

Given the significance of these issues, the researcher is interested in conducting a study entitled “Development of a Model of Factors Affecting the Financial Planning of Civil Servants in the Office of the Attorney Region 8:

The Mediating Role of Financial Behavior” in order to examine the relationships between causal factors and the outcomes of financial behavior, and to clarify the structural model of factors affecting the financial planning of civil servants in the Office of the Attorney Region 8.

## II. LITERATURE REVIEW AND HYPOTHESIS

### Concepts of Financial Planning

Financial planning is a systematic process of managing financial resources in order to achieve life goals efficiently at each stage of life. The Financial Pyramid concept explains the hierarchy of priorities in personal financial management, beginning from the foundation and progressing toward long-term wealth creation. It starts with cash flow management, expense control, debt management, and maintaining an emergency fund, which are essential foundations of financial stability [7]. It then moves to risk protection through financial instruments such as life insurance and health insurance [8]. The next stage involves the accumulation and growth of assets through saving and investment that are appropriate to each individual’s level of risk tolerance [9]. The highest stage is wealth management, retirement planning, and the sustainable transfer of assets. This concept is consistent with the OECD financial literacy framework, which emphasizes the relationship among financial knowledge, financial behavior, and financial outcomes [5]. In addition, Lusardi and Mitchell [3] pointed out that financial behavior is an important mechanism linking financial literacy to financial planning outcomes. Therefore, in this study, financial behavior is designated as a mediating variable to explain its effect on the financial planning of civil servants in the Office of the Attorney Region 8.

Based on the review and synthesis of the literature related to financial planning in accordance with the theoretical framework identified by various scholars, the findings can be summarized as shown in Table 1.

TABLE I  
A REVIEW OF THE LITERATURE AND RELATED STUDIES ON THE FINANCIAL PLANNING VARIABLE

Author (s) / Year	Research Title / Source	Summary of Key Relevant Findings	Observed Variable
Hilgert, Hogarth & Beverly [10]	Household Financial Management: The Relationship Between Financial Literacy and Financial Behavior,	The study found that financial literacy is positively associated with household financial management behavior in four areas:	- Expense and Debt Planning - Saving and Investment

	Federal Reserve Bulletin	cash flow management , credit management , saving, and investment. Individuals with higher levels of financial literacy were more likely to engage in appropriate financial behaviors, such as paying debts on time, planning cash flow, and saving and investing regularly.	
Yeo, Lim & Yii [11]	Financial Planning Behavior: A Systematic Literature Review and the Development of a New Theory, Journal of Financial Services Marketing	Research that synthesized and developed theories on financial planning behavior found that key factors, including financial satisfaction, socialization , and financial literacy, influence individuals’ intentions and acceptance of financial planning. These are reflected in major activities such as cash flow planning, tax	- Expenses and Debt - Risk Protection - Saving and Investment - Estate Planning

		planning, investment, risk management, estate planning, and retirement planning, all of which are considered the principal dimensions of financial planning.	
Srisorn [12]	Personal Financial Planning for Post-Retirement Living Across All Age Groups in Thailand, Journal of Positive School Psychology	The study found that personal financial planning plays an important role in post-retirement quality of life. Various components, such as asset allocation, cash flow management, expenditure planning, insurance, and estate planning, all have a positive influence on financial security and life satisfaction in retirement. This reflects that cash flow management, risk protection, investment, and asset planning are essential components of financial planning.	- Expenses and Debt - Risk Protection - Saving and Investment - Estate Planning

	Knowledge of Personal Financial Planning	The AICPA professional standards specify that financial planners should possess knowledge in at least 12 areas, covering cash flow and budgeting management, risk management through insurance, investment, and estate and inheritance tax planning. This document is often used as a reference framework for designing financial planning services and developing financial planning indicators in academic research.	- Expenses and Debt - Risk Protection - Saving and Investment - Estate Planning
	AICPA [13]		

Based on the synthesis of research and concepts in personal financial planning, it was found that financial planning is a behavioral variable that reflects the level of preparedness and the systematic management of an individual's financial resources in the short term, medium term, and long term. It encompasses income and expenditure management, risk management, the creation of financial security through saving and investment, as well as the transfer of assets in the future. Most of the literature agrees that the components of financial planning can be classified into four main dimensions:

- (1) expense and debt planning,
- (2) risk protection,
- (3) saving and investment, and

#### (4) estate planning.

##### Conceptual Perspectives on Financial Behavior

Financial behavior can be explained through several important theoretical frameworks. The Theory of Reasoned Action (TRA) explains that behavior arises from intention, which is influenced by attitudes and social norms [14]. Meanwhile, the Theory of Planned Behavior (TPB) adds perceived behavioral control to explain practical limitations in performing a behavior [15]. In addition, behavioral finance theory suggests that human financial decisions are influenced by cognitive biases, such as loss aversion and mental accounting [16] [17]. Furthermore, self-control theory explains the role of discipline and the ability to delay short-term gratification in order to achieve long-term goals [18]. Research has also found that individuals with a high level of self-control tend to demonstrate more appropriate money management behavior and better financial well-being [19]. In this study, financial behavior is examined in five dimensions: saving, spending, investment, debt management, and financial monitoring and planning.

##### Conceptual Perspectives on Financial Technology Acceptance

The acceptance of financial technology (FinTech) plays an important role in the development of individuals' financial behavior. It can be explained through the Technology Acceptance Model (TAM) and the Unified Theory of Acceptance and Use of Technology (UTAUT), which suggest that the intention to use technology is influenced by perceived usefulness and perceived ease of use [20] [21]. In addition, social influence from people around the individual can also encourage greater acceptance and use of technology [21]. At the same time, trust in the security and reliability of the system plays an important role in reducing perceived risk and increasing the intention to use [26], as do facilitating conditions, such as infrastructure and technical support, which help transform intention into actual usage behavior [21]. Research has also found that perceived usefulness and trust significantly influence the acceptance of FinTech [27] [28]. The use of such technology can effectively and continuously support financial monitoring and planning.

##### Conceptual Perspectives on Financial Literacy

Financial literacy refers to the ability to understand basic financial concepts and apply them appropriately in decision-making. One of the most widely accepted frameworks is Lusardi and Mitchell's Big Three [3], which consists of knowledge of interest rates and compound interest, inflation, and risk diversification [3]. Understanding interest helps individuals recognize the cost of debt and the benefits of long-term saving, while knowledge of inflation enables them to understand the decline in purchasing power and the necessity of investment. Knowledge of risk diversification helps reduce the risks associated with concentrated investments. Research has found that individuals with higher financial literacy are more likely to engage in retirement planning and accumulate wealth more effectively [3], and they also tend to demonstrate more appropriate debt

management behavior [29]. Therefore, financial literacy is a fundamental factor influencing saving, investment, and debt management behavior, which in turn leads to long-term financial security.

##### Conceptual Perspectives on Financial Motivation

Financial motivation refers to the internal driving force that determines the direction and persistence of financial behavior, such as saving, debt reduction, and retirement planning. It can be explained through Self-Determination Theory (SDT) developed by Deci and Ryan, which suggests that the quality of motivation depends on the level of self-regulation [30]. This theory proposes that human beings have three basic psychological needs: autonomy (the freedom to make one's own decisions), competence (the ability to accomplish tasks successfully), and relatedness (the sense of connection with others), all of which support sustainable behavior. In addition, SDT classifies motivation into intrinsic motivation, such as the desire for financial security and financial independence, and extrinsic motivation, such as rates of return and tax benefits. These external motives can be transformed into internalized values through the process of internalization, thereby making financial behavior more persistent (Ryan & Deci, 2000). Therefore, financial motivation is an important factor that helps translate financial goals into actual behavior and leads to long-term financial security.

##### Conceptual Perspectives on Work–Life Balance

Work–Life Balance (WLB) refers to an individual's ability to manage work and personal life roles in a balanced manner in terms of time, involvement, and satisfaction (Greenhaus, Collins, & Shaw, 2003). WLB consists of three dimensions: time balance, involvement balance, and satisfaction balance, all of which play an important role in quality of life and psychological stability. Individuals with a good work–life balance tend to experience lower levels of stress, possess sufficient psychological resources, and are able to regulate their behavior more effectively, resulting in more prudent financial decision-making. At the same time, research in the Thai context has found that workload, working hours, and organizational support significantly influence the level of work–life balance (Pawinee Saenwan, 2016). Therefore, work–life balance is a supportive factor that helps promote appropriate financial behavior, such as saving, investment, and long-term financial planning.

##### Relationships Among the Variables Under Study and the Development of Research Hypotheses

##### The Relationship Between Financial Technology Acceptance and Financial Planning

Financial technology (FinTech) acceptance plays an important role in personal financial management because financial technology enables individuals to access financial information, track income and expenses, and manage investments more conveniently and efficiently. This concept is consistent with the Technology Acceptance Model (TAM), which explains that perceived usefulness and perceived ease of use are important factors influencing the

acceptance and use of technology [20] [21]. Research on FinTech has also found that financial technology supports personal financial management, such as budget tracking, saving, and investment, thereby improving the effectiveness of financial planning [22] [23]. Therefore, the acceptance of financial technology is likely to have a positive effect on individuals' financial planning. Based on this review of the literature, the following hypothesis is proposed.

H1: Financial technology acceptance has a positive effect on the financial planning of civil servants in the Office of the Attorney Region 8.

#### The Relationship Between Work–Life Balance Values and Financial Planning

Work–Life Balance (WLB) is an important factor affecting individuals' quality of life and decision-making. It refers to the ability to manage work and personal life roles in a balanced manner in terms of time, involvement, and satisfaction [25].

Research has found that individuals with a good work–life balance tend to experience lower levels of stress and are able to make more rational financial decisions [25]. In addition, Lahav and Shavit [24] found that awareness of the importance of work–life balance can encourage individuals to plan their income, savings, and retirement more systematically in the long term. Based on this review of the literature, the following hypothesis is proposed:

H2: Work–life balance values have a positive effect on the financial planning of civil servants in the Office of the Attorney Region 8.

#### The Relationship Between Financial Literacy and Financial Behavior

A large body of research points to a positive relationship between financial literacy and appropriate financial behavior. Hilgert, Hogarth, and Beverly [10] found that individuals with higher financial literacy are more likely to engage in sound financial behaviors, such as budgeting, saving, and avoiding unnecessary debt, than those with lower levels of financial knowledge. This is consistent with Perry and Morris [31], who found that financial literacy and perceived control over one's financial future play an important role in financial discipline, such as saving and controlling spending. In addition, Robb and Woodyard [32] found that both objective and subjective financial literacy are positively associated with good financial behavior. Meanwhile, van Rooij, Lusardi, and Alessie [33] indicated that financial literacy significantly influences stock market investment decisions, and Hwang and Park (2023) confirmed through a meta-analysis that financial literacy is positively related to both financial behavior and financial well-being. Therefore, based on this review of the literature, it is hypothesized that financial literacy has a positive influence

on individuals' financial planning and management behavior. Based on the above literature review, the following hypothesis is proposed:

H3: Financial literacy has a positive effect on the financial behavior of civil servants in the Office of the Attorney Region 8.

#### The Relationship Between Financial Motivation and Financial Behavior

Several studies have indicated that financial motivation plays an important role in shaping individuals' financial behavior. Bebasari et al. [32] found that investment motivation has a positive and significant influence on students' investment decisions, reflecting that when individuals have stronger motivation in terms of returns or future security, they are more likely to exhibit proactive financial behavior. This is consistent with Chuaybudda and Rattanapongpinyo [33], who found that investment motivation has a positive effect on the investment behavior of Generation Y, leading to continuous saving and investment. In addition, Di Domenico et al. [34] pointed out that intrinsic motivation, such as the desire for financial security and financial independence, is more strongly associated with financial planning, spending control, and consistent saving and investment than extrinsic motivation alone. Based on this review of the literature, the following hypothesis is proposed:

H4: Financial motivation has a positive effect on the financial behavior of civil servants in the Office of the Attorney Region 8.

#### The Relationship Between Financial Behavior and Financial Planning

A large number of studies confirm that financial behavior plays an important role in retirement planning and long-term financial planning. Tiwari, Yadav, and Vadgama [35] found that sound financial behaviors, such as income and expense planning, spending control, and investment for the future, have a positive influence on employees' level of retirement planning. This is consistent with Waga, Memba, and Muriithi [36], who found that individuals with financial discipline, such as saving regularly and paying debts on time, are more likely to engage in more comprehensive retirement planning. In addition, Rahim and Ali [37] pointed out that financial behaviors such as saving, budgeting, and disciplined investment are important mechanisms linking financial literacy to retirement preparedness. Meanwhile, Setiawati and Nurkhin [38] and Wardani et al. [39] found that individuals with rational financial management behavior tend to be better able to plan their future finances. Based on this review of the literature, a hypothesis is proposed regarding the relationship between financial behavior and long-term financial planning. Based on the above literature review, the following hypothesis is proposed:

H5: Financial behavior has a positive effect on the financial planning of civil servants in the Office of the Attorney Region 8.

The Relationships Among Financial Literacy, Financial Behavior, and Financial Planning

The literature review indicates that financial literacy plays an important role in financial planning through its effect on financial behavior. In other words, financial literacy helps individuals develop an understanding of saving, spending, investment, and debt management, which in turn leads to the expression of appropriate financial behaviors, such as budgeting, regular saving, and debt control. Such behaviors therefore serve as an important mechanism that promotes more systematic financial planning. Several studies have consistently found that financial behavior acts as a mediating variable between financial literacy and financial planning [11] [40] [41] [42]. Based on this review of the literature, the following hypothesis is proposed:

H6: Financial literacy has a positive effect on the financial planning of civil servants in the Office of the Attorney Region 8, with financial behavior acting as a mediating variable.

The Relationships Among Financial Motivation, Financial Behavior, and Financial Planning

Financial motivation can be explained by Self-Determination Theory (SDT), which classifies motivation into intrinsic motivation and extrinsic motivation. Intrinsic motivation, such as the desire for financial security and financial independence, plays an important role in encouraging individuals to exhibit appropriate financial behaviors, such as saving, controlling expenses, and monitoring financial status [34]. In addition, research has found that financial motivation is positively related to financial planning, particularly retirement planning [43] [44]. At the same time, financial behavior serves as an important mechanism linking psychological factors to long-term financial outcomes [45]. Therefore, financial motivation is likely to influence financial planning through individuals' appropriate financial behavior. Based on this review of the literature, the following hypothesis is proposed:

H7: Financial motivation has a positive effect on the financial planning of civil servants in the Office of the Attorney Region 8, with financial behavior acting as a mediating variable.

III. METHODOLOGY

This study involves construct development for the purpose of developing a model of factors affecting the financial planning of civil servants in the Office of the Attorney Region 8, with financial behavior as a mediating variable. The study employs qualitative research methods, including literature review and document analysis, based on the relevant theoretical concepts of financial technology acceptance, financial literacy, financial motivation, work-life balance values, financial behavior, and financial planning. The study is conducted using secondary data, with data collected from related research documents, including

journal articles and information retrieved from online databases via the Internet, such as ScienceDirect, Scopus, Google Scholar, and Business Source Complete, among others.

IV. RESULTS

Based on the review of the literature and theoretical concepts related to the causal variables and outcome variables in the model of factors affecting the financial planning of civil servants in the Office of the Attorney Region 8, with financial behavior as a mediating variable, the relationships between the causal and outcome variables can be illustrated as shown in Figure 1.

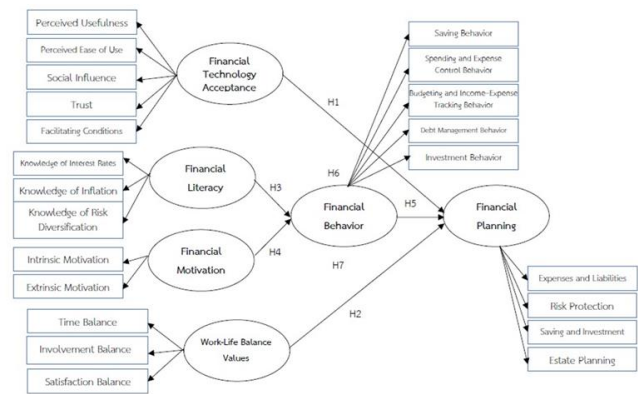


Fig. 1. Conceptual Framework Showing Proposed Hypothesis.

This study is a documentary research study aimed at reviewing and synthesizing the literature related to factors influencing financial planning in order to develop a research conceptual framework. The literature review revealed that individuals' financial planning is influenced by several important factors, including financial technology acceptance, financial literacy, financial motivation, and work-life balance values, with financial behavior serving as an important variable linking these factors to financial planning outcomes.

The literature synthesis further found that financial technology acceptance plays an important role in individuals' financial planning and management because financial technology enables users to access financial information, track income and expenses, and manage investments more conveniently, thereby enhancing the effectiveness of financial planning. This concept is consistent with the Technology Acceptance Model (TAM), which explains that perceived usefulness and perceived ease of use of technology affect users' acceptance and behavioral adjustment [20]. In addition, FinTech research has indicated that financial technology supports personal financial management and long-term financial planning [22] [23].

A substantial body of literature indicates that work-life balance values play an important role in individuals'

financial decision-making. When individuals place importance on quality of life and future security, they are more likely to plan their income, savings, and retirement in a more systematic manner. Lahav and Shavit [24] found that awareness of the impact of work–life balance on one’s financial future leads individuals to make more rational decisions regarding income and pension planning, while Chaudhary and Vatsyayan [25] found that a good work–life balance is associated with employees’ financial security and well-being.

The synthesis of the literature also found that financial literacy is an important factor in promoting appropriate financial behavior, such as budgeting, saving, and debt management. This is consistent with the study by Hilgert, Hogarth, and Beverly [10], which found that individuals with higher financial literacy are more likely to engage in sound financial behavior. In addition, Robb and Woodyard [32] found that both objective and subjective financial literacy are positively related to financial behavior.

The literature review further suggests that financial motivation is an important factor that encourages individuals to engage in proactive financial behavior, such as saving, investing, and planning for the future. The study by Bebasari et al. [32] found that investment motivation has a positive influence on investment decisions, while Di Domenico et al. [34] found that intrinsic motivation, such as the desire for financial security and financial independence, is associated with personal financial planning and management behavior.

The synthesis of prior studies also indicates that sound financial behavior, such as saving regularly, controlling expenses, and investing, is associated with long-term financial planning. Tiwari, Yadav, and Vadgama [35] found that good financial behavior affects employees’ level of retirement planning, while Waga, Memba, and Muriithi [36] found that individuals with financial discipline are more likely to engage in more comprehensive retirement planning.

The literature review also found that financial literacy does not only affect financial planning directly, but also exerts its influence through financial behavior, such as saving, budgeting, and investing, which serve as important mechanisms for transforming knowledge into practice. The synthesis by Rahim and Ali [37] identified financial behavior as a key mechanism linking financial literacy with long-term financial preparedness.

At the same time, the literature also suggests that financial motivation can influence financial planning through financial behavior. In other words, when individuals are motivated to build security or achieve financial goals, this motivation encourages financial behaviors such as saving and investing, which in turn lead to more effective financial planning. This view is consistent with the studies of Bebasari

et al. [32] and Di Domenico et al. [34], which indicate that financial motivation is an important factor driving individuals’ financial behavior and investment decision-making.

Therefore, based on the synthesis of the literature, a research conceptual framework can be developed to explain the relationships among financial technology acceptance, financial literacy, financial motivation, and work–life balance values, which influence financial behavior and subsequently lead to individuals’ long-term financial planning.

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# The Development of a Model of Strategic Leadership, New Public Management, and Good Governance Affecting the Sustainable Development of Local Governments

Petai Thippimon<sup>1</sup> and Chanyaphak Lalaeng<sup>1,a)</sup>

Author Affiliations

<sup>1</sup>King Mongkut's Institute of Technology Ladkrabang, Prince of Chumphon Campus, Chumphon, 86160, Thailand,

Author Emails

<sup>a)</sup>Corresponding author: chanyaphak.la@kmitl.ac.th

**Abstract.** This study aims to develop a conceptual model examining the relationships among strategic leadership, new public management, and good governance affecting the sustainable development of local government organizations. The research employed a qualitative approach using literature review and document analysis. Secondary data were collected from relevant research articles and academic publications retrieved from online databases such as Scopus, ScienceDirect, and Google Scholar. The study was based on the theoretical frameworks of strategic leadership, new public management, good governance, and sustainable development. The findings from the document synthesis indicate that strategic leadership plays a crucial role in promoting the implementation of new public management and good governance in public organizations. These management approaches enhance administrative efficiency, transparency, and accountability. Furthermore, new public management and good governance act as key mechanisms in driving sustainable development in local government organizations and function as mediating factors linking strategic leadership with sustainable development.

**Index Terms**—Strategic leadership, New public management, Good governance, Sustainable development, Local government organizations.

## I. INTRODUCTION

In the contemporary world, within the context of rapid economic, social, political, and technological changes occurring in the 21st century, public sector organizations are increasingly confronted with more complex challenges. These challenges include rising public expectations, the necessity for transparent and accountable governance, and limitations in resources and budgets that must be utilized with maximum efficiency [1] [2]. At the same time, current development trends emphasize sustainable development, which requires balancing economic, social, environmental, and governance dimensions [3] [4]. Therefore, public sector organizations need to adapt their management approaches in order to effectively respond to these changes and ensure sustainable and efficient development.

Local government organizations, including Subdistrict Administrative Organizations, Municipalities, and Provincial Administrative Organizations, represent the public sector entities that are closest to the people. These institutions play a crucial role in driving development at the local level across economic, social, environmental, and governance dimensions. Their primary responsibilities include providing public services and improving the quality of life of local residents in an equitable and sustainable manner [5]. Strengthening the capacity of local government organizations is therefore a key mechanism for enhancing

democratic governance and supporting long-term national development. The decentralization of authority to local governments aims to increase their capacity for self-administration, promote public participation in local governance, and enable local authorities to respond more effectively to the specific needs and conditions of their communities [6].

However, in practice, many local government organizations continue to encounter challenges related to administrative efficiency. These challenges include the lack of clear vision and strategic direction, policy changes influenced by local political factors, inefficient resource management, as well as issues related to transparency and public trust. Such problems may undermine the capacity of local governments to achieve sustainable local development [7]. One of the key factors influencing the success of local government organizations is the strategic leadership of local administrators. Strategic leadership reflects the ability of leaders to formulate a clear vision, analyze internal and external environments, apply systems thinking, and make decisions that consider long-term impacts. These capabilities enable organizations to adapt to changing circumstances and effectively achieve their development objectives [8] [9]. In addition, the concept of New Public Management has emerged as an important approach to public sector reform. This approach emphasizes enhancing efficiency, focusing on performance outcomes, establishing performance indicators, and ensuring the effective and economical use of resources

[10] [11]. However, focusing solely on efficiency may not be sufficient if good oversight mechanisms are lacking. Therefore, the concept of good governance plays a crucial role in public administration. It emphasizes the principles of the rule of law, transparency, accountability, public participation, and the efficient use of resources [12] [13]. These principles contribute to strengthening credibility and reducing corruption in public sector management.

At the same time, the concept of sustainable development has become a central objective of global development, emphasizing development that meets the needs of the present generation without compromising the ability of future generations to meet their own needs [3]. This concept encompasses several key dimensions, including economic, social, environmental, and governance aspects [4]. For local government organizations, sustainable development therefore involves not only the development of infrastructure but also the improvement of citizens' quality of life, the conservation of natural resources and the environment, and the establishment of management systems that are efficient, transparent, and accountable. Such an approach enables local governments to promote balanced and long-term development within their communities while ensuring responsible and sustainable use of resources.

Although there have been several studies examining strategic leadership, New Public Management, and good governance within the context of the public sector and local government organizations, most of these studies have tended to focus on only one particular issue or examine only certain components of these concepts. Research that integrates these three concepts to explain their combined influence on the sustainable development of local government organizations remains relatively limited. This limitation is particularly evident in the context of Thailand, where differences exist in organizational size, economic capacity, social conditions, and administrative structures across different local areas [7]. Given the significance of these issues, the researcher is therefore interested in developing a model of strategic leadership, New Public Management, and good governance affecting the sustainable development of local government organizations. The study aims to examine the relationships between causal factors and sustainable development outcomes of local government organizations, as well as to clarify the structural model explaining how strategic leadership, New Public Management, and good governance influence the sustainable development of local government organizations.

## II. LITERATURE REVIEW AND HYPOTHESIS

### The Concepts of Sustainable Development

Sustainable development is a development concept that aims to create a balance among economic, social, environmental, and governance dimensions in order to meet the needs of the present generation without compromising the ability of future generations to meet their own needs. This concept was formally introduced in the report *Our Common Future*, which emphasizes the responsible use of resources and consideration of long-term impacts [14]. Subsequently,

the concept has been further developed to encompass multiple dimensions, particularly the inclusion of the governance dimension or good governance, in order to ensure efficiency and transparency in development and public administration [15] [16]. Sustainable development can generally be explained through four key dimensions, as follows: 1) The economic dimension focuses on achieving economic stability and the efficient use of resources. It is reflected in indicators such as local economic growth, income and employment opportunities for citizens, efficient resource utilization, and the development of infrastructure that supports economic activities within the community [16] [15]. 2) The social dimension emphasizes quality of life, social equity, and the strength of communities. Observable variables include citizens' quality of life, social justice, public participation, and community strength and cohesion [17]. 3) The environmental dimension focuses on the conservation and sustainable use of natural resources, as well as pollution management and the reduction of impacts on ecosystems. Examples include the conservation of natural resources, waste and pollution management, and the efficient and sustainable use of environmental resources [3] [15]. 4) The governance dimension emphasizes transparent, accountable, and participatory administration. Key variables include transparency in administration, public participation in decision-making, social responsibility, and adherence to the principles of good governance in public management [16].

Therefore, sustainable development can be regarded as a development approach that requires a balanced integration of four key dimensions: economic, social, environmental, and governance. The observable variables within each dimension can be used as indicators for assessing the level of sustainable development of organizations or local government organizations. Furthermore, these variables can serve as a conceptual framework for examining the factors that influence sustainable development.

Based on the review and synthesis of the literature related to sustainable development, in accordance with the theoretical framework proposed by various scholars, the key concepts and dimensions can be summarized as presented in Table 1.

TABLE I  
A REVIEW OF THE LITERATURE AND RELATED RESEARCH ON THE SUSTAINABLE DEVELOPMENT VARIABLE

Author (s) / Year	Research Title / Source	Summary of Key Relevant Findings	Observed Variable
Ding, Han & Wang [18]	Environmental, Social, and Governance (ESG) and	The findings indicate that ESG performance has a positive	- Economic - Social - Environmental - Governance

	Total Factor Productivity	effect on an organization's total factor productivity and contributes to sustainable economic and social development . Investment in research and development (R&D) and the reduction of financial constraints serve as key mechanisms linking ESG performance with sustainable development .	
Mahmood et al. [19]	The Role of Environmental, Social, and Governance (ESG) in Achieving Sustainable Development Goals: Empirical Evidence from ASEAN Countries	The findings indicate that the ESG dimensions — environmental, social, and governance — along with economic growth, are positively associated with the achievement of the Sustainable Development Goals (SDGs). In particular, environmental management and stakeholder relationships play a significant role in	- Economic - Environmental - Governance

		supporting the attainment of the SDGs.	
David, Wang & David [20]	The Economic and Governance Dimensions of Environmental, Social, and Governance (ESG) Performance	The study found that the economic and governance dimensions are key factors supporting economic resilience and sustainable development , particularly in developing countries.	- Economic - Social - Environmental - Governance
Cek & Kalmaz [21]	Innovation , Governance, and Participation: Key ESG Pillars Driving Economic Growth	The findings indicate that the ESG dimensions play a significant role in economic growth, particularly governance and environmental innovation, which contribute to the development of a green economy and sustainable development .	- Economic - Social - Environmental - Governance
Dai [22]	An Analysis of the Challenges of Green Growth and ESG Investment in	The findings indicate that ESG-based investment contributes to green growth, with environmental	- Economic - Social - Environmental - Governance

	Southeast Asia	investment significantly increasing the Green Growth Index.	
Pu [23]	The Link Between Digital Transformation and Environmental, Social, and Governance (ESG) Performance	The findings indicate that the use of digital technologies enhances ESG performance, particularly by improving environmental management and organizational transparency.	<ul style="list-style-type: none"> <li>- Economic</li> <li>- Social</li> <li>- Environmental</li> <li>- Governance</li> </ul>
Zhang et al. [24]	The Integration of Economy, Environment, Society, and Governance (EESG): An Integrated Framework for Sustainable Development	The study proposes an EESG-based sustainability assessment framework, which integrates the economic, social, environmental, and governance dimensions to evaluate the level of sustainable development across different countries.	<ul style="list-style-type: none"> <li>- Economic</li> <li>- Social</li> <li>- Environmental</li> <li>- Governance</li> </ul>

looking vision, maintain flexibility in management, and translate strategies into concrete actions [25] [9] [26] [8]. Strategic leaders therefore not only determine the direction of the organization but also motivate and encourage personnel to actively participate in driving the organization toward its established goals. Strategic leadership is also associated with the ability to analyze both internal and external organizational environments in order to utilize relevant information in formulating appropriate strategies. This includes the effective allocation and management of resources, as well as the promotion of an organizational culture that supports learning, innovation, and collaboration, while adhering to moral and ethical principles in management.

According to the concept proposed by Hitt, Ireland, and Hoskisson [8], strategic leadership consists of several key components, including determining strategic direction, effectively managing organizational resources, establishing an effective organizational culture, emphasizing ethical practices, and maintaining balanced organizational control. Meanwhile, Dubrin [26] emphasizes the importance of systems thinking, gathering information from multiple sources, anticipating future trends, and formulating the organization's vision.

#### The Concept of New Public Management

New Public Management is a concept aimed at improving public sector administration to become more efficient, flexible, and responsive to the needs of citizens. It emphasizes the application of private sector management practices within the public sector, such as results-based management, efficient use of resources, flexible organizational restructuring, and the involvement of the private sector in the provision of public services [27]. This concept emerged from the forces of globalization and the limitations of traditional bureaucratic systems, which were often characterized by rigidity, delays, and an inability to respond effectively to changes in economic and social environments. Hood [10] explained that the essence of New Public Management lies in shifting the focus of public administration from rule- and procedure-oriented management to performance- and results-oriented management. Meanwhile, Boston [28] and Osborne and Gaebler [1] proposed that public administration should emphasize decentralization, the promotion of competition, a focus on performance outcomes, and the use of modern management tools in order to enhance the efficiency of public sector operations.

From the synthesis of the concepts proposed by the aforementioned scholars, it can be concluded that New Public Management consists of seven empirical or observable variables, including: 1) professional management by skilled and competent managers, 2) the establishment of clear standards and performance measurement, 3) greater emphasis on output control, 4) the disaggregation of public sector organizations into smaller units, 5) increased competition within the public sector, 6) the adoption of private sector management practices, and 7) greater discipline and efficiency in the use of resources.

#### The Concept of Good Governance

#### The Concept of Strategic Leadership

Strategic leadership refers to the ability of leaders to formulate the vision, direction, and strategies of an organization in order to enable the organization to adapt to environmental changes and achieve long-term success effectively. Many scholars have described strategic leadership in similar ways, emphasizing the leader's ability to anticipate future trends, possess a broad and forward-

The concept of good governance refers to the management and administration of organizations or countries based on principles of correctness, transparency, morality, and accountability. The term “good governance” is derived from two key concepts: “*dharma*,” which refers to righteousness or proper rules and principles, and “*governance*,” which refers to the act of administration or management. When combined, the concept refers to a system of management founded on ethical values, moral principles, and legitimacy. Good governance can be applied in both the public and private sectors to promote transparency, accountability, and the participation of all sectors of society in the governance process [29].

The concept of good governance has been widely promoted at the international level. The World Bank has defined good governance as the manner in which political power is exercised and economic and social resources are managed effectively in order to support national development and reduce corruption [30]. Similarly, the United Nations (UN) and the United Nations Development Programme (UNDP) emphasize the importance of public participation, transparency, accountability, and adherence to the rule of law in the governance and administration of a country [31].

In Thailand, the principles of good governance in public administration have been formally established through the Regulation of the Office of the Prime Minister on Good Governance in Public Administration B.E. 2542 (1999). This regulation outlines six key principles: the rule of law, morality, transparency, participation, accountability, and value for money (efficiency). These principles serve as guidelines for managing organizations and governing the country in a manner that promotes efficiency, transparency, and sustainable development [29].

Relationships Among the Research Variables and the Development of Research Hypotheses

Strategic Leadership, New Public Management, and Good Governance

Abdissa and Fitwi [32] examined change management through strategic leadership, with knowledge management as a mediating variable in public sector organizations. The findings revealed that strategic leadership has a significant positive influence on change management in public organizations. Moreover, it promotes knowledge management and innovation within organizations, which are important components of New Public Management, emphasizing efficiency and the adaptability of public sector organizations. Similarly, Yapukdee, Kosonkittiumporn, and Yupas [32] found that the strategic leadership of local government administrators plays a crucial role in determining organizational development directions, strategic planning, and performance monitoring and evaluation. These factors significantly influence the effectiveness of administration and public service delivery in local government organizations. In addition, Fernandez, Cho, and Perry [34] reported that leadership in public sector organizations has a positive effect on the performance of public agencies. The role of leaders in setting direction, managing change, and motivating personnel can

significantly enhance the operational performance of public sector organizations.

Based on the review of the aforementioned literature, the following hypothesis is proposed.

H1: Strategic leadership positively influences the implementation of New Public Management in local government organizations.

M’Mugambi [35] examined strategic leadership and good governance in the public sector: a case study of county governments in Kenya. The study found that strategic leadership has a significant positive relationship with good governance in public sector organizations. Leaders who possess strategic vision and strong ethical values can effectively promote transparency, accountability, and ethical management within public agencies. Similarly, Yusuf, Hamzah, and Tikson [36] analyzed the role of strategic leadership in public administration within government agencies in Indonesia. Their findings revealed that strategic leadership has a direct influence on the development of good governance in public organizations. Leaders who are capable of formulating strategies and managing organizations effectively can enhance transparency, accountability, and the overall performance of public sector organizations. Based on the review of the aforementioned literature, the following hypothesis is proposed.

H2: Strategic leadership positively influences the implementation of good governance in local government organizations.

New Public Management, Good Governance, and Sustainable Development

Istianto and Wahyurudhanto [37] examined the role of New Public Management and leadership in shaping civil servants’ perceptions of good governance in Jakarta, Indonesia. The findings revealed that New Public Management has a positive influence on the perception and implementation of good governance among public sector personnel, which in turn enhances work efficiency and the delivery of public services by government agencies. Similarly, Viboonrungsun and Maitreesophon [38] investigated New Public Management based on good governance principles in the Provincial Offices of Tourism and Sports in the central region of Thailand. The results indicated that good governance principles—such as equity, decentralization, and accountability—have a significant causal relationship with New Public Management. This reflects that the adoption of NPM can support the implementation of good governance practices within public sector organizations. In addition, Oddokmai and Maitreesophon [39] studied the application of New Public Management in Phetchaburi Municipality. The findings showed that the adoption of NPM practices, such as results-based management and the use of performance indicators, can effectively promote good governance in local government organizations. Based on the review of the aforementioned literature, the following hypothesis is proposed.

H3: New Public Management positively influences the implementation of good governance in local government organizations.

Sukma and Yamnill [40] developed a model integrating New Public Management with open data governance to create a sustainable digital ecosystem. The findings revealed that the principles of New Public Management—such as efficiency, accountability, and responsiveness to stakeholders—can promote data collaboration and governance mechanisms that lead to sustainable outcomes in the public sector. Similarly, Maryono et al. [41] analyzed the effects of public policies based on the New Public Management approach on the sustainability performance of public organizations. The study found that the adoption of NPM principles, such as performance measurement, decentralization, and service efficiency, can enhance the sustainability performance of public sector organizations. In addition, Suksai [42] examined the role of modern public management in advancing the Sustainable Development Goals (SDGs). The results indicated that modern public management, which emphasizes data utilization, collaborative integration, and efficient resource management, can effectively support public sector agencies in driving the achievement of the Sustainable Development Goals. Based on the review of the aforementioned literature, the following hypothesis is proposed.

H4: New Public Management positively influences the sustainable development of local government organizations.

Mahmood et al. [19] examined the role of political stability and governance in achieving the Sustainable Development Goals (SDGs). The findings indicated that good governance, which includes transparency, accountability, and public participation, plays a crucial role in implementing policies aimed at achieving sustainable development goals, such as sustainable cities, clean energy, and responsible consumption. Similarly, Albassam [43] analyzed data from 114 countries using the World Governance Indicators (WGI) and the Economic Complexity Index to investigate the relationship between governance and sustainable development. The results showed that improvements in the quality of public governance are positively associated with economic development and sustainable development, as governance strengthens institutional stability, investment, and the effective management of national resources. In addition, Hamid and AlObaid [44] examined whether governance and foreign direct investment play a role in achieving the Sustainable Development Goals. Their findings indicated that governance is an important institutional factor influencing progress toward achieving the SDGs, as it supports economic, social, and environmental development. Likewise, Chamba [46] investigated the influence of effective governance on unlocking intrapreneurial potential to create sustainable public value. The study found that good governance has a positive influence on organizational sustainability, as transparent administration, accountability, and efficient resource utilization contribute to the sustainable development of public sector organizations. Based on the review of the aforementioned literature, the following hypothesis is proposed.

H5: Good governance positively influences the sustainable development of local government organizations.

The Mediating Role of Variables.

M'Mugambi [35] found that strategic leadership has a positive influence on the implementation of good governance in public sector organizations, as leaders with strategic vision and strong ethical values can promote transparency, accountability, and efficient resource management within public agencies. Similarly, Ferede et al. [46] examined change management through strategic leadership, with knowledge management as a mediating variable in public sector organizations. The findings revealed that strategic leadership influences public sector administration both directly and indirectly through organizational management variables, such as knowledge management, organizational culture, and accountability. These factors contribute to enhancing administrative efficiency and governance in public sector organizations. In addition, Yeekew et al. [47] investigated transformational leadership and governance among personnel in district public health offices in Chumphon Province, Thailand. The results indicated that leadership of administrators influences the implementation of good governance among public sector personnel. Leaders who possess clear vision and demonstrate concern for their personnel can promote transparency, accountability, and organizational effectiveness. Based on the review of the aforementioned literature, the following hypothesis is proposed.

H6: Strategic leadership has an effect on good governance in local government organizations, with New Public Management serving as a mediating variable.

Nguyen [48] examined the impact of strategic leadership on the financial sustainability of public service organizations in Vietnam. The findings indicated that strategic leadership has a positive influence on the sustainability of public service organizations, as leaders with strategic vision are able to determine organizational development directions and manage resources effectively, thereby promoting the sustainability of public sector organizations. Similarly, Md Rami et al. [49] investigated the role of strategic leadership in organizational and community development in Malaysia. The study found that strategic leadership plays a crucial role in planning and implementing sustainable community development, as leaders are able to establish visions and strategies that support the long-term sustainability of organizations and communities. In addition, Chullasutthi et al. [50] found that public administration supported by strategic management systems and good governance can enhance organizational sustainability. Effective management practices contribute to improving organizational performance and the efficient utilization of resources in public sector organizations. Based on the review of the aforementioned literature, the following hypothesis is proposed.

H7: Strategic leadership has an effect on the sustainable development of local government organizations, with New Public Management serving as a mediating variable.

Benredjem et al. [51] examined strategic leadership, governance, and the financial performance of local government organizations in Algeria. The findings revealed that strategic leadership influences the performance of local

government organizations through governance mechanisms, with governance acting as a mediating variable between strategic leadership and organizational outcomes, such as transparency and accountability in public agencies. These factors play a crucial role in enhancing organizational efficiency and sustainability. Similarly, M’Mugambi [35] found that strategic leadership has a positive influence on the implementation of good governance in public sector organizations, as leaders with vision and ethical values can promote transparency, accountability, and effective resource management within government agencies. In addition, Albassam [52] examined sustainable development from a governance perspective. The study found that improvements in the quality of governance are positively associated with economic development and sustainable development. Countries with strong governance systems tend to have a greater capacity to achieve sustainable development goals. Based on the review of the aforementioned literature, the following hypothesis is proposed.

H8: Strategic leadership has an effect on the sustainable development of local government organizations, with good governance serving as a mediating variable.

### III. METHODOLOGY

This study examines the causal relationships between antecedent and consequent variables in order to develop a model of strategic leadership, New Public Management, and good governance affecting the sustainable development of local government organizations. The research employs a qualitative research approach, including literature review and document analysis, based on relevant concepts and theories such as strategic leadership theory, New Public Management, good governance, and sustainable development. The study utilizes secondary data sources, collecting information from relevant research documents, including academic studies, journal articles, and online databases. Data were retrieved from major academic databases and search platforms, including Science Direct, Scopus, Google Scholar, and Business Source Complete, among others.

### IV. RESULTS

Based on the review of literature, concepts, and theories related to the antecedent and consequent variables of the model of strategic leadership, New Public Management, and

good governance affecting the sustainable development of local government organizations, the relationships among these variables can be illustrated as shown in Figure 1.

Fig. 1. Conceptual Framework Showing Proposed Hypothesis.

Based on the synthesis of relevant documents, concepts, theories, and previous studies, the researcher developed a model illustrating the relationships among strategic leadership, New Public Management, good governance, and the sustainable development of local government organizations.

The synthesis results indicate that strategic leadership plays a crucial role in determining organizational direction, policy development, and improving administrative processes to enhance efficiency. This is consistent with the concept of New Public Management, which emphasizes efficiency, performance outcomes, and the effective utilization of resources. Leaders with strategic vision are able to drive organizational change and effectively apply modern management concepts within the public sector [53] [8] [10], which supports Hypothesis 1 (H1).

Furthermore, strategic leadership also plays an important role in promoting good governance by fostering an organizational culture based on transparency, accountability, and public participation. As a result, organizations are able to gain greater trust and confidence from society [55] [53], which is consistent with Hypothesis 2 (H2).

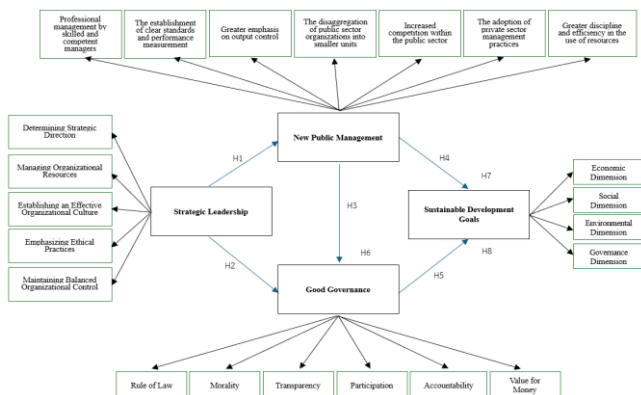
At the same time, the concept of New Public Management contributes to improving the efficiency of public sector administration and supports transparency, accountability, and auditability, which are consistent with the principles of good governance [1] [11]. In addition, it promotes the efficient utilization of resources, which is a key factor in achieving sustainable development [15] [2]. These findings are consistent with Hypotheses 3 and 4 (H3–H4).

Good governance serves as an important approach for enhancing transparency, accountability, and public participation, which contribute to improving the efficiency of resource management and supporting sustainable development in economic, social, and environmental dimensions (World Bank, 1992; [53]). This finding is consistent with Hypothesis 5 (H5).

In addition, New Public Management acts as a mediating variable linking strategic leadership with good governance and sustainable development. It helps translate the leader’s vision into concrete administrative practices and operational implementation [10] [1] [11] [2], which supports Hypotheses 6 and 7 (H6–H7).

At the same time, good governance also functions as an important mechanism linking strategic leadership with sustainable development by promoting transparency, accountability, and public participation in public administration [53] [15]. This finding is consistent with Hypothesis 8 (H8).

In conclusion, the developed model indicates that strategic leadership is a key antecedent factor influencing New Public Management and good governance. Both factors serve as important mechanisms in driving the sustainable development of local government organizations.



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# “Prioritizing Future Skills for Modern Entrepreneurship: The Role of Project-Based Learning in Developing Youth Human Capital.”

Pornsri Laurujisawat<sup>1,a)</sup>

Author Affiliations

<sup>1</sup>Office of General Education, King Mongkut’s Institute of Technology Ladkrabang, Bangkok, 10520, Thailand

Author Emails

<sup>a)</sup> Corresponding author: Pornsri.la@kmitl.ac.th, Pornsri.lau@gmail.com

**Abstract.** In the context of rapid transformation toward a knowledge-based and digital economy, future skills have become critical for developing entrepreneurial capability among youth. Grounded in human capital theory, this study investigates how modern youth prioritize future skills and examines the role of Project-Based Learning (PBL) as an experiential learning approach in enhancing entrepreneurial capability.

A mixed-methods research design was employed, integrating quantitative and qualitative approaches. Quantitative data were collected from 60 undergraduate students using a five-point Likert scale questionnaire measuring 12 future skill dimensions, while qualitative data were obtained through in-depth interviews and behavioral observations during project implementation. Data were analyzed using descriptive statistics and thematic content analysis to ensure methodological triangulation and robustness.

The findings indicate that students assign high importance to key future skills, particularly critical thinking, creativity, communication, digital literacy, and leadership, which are recognized as essential competencies for workforce readiness and long-term success. These skills function as an integrated system across cognitive, social, digital, and adaptive domains. Furthermore, entrepreneurial attitudes such as self-efficacy, risk tolerance, and intrinsic motivation significantly enhance entrepreneurial capability, consistent with prior research in entrepreneurship education and competence development. The results also demonstrate that PBL serves as an effective pedagogical approach, facilitating experiential learning, opportunity recognition, decision-making, and collaborative skill development, aligning with experiential learning theory.

This study highlights the combined effect of future skills, entrepreneurial attitudes, and experiential learning approaches as key drivers of youth entrepreneurial capability. The findings contribute to the literature by reinforcing the integration of human capital development and PBL in entrepreneurship education. Practical implications are provided for curriculum design, emphasizing experiential and competency-based learning, as well as for policy development aimed at strengthening entrepreneurial ecosystems in the context of the 21st-century knowledge economy.

The study contributes to the literature by proposing an integrative model that explains how future skills are transformed into entrepreneurial capability through human capital and experiential learning mechanisms. The findings confirm that future skills influence entrepreneurial capability through the mediating role of human capital.

**Index Terms—** Future Skills, Human Capital; Entrepreneurial Capability, Project-Based Learning, Entrepreneurship Education, Experiential Learning

## I. INTRODUCTION

In the 21st century, the global economy is undergoing rapid transformation driven by digitalization, technological disruption, and the transition toward a knowledge-based economy, significantly reshaping labor markets and career pathways (1). Within this dynamic environment, the concept of the “modern entrepreneur” has evolved beyond traditional business creation to encompass value creation through innovation, opportunity recognition, and resource recombination (2)(3).

At the same time, the contemporary world is increasingly characterized by the VUCA framework—volatility, uncertainty, complexity, and ambiguity—which intensifies

the need for adaptive and future-oriented competencies (5).

In this context, “future skills” have emerged as essential capabilities that enable individuals to navigate uncertainty, continuously learn, and create new economic opportunities (2). These skills including critical thinking, creativity, communication, and digital literacy—are widely recognized as core components of workforce readiness and long-term employability (2).

Importantly, the development of such skills can be theoretically grounded in human capital theory, which posits that individuals’ knowledge, skills, and competencies are key drivers of productivity and economic value (6). Despite its central relevance, human capital has often been under-

integrated in studies examining youth entrepreneurship, particularly in linking skill development with entrepreneurial capability. This gap is especially evident among modern youth, who represent a critical segment in shaping future economic systems but require structured learning approaches to transform skills into entrepreneurial outcomes.

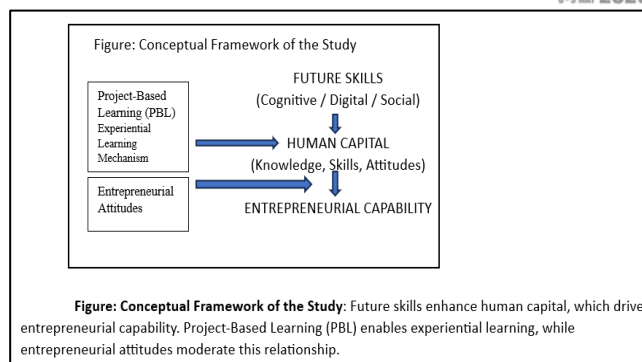
Entrepreneurship education has been identified as a key mechanism for developing entrepreneurial competencies, attitudes, and intentions (8)(9). In particular, Project-Based Learning (PBL), grounded in experiential learning theory, provides an effective pedagogical approach that enables learners to engage in real-world problem-solving, opportunity recognition, and decision-making processes (10). Furthermore, tools such as the Business Model Canvas (BMC) offer a systematic framework for translating ideas into viable business models, thereby enhancing entrepreneurial thinking and capability (11).

However, despite the growing body of literature, there remains a lack of integrative research that simultaneously examines 1) the prioritization of future skills among modern youth, 2) the role of entrepreneurial attitudes, and 3) the effectiveness of experiential learning approaches such as PBL in developing entrepreneurial capability through the lens of human capital. Addressing this gap is essential for advancing both theoretical and practical understanding of entrepreneurship education in the 21st century. Therefore, this study aims to investigate the future skills that modern youth prioritize (“what”) and to analyze the role of Project-Based Learning (PBL) in enhancing entrepreneurial capability (“how”) through human capital development. By integrating these dimensions, this research contributes to the literature by providing a comprehensive framework that links future skills, human capital, and experiential learning in the development of modern entrepreneurial capability.

This study makes several important contributions to the literature. First, it develops an integrative framework that links future skills, human capital, and experiential learning through Project-Based Learning (PBL), addressing the

fragmented nature of prior research. Second, it empirically demonstrates how future skills function as foundational components of human capital that drive entrepreneurial capability among modern youth. Third, it highlights the role of PBL as an experiential learning mechanism that transforms theoretical knowledge into practical entrepreneurial competence. Finally, the study provides evidence from a developing country context, contributing to the limited body of research on entrepreneurship education in emerging economies.

H1: Future skills positively influence human capital.  
(Future skills enhance human capital by improving individuals’ knowledge, competencies, and abilities.)



H2: Human capital positively influences entrepreneurial capability.

(Human capital enhances entrepreneurial capability by improving individuals’ knowledge, skills, and competencies, enabling opportunity recognition, decision-making, and value creation.)

H3: Project-Based Learning positively influences human capital through experiential learning.

(Project-Based Learning (PBL) enhances human capital through experiential, hands-on, and reflective learning processes.)

H4: Entrepreneurial attitudes moderate the relationship between human capital and entrepreneurial capability.

(Entrepreneurial attitudes influence the strength of the relationship between human capital and entrepreneurial capability.)

## II. METHODOLOGY

This study employed a mixed-methods research design, integrating quantitative and qualitative approaches to provide a comprehensive understanding of the relationships among future skills, Project-Based Learning (PBL), human capital, and entrepreneurial capability. The use of mixed methods is appropriate for capturing both measurable constructs and contextual insights, thereby enhancing the validity and robustness of the findings

The population consisted of undergraduate students enrolled in the “Modern Entrepreneurship” course during Semester 2/2025 at King Mongkut’s Institute of Technology Ladkrabang. A purposive sampling technique was employed, resulting in a sample of 89 students, of whom 60 valid responses (66.67%) were obtained for quantitative analysis. The conceptual framework of this study is grounded in human capital theory (6), which posits that individuals’ knowledge, skills, and competencies contribute to productivity and performance outcomes. Accordingly, the independent variables included 12 dimensions of future skills, entrepreneurial knowledge (operationalized through the Business Model Canvas: BMC), entrepreneurial attitudes, and participation in Project-Based Learning (PBL). The dependent variable was entrepreneurial capability, while human capital was specified as a mediating variable linking skill development and entrepreneurial outcomes.

The research instruments consisted of three components. First, a structured questionnaire using a five-point Likert scale was developed to measure the perceived importance of future skills and related constructs. The instrument design was informed by prior studies on skill measurement and soft skills assessment (7). Second, in-depth interviews were conducted to explore students' learning experiences and entrepreneurial perspectives. Third, behavioral observations were carried out during project implementation to capture real-time engagement and skill application within the PBL environment, consistent with experiential learning principles (10).

Quantitative data were analyzed using descriptive statistics, including mean, standard deviation, and percentage, to identify patterns in students' prioritization of future skills. Qualitative data were analyzed using thematic content analysis, involving data transcription, coding, categorization, and theme development. This triangulation approach enhances the credibility and interpretive depth of the study. Overall, this methodological design enables a systematic examination of "what" (future skills prioritized by modern youth) and "how" (the role of PBL as an experiential learning mechanism) in shaping entrepreneurial capability through the mediating effect of human capital.

### III. RESULTS AND DISCUSSION

The findings of this study provide strong theoretical and empirical support for the integrative role of future skills, human capital, and experiential learning in shaping entrepreneurial capability among modern youth. By positioning human capital as a mediating mechanism, this study advances existing literature beyond direct-effect models and offers a more nuanced explanation of how competencies are translated into entrepreneurial outcomes. Specifically, the results confirm that future skills do not directly lead to entrepreneurial capability; rather, their impact is realized through the accumulation and transformation of human capital. This finding reinforces the central proposition of human capital theory, which emphasizes that knowledge, skills, and competencies must be developed and internalized before they can generate productive outcomes (6).

Importantly, this study extends prior research by conceptualizing future skills as an integrated, multidimensional construct that encompasses cognitive, social, digital, and adaptive competencies. While previous studies have often examined these skills in isolation, the present findings suggest that their combined and synergistic effects are critical in enhancing human capital. This integrative perspective aligns with contemporary views of workforce readiness, where complex problem-solving and adaptability require the simultaneous deployment of multiple competencies (1)(2). Thus, the study contributes to the literature by reframing future skills not merely as individual attributes, but as a systemic capability that underpins human capital development.

Furthermore, the role of Project-Based Learning (PBL) as an enabling mechanism provides important insights into how human capital is developed in educational contexts. Drawing

on experiential learning theory (10), the findings demonstrate that PBL facilitates the transformation of abstract knowledge into practical competence through active engagement, reflection, and iterative learning. This suggests that learning environments that prioritize experiential and practice-based approaches are more effective in fostering entrepreneurial capability than traditional instructional methods. In this sense, PBL operates not merely as a pedagogical tool, but as a critical process that activates and enhances human capital formation.

Another significant contribution of this study lies in identifying entrepreneurial attitudes as a moderating factor. The findings indicate that the effectiveness of human capital in driving entrepreneurial capability depends on individual-level attitudinal factors such as self-efficacy, motivation, and risk tolerance. This highlights the importance of non-cognitive dimensions in entrepreneurship, supporting the argument that capability development is not solely determined by knowledge and skills, but also by individuals' willingness and confidence to act upon them (8). By incorporating this moderating effect, the study provides a more comprehensive explanation of entrepreneurial behavior that integrates both cognitive and psychological perspectives.

Taken together, these findings contribute to the development of a holistic framework that links future skills ("what"), human capital ("mechanism"), and experiential learning through PBL ("how") in explaining entrepreneurial capability. This integrative model responds to calls in the literature for more comprehensive approaches to entrepreneurship education, particularly in the context of rapidly changing and uncertain environments. It also provides a clearer theoretical foundation for understanding how educational interventions can be designed to develop entrepreneurial capacity in a systematic and sustainable manner.

From a practical perspective, the findings suggest that higher education institutions should move beyond traditional knowledge transmission models and adopt experiential, competency-based learning approaches that actively develop both human capital and entrepreneurial attitudes. Policymakers and educators should also recognize the importance of integrating cognitive, digital, and social skills into curricula, while simultaneously fostering motivational and behavioral dimensions that enable students to effectively utilize their capabilities.

### IV. CONCLUSION

This study aimed to examine the future skills prioritized by modern youth, the mechanism through which these skills contribute to entrepreneurial capability, and the role of Project-Based Learning (PBL) in enhancing human capital within an entrepreneurship education context. Using a mixed-methods approach, the findings provide a comprehensive understanding of how skill development translates into entrepreneurial readiness.

The results demonstrate that future skills—particularly critical thinking, creativity, digital literacy, leadership, and ethical responsibility—are perceived as highly important by

students. These findings are consistent with prior research emphasizing the importance of cognitive and non-cognitive competencies in shaping adaptability and performance in uncertain environments (1)(2). Importantly, this study confirms that future skills function as foundational inputs to human capital, reinforcing human capital theory, which posits that knowledge, skills, and attitudes collectively enhance productivity and opportunity recognition (6).

More critically, the findings show that future skills do not directly lead to entrepreneurial capability; rather, their influence is realized through the mediating role of human capital. This highlights the importance of human capital as a key mechanism that transforms competencies into entrepreneurial outcomes, consistent with prior research in entrepreneurship education (8)(9). In addition, Project-Based Learning (PBL) plays a significant role in strengthening human capital through experiential learning processes. By engaging students in hands-on activities, real-world problem-solving, and reflective learning, PBL facilitates the transformation of knowledge into practical entrepreneurial competence, aligning with experiential learning theory (10). Furthermore, the study demonstrates that entrepreneurial attitudes—such as self-efficacy, motivation, and risk tolerance—moderate the relationship between human capital and entrepreneurial capability. This indicates that the effectiveness of human capital in driving entrepreneurial outcomes depends not only on competencies but also on individuals' willingness and confidence to apply them (8).

The study contributes to the literature by proposing an integrative framework that links future skills (“input”), human capital (“mechanism”), and experiential learning through PBL (“process”) in explaining entrepreneurial capability. This model provides a more comprehensive understanding compared to prior studies that have examined these elements in isolation.

From a practical perspective, the findings suggest that higher education institutions should adopt experiential, competency-based learning approaches that actively develop human capital while simultaneously fostering entrepreneurial attitudes. Integrating tools such as the Business Model Canvas (BMC) can further support the application of knowledge into practice, enhancing students' ability to develop viable business models (11).

In conclusion, this study affirms that entrepreneurial capability is not solely determined by skill possession but is shaped through the dynamic interaction of future skills, human capital development, experiential learning, and entrepreneurial attitudes. Future research should expand the sample size, employ advanced analytical techniques such as Structural Equation Modeling (SEM), and explore cross-cultural contexts to further validate and extend the proposed framework.

#### ACKNOWLEDGMENT

The author would like to express sincere gratitude to the School of General Education, King Mongkut's Institute of Technology Ladkrabang, Bangkok 10520, Thailand, for providing the opportunity to teach the course *Modern Entrepreneurship* and for recognizing the value and potential of this research.

The author also extends heartfelt thanks to all students who participated as the sample group in this study.

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# Potentials, Challenges, and Strategic Pathways For Community-Based Low-Carbon Tourism Development On Koh Sukorn Island, Thailand.

Siripoonyakorn Jaroenwiriya<sup>1,a)</sup> Parichart Visuthismajarn<sup>1</sup> and Korawan Sangkakorn<sup>2</sup>

## Author Affiliations

<sup>1</sup>Faculty of Environmental Management, Prince of Songkla University, Songkla, 90110, Thailand.

<sup>2</sup>Social Research Institute, Chiang Mai University, Chiang Mai, 50200, Thailand.

## Author Emails

<sup>a)</sup>Corresponding author: siripoonyakorn.j@gmail.com

**Abstract.** This research article investigates the development of low-carbon tourism on Koh Sukorn Island with three principal objectives: 1) to examine the local context and potential for low-carbon tourism management, 2) to analyze the challenges of such development through a SWOT analytical framework, and 3) to propose strategic pathways for achieving sustainable low-carbon tourism on the island. A qualitative research approach was employed, with data collected from in-depth interviews with key local stakeholders, field observations, and a review of relevant documents. The collected information was analyzed to understand the spatial context and to identify the potential, strengths, weaknesses, opportunities, and threats related to low-carbon tourism development in the area. The findings indicate that Koh Sukorn is endowed with strong social capital, a traditionally low-energy way of life, rich natural resources, and diverse coastal ecosystems. The island also maintains a distinctive identity shaped by agriculture and small-scale fisheries, which together provide a solid foundation for the growth of community-based low-carbon tourism. Nevertheless, the area continues to face several constraints, particularly in relation to administrative and governance structures, inadequate infrastructure, and limited technical capacity in carbon management. At the same time, significant opportunities are emerging from the increasing market demand for low-carbon tourism, the growing support from governmental and academic institutions, and the advancement of clean technologies. In contrast, key challenges include inconsistency in policy implementation, the burden of environmental management costs, and pressures arising from external investment. Based on these findings, the study recommends that future development should build upon existing community assets while reinforcing participatory governance mechanisms and securing appropriate external support. Such an approach would enable a transition from a form of low carbon rooted in everyday lifestyles toward a more systematic model, thereby ensuring a balanced and sustainable development trajectory for Koh Sukorn in the long term. This study highlights that low-carbon tourism on small islands operates as a critical “bridge” linking sustainable consumption and production patterns (SDG 12) with climate change mitigation outcomes (SDG 13), demonstrating how everyday local practices can contribute to global climate goals.

**Index Terms** — Community-based tourism, Island destinations, Low-carbon tourism, SWOT analysis, Sustainable development.

## I. INTRODUCTION

Climate change has emerged as one of the most critical global environmental challenges, exerting profound impacts on ecosystems, economies, and societies worldwide [1, 2]. According to the Intergovernmental Panel on Climate Change (IPCC), the global average temperature has risen by approximately 1.1°C compared with the pre-industrial period (1850–1900). The tourism industry is recognized as a significant contributor to greenhouse gas emissions, accounting for an estimated 8–10 percent of global emission [3]. These emissions stem from multiple sources, including air, land, and water transportation; energy consumption in accommodation facilities; food and beverage services and their production processes; waste management; as well as tourism-related recreational activities [4, 5]. Without proactive and concrete measures to mitigate emissions, greenhouse gas output from the tourism sector is projected to increase by 25–30 percent by 2030. This trend is driven by the continuous expansion of the

global tourism industry and the growing number of international travelers, particularly in rapidly developing emerging economic [3]. This projection corresponds with estimates from the United Nations World Tourism Organization (UNWTO), which anticipate that international tourist arrivals will reach 1.8 billion by 2030 [5–8]. At the same time, tourism is also a sector directly affected by climate change [9]. Coastal and island areas among the most important and sensitive tourism destinations are particularly vulnerable to rising sea levels, coastal erosion, coral bleaching, and increasingly extreme weather events such as stronger storms, seasonal irregularities, and climatic instability. These changes threaten the sustainability of tourism resources and the livelihoods of local communities that depend heavily on tourism [10].

According to the database of the Department of Marine and Coastal Resources, Thailand has a total of 936 islands, of which 54 are located in Trang Province, distributed across 14 sub-districts and 5 districts, covering a combined area of 75.312 square kilometers. The largest island is Koh Libong, followed

respectively by Koh Sukorn and Koh Mook [11]. This considerable number and diversity of islands present distinctive challenges for management, as island areas constitute ecosystems that are particularly fragile and highly sensitive to the impacts of climate change, especially sea-level rise, the increasing frequency and intensity of natural disasters, and ecological transformations [12, 13]

Koh Sukorn is the second largest island in Trang Province, located in Palian District with an area of 8,750 rai, or approximately 14 square kilometers. The island lies about 3 kilometers from the mainland and is home to a population of 2,560 residents, most of whom engage in small-scale fisheries and agriculture [13]. Koh Sukorn possesses a variety of tourism resources, including attractive beaches, mangrove forests, and coral reefs. The island is also characterized by a simple yet distinctive community way of life, reflected in diverse forms of local wisdom such as traditional fishing practices and rice cultivation on the island an uncommon phenomenon not generally found on other islands in Trang Province. A particularly notable feature is the cultivation of watermelon on sandy beaches, which has become a signature local product and a key selling point of Koh Sukorn [14-16]. At present, Koh Sukorn watermelon has been registered as a Geographical Indication (GI) product, demonstrating the linkage between product quality and the island's natural resource base as well as its spatial identity. This GI status has become an important foundation for community-based agricultural development and for low-carbon tourism that utilizes local resources in a sustainable manner. In addition, the island is rich in various forms of local wisdom, including knowledge related to agriculture, herbal medicine, food and nutrition, traditional desserts, fishery product processing, and handicrafts [17]. These cultural assets can be further developed into low-carbon tourism activities on Koh Sukorn, such as demonstrations and learning experiences of small-scale fishing, studies of rice farming systems adapted to the island's specific environment, learning techniques for cultivating economic crops especially watermelon exploration of mangrove ecosystems by boat, visits to seagrass conservation areas, and homestay programs that allow visitors to share daily life experiences with local hosts.

However, despite the notable tourism potential of Koh Sukorn, tourism development in the area continues to face significant challenges in the management of natural resources and the environment. A number of persistent problems remain evident and require further attention, including encroachment on public land and deforestation, which stem largely from the limited strength of local participation in natural resource conservation. Some segments of the population still lack sufficient awareness regarding the efficient and sustainable use of resources. In addition, the absence of an effective system for solid waste and wastewater management remains a major issue, adversely affecting environmental conditions in residential areas and within the community market zone, which serves as a key space for economic and tourism activities [12, 13] Tourism-related activities in the area also continue to contribute considerably to greenhouse gas emissions, particularly from transportation processes, energy consumption in Accommodation facilities, and waste management practices.

This study will serve as an important case study for the development of low-carbon tourism in small island contexts and is expected to generate broad benefits at the academic, policy, community, and business levels. The research will contribute to expanding the body of knowledge on low-carbon tourism management within the specific conditions of small islands, while also supporting the formulation of policies and strategies for low-carbon tourism development. In addition, it will help strengthen community capacity for sustainable tourism management and encourage the growth of tourism businesses that reduce greenhouse gas emissions. These contributions will provide an essential foundation for advancing low-carbon tourism development in Thailand and are aligned with the United Nations Sustainable Development Goals (SDGs), particularly Goal 12 on responsible consumption and production and Goal 13 on climate action. Ultimately, the study aims to enhance sustainable tourism management and support progress toward the national target of achieving net-zero greenhouse gas emissions.

## II. OBJECTIVE

- 1) To examine the context and potential of low-carbon tourism management on Koh Sukorn Island.
- 2) SWOT To analyze the challenges of low-carbon tourism development on Koh Sukorn Island through a SWOT analytical framework.
- 3) To propose strategic approaches for the sustainable development of low-carbon tourism on Koh Sukorn Island.

## III. METHODOLOGY

This study employed a qualitative research methodology. A total of 30 key informants were selected through purposive sampling, a non-probability sampling technique considered appropriate for qualitative research [18, 19], in order to obtain in-depth information from individuals with knowledge, understanding, and direct experience related to low-carbon tourism management on Koh Sukorn Island. The participants represented four major stakeholder groups, consisting of five representatives from government agencies, three from the private sector, fourteen local entrepreneurs, and eight community representatives. Informants were selected based on the following criteria: having at least two years of experience related to tourism or resource management, possessing a role or involvement in tourism development, and for community representatives, being residents of Koh Sukorn and affiliated with at least one occupational group or community organization. The sample size was determined according to the principle of data saturation, defined as the point at which additional data collection no longer yields significant new information [20, 21].

The research instruments included semi-structured in-depth interview guidelines in conjunction with observation and field notes. The interview guidelines explicitly included questions related to governance structures, coordination mechanisms, and the presence or absence of a central coordinating body in tourism management. Data was analyzed using content and thematic analysis. Interview transcripts were prepared and coded through both data-driven and framework-driven

approaches before being synthesized into themes and interpreted descriptively. To enhance the credibility of the findings, the researcher applied triangulation techniques. The study received approval from the Human Research Ethics Committee (Project Code: 2025–St–Envl–042)

## IV. RESULTS

### 4.1 Context and Potential of Low-Carbon Tourism - Management on Koh Sukorn Island

The findings on the context and potential of low-carbon tourism management on Koh Sukorn Island can be presented according to nine components of low-carbon tourism, as outlined below.

#### 4.1.1 Low-Carbon Community

Koh Sukorn is a small island with an area of approximately 18 square kilometers, located 3 kilometers from the mainland. Transportation between the island and the coast is mainly provided by 12-seat passenger boats, with a crossing time of around 15 minutes. In general, the residents of Koh Sukorn engage in small-scale fisheries, agriculture, rice farming, watermelon cultivation, rubber plantations, livestock raising, general wage labor, and small-scale tourism services. Most islanders demonstrate frugal and mindful patterns of resource use, shaped by the limitations of the island's geography, resource availability, and accessibility from outside. These constraints have encouraged local people to adapt their daily practices in terms of energy consumption, water use, and the efficient management of materials and belongings. As a result of these conditions, the everyday way of life on Koh Sukorn can be characterized as inherently low-carbon.

Tourism on Koh Sukorn has not been driven by large-scale external investment; rather, it has developed through the utilization of existing community resources and local capacities. Examples include the adaptation of private houses into tourist accommodation, the employment of local labor, the use of locally sourced ingredients for food preparation, and the organization of tourism activities that are closely connected to everyday life. Such activities include traditional dessert making, such as *khanom ta yap* and *khanom phuk rak*, shell collecting, fishing, and sightseeing tours around the island to observe community livelihoods. Both tourism activities and the daily practices of local residents thus exhibit characteristics that are naturally inclined toward low-carbon patterns. This situation corresponds with the concept of a low-carbon lifestyle, which emphasizes that carbon reduction can be achieved through adjustments in daily behavior rather than through reliance on advanced technologies. The way of life and tourism management on Koh Sukorn have not emerged directly from environmental regulations or government policies, but from a combination of spatial constraints, values of sufficiency, and an economic model grounded in self-reliance.

From the context described above, it can be concluded that Koh Sukorn represents a community characterized by low-carbon practices arising from the ordinary way of life of local residents. Such a lifestyle has shaped tourism activities on the island to remain small in scale, resource-efficient, and closely connected to everyday community life. These features constitute a fundamental basis for the long-term development of low-carbon tourism, rather than relying on externally

constructed low-carbon images or policy-driven regulatory frameworks imposed by agencies.

#### 4.1.2 Collaboration among Network Partners

Tourism management on Koh Sukorn operates through network-based collaboration among community leaders, occupational groups, and tourism entrepreneurs. This collaboration is largely informal in nature and relies primarily on social relationships, familiarity, and mutual trust. Within this cooperative arrangement, community networks function as an important mechanism for information sharing, coordination, and support for day-to-day tourism activities. Examples include assisting in the provision of accommodation, preparing food, arranging boats or vehicles for transportation, and coordinating local guides. Such forms of partnership help reduce the need to depend on external operators and minimize large-scale infrastructure investment, thereby supporting the maintenance of the low-carbon characteristics of tourism activities on the island.

In addition, network-based collaboration plays a role in regulating the scale and pace of tourism in the area. Community members engage in informal discussions and mutual agreements regarding the number of visitors, appropriate activities, and periods suitable for receiving tourists. As a result, tourism growth has not occurred in a rapid or uncontrolled manner and remains consistent with the traditional way of life of the community. The collaboration among network partners therefore functions as a linking mechanism between various components such as accommodation, food services, transportation, attractions, and tourism activities enabling management in each dimension to operate in a coordinated manner and to utilize shared resources efficiently.

From this context, it can be concluded that network-based collaboration on Koh Sukorn is not merely a form of cooperative working arrangement, but constitutes social capital that helps maintain tourism at an appropriate scale and supports the preservation of the area's low-carbon characteristics in the long term.

#### 4.1.3 Public Relations and Marketing Communication

Public relations and marketing communication for Koh Sukorn are relatively simple and rely more on informal communication than on large-scale commercial marketing. The main channels include word-of-mouth among tourists, networks of previous visitors, communication through basic online platforms such as Facebook and messaging applications, as well as recommendations shared among acquaintances and community networks. This form of communication reflects the community's limitations in terms of resources, budget, and marketing skills. At the same time, however, it functions as a natural screening mechanism that allows information about Koh Sukorn to circulate within a limited circle, resulting in a gradual increase in tourist numbers that remains consistent with the carrying capacity of the area.

From the perspective of low-carbon tourism, a promotional approach that does not emphasize rapid market expansion and avoids large commercial campaigns helps reduce pressure on local resources and infrastructure, as well as the need for major investments in construction and large-scale services. Such conditions are conducive to maintaining the low-carbon characteristics of tourism activities on the island.

From the context described above, it can be concluded that communication through community networks helps convey the image of Koh Sukorn as a small, simple, and tranquil tourism destination that remains closely connected to local ways of life. Public relations and marketing communication on the island therefore functions as an important component in regulating the pace and scale of tourism in a gradual manner, while also supporting the long-term continuity of low-carbon tourism.

#### 4.1.4 Energy Management

Energy use on Koh Sukorn reflects a pattern of frugal management that relies largely on the knowledge and practices of households and local entrepreneurs. This is particularly evident in efforts to limit electricity consumption to necessary levels, the selection of energy-efficient appliances, and the incorporation of natural resources such as sunlight and wind into daily life. Such behaviors have not primarily resulted from formal energy campaigns, but are closely linked to awareness of energy costs and the uncertainty associated with dependence on external systems. Although electricity is accessible in all villages, certain infrastructure limitations remain, including occasional instability of the power supply, which has led households and business operators to depend on self-management and to adopt cautious approaches to energy use.

In addition, the use of renewable energy particularly solar cell systems has begun to appear in some households and business establishments. Although this remains limited to groups with sufficient financial capacity and maintenance readiness, it represents an initial sign of energy transition at the local level. From the perspective of low-carbon tourism, such energy management practices help reduce energy consumption per unit of tourism activity and lessen dependence on external energy sources, enabling accommodation facilities, restaurants, and tourism activities on Koh Sukorn to exhibit naturally low-carbon tendencies.

From this context, it can be concluded that energy management on Koh Sukorn reflects a transition toward low carbon that is driven primarily by community lifestyles and adaptive practices rather than by externally imposed technical measures. This forms an important foundation for the long-term development of low-carbon tourism.

#### 4.1.5 Low-Carbon Tourism Attractions

Koh Sukorn is distinguished by its natural resources, local way of life, and coastal rural landscape, all of which are conducive to the development of low-carbon tourism without the need for large-scale infrastructure. Most attractions are existing community spaces that remain closely connected to the daily lives of local residents. Tourism activities largely emphasize learning and participation in natural and community-based experiences. Examples include Watermelon Beach, where visitors can learn about model agricultural practices associated with the only GI-registered watermelon in Trang Province; rice farming practices on the island; traditional fishing; rubber plantation livelihoods; and community art learning spaces such as Yutalay Community Enterprise, Mat Yom Klang Lay, Nai Suan Sin, and Mum Beam Studio. These initiatives represent community-oriented experiences rather than the creation of large commercial tourist sites. Such

characteristics shape tourism on Koh Sukorn to focus on simple ways of spending time and experiential learning, rather than on the consumption of high-energy activities.

Under conditions of limited accessibility and constrained resources, tourism attractions on Koh Sukorn have not been developed in a dense or intensive manner. As a result, the area has largely retained its natural character, with only a small number of built structures and the use of infrastructure limited to what is necessary. From the perspective of low-carbon tourism, attractions that are simple in nature and rely on existing community resources serve as an essential foundation supporting other components of the system, including low-carbon tourism activities, low-carbon transportation, and low-carbon accommodation.

From this context, it can be concluded that the characteristics of tourism attractions on Koh Sukorn reflect a development pattern that avoids rapid expansion and large-scale construction, thereby contributing to the long-term sustainability of low-carbon tourism on the island.

#### 4.1.6 Low-Carbon Transportation

Transportation on Koh Sukorn exhibits low-carbon characteristics due to the island's relatively small size and the short distances between villages and tourist sites, which require only limited travel time. Consequently, most mobility relies on small-scale and shared modes of transport, such as motorcycles and local three-wheeled vehicles (saleng), while walking and cycling are also practiced in certain areas. Travel between the island and the mainland is provided by short-distance passenger boats with a capacity of 12 seats, with a crossing fare of 30 baht.

The key mechanism that supports the low-carbon characteristics of the transport system on Koh Sukorn does not stem directly from formal transportation measures, but rather from the island's spatial structure, infrastructure limitations, and the community's way of life, which is accustomed to short-distance travel and the moderate use of vehicles. Nevertheless, travel to and from the island still relies primarily on boats, representing a structural constraint that the community cannot fully manage on its own and that requires coordination with external agencies or service providers. From the perspective of low-carbon tourism, this situation reflects the need to consider both internal mobility and external connectivity in maintaining the overall low-carbon features of the transport system. Within the island, particularly along short routes and in areas close to accommodation and tourism activities, movement does not depend on high-energy transport systems or on modes with high energy consumption per trip.

From this context, it can be concluded that the travel system on Koh Sukorn is conducive to the persistence of low-carbon tourism at the local level, as it is characterized by simplicity, low energy use, and consistency with the island's spatial structure, forming an important foundation for the long-term development of low-carbon tourism.

#### 4.1.7 Low-Carbon Accommodation

Accommodation on Koh Sukorn is predominantly small in scale, including establishments such as Sai Thong Beach Resort, Koh Sukorn Homestay, Ing Lay Homestay, and Ammar Homestay. Most accommodations are operated by local

households and have developed gradually without an emphasis on large new investments. Many buildings have been adapted from existing residential houses, constructed with simple structures and decorated with artworks created by local artists. As a result, resource and energy use during construction and operation remain at relatively modest levels. Within most accommodations, electrical appliances are used only as necessary, while natural ventilation is relied upon as the primary means of cooling, such as through the opening of windows and air vents and the use of fans rather than air conditioners. These characteristics contribute to low energy intensity and reduce energy consumption per stay compared with large commercial hotels. In terms of service provision, accommodation operations reflect community-based relationships and informal hospitality. Owners often play multiple roles, including caring for guests, preparing meals, and recommending local activities. Such practices reduce dependence on external personnel and lessen the need for large service systems, creating impressions that are particularly appreciated by international visitors.

From this context, it can be concluded that the nature of accommodation on Koh Sukorn reflects a development pattern that avoids rapid expansion and large-scale investment, while remaining consistent with community ways of life. These conditions support the long-term continuity of low-carbon tourism on the island.

#### **4.1.8 Low-Carbon Food**

Food provided to tourists is largely prepared using ingredients sourced from the island or nearby areas, such as seafood from local fisheries, indigenous vegetables, and seasonal agricultural products. Reliance on local ingredients helps reduce long-distance transportation, resulting in lower energy use and carbon emissions in the food procurement process. At the same time, it generates income circulating within the community and links tourism activities to the local grassroots economy. Food services for visitors are commonly organized at the household level or through community women's groups, offering local dishes that reflect the identity and way of life of the residents. Such arrangements lessen the need for establishing large commercial restaurant systems and reduce energy consumption in food preparation and service.

From this context, it can be concluded that food provision within the Koh Sukorn community reflects a management pattern that depends on local resources, involves low energy use, and remains consistent with community lifestyles. These characteristics form an important foundation for the long-term development of low-carbon tourism.

#### **4.1.9 Low-Carbon Tourism Activities**

Tourism activities on Koh Sukorn are characterized by low energy use and are primarily linked to learning about community livelihoods and local ecosystems. Most activities originate from the everyday practices of residents and have been adapted into tourism experiences, such as community visits, observation of agricultural and small-scale fishing areas, learning to produce local products, nature walks, and activities that rely more on human labor than on machinery. These characteristics shape tourism on Koh Sukorn to emphasize "time spent, interaction, and experiential learning" rather than the consumption of high-energy entertainment. Consequently,

energy use per unit of tourism activity remains low and the need to establish large commercial activities or facilities is reduced.

The integration of tourism activities into the everyday life of the community means that tourism is not separated from local ways of living, but instead occurs in harmony with daily routines. Such characteristics enable the community to manage the scale, form, and pace of tourism activities on its own and help reduce pressure on the area's natural and social resources. Within the framework of low-carbon tourism, low-carbon tourism activities function as a connecting component that links low-carbon attractions, accommodation, food, and transportation.

As a result, the overall tourism system of Koh Sukorn tends to exhibit naturally low-carbon characteristics.

From this context, it can be concluded that the nature of tourism activities on Koh Sukorn reflects a development pattern that emphasizes simplicity, low energy use, and consistency with community lifestyles. These features constitute an important foundation for the long-term continuity of low-carbon tourism.

Therefore, based on the examination of the context and potential of low-carbon tourism management on Koh Sukorn through the nine components of the low-carbon tourism framework, it can be concluded that the emergence and persistence of low-carbon tourism on the island have not been driven by technical policies or large-scale infrastructure investment. Rather, they have been shaped primarily by spatial conditions, community lifestyles, and local livelihood circumstances.

## **4.2 SWOT Challenges of Low-Carbon Tourism - Development on Koh Sukorn through SWOT Analysis**

The study of challenges in developing low-carbon tourism on Koh Sukorn, examined through a SWOT analytical framework, reveals that the island possesses social capital, resource capital, and lifestyles that support the persistence of naturally low-carbon tourism. At the same time, it continues to face constraints related to governance structures, technological capacity, and policy continuity. The results of the analysis can be synthesized into four main dimensions as presented below.

### **4.2.1 Strengths**

Koh Sukorn possesses structural and social strengths that clearly support the emergence and persistence of community-based low-carbon tourism. These strengths are particularly evident in the island's social capital, lifestyles that rely on local resources, and informal governance mechanisms embedded in the daily lives of community members. Such advantages mean that low-carbon tourism on Koh Sukorn is not merely a policy-driven project, but rather a form of development that has genuinely grown out of local ways of living and the specific context of the area.

#### **1) Strength of Social Capital and Hospitality Culture**

The strength of social relationships in the form of kinship ties, mutual trust, and a culture of mutual support within the community is a distinctive feature of Koh Sukorn. These characteristics are reflected in the friendliness of local residents,

their welcoming attitude toward visitors, and the general sense of safety in terms of life and property, all of which constitute fundamental conditions conducive to community-based tourism development. Many tourists are able to engage directly with community ways of life and develop social bonds with hosts or local entrepreneurs, leading to groups of long-stay and repeat visitors. This contributes to stable and continuous income generation without the need to increase tourist numbers to a high level, representing a key strength of Koh Sukorn.

### **2) Agricultural and Small-Scale Fisheries Lifestyles as a Foundation for Low-Carbon Tourism**

Koh Sukorn maintains a strong identity rooted in agriculture and small-scale fisheries, including seasonal rice cultivation, the cultivation of GI-registered watermelon, and subsistence fishing practices. These ways of life rely primarily on human labor and local resources, with limited use of machinery and fossil energy, thereby providing favorable conditions for the formation of implicitly low-carbon learning-based tourism activities. Tourists are able to participate in such activities without the need for new construction or complex technologies, allowing tourism to develop upon existing resource bases while reducing pressure on the environment.

### **3) Abundance of Natural Resources and Ecosystems**

The natural resources of Koh Sukorn including mangrove forests, coastal ecosystems, and marine resources remain at a relatively high level of abundance, constituting an important asset for the development of ecotourism and low-carbon tourism. Most attractions are natural sites that do not depend on large-scale infrastructure, allowing tourism activities to focus on observation, learning, and interaction with nature rather than on high-energy or machinery-based activities.

### **4) Small-Scale and Community-Dispersed Tourism Structure**

Accommodation and tourism services on Koh Sukorn are predominantly homestays or small lodgings adapted from existing houses and are dispersed throughout the community rather than concentrated in large resort complexes. Such spatial characteristics help reduce energy use per unit, lessen the demand for large infrastructure, and facilitate the direct distribution of income to local households.

### **5) Emerging Environmental Practices and Renewable Energy**

The Koh Sukorn community has begun to adopt environmental practices at the household level, including waste management, waste separation, and the operation of a community waste bank. There has also been an initial uptake of renewable energy, particularly solar cells, in certain areas such as agriculture, lighting systems, and tourism establishments. Although these initiatives remain at an early stage, they reflect the community's attitudes and basic readiness to move toward environmentally friendly energy management.

In summary, the strengths of Koh Sukorn lie in its social capital, way of life, and natural resources, which support the natural emergence of low-carbon tourism rather than dependence on external intervention. These strengths provide a solid foundation for the long-term development of community-based low-carbon tourism. With the addition of appropriate management systems and support mechanisms, the island has

the potential to advance from "lifestyle-based low carbon" toward a more sustainable "system-based low carbon" model.

### **4.2.2 Weaknesses**

The analysis of weaknesses in the development of community-based low-carbon tourism on Koh Sukorn indicates that, despite the island's considerable strengths in terms of social capital, low-carbon lifestyles, and abundant natural resources, the participatory development of low-carbon tourism management continues to face structural and systemic constraints in several dimensions. These limitations may affect the continuity and long-term sustainability of development efforts.

#### **1) Limitations in Management and Community - Organizational Structure**

There is a lack of unified management mechanisms at the local level. Tourism operations remain largely fragmented and depend primarily on individual entrepreneurs, without a clear central coordinating body or shared information system, such as booking arrangements, tourist information services, or systematic allocation of activities. In addition, although community enterprises related to tourism have been formally established, their operations still lack continuity, a clear membership system, and mechanisms for equitable benefit sharing. As a result, the driving of community tourism continues to rely heavily on the roles of a few key leaders or individuals, making the system highly vulnerable. When these individuals are unable to perform their functions, overall community operations tend to slow down immediately.

#### **2) Limitations in Infrastructure and Public Utilities**

In terms of infrastructure, Koh Sukorn continues to face issues related to the stability of electricity and water supply systems, as the island is located at the end of transmission lines. This results in periodic problems such as voltage drops or power outages, as well as water shortages during the dry season or peak tourism periods, which increase cost burdens for small-scale operators who must secure additional resources. At the same time, the standard of transportation and guiding services such as those provided by local three-wheeled vehicles (saleng) or passenger boats remains inconsistent, particularly with regard to communication skills, the provision of educational information, and language readiness. These limitations may affect the quality of learning-based tourism experiences and constrain the effective communication of low-carbon concepts to visitors.

#### **3) Limitations in Environmental Management and Technical Knowledge**

Although the community has shown a certain level of awareness regarding waste and environmental management, the waste management system remains incomplete, particularly at the downstream stage. Problems include the deterioration of equipment, machinery, or incinerators, as well as the costs and logistical difficulties involved in transporting waste off the island, resulting in some types of waste remaining within the system. In addition, the community lacks in-depth technical knowledge related to carbon management, such as greenhouse gas emission assessment, carbon footprint calculation, or the use of quantitative data to support policy decision-making. Consequently, the concept of low-carbon tourism remains

largely at the level of general practice rather than systematic management.

#### **4) Limitations in Human Resources and Community Economy**

In terms of human resources, Koh Sukorn faces a shortage of younger generations with the capacity and motivation to assume long-term roles in tourism management. At the same time, the costs associated with environmentally friendly practices such as eco-friendly packaging or alternatives to plastic materials remain high compared with the income of small businesses, creating economic constraints on behavioral change. Furthermore, government support is mostly provided in the form of short-term projects that lack continuous follow-up, preventing the community from developing stable systems or maintaining management standards over the long term.

In summary, the key weaknesses in the development of low-carbon tourism on Koh Sukorn do not lie in a lack of community potential, but rather in the absence of integrated management systems and continuous support mechanisms in the areas of organization, infrastructure, technical knowledge, and external policy. If a central coordination unit can be established, carbon management capacity strengthened, and support designed in a consistent manner aligned with local contexts, these weaknesses could be mitigated and transformed into opportunities to enhance community-based low-carbon tourism in the long run.

##### **4.2.3 Opportunities**

The analysis of opportunities for developing low-carbon tourism on Koh Sukorn indicates that the island holds strategic potential to enhance low-carbon tourism management based on its existing assets of natural resources, local lifestyles, and social capital. Combined with the growing demand for ecotourism and support from external sectors, these conditions create opportunities to develop tourism pathways aligned with sustainability concepts without the need to rely on large-scale infrastructure investment.

##### **1) Opportunities to Develop Low-Carbon Attractions and Activities on a Low-Cost Basis**

Koh Sukorn has the potential to restore and develop distinctive natural attractions with strong “place-based narratives,” such as freshwater ponds adjacent to the sea, the development of mangrove nature study trails, and viewpoints in the island’s elevated areas. These can be designed as low-carbon activities that emphasize walking, paddling, or the use of small vehicles. Development in this manner can enhance the diversity of tourism activities without creating burdens on the ecosystem, while also responding to the needs of tourists seeking nature-based experiences and tranquility.

##### **2) Opportunities to Create Added Value through Circular Economy and Efficient Resource Use**

The concrete development of waste management and recycling systems such as the introduction of waste compaction equipment or the establishment of logistics for transporting recyclable materials from the island to the mainland would help reduce waste management costs and increase community participation incentives. In addition, further development of activities that transform marine debris and residual materials into creative works or community products, as well as the use of agricultural residues to produce organic fertilizer, could

generate supplementary income while simultaneously reducing environmental impacts. These initiatives would also reinforce the low-carbon tourism image of Koh Sukorn.

##### **3) Opportunities from the Growing Market for Quality and Environmentally Friendly Tourism**

The increasing trend of quality-oriented and long-stay tourists, particularly those who value tranquility, natural surroundings, and responsible travel, is highly consistent with the characteristics of Koh Sukorn. At the same time, the growing awareness among many visitors regarding plastic reduction and environmental care provides an opportunity for the community to develop voluntary environmental measures in collaboration with tourists. Such initiatives can enhance participation and foster shared environmental awareness.

##### **4) Opportunities from Academic, Technological, and Innovation Support**

Collaboration with academic institutions and external agencies provides opportunities for Koh Sukorn to access knowledge, technologies, and innovations suited to the local context, such as the development of solar energy, smart water systems for agriculture, and digital communication tools including online maps or QR codes to deliver tourism information and low-carbon guidelines to visitors. Support of this nature can function as an “enabling mechanism” that strengthens community capacity without undermining local ownership.

In summary, the most significant opportunity for Koh Sukorn lies in building upon its existing assets, including low-carbon lifestyles, natural resources, and social capital, combined with the appropriate use of technology and responsiveness to international ecotourism market trends. If support can be designed to function as facilitative support rather than external control, these opportunities will help strengthen and sustain low-carbon tourism management on Koh Sukorn in the long term.

##### **4.2.4 Threats**

The analysis of threats to the development of community-based low-carbon tourism on Koh Sukorn indicates that, despite the island’s strong potential to evolve as a low-carbon tourism destination grounded in local lifestyles and robust social capital, such development continues to encounter several structural and systemic obstacles. These challenges may undermine the continuity of management efforts and limit the community’s ability to maintain a low-carbon development pathway in the long term.

##### **1) Instability of Energy Infrastructure**

A major obstacle is the instability of electricity and water supply systems, resulting from the island’s location at the end of transmission lines. This leads to periodic problems such as voltage drops and power outages, which directly affect daily life and tourism activities. Moreover, the water supply system, which relies on electricity for pumping, links energy instability to water shortages, particularly during peak tourism seasons. These constraints generate hidden costs for operators and reduce their capacity to plan and manage energy and resources in a systematic manner.

##### **2) Discontinuity of Policy and Administrative Structure**

Government support has largely been provided through short-term projects that lack sufficient budgets and long-term monitoring mechanisms, preventing environmental and low-carbon initiatives from developing in a continuous manner. In addition, the absence of a central tourism coordination body on the island results in fragmented management, a lack of shared information systems, and difficulties in establishing standards or an overall direction for low-carbon development.

### **3) Cost Burdens and Economic Constraints of Operators**

The costs of environmentally friendly technologies and materials such as eco-friendly packaging or clean energy equipment remain high relative to the economic capacity of small-scale operators on the island. Moreover, certain equipment, particularly solar panels, is subject to deterioration under marine environmental conditions, leading to high maintenance expenses. These cost-related constraints may reduce incentives for long-term investment in carbon reduction.

#### **4) Incomplete Waste Management System**

Although the community has demonstrated awareness of waste separation at the upstream level, the downstream disposal system remains limited in terms of equipment and capacity to handle waste volumes. In addition, marine debris transported from external areas continues to impose a management burden that the community cannot directly control. This situation may undermine local environmental efforts.

#### **5) Structural Changes in the Social Context**

The expansion of external investors and growing interest in developing large-scale accommodation or resort projects may divert the island's tourism development trajectory away from low-carbon and community-based approaches. At the same time, differences in interests and perspectives among occupational groups within the community may lead to tensions and reduce the effectiveness of participatory processes in establishing shared rules and directions.

In summary, the most significant threats to the development of low-carbon tourism on Koh Sukorn are the discontinuity of policy and the hidden cost burdens associated with maintaining environmental standards.

### **4.3 Strategic Pathways for Sustainable Low-Carbon Tourism Development on Koh Sukorn**

The findings indicate that Koh Sukorn possesses strong existing assets in terms of low-carbon lifestyles, social capital, and natural resources. Therefore, strategic pathways should focus on "building from within" while simultaneously strengthening systemic mechanisms from external sources. These pathways can be synthesized into five main strategies as follows.

#### **1) Strategy 1: Strengthening Community Organizations and Participatory Governance Mechanisms**

Develop or upgrade community-based tourism groups to function as a central coordination unit for low-carbon tourism on Koh Sukorn, with responsibilities for planning, setting directions, establishing community rules, and coordinating with external agencies. This should be undertaken alongside the promotion of participation among various occupational groups

within the community so that tourism-related decision-making reflects shared interests and reduces inequality.

#### **2) Strategy 2: Developing Low-Carbon Tourism Activities Based on Local Lifestyles and Identity**

Build upon activities that already exist in the everyday life of the community such as agriculture, small-scale fisheries, local food processing, and cultural learning to transform them into low-carbon experiential tourism activities, while avoiding the creation of facilities or activities that require high energy consumption.

#### **3) Strategy 3: Gradually Enhancing Energy, Resource, and Waste Management**

Promote the use of small-scale renewable energy, such as household and business solar systems, improve the efficiency of waste separation and waste bank operations, and support the reduction of plastic use in tourism activities.

#### **4) Strategy 4: Strengthening Knowledge and Capacity in Carbon Management**

Enhance the capacity of community leaders and tourism operators in low-carbon tourism management, including basic knowledge of carbon footprint concepts, communication of low-carbon principles to tourists, and the preparation of empirical data to support decision-making.

#### **5) Strategy 5: Building Network Collaboration with External Actors in the Role of "Facilitators"**

Develop cooperation with academic institutions, government agencies, and civil society organizations to support knowledge, appropriate technologies, and monitoring and evaluation, while avoiding externally imposed development models that are inconsistent with the local context.

Strategic pathways for Koh Sukorn should therefore emphasize gradual development grounded in community lifestyles and local identity rather than rapid quantitative expansion. Such an approach will enable the island to appropriately advance from "lifestyle-based low carbon" toward "system-based low carbon," while preserving the character of a small island community that maintains balance among economic, social, and environmental dimensions in the long term.

## **V. DISCUSSION**

### **5.1 Discussion on the Context and Potential of Low-Carbon Tourism Management on Koh Sukorn**

The findings indicate that low-carbon tourism on Koh Sukorn has not emerged from direct policy interventions or formal carbon reduction programs. Rather, it has developed from the "everyday lifestyles of the community," characterized by frugal resource use, reliance on local assets, and adaptive practices shaped by the island's geographical constraints. These characteristics are consistent with the concept of low-carbon lifestyles, which suggests that carbon reduction can be achieved through behavioral patterns and ways of living, rather than solely through dependence on advanced technologies [22]

When considered through the nine components of low-carbon tourism, it becomes evident that the "low-carbon community" and "tourism activities linked to everyday lifestyles" serve as the foundation of the system. Other elements such as collaborative networks, simple forms of marketing

communication, energy management, short-distance transportation, small-scale accommodation, and local food function in a mutually supportive manner, contributing to an overall tourism system that tends to be naturally low-carbon. These characteristics are consistent with studies on tourism governance, which suggest that management approaches tailored to local contexts and centered on community bases are more likely to achieve sustainability than uniform models applied across different areas [23]

Furthermore, frugal energy use, short-distance travel within the island, and reliance on small-scale accommodation help reduce energy consumption per unit of activity, which is a key factor in lowering the carbon footprint of tourism destinations [24]. At the same time, food systems that depend on locally sourced ingredients contribute to the reduction of long-distance transportation and strengthen the local economy [25]

In summary, Koh Sukorn possesses significant potential derived from being “lifestyle-based low carbon,” which provides a strong foundation for the long-term development of low-carbon tourism. Nevertheless, this potential needs to be supported by appropriate management mechanisms in order to cope with future changes and emerging pressures. Given these conditions, it is necessary to further examine the challenges faced by Koh Sukorn in maintaining and developing its low-carbon characteristics through the SWOT analytical framework.

## **5.2 Discussion on the Challenges of Low-Carbon- Tourism Development through SWOT Analysis**

The SWOT analysis indicates that Koh Sukorn possesses key strengths in terms of social capital, low-energy lifestyles, and abundant natural resources, all of which are conducive to community-based tourism development. However, the major weaknesses lie in the lack of systematic and continuous management structures, infrastructure constraints, and insufficient technical knowledge related to carbon management. This issue is consistent with research on community-based tourism, which suggests that even when communities demonstrate strong potential, development may remain discontinuous and vulnerable to change in the absence of clear institutional mechanisms [26]. At the same time, the literature on tourism governance emphasizes that sustainability requires both social capital and administrative structures that facilitate collective decision-making [23]

Regarding opportunities, the growing trend of ecotourism markets and support from academic institutions and external agencies can help enhance the management of Koh Sukorn in a more systematic direction. Meanwhile, key threats include policy discontinuity, the costs of green technologies, and pressure from external investment, challenges that are commonly found in small-scale tourism destinations

In summary, the challenges faced by Koh Sukorn do not stem from a lack of community potential, but rather from the absence of a “connecting mechanism” between existing community assets and external support systems. Therefore, strategic approaches should emphasize strengthening internal systems alongside external support that functions in a facilitative role.

## **5.3 Discussion on Strategic Pathways for Sustainable Low-Carbon Tourism Development on Koh Sukorn**

Based on the findings regarding context, potential, and challenges analyzed through the SWOT framework, it can be synthesized that the development of low-carbon tourism on Koh Sukorn should focus on building upon existing community assets while gradually strengthening systemic mechanisms, without undermining the identity and ways of life of the area. The five strategic pathways can therefore be discussed as follows.

### **1) Strengthening Community Organizations and - Participatory Governance Mechanisms**

The establishment of a community-based organization or central coordination unit for low-carbon tourism would help reduce fragmented management and enhance clarity regarding roles, planning, and collective direction at the local level. This is consistent with tourism governance concepts, which emphasize that sustainability requires mechanisms for joint decision-making and shared responsibility among multiple stakeholders [27] In the context of Koh Sukorn, upgrading community tourism groups to function as a central body would facilitate a shift from reliance on a few key individuals toward institutionalized community management, in line with the principles of common resource management that prioritize local rules and participation as foundational elements [28] This strategy therefore constitutes a crucial basis for enhancing the long-term stability of low-carbon tourism development.

### **2) Developing Low-Carbon Tourism Activities Based on Local Lifestyles and Identity**

The findings from Koh Sukorn indicate that many tourism activities are already embedded in the everyday life of the community, such as agriculture, small-scale fisheries, and local food processing. Building upon these activities to create experiential learning tourism can generate added value without the need for large investments or extensive infrastructure. This approach is consistent with community-based tourism literature, which emphasizes that success should be assessed in terms of the degree of community control and the preservation of local identity rather than quantitative growth [26] For Koh Sukorn, grounding tourism activities in local lifestyles therefore helps maintain the character of “lifestyle-based low carbon” and reduces the risk of shifting toward high-energy activities.

### **3) Gradually Enhancing Energy, Resource, and Waste Management**

Although the community already demonstrates energy-saving behaviors and has begun to adopt renewable energy in certain areas, further improvements should proceed in a “gradual” manner and remain appropriate to community capacities. Examples include small-scale solar systems, more efficient waste separation, and the reduction of plastic use in tourism activities. This approach is consistent with literature on the transition toward low-carbon societies, which highlights that changes in behavior and lifestyles play a crucial role in reducing long-term energy demand [22, 27] For Koh Sukorn, this strategy can help reduce structural carbon emissions without imposing excessive cost burdens on small-scale operators.

### **4) Strengthening Knowledge and Capacity in Carbon Management**

A major limitation of Koh Sukorn lies in the lack of technical knowledge related to carbon management, such as carbon footprint assessment and the use of quantitative data for decision-making. Therefore, enhancing the capacity of community leaders and tourism operators in low-carbon tourism management represents a crucial mechanism for upgrading practices from general awareness to a systematic approach. International reports indicate that many tourism sectors still lack the tools and capabilities to measure and monitor carbon emissions, particularly among small-scale organizations [29] Strengthening knowledge in this area will enable Koh Sukorn to communicate its low-carbon positioning more clearly and enhance the credibility of the destination.

#### **5) Building Network Collaboration with External Agencies in a “Facilitative” Role**

Although development should be grounded in a community-centered approach, the community cannot address all issues independently, particularly those related to infrastructure, energy, water management, and technology. Establishing collaboration with academic institutions, governmental agencies, and civil society organizations in the role of facilitators can help enhance knowledge, provide appropriate technologies, and strengthen monitoring and evaluation systems. This approach is consistent with the literature on tourism governance, which suggests that external actors should focus on supporting and empowering local communities rather than imposing top-down development models [30] For Koh Sukorn, this strategy would enable a balanced linkage between the community’s existing assets and external supportive resources.

In summary, the five strategic directions indicate that the development pathway for low-carbon tourism on Koh Sukorn should follow a gradual and incremental process, grounded in local lifestyles and community identity, while being complemented by appropriate systemic mechanisms. Such an approach would facilitate a transition from “lifestyle-based low carbon” to “system-based low carbon” without undermining the community’s character and long-term socio-environmental balance.

## **VI. CONCLUSION**

This study demonstrates that the development of community-based low-carbon tourism on Koh Sukorn exhibits distinctive characteristics that differ from conventional low-carbon tourism frameworks applied in mainstream destinations. Specifically, the emergence and persistence of low-carbon tourism on Koh Sukorn have not been driven by technical policies or large-scale infrastructure investment; rather, they have been shaped primarily by local spatial contexts, community lifestyles, and social structures. The community’s resource-saving behavior, reliance on existing local assets, and adaptive practices under the constraints of island conditions have resulted in many tourism activities inherently embodying low-carbon characteristics.

The analysis based on the nine dimensions of low-carbon tourism indicates that the low-carbon community and tourism activities closely linked to local ways of life function as the foundation of the system. Meanwhile, network collaboration, simple forms of marketing communication, prudent energy management, low-energy internal transportation, accommodation and food systems dependent on local resources, and experiential learning activities collectively support one another as components of a “naturally low-carbon system.” Nevertheless, the SWOT analysis reveals that despite Koh Sukorn’s strong foundational assets, the area still faces limitations in terms of management structures, technical knowledge on carbon management, infrastructure, and policy discontinuity factors that may undermine the long-term sustainability of development.

Based on these findings, this research proposes that the development of low-carbon tourism on Koh Sukorn should prioritize building upon existing community assets while gradually strengthening systemic mechanisms. This can be achieved through enhancing the capacity of community organizations and participatory governance mechanisms, developing activities rooted in local lifestyles and identity, appropriately upgrading energy, resource, and waste management, strengthening knowledge on carbon management, and fostering collaboration with external agencies should play a facilitative rather than directive role, supporting local capacities, strengthening existing community-based systems, and avoiding interventions that may disrupt the island’s low-carbon trajectory.

In conclusion, the development of low-carbon tourism on Koh Sukorn should follow a gradual trajectory grounded in community lifestyles and identity, enabling a transition from “lifestyle-based low carbon” to “system-based low carbon” without undermining the character of the community or the balance between economic, social, and environmental dimensions. Such an approach would contribute to a sustainable development pathway in the long term.

## **ACKNOWLEDGMENT**

The authors gratefully acknowledge the invaluable academic guidance and constructive feedback provided by the advisors, co-advisors and expert reviewers. We also extend our sincere appreciation to the relevant agencies and the Human Research Ethics Committee for granting ethical approval for this study (Project Code: 2025–St–Envl–042). Special thanks are extended to the key informants, community leaders, local entrepreneurs, and residents of Koh Sukorn, Palian District, Trang Province, Thailand, for their generous cooperation, insightful contributions, and continued support throughout the research process, which were essential to the successful completion of this study. We further express our gratitude to the scholarship funding source that provided financial support for this research.

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# Developing the 4H Model for Physical Wellness Tourism: A Mixed Methods Study in Trang Province, Thailand

Taweesak Noosuwan<sup>1,a)</sup>, Parichart Visuthismajarn<sup>1</sup>, Korawan Sangkakorn<sup>2</sup>  
and Theerakamol Pengsakul<sup>3</sup>

## Author Affiliations

<sup>1</sup>Faculty of Environmental Management, Prince of Songkla University, Songkhla 90110, Thailand

<sup>2</sup> Center of Tourism Research and Development, Multidisciplinary Research Institute, Chiang Mai University, Chiang Mai, 50200, Thailand

<sup>3</sup> Health and Environmental Research Center, Faculty of Environmental Management, Prince of Songkla University, Songkhla, 90110, Thailand

## Author Emails

<sup>a)</sup>Corresponding author: taweesak.n@psu.ac.th

**Abstract.** This study developed the 4H Model for physical wellness tourism in Trang Province, Thailand, using a convergent parallel mixed methods design. Qualitative data from 36 stakeholders across nine sites were analyzed thematically, revealing four key potentials—natural resource abundance, food and herbal identity, strong community leadership, and infrastructure readiness—alongside four challenges, most notably the lack of a coordinating host agency. Quantitative data from 400 domestic tourists were analyzed using structural equation modeling, confirming that wellness motivation strongly influences destination image and perceived value, while satisfaction significantly predicts loyalty. Integration of both datasets yielded the 4H Model comprising Healthy Activities, Holistic Infrastructure, Human Resource Development, and Host Community Participation. Benchmarking against established Thai wellness destinations revealed that Trang's ultra-low sulfur springs and clean-air botanical garden offer a scientifically verifiable competitive advantage, though formal inter-agency governance remains the critical prerequisite for realizing this potential.

**Index Terms**—community-based tourism, mixed methods research, physical wellness tourism, structural equation modeling, 4H Model

## I. INTRODUCTION

The global wellness tourism industry reached USD 651 billion in 2022 and is projected to exceed USD 1.3 trillion by 2025 [1]. Physical wellness tourism—encompassing hot springs, therapeutic massage, outdoor recreation, and health-focused gastronomy—is one of its fastest-growing segments [2]. Although Thailand has positioned itself as a leading wellness destination, development remains concentrated in Bangkok, Phuket, and Chiang Mai, leaving secondary provinces with significant untapped potential [3].

Trang Province exemplifies this gap. Despite three natural hot springs with exceptionally low sulfur content (0.01%), a 12,473-rai botanical garden with documented low PM2.5 levels, and distinctive therapeutic herbs, the province remains underrepresented in physical wellness tourism. Previous studies have addressed tourist motivations [4], destination image [5], and service quality [6], but rarely integrate supply-side stakeholder data with tourist behavior in a unified development framework.

This study pursues three objectives: (1) to explore potentials and challenges from stakeholder perspectives; (2) to analyze causal relationships among wellness motivation, destination image, perceived value, satisfaction,

and loyalty; and (3) to develop the 4H Model—an integrated framework for physical wellness tourism in secondary destinations.

## II. METHODOLOGY

### A. Research Design

A convergent parallel mixed methods design [7] was employed. Qualitative and quantitative strands were collected concurrently, analyzed independently, and integrated at interpretation stage using joint display and integration matrix techniques.

### B. Qualitative Strand

Thirty-six key informants representing seven stakeholder groups (provincial government, local government, park officers, community leaders, public health officials, tourism operators, academics) were interviewed across nine sites. Semi-structured interviews (45–90 min) were transcribed verbatim and analyzed using Braun and Clarke's [8] six-phase reflexive thematic analysis with MAXQDA 2024.

### C. Quantitative Strand

Questionnaires were administered to 400 domestic tourists at major wellness sites in Trang Province (August 2025–February 2026). Five constructs were

measured on 5-point Likert scales: Wellness Motivation (9 items), Destination Image (6 items), Perceived Value (4 items), Satisfaction (6 items), and Loyalty (3 items). CB-SEM was conducted using IBM AMOS 29 with Maximum Likelihood estimation [9]. Multivariate normality was confirmed (Mardia’s normalized coefficient = 4.21 < 5.0).

**D. Mixed Methods Integration**

MAXQDA 2024’s Mixed Methods module linked qualitative code frequencies with AMOS-derived construct scores, generating an integration matrix identifying convergence, complementarity, and expansion patterns across datasets. To enhance clarity, the integration process followed three steps: (1) independent analysis of qualitative and quantitative data, (2) comparison of findings using joint displays, and (3) interpretation of convergence and divergence to develop the 4H Model.

**III. RESULTS AND DISCUSSION**

**A. Qualitative Findings**

Reflexive thematic analysis yielded eight themes. Four potentials were identified: (1) Natural Resource Abundance (94.4% informant coverage)—unique low-sulfur hot springs, low-PM2.5 botanical gardens, coastal ecosystems; (2) Food and Herbal Identity (91.7%)—“Trang 9 Meals” culinary culture and anti-inflammatory local herbs; (3) Strong Community Leadership (86.1%)—exemplified by Nam Phut’s CBT model with QR-based information systems and fair income distribution; and (4) Infrastructure Readiness (75.0%)—upgraded airport, road connectivity to neighboring provinces.

Four challenges were equally salient: (1) Lack of Host Agency (94.4%)—absence of a lead authority with budget and coordination power; (2) Infrastructure Gaps (83.3%)—no inter-site public transport, lighting deficits, variable hygiene standards; (3) Insufficient Promotion (80.6%)—“premium products not yet ready to sell” (GOV1); and (4) Regulatory Constraints (77.8%)—overlapping jurisdictions among national parks, forestry land, and treasury property.

**B. Quantitative Findings**

The measurement model demonstrated excellent fit (Table I). All standardized factor loadings exceeded 0.70, composite reliability > 0.90, and AVE > 0.69. Discriminant validity was confirmed via the Fornell–Larcker criterion and HTMT ratios (< 0.92).

**TABLE I  
MODEL FIT INDICES AND STRUCTURAL PATH RESULTS**

Construct / Path	β / CFI	f <sup>2</sup> / TLI	R <sup>2</sup> / RMSEA
Model Fit	CFI = 0.963	TLI = 0.958	RMSEA = 0.063
χ <sup>2</sup> /df = 2.603	SRMR = 0.051	—	—
WM → DI	0.792***	1.684	R <sup>2</sup> = 0.627
WM → PV	0.831***	2.294	R <sup>2</sup> = 0.691
DI → SAT	0.321***	0.174	R <sup>2</sup> = 0.762
PV → SAT	0.574***	0.544	—
SAT → LOY	0.748***	1.258	R <sup>2</sup> = 0.560

Note: WM = Wellness Motivation; DI = Destination Image; PV = Perceived Value; SAT = Satisfaction; LOY = Loyalty.  
\*\*\*p < 0.001; f<sup>2</sup>: 0.02 small, 0.15 medium, 0.35 large.

Wellness motivation exhibited very large effects on destination image (β = 0.792, f<sup>2</sup> = 1.684) and perceived value (β = 0.831, f<sup>2</sup> = 2.294), extending findings of Xia et al. [4]. Perceived value influenced satisfaction nearly twice as strongly as destination image (β = 0.574 vs. 0.321), consistent with Jebbouri et al. [5]. Satisfaction strongly predicted loyalty (β = 0.748), replicating Ahn and Kim’s [6] result (β = 0.756) and suggesting cross-cultural generalizability. IPMA identified wellness motivation as the priority improvement area: second-highest importance (0.574) but lowest performance (82.361).

**C. Mixed Methods Integration and the 4H Model**

Integration of both strands through MAXQDA 2024’s Mixed Methods module yielded the 4H Model (Fig. 1), comprising four interrelated components:

**H1 – Healthy Activities:** Core wellness products leveraging Trang’s unique assets—ultra-low sulfur hot springs (0.01% sulfur, certified by Japanese researchers), low-PM2.5 Thung Khai Botanical Garden, Theptharo aromatherapy, and “Trang 9 Meals” wellness menus. IPMA confirms H1 requires urgent product development (WM importance = 0.574, performance = 82.361).

**H2 – Holistic Infrastructure:** Inter-site transportation, standardized facilities, safety/hygiene systems, and IT applications. The DI–SAT path (β = 0.321) is weaker than PV–SAT (β = 0.574), indicating infrastructure improvements would selectively strengthen this pathway.

**H3 – Human Resource Development:** Health institution partnerships, digital marketing training, and local herbal knowledge documentation to address the digital skills gap (72.2% coverage). The PV→SAT→LOY mediating path (β<sub>indirect</sub> = 0.429) makes skilled human resources critical for sustaining loyalty.

**H4 – Host Community Participation:** Strong community leadership, CBT enterprise development, resource conservation, and equitable income distribution, exemplified by the Nam Phut model. SAT→LOY (β = 0.748) and 56.5% repeat visitation validate this pathway.

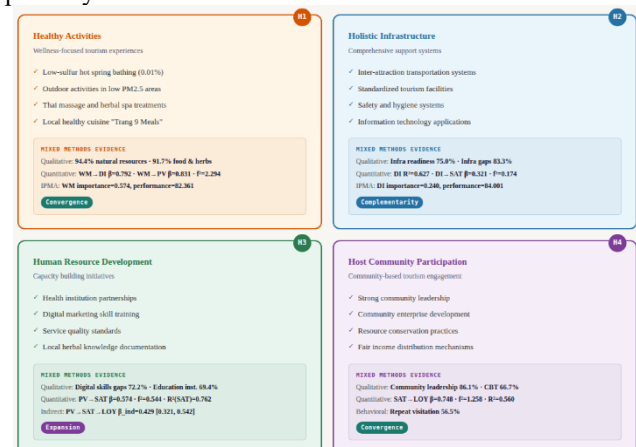


Fig. 1. The 4H Model for Physical Wellness Tourism Development.

H1 = Healthy Activities; H2 = Holistic Infrastructure; H3 = Human Resource Development; H4 = Host Community Participation.

#### D. Comparative Analysis with Leading Wellness Regions

Benchmarking against established Thai wellness regions reveals both lessons and competitive positioning for Trang (Table II).

**TABLE II**  
**COMPARATIVE WELLNESS TOURISM DEVELOPMENT PROFILE**

Dimension	Northern Thailand	Nakhon Ratchasima	Trang (this study)
<b>Resources</b>	Lanna herbs; multi-hot spring circuit; cultural heritage	Khao Yai nature; Isaan herbal wisdom; thermal springs	Ultra-low sulfur springs (0.01%); low-PM2.5 gardens; endemic herbs
<b>Governance</b>	Lanna Health campaign; 4-route circuit; TAT support [10]	Cabinet-designated wellness city; national policy backing [11]	No host agency—critical gap (94.4%)
<b>Human Resources</b>	Mature workforce; CMU research partnerships; certified therapists	Growing workforce; SUT partnerships; certification infrastructure	Health institutions present; digital skills gaps (72.2%)
<b>Key Finding</b>	National differences in wellness preferences; cluster marketing [10]	District specialization (6AsTD-TOPSIS); attractions as top priority [11]	High WM importance, low performance—resource uniqueness underutilized

TAT = Tourism Authority of Thailand; CMU = Chiang Mai University; SUT = Suranaree University of Technology.

Northern Thailand’s Lanna cluster operates as an integrated multi-destination wellness circuit—four curated routes (Adventure & Wellness, Friendship Trip, Onsen Trip, Food & Crafts)—enabling visitor dispersal and economies of scale in marketing that are entirely absent from Trang’s current fragmented model [10]. Sangkakorn and Krajangchom [10] identified clear national-origin differences in 643 international tourists’ wellness preferences (European visitors favoring mindfulness; Asian visitors favoring thermal/herbal experiences), indicating that product segmentation within a regional cluster is both feasible and commercially valuable.

In Nakhon Ratchasima, Jittamai et al. [11] applied a Multi-Criteria Decision-Making TOPSIS framework based on the 6AsTD model to three districts, finding that attractions, accessibility, and amenities were the highest-priority criteria—a finding directly consistent with this study’s IPMA results for Trang. Their district-level specialization strategy (Pak Chong for aroma/water therapy; Wang Nam Khiao for ecotourism; Mueang for sports) offers a template for sub-destination differentiation across Trang’s hot spring zone, botanical garden, and coastal ecosystem

sites. Crucially, Nakhon Ratchasima’s Cabinet-level designation as a wellness city provided the formal governance mandate that enabled coordinated development—precisely the “host agency” that 94.4% of Trang informants identified as the single most critical missing element.

Despite its development lag, Trang possesses a scientifically verifiable competitive differentiator: hot spring water with 0.01% sulfur content, confirmed by both Thai university researchers and Japanese experts, documented mineral composition (calcium, magnesium, silica), and 100% safety certification. This unique water chemistry—unavailable at competing Northern Thailand hot spring destinations such as Chae Son, Lampang, which rely on higher-temperature sulfuric springs [12]—provides a defensible market position that, if translated into wellness narratives and product experiences under H1, could drive the motivational performance improvement identified by IPMA.

#### IV. CONCLUSION

This study proposed the 4H Model (Healthy Activities, Holistic Infrastructure, Human Resource Development, Host Community Participation) as an integrative framework for physical wellness tourism in secondary destinations. Based on mixed methods research with 36 stakeholders and 400 tourists in Trang Province, Thailand, the study confirmed strong causal relationships from wellness motivation through perceived value to loyalty, with wellness motivation identified as the priority improvement area.

Benchmarking against established Thai wellness regions reveals that Trang’s greatest competitive asset—its scientifically unique low-sulfur hot springs—remains largely unutilized due to the absence of inter-agency governance. Formal establishment of an Area-Based Management Committee, modeled on Northern Thailand’s Lanna cluster governance and Nakhon Ratchasima’s wellness city designation, would directly address this gap. The 4H Model provides a replicable framework for other resource-rich secondary destinations in developing countries facing similar institutional constraints.

#### ACKNOWLEDGMENT

This research was supported by the Memorandum of Agreement for Thesis Research Funding for the Topics on Community Problem Solving in the Fiscal Year 2025, Graduate School, Prince of Songkla University, Thailand. Research ethics approved by PSU IRB 2025-St-Envi-025.

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# Achieving Sustainable Tourism through Public-Private-People Partnerships for Lake Taungthaman, Myanmar

Tay Zar Oke Kyaw <sup>1,a)</sup> and Parichart Visuthismajarn <sup>2,b)</sup>

## Author Affiliations

<sup>1</sup>Ecosystem Innovation Management for Sustainable Tourism Program, Prince of Songkla University, Songkhla, 90110, Thailand

<sup>2</sup>Faculty of Environmental Management, Prince of Songkla University, Songkhla, 90110, Thailand

## Author Emails

<sup>a)</sup> Corresponding author: tayzar.moht@gmail.com

<sup>b)</sup> parichart.v@psu.ac.th

**Abstract.** Lakes are the most invaluable natural recourses by offering abundant ecological services for living creatures and they also play a crucial role in tourism and recreation globally serving a destination for leisure activities. Lake Taungthaman has been encountering three major challenging issues; over tourism, environmental degradations, and threats to socio-cultural authenticities. This paper aims to explore a sustainable approach to Lake Taungthaman, Myanmar by investigating the perceptions of the different stakeholders on their current actions that help environmental purity, economic growth and socio-cultural sustainability and how those actions can be enhanced through the active partnership among the 3 Ps: Public, Private and local People. Qualitative data were collected through face-to-face and, in-depth interviews with 28 key different stakeholders from the government sector, private enterprises and local community, by using EASIER Model, a popular model to evaluate Public, Private Partnership. The findings suggest that the vital roles of Destination Management Organizations (DMOs), together with the active participation of 3 Ps to increase the environmental quality of Lake Taungthaman through better water purity, air freshness, waste-collecting, water treatment systems which lead to healthier biodiversity of flora and fauna and effective conservation for the socio-cultural authenticities of Amarapura Ancient City and U Bein Bridge around Lake Taungthaman for both tangible and intangible cultural heritage by raising awareness via effective training and actions, finally, local economic development will be followed for the people around Lake Taungthaman. The results of this study can also be helpful for practical implications in implementing other small-scaled lakes for sustainable tourism development, in Myanmar.

**Index Terms**— Sustainable Tourism, Public, Private, People, Lake Tourism, Lake Taungthaman, DMOs, Amarapura, Myanmar.

## I. INTRODUCTION

The Guanajuato Declaration at the 18th World Lake Conference in Mexico emphasized that several Sustainable Development Goals (SDGs) would be challenging to achieve without freshwater supplies and that freshwater is indispensable for all living creatures and socioeconomic growth globally [1]. The 19<sup>th</sup> World Lake Conference held in Hungary reaffirmed that lakes are at risk for the effects of climate changes and human growth. Therefore, lake management is indispensably needed to figure out these challenges globally [2].

In the global tourism industry, there are various types of tourism. Among them, lake tourism is pertaining to nearly all types of tourism [3]. The most popular tourist destinations across the world are basically built on the natural resource of water [4]. Numerous human endeavors, such as agriculture, trade, transportation, sport and recreation, tourism, food production, and electrical generation, are also supported by lakes. The biological regeneration of lakes is crucial because they are frequently home to a wide range of unusual animal and plant species [5].

The tourism industry of Myanmar is majorly relying on the Cultural Tourism currently, though the policy makers and stakeholders have been planning and implementing to develop other tourism products like Ecotourism including Lake Tourism, Community Based Tourism and other Nature Based Tourism [6]. Thus, most of the major destinations in Myanmar are the cultural destinations mingling with the natural beauties. Among them, Yangon, Bagan, Mandalay and Inlay are four major destinations of Myanmar [7]. The study area, Lake Taungthaman is situated in Mandalay Region, one of the most attractive major tourist destinations in Myanmar.

There are four major tourist destinations in Myanmar, Yangon, Bagan, Mandalay and Inlay [8]. The city, which ranks fifth on the ASEAN Smart Cities Network list, is the main hub for commerce, education, and health in Myanmar. Visit Mandalay is a must for both international and local tourists to see the distinctive fusion of old heritage and contemporary development [9]. Lake Taungthaman is one of the famous touristic spots around Mandalay and in Myanmar as well.

Lake Taungthaman is a famous touristic spot in Myanmar for many reasons: historic background, scenic beauties and picturesque of the Lake and Bridge, silk weaving industry, Mahagandaryon Monastery, the historic religious monuments in surroundings, the roll of Meze (*Madhuca longifolia*) Trees, boat riding, local ways of life and other activities [10]. Therefore, the Taungthaman Lake is a renowned for its historic temples, pagodas, monuments, idiosyncratic U Bein Bridge, eminent Mahagandaryon Monastery, fresh breeze across the Lake, scenic beauties and picturesqueness.

Its fame, attractions and good accessibility led this destination to be a crowded tourist spot with both intra and international tourists. Over tourism has been threatening the environmental quality of the Taungthaman Lake and the strength of the old teak wood bridge over 170 years ago. Further, the urbanization and the waste water draining from the industrial zones and weaving workshops nearby degraded the water quality of the Taungthaman Lake and killed thousands of fresh water fishes and other habitats [11]

This study has knowledge gap [12]. Regarding the Taungthaman Lake, there are no research papers for the tourism aspects formerly. Albeit, there are some studies for the environmental fields and environmental services provided by the Taungthaman Lake. This study will be the first research for it from the tourism field and that will be a pilot research for small-scaled lakes in terms of tourism utilization in Myanmar.

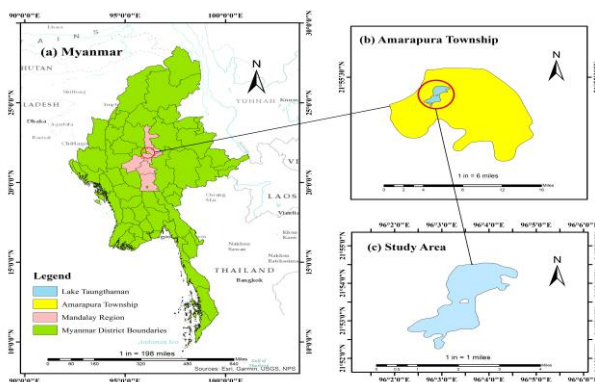


Figure.1 Research Area Map

## II. LITERATURE REVIEW

### A. Lake

Human beings and other living creatures have been depending and relying on lakes for food and a variety of other ecological services since the beginning of time. Over many millions of years, this human-nature interaction with lakes has led to the development of special and pervasive interdependencies that are part of the idea of sustainability, most notably in the Sustainable Development Goals (SDGs) today [1].

All the water on the planet is only 0.3% of fresh water in liquid form on the outermost layer, and around 25% of these vital resources stay in lakes, wetlands, and their basins. Lakes are the most valuable natural resources, offering a

range of ecological services. Albeit, lakes are very delicate to the effects of human growth and climate change; lake management is necessary to address these issues [1].

### B. Lake Tourism

Lakes play an important role in tourism and recreation in many regions of the world, serving as both a destination for leisure activities and a stand-alone attraction. Many nations and tourist destinations also make considerable use of lakes in their marketing strategies, whether it's to present a positive image of the place or as a picturesque setting for various recreational pursuits [13]. The idea of lake tourism is sophisticated. The term "lake tourism" encompasses both tourism on the lake and tourist in the surrounding environs. Similar to how alpine or forest tourism have been acknowledged as a component of tourism, lake tourism may also be respected and understood [14].

### C. Sustainability of Lake Tourism in Different Regions

The actions for the sustainability of the Lake Tourism in Europe, Australia Continent (Australia and New Zealand), Japan, neighboring countries: Thailand, India and Bangladesh and ASEAN Countries: Indonesia, Cambodia were reviewed and analyzed for this research to acquire a deep insight and implementations of the different Nations in the different Continents and Regions as well to approach the Sustainable Lake Tourism Development of Lake Taungthaman.

### D. The Environmental Quality of the Taungthaman Lake

The Lake is a natural flood plain flooded by the inflow of the Ayeyarwady River in the rainy season transforming into a permanent lake by the construction of water control gates for fishery. The water from the lake flowed down in the winter and hot seasons. In the winter season, the crops and vegetables are cultivated in the southern part of the lake. Due to industrial zone development, chemically deposited from the fertilizer used in agricultural farms, sewage disposal, and human activity cause lake pollution [15]. To improve the water quality management of Lake Taungthaman, a regular monitoring and evaluation of the Lake water quality is extremely critical [16].

### E. Destination Management Organizations (DMOs)

Since sustainable development is a long-term strategic objective that needs to be taken into account beyond its operational tasks, the DMO is essential in establishing a vision, integrating sustainability into the larger destination strategy, or even creating a specific tourism development plan [17].

A DMO will always need to adjust to the particular difficulties of its location. Although effective management may boost the local economy and communities, social and environmental trends must receive greater attention to guarantee a profitable and sustainable tourist business. In a local setting, tourism has symbiotic relationships with culture, ecology, and economy. [18].

The most popular methods to evaluate Public Private Partnership (PPP): the Economic Impact Assessment (EIA) or the Computable General Equilibrium (CGE) models, are overly focused on the economic dimension, but they provide limited analysis of the social and environmental effects.

Albeit EASIER, an acronym for the six dimensions of the model: Engagement of Stakeholders; Access; Scalability and Replicability; Inclusiveness; Economic Impact; Resilience and Environment is an initial evaluation model due to its simplicity and its holistic perspective accounting for six dimensions that are relevant for social, environmental, and economic progress [19].

### III. RESEARCH METHODOLOGY

This study utilizes a qualitative method with a Case Study, Single Case Research Design and using an Inductive Approach which allows the exploratory narrative to investigate the perceptions of the different stakeholders pertaining to actions undertaking currently for environmental purity, socio-cultural sustainability and economic prosperity and how those actions can be enhanced through the unanimous and harmonious partnership among public, private and local people, the main emphasis of this research.

To support the qualitative findings, observations, document analysis, face to face and in-depth interviews are primarily utilized by conducting with (28) persons in total: eight government officials from the public sector and twenty different stakeholders from the private and local community; two senior monks, two pagoda trustee board members, two each from travel agencies, tour guides, and hoteliers, weaving workshops, souvenir shops, restaurants; and four boatmen.

The interviewees were selected by using judgmental or purposive sampling for the informants from the public sector, private enterprises and local people from the community [20]. The following three tables illustrate summary facts of (28) interviewees.

**TABLE 1  
THE INTERVIEWEES FROM THE PUBLIC  
SECTOR AND THEIR ROLES AND  
RESPONSIBILITIES**

Code	Designation	Experience	Ministry/ Department	Roles & Responsibilities
I-1	Director	5 years	Hotels & Tourism	Tourism Development
I-2	Director	3 years	General Administration	Over all Administration
I-3	Director	4 years	Environmental Conservation	Environmental Conservation
I-4	Director	3 years	Fisheries	Livestock & fisheries
I-5	Principal	10 years	Weaving Institute	Weaving & Textile
I-6	In Charge	3 years	Religious Affairs	Religious Affairs
I-7	In Charge	5 years	Archaeology	Cultural Affairs
I-8	In Charge	10 years	Municipal	Waste Management

**TABLE 2  
THE INTERVIEWEES FROM THE PRIVATE  
SECTOR**

Code	Position	Experience	Business	Function
I-9	Owner	30 years	Weaving Workshop	Selling Weaving Products
I-10	Owner	25 years	Weaving Workshop	Selling Weaving Products
I-11	Owner	30 years	Restaurant	Selling Foods and Drinks
I-12	Owner	20 years	Restaurant	Selling Foods and Drinks
I-13	Owner	20 years	Souvenir Shop	Selling Souvenirs
I-14	Owner	15 years	Souvenir Shop	Selling Souvenirs
I-15	MD	15 years	Travel Agency	Tour Operation
I-16	MD	10 years	Travel Agency	Tour Operation
I-17	Manager	5 years	Hotel	Accommodation Service
I-18	Manager	5 years	Hotel	Accommodation Service

I-19	Tour Guide	25 years	Freelance Guide	Tour Guiding
I-20	Tour Guide	20 years	Station Guide	Tour Guiding

**TABLE 3  
THE INTERVIEWEES FROM LOCAL  
COMMUNITY (PEOPLE) AND THEIR ROLES**

Code	Occupation	Experience	Organization	Role (Community)
I-21	Senior Monk	40 years	Mahagandayone Monastery	Religious Leader
I-22	Senior Monk	30 years	Taungkhunmingyi Monastery	Religious Leader
I-23	Pagoda Trustee	10 years	Taungkhunmingyi Pagoda	Chairman, Trustee Board
I-24	Pagoda Trustee	10 years	Pahtowtawgyi Pagoda	Secretary, Trustee Board
I-25	Administrator	10 years	Taungthaman Village	Village Leader
I-26	Administrator	3 years	Sinswepit Village	Village Leader
I-27	Boatman	20 years	Boat Club	Chairman
I-28	Boatman	25 years	Boat Club	Member

The qualitative field works were conducted for three weeks in September 2025 around Lake Taungthaman and U Bein Bridge, Amarapura City and Mandalay. Based on purposive or judgmental method, the selected and targeted government officials and other stakeholders were asked to voice their perception on promoting environmental, socio-cultural and economic aspects of Lake. Each of the interview took about 30 minutes on average. For the pre-structured interview questions, EASIER model which evaluate the present situation of partnership among 3Ps.

The researcher took notes for the key points of the interviewee. On the other hand, the whole conversation was also recorded by an audio recorder as a major source for detailed and intensive listening to be able to conduct the content analysis. By applying a content analysis method, the interview transcripts from government officials, other stakeholders as well as the secondary qualitative information were reviewed, coded and categorized over and over again based on various questions. Then each data category was described and links between different categories were looked for. After these things had been done, an overall perspective was sought.

### IV. RESULTS AND DISCUSSION

After processing and analyzing the content analysis, six dimensional contents of EASIER model to enhance the partnerships among 3 Ps for the sustainable management of Lake Taungthaman emerged from the qualitative interviews as shown in table (4).

**TABLE 4  
SUMMARY OF KEY FINDINGS**

No.	Dimension	Results
1.	Engagement of Stakeholders	a. Strengthening functions of DMOs for better partnership of 3Ps b. Converging Research findings and DMO's implementation
2.	Access	a. Preparing for Barrier Free Tourism b. Offering various food menus
3.	Scalability and Replicability	a. Preparing to extend from a tourist spot to night stop destination b. A Pilot Research for other small-scale lakes in Myanmar
4.	Inclusiveness	a. Ensuring growth and development are equitable and inclusive b. Empowering local community (People)
5.	Economic Impact	a. Achieving local economy development through better environmental purity and socio-cultural sustainability

		b. Sharing updated technical know-how for weaving industry
6.	Resilience and Environment	a. Conserving the roll of Meze ( <i>Madhuca longifolia</i> ) Trees b. Improving water quality and enhancing air freshness

## 1. Engagement of Stakeholders

### A. Strengthening functions of DMOs for better partnership of 3Ps

Destination Management Organization (DMO) for Amarapura District which is mainly responsible for Lake Taungthaman has already formed since 2024 comprising with tourism related stakeholders from Public, Private and People, local community members. Albeit, currently even cooperating among other line Ministries, Departments, Universities, Research Centers and High Schools need to be improved by organizing regular meetings and activities.

Moreover, volunteer activities of the University students, high school students and local youths for waste collecting and hyacinth cleaning campaigns should be organized by the responsible Departments to raise awareness for younger generation regarding with environmental sustainability. DMO also needs to organize excursion programs with attractive activities for primary and junior students cooperating with the Ministry of Education.

### B. Converging Research findings and DMO's implementation

According to the outcomes of the content analysis of the qualitative interviews, the respondents highlighted to integrate the research findings of Lake Taungthaman by the researchers from the academic Universities and Research Institutions with practical implementation of DMO to achieve the sustainable lake management.

## 2. Access

### A. Preparing for Barrier Free Tourism

All people, without any discrimination and differentiation relating with social diversity, gender, race, disabilities, and minorities need to access to experience and enjoy the atmosphere of Lake Taungthaman, DMO has to plan to implement Barrier Free Tourism, especially infrastructure and facilities to provide equitable services for all visitors without discrimination.

### B. Offering various food menus

Simultaneously, the restaurants around Lake Taungthaman and U Bein Bridge have to prepare to be able to offer different types of foods also need to prepare and upgrade their menus and services.

## 3. Scalability and Replicability

### A. Preparing to extend from a tourist spot to night stop destination

Lake Taungthaman is situated in Amarapura City, an ancient capital city of the last dynasty of Myanmar. Therefore, it has rich cultural heritage both tangible and intangible legacies and religious buildings and monuments around the Lake. Further, a new hotel project with MICE facilities and other hotel projects are under construction. Addition to this, Yangon – Mandalay high way is very close with the Lake. The respondents from the Public and Private Sectors highlighted that Lake Taungthaman will be a night

stop tourist destination with accommodation services and MICE facilities to host big events in their interviews.

### B. A Pilot Research for other small-scale lakes in Myanmar

Specifically, Lake Taungthaman is not a large-scale lake like Inlay Lake in Shan State. It is an ox-bow fresh water lake possesses natural scenic beauties with historic U Bein Bridge, the longest teakwood bridge in the world and invaluable cultural idiosyncrasies and assets. Therefore, this study will be pilot research for other small-scale lakes in Myanmar. The other lakes can adapt and apply this approach for the tourism planning and development.

## 4. Inclusiveness

### A. Ensuring growth and development are equitable and inclusive

Inclusiveness assures that every growth and development are socially equitable and inclusive for each and every individual of the visited community. Hence, inclusiveness is the capability of a mechanism or community avoiding any form of exclusion even for those who are not getting profits pertinent with tourism booming and development. The benefits from tourism must be contributed equally to all visited community through education, infrastructure development and health care services.

### B. Empowering local community (People)

The outcomes of the qualitative questions stressed that to empower local community (People) to give the rights to suggest, advice and express their disagreement on the local tourism development planning and implementation systematically and properly. Otherwise, the conflicts will be encountered between visitors and visited and those who are providing tourism related services.

## 5. Economic Impact

### A. Achieving local economy development through better environmental purity and socio-cultural sustainability

The interviewees reflected in their interviews the matters relating to the priority of the three key aspects of sustainability in serial due to the context of Lake Taungthaman.; environmental quality, socio- cultural authenticity and economic development. Firstly, DMO have to strive to enhance the environmental purity for both water and air qualities of the Lake, simultaneously the actions for the conservation and preservation of social-cultural authenticity and sustainability of Lake Taungthaman and U Bein Bridge around Amarapura City. Then, local economy development will be followed. Contrary to that, DMO comprising with 3 Ps is not able to maintain the environmental quality and socio-cultural sustainability, the attractiveness of Lake will be descending and local economy development as well.

### B. Sharing updated technical know-how for weaving industry

Weaving Industry producing silk ware, longyi and tradition textile is the major business of Amarapura City

since the ancient period. Wearing traditional longyi in our daily life is an idiosyncratic characteristics of Myanmar people socio-culturally. In this context, this unique traditional style is mingling with both local economy and socio-cultural authenticity which needs highly protective and conservative actions. In the same time, DMO and the leading persons from the weaving industry takes into account how to utilize weaving products by creating good opportunities and benefits combining with tourism attractions and activities.

Moreover, the Weaving Institute in Amarapura is striving to promote and modernize weaving products and share technical know-how to keep abreast with the weaving industries of other nations in terms of weaving and coloring techniques. The leading role of Weaving Institute is conducting trainings for weaving skills and generating skilled persons for the industry and expanding international network for the nation's weaving industry.

## 6. Resilience and Environment

### A. Conserving the roll of Meze (*Madhuca longifolia*) Trees

The roll of Meze (*Madhuca longifolia*) Trees also called the Meze Plain is very famous and idiosyncratic attraction of the LAKE for its fresh breeze across the lake's surface water under 95 plants roll of Meze trees. It is also the significant symbol of rich ecology assets of the Lake and also the natural heritage of our ancestors over a century ago. DMO also the agents of 3 Ps are responsible to protect those natural assets and to handover to the new generation, our descendants.

### B. Improving water quality and enhancing air freshness

Almost of interviewees from 3 Ps highlighted the vital role of air and water purity and waste management as well as the most prioritized actions for the sustainable management of the Lake. Systematic and proper waste collecting system, effective management for untreated water from the industrial zone near the lake and textile coloring, cleaning water hyacinth and digging and moving sediments of the lake are the actions to be undertaken urgently. Sedimentation is affecting for both air and water purity. During the summer, the layers of sedimentation generate very bad smell because of the intense heat when the water level is very shallow. That is affecting to the air freshness of the Lake.

## V. CONCLUSION

This study explored how to achieve the sustainable lake tourism management of Lake Taungthaman through the unanimous and harmonious partnership among Public, Private and People after investigating the perceptions of different tourism related stakeholders. The active role DMO is very crucial for the successful implementation of a tourist destination in the long run. This paper is a first tourism related study for Taungthaman Lake and it will be also a pilot study for other small-scale lakes for tourism utilizations and development.

## ACKNOWLEDGMENT

This research was supported by the Graduate School, Prince of Songkla University, Thailand. Research ethics approved by Sirindhorn College of Public Health, Yala SCPHYLIRB-2568/893.

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# Strategic Evaluation of Myanmar's Tourism Policy Frameworks and Stakeholder Perceptions: A SWOT Analysis of Inle Lake

Min Maung Soe<sup>1,a)</sup> and Parichart Visuthismajarn<sup>2</sup>

## Author Affiliations

<sup>1</sup>Ecosystem Innovation Management for Sustainable Tourism Program, Faculty of Environmental Management, Prince of Songkla University, Songkhla, 90110, Thailand

<sup>2</sup>Faculty of Environmental Management, Prince of Songkla University, Songkhla, 90110, Thailand

## Author Emails

<sup>a)</sup>Corresponding author: 6710930006@psu.ac.th

**Abstract.** This study examines how Myanmar's national tourism policies align with local governance to promote sustainable tourism at Inle Lake, a region in Shan State that relies on tourism. Inle Lake, recognized as a UNESCO Biosphere Reserve and a Ramsar Wetland, faces increasing ecological problems, including sedimentation, pollution from agrochemicals, deforestation, and the expansion of tomato floating agriculture. The research employs a qualitative case study approach, analyzing five key tourism policy documents and conducting 11 stakeholder interviews. The coded data were analyzed using NVivo and through a SWOT framework, drawing on Social–Ecological Systems (SES), Ecosystem-Based Management (EBM), and Integrated Lake Basin Management (ILBM) concepts. The coding process identified 66 strengths, 31 threats, 21 weaknesses, and 20 opportunities, indicating that stakeholders recognize the area's social and ecological assets, as well as its strong legal frameworks. However, the findings reveal a clear gap between policy and practice in key ILBM areas: institutions, information, technology, and finance. Ongoing budget shortages, limited staff, weak enforcement, and insufficient systematic environmental monitoring reveal this gap. The study concludes that stakeholders must strengthen, fund, and ground governance in evidence to protect the lake's ecosystem and ensure long-term tourism-based livelihoods.

**Index Terms—** Inle Lake, social–ecological systems (SES), sustainable tourism governance, integrated lake basin management (ILBM), policy–practice gap, lake management

## I. INTRODUCTION

Inle Lake in Shan State, Myanmar, is one of the complex social-ecological systems with a very close link in terms of tourism, livelihoods, and environmental processes. Its special features, such as leg-rowers and tomato floating gardens, help to make the local culture vibrant and attract tourists to the lake. Sustainable tourism research provides for creating a feedback loop between the ecosystem and the communities, which leads to the creation of SESs in these destinations. [1, 2].

Sustainable tourism is on the rise internationally and has been economically useful, though it has also had detrimental effects on the environment. Tourism helps rural communities to develop and flourish, but if resources aren't managed well, it can make environmental problems worse [3, 4]. Due to the interlinkage between tourism, agriculture, and fishing, which requires the combination of complex trade-offs, issues in the lake are more complicated.

Inle Lake's ecological health is also declining due to sedimentation, nutrient loading, deforestation, and the development of floating agriculture of tomatoes [3]. These pressures emphasize more sustainability requirements of

lake tourism in which tourism growth can exceed the ecological capacity of fragile systems [4]. Such international support as UNESCO Biosphere Reserve and Ramsar Wetland status is not ending the process of degradation [5].

Myanmar's government policies, such as the Responsible Tourism Policy (2012)[6], the Myanmar Tourism Master Plan (2013–2020)[7], and the Tourism Law (2018), recommend sustainable and responsible tourism[8]. However, these policies are often undermined in practice by unorganized planning, weak enforcement, and fragmented stakeholder collaboration [9, 10].

The discrepancy between the tourism policies in Myanmar and the reality at Inle Lake is evident. As the government plans are aimed at growth and conservation, residents are burdened with poor planning, poor infrastructure, and absence of participation in decision making. This disconnection is taking a toll on the region. The lake has an environmentally sensitive ecosystem that has been affected by water contamination, uncontrolled wastes and also soil erosion. The socially-based situation is also straining as it results in unequal financial gains, the marginalization of locals in terms of leadership, and failure to support sustainable practices[11, 12]. This will involve taking into account environmental constraints and ensuring that the local

community has a significant say in the planning process [13, 14].

These results indicate that the sustainable tourism in Inle Lake is a social challenge, rather than an environmental one. To ensure that the sector thrives in the long run, the local stakeholders should be actively integrated in the planning process, and the various agencies handling the area should coordinate their activities. Finally, successful governance is a practical compromise that safeguards the delicate ecosystem and at the same time promotes the local economy and the lives of residents [15]. The real impact of tourism can only be perceivable when one considers the environmental, social, and economic factors collectively. Practical enforcement of rules and a consideration of local opinions are equally important and play a key role in determining the success of any tourism project as much as community unity. Most importantly is the fact that sustainably developing tourism means that the management needs to strike a viable balance between preservation of natural habitats and promoting active engagement of people in the community [14].

The importance of this study is that although tourism in Inle Lake has resulted in economic benefits, it has also caused severe environmental and socio-economic inequity and inequality. It highlights the importance of sustainable management of tourism that safeguards the ecosystem of the lake and generates sustainable, equitable benefits to the local communities.

This paper studies how Myanmar's national tourism policy matches local stakeholders' views of sustainability in Inle Lake, using a SWOT analysis framework and considering Inle Lake within the SES framework.

## II. LITERATURE REVIEW

### 2.1 Social–Ecological Systems and Tourism Destinations

The social-Ecological Systems (SES) framework gives a perspective on the relationship between tourism development and environmental protection. The SES theory proposes that ecological and social elements are components of complex adaptive systems that are interdependent, dynamic, and manifest in feedback, cross-scale interactions, and dynamic change [16]. Such factors in the tourism destination affect the ecosystem's resilience as well as the community's livelihoods.

Ecosystem services mostly depend on lakes, coastal areas, and protected areas, as these areas are particularly susceptible to environmental imbalance due to the interdependence of tourism on them. Therefore, tourism can encourage long-term ecological degradation because of its economic foundation [2]. The problem of sustainable tourism entails determining governance institutions that combine the management of environmental processes and human actions.

The recent literature is on tourism system durability thinking and why adaptive governance structures are needed to serve in reaction to environmental and socio-economic

changes [1, 17]. Sustainable tourism is therefore not only based on environmental conservation, but also on institutional capacity and collaboration with the stakeholders.

### 2.2 Ecosystem-Based Management and Integrated Lake Basin Management

Ecosystem-Based Management (EBM) is an environmental governance plan that focuses on protecting ecosystem integrity as well as enabling economically sustainable activities. In contrast to conventional sector-based management, EBM addresses cumulative environmental effects, and promotes integrated management across ecological boundaries, watersheds, and lake basins [18].

The incorporation of these principles into lake management is called Integrated Lake Basin Management (ILBM). ILBM recommends integrating governance across areas and establishments, as it notes that the sustainability of the lakes will be achieved through the interaction of in, considering environmental, economic, and social conditions. Usually, effective ILBM rests on six pillars: institutions, policies, participation, information, technology, and finance. Multiple lake governance systems, however, are by nature faced with diffuse responsibilities and poor inter-agency coordination. Tourism often overlaps with agriculture, fisheries, and urban management, resulting in complicated governance arrangements that demand multi-stakeholder collaboration [19].

### 2.3 Governance and Stakeholder Participation in Sustainable Tourism

One of the major themes of the sustainable tourism process is governance. Instead of emphasizing government, governance presents a perspective on the network-based coordination of public institutions, corporations, civil society groups, and local communities [9]. Collaborative forms are especially essential when multiple stakeholders stand responsible for managing the environment.

The stakeholder theory assumes that sustainable tourism performance will be achieved through governance systems' capacity to balance competing interests. Effective stakeholder involvement may lend legitimacy to decision-making and support resource and environmental management [20]. However, poor participation may lead to the collapse of the policy and threaten the stability between economic growth and environmental protection.

In most developing nations, tourism governance is constrained by limited institutional capacity and funding. These constraints usually prevent local authorities from effectively implementing sustainability policies when powerful national policies are absent [21, 22].

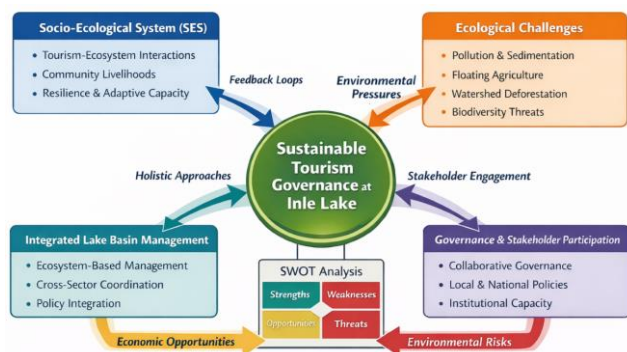


Diagram 2.1 Conceptual map of the study

### III. RESEARCH METHODOLOGY

#### 3.1 Research Design

In this study, the qualitative case study will be used to evaluate tourism governance at Inle Lake using the SES and ILBM frameworks. This type of research is especially suitable for the qualitative approach because it allows studying the operations of the institutions in depth, the challenges associated with the policy implementation, and the views of the stakeholders. The research design consisted of two key components: review of national tourism policy documents and semi-structured interviews of stakeholders. Both data sets were coded and structured into themes by using the SWOT analysis to build a comprehensive picture of the movements in governance.

#### 3.2 Data Sources

The research is based on five policy documents and 11 stakeholder interviews.

The following table (1) is a summary of five key policy and legal documents, which have influenced the development of tourism in Myanmar, and these are very critical in this study, as they give the policy context of examining tourism governance within the Inle Lake. These documents combined set the official policy on responsible tourism, ecotourism, legal regulation, and recovery of tourism, and they are the key sources to learn how the national goals are turned into the local practice. They also aid in determining the difference between policy intents and practice, particularly in relation to environmental conservation, community involvement, institutional coordination, and sustainable livelihood development. Thus, the five policies are the fundamental structure to investigate whether the tourism development at Inle Lake is based on the sustainability principles and needs of local stakeholders.

TABLE 1.  
KEY POLICY AND LEGAL DOCUMENTS  
RELEVANT TO TOURISM DEVELOPMENT AT INLE  
LAKE

No.	Document	Key Provisions
1	<i>Myanmar Ecotourism Policy and Management</i>	Establishes a national ecotourism framework for protected areas, emphasizing biodiversity conservation,

	<i>Strategy 2015–2025 (2015)</i>	community benefits, institutional strengthening, and collaborative management.
2	<i>Myanmar Tourism Master Plan 2013–2020 (2013)</i>	Provides the national tourism framework, covering growth, coordination, infrastructure, human resources, investment, implementation, and monitoring.
3	<i>Myanmar Responsible Tourism Policy (2012)</i>	Defines the national vision and action points for responsible tourism, with strong emphasis on participation, monitoring, and policy revision.
4	<i>Myanmar Tourism Law, Union Hluttaw Law No. 26/2018 (2018)</i>	Provides the legal basis for tourism regulation, including tourism business categories, accommodation, guiding, and related services.
5	<i>Myanmar Tourism Strategic Recovery Roadmap 2021–2025 (2021)</i>	Offers a recovery framework to revitalize tourism through strategic support, implementation measures, and sector revival.

The table (2) is significant as it outlines the main tourism stakeholders in the process of governance and development at the Inle Lake, indicating that tourism is formed both by governmental institutions and individuals. Participants are the representatives of the relevant sectors, including tourism administration, conservation, forestry, agriculture, irrigation, hotel ownership, destination management, religious tourism, and floating agriculture, which reflects the multi-sectoral character of tourism in the region. Their different positions and experience years show that they are key informants having practical knowledge on local tourism problems, environmental management, and community livelihoods. Thus, all participants identify the key actors whose views are critical to comprehending the tourism governance, stakeholder coordination, and sustainable development at Inle Lake.

TABLE 2.  
PROFILE OF PARTICIPATED STAKEHOLDERS AT  
INLE LAKE

No.	G	Sec.	Role	Exp.	Org.
1	M	Gov.	Director	1 yr	MOHT, Shan State
2	M	Gov.	Staff Off.	5 yrs	Inle Lake WS
3	M	Gov.	Exec. Off.	6 yrs 2mo.	City Dev. Committee
4	M	Gov.	Staff Off.	1 yr	Forest Dept.
5	M	Gov.	Staff Off.	7 yrs	Agr. Dept.
6	M	Gov.	Dy. Dir.	1 yr	Irrigation Dept.

7	F	Priv.	Hotel Owner	35+ yrs	Intha Assoc.
8	M	Priv.	Hotel Owner	35+ yrs	MHA
9	M	Priv.	DMO Mem.	20+ yrs	Township DMO
10	M	Priv.	Vice Chair	20+ yrs	Trustee Board, Phaung Daw Oo Pagoda
11	M	Priv.	Farmer	40+ yrs	Floating Garden

### 3.3 Data Analysis

NVivo was used to manage and analyze the qualitative data systematically through open, axial, and selective coding. The analysis started with open coding to identify basic concepts, followed by axial coding to group them into broader categories, and selective coding to define the main themes. These themes were then organized using a SWOT framework, mapping the data into internal strengths and weaknesses, as well as external opportunities and threats[23]. Combining these methods is highly effective for capturing both policy and stakeholder perspectives. It also provides a practical foundation for applying the Social-Ecological System (SES) and Integrated Lake Basin Management (ILBM) theories to the research.

## IV. RESULTS

### 4.1 NVivo SWOT Coding Analysis

Thematic analysis of interviews and policy documents provides the picture of governance in Inle Lake. NVivo analysis shows that strengths were mentioned most often (66 times), suggesting consensus on the lake's key assets. There were also threats mentioned 31 times, weaknesses mentioned 21 times, and opportunities mentioned 20 times. Such a distribution implies that, despite the general public's awareness of the lake's resources, stakeholders remain more sensitive to environmental and governance risks than to development opportunities.

### 4.2 Detailed SWOT Findings

#### **Strengths: Socio-ecological Assets and Policy Foundations (66 references)**

There are also many social and ecological strengths to Inle Lake, such as its natural beauty, cultural heritage, and legal and institutional underpinnings. The lake was often seen by stakeholders as a unique natural and cultural heritage of the place; some of the attractions include the Intha leg-rowing tradition, tomato floating gardens, and dominant landmarks such as Phaung Daw Oo Pagoda.

These features are backed by strong institutions. Being a Biosphere Reserve by the United Nations and a Ramsar site, Inlay Lake is internationally recognized and has a well-defined and structured system for its conservation with a system of core zones, buffer zones, and transition zones. Tourism is well backed by a robust legal framework. The Myanmar Tourism Law (2018) and the Responsible Tourism Policy (2012) provide a legal foundation for enhanced local and community participation in tourism planning.

In addition to government initiatives, non-governmental organizations participate in responsible tourism. Local companies give priority to sustainability and employ more local residents, thereby decreasing environmental impact and increasing social benefits from tourism [24].

#### **Weaknesses: Resource and Administrative Constraints (21 references)**

Although these strengths, Inle Lake confronts major weaknesses, such as resource scarcity and limited administrative capacity. Institutional inadequacies are prevalent, with major challenges including insufficient government budgets, low staffing levels, and restricted enforcement powers among relevant agencies. These constraints are additionally worsened by substantial technical and data deficiencies. Stakeholders have identified a critical lack of technical capacity for effective lake management and an almost complete absence of evidence-based planning to guide decision-making[25].

These gaps result in inadequate information for well-informed management decisions. Governance is more hindered by the missing explicit land-use zoning and effective environmental monitoring mechanisms[3]. Lack of good data also results in decisions without factual bases and thus to opportunities for ineffective or harmful interventions.

#### **Opportunities: Collaboration and Market Niche (20 references)**

There are important opportunities for promoting sustainable tourism and conservation at Inle Lake, particularly the cooperation and development of niche markets. Stakeholders referred to community-based ecotourism (CBET) as a promising approach since it promotes a higher level of community participation and raises local interest in conservation activities. Additionally, CBET programs can help to offer financial incentives to residents to conserve the environment and to achieve better sustainable lifestyles.

International technical support is a great opportunity. Collaboration with organizations such as JICA and GIZ, enabling access to technical expertise, training, and environmental awareness programs and, subsequently, improvement in the capacity and quality of management. Inle Lake is also in a perfect location to gain advantages from niche tourism markets because of its international reputation and unique natural aspects. High-value, low-impact activities such as birdwatching and nature tourism can also generate income, but with low impact on the environment.

#### **Threats: Environmental Degradation and Systemic Risks (31 references)**

In spite of these opportunities, Inle Lake is confronted with growing vulnerability to major threats occasioned by environmental degradation and systemic risks. Additional ecological stressors include the mass application of agricultural fertilizers, the invasion of invasive water hyacinths, and the poor management of both solid and liquid waste, which contribute to the degradation of aquatic

ecosystems and their environment[3].

Sedimentation is an ever-greater concern. Water-side erosion, which is being attributed to deforestation in the surrounding watershed, has resulted in major soil loss. This process has led to declining water levels and the development of mudflats, making shipping difficult and putting traditional livelihoods at risk[26].

Financial forces that lead to short-term decision-making increase existing environmental problems. Because of the ups and downs of the economy, local farmers and communities are often more focused on short-term revenue from agriculture than on the long-range viability of the social-ecological system of the lake[27]. These are problems that adversely affect the integrity of the Lake's ecosystem and the sustainability of tourism and community prosperity.

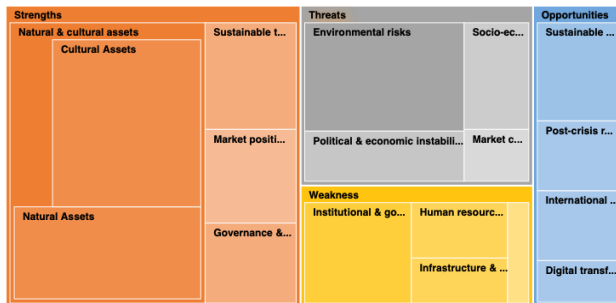


Diagram 4.1 NVivo coding result of stakeholder interviews

### 4.3 Mapping Findings to ILBM Governance Pillars

The results have been compared against the six ILBM pillars to identify gaps.

#### 1. Policy–implementation gap (policy and institutions)

The difference between the policy pillar and the institutional pillar is apparent: the former features one of the key strengths (66 references), while the latter features one of the weaknesses (21 references). Although the Myanmar Tourism Law (2018) and the Ecotourism Strategy (2015) provide an excellent legal framework, the lack of budget and staff to implement the law locally makes it difficult to do so.

#### 2. Knowledge and technical deficits (information and technology)

The information and technology pillars are poor. Decision-making is based on assumptions rather than on the scientific monitoring the Ramsar site should have. It is not helped by the fact that this problem is also threatened by sedimentation and chemical pollution (31 references), which demand technical measures that the local authorities have yet to develop.

#### 3. Social resilience and finance (participation and finance)

**Participation:** The pillar provides an opportunity. Engaging local communities in ecotourism can make conservation more financially attractive than short-term agricultural gains.

**Finance:** Stakeholders identified limited funding as the main weakness (21 references), which directly reduced local

authorities' ability to implement the tourism regulations. A lack of financial motivators leads to an emphasis on short-range economic needs rather than environmental protection [28]. The ILBM pillars are all supported by financial resources, as without sufficient funds, institutions cannot hire more employees, build information systems, or purchase water treatment and lake restoration technology.

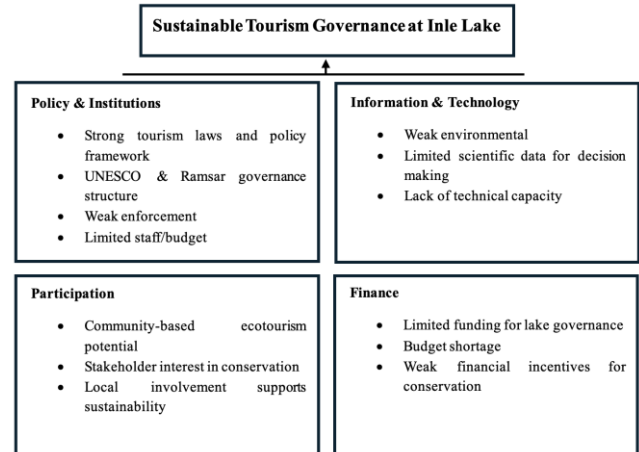


Diagram. 4.2 Mapping to ILBM governance pillars

## V. DISCUSSION

The implications for social studies highlight that governance at Inle Lake extends beyond formal policies to include local stakeholders' perceptions, interests, and experiences. Even though SWOT analysis demonstrates strengths as the most cited category, the prevalence of threats and weaknesses reveals that the stakeholders realize the tensions between tourism development and environmental protection and community welfare. This implies that sustainable tourism governance should not only be limited to any legal system or planning documents but also address the social reality of people, institutions, and tourism actors[14, 29].

The existence of a clear policy-practice gap is one of the key implications. The legal and policy frameworks in tourism and ecotourism are quite good, but implementation is constrained by low budgets, poor enforcement, poor staffing, and poor technical capacity. In social studies, this gap highlights the reliance of the performance of governance on institutional capacity and social coordination rather than on the process of policy formulation itself[30].

The stakeholder perceptions also suggest that the livelihoods of the people living in the community are closely related to the state of the lake ecosystem. The opportunities that have been found in community-based ecotourism and niche tourism represent the necessity of models of tourism that bring local benefits and facilitate conservation. It is significant to social studies in that the local people do not consider tourism as only an economic activity, but as a social and environmental system, which defines access to resources, employment, identity, and resilience.[14].

The analysis also assists in interpreting the governance

perceptions of the stakeholders. The data shows that local actors focus heavily on risks and limitations, rather than just looking at opportunities. This is important because it demonstrates that stakeholders do not just blindly accept policies; instead, they actively evaluate how their area is governed. By pointing out issues like weak enforcement, poor planning, and a lack of information, they provide practical insights that should guide future decisions. Ultimately, this finding supports the social science principle that effective governance requires local participation and values community knowledge as real evidence[14].

The findings demonstrate that Inle Lake operates as a social-ecological system, where human actions and environmental changes constantly impact one another. The primary threats identified in the data, such as sedimentation, agricultural runoff, waste mismanagement, and invasive species, are not just environmental problems. Rather, they are governance issues rooted in land use, resource competition, and weak institutions. Therefore, managing the lake effectively requires a comprehensive approach that aligns with the ILBM pillars: focusing on policy, institutions, information sharing, community participation, and funding. Finally, this highlights that ecosystem management is never just a technical task; it is fundamentally a social process shaped by power dynamics, cooperation, and shared responsibility.

Generally, the findings suggest that sustainable tourism management in Inle Lake should not just be reduced to preservation as a technical goal but rather be oriented to a more participatory approach that includes institutional reforms, community livelihoods, and ecosystem restoration. In this case, the convergence of governance failures, perception of stakeholders, and environmental pressures is evident in a complicated tourism setting. The study therefore contributes to a good contribution to appreciate sustainability not as a fixed policy outcome, but as a social process that is negotiated by institutions, communities, and ecological limitations.[14, 29, 30].

## VI. CONCLUSION

This study takes into consideration the issue of tourism governance in Inle Lake from the perspective of integrated Social-Ecological System and Ecosystem-Based Management. The results show that although Myanmar's tourism policies reflect a high level of commitment towards sustainability, this is limited by the lack of integration between institutions and governance structures.

These outcomes contribute towards a better understanding of tourism governance, which suggests that sustainable tourism performance cannot be determined solely by policy design, institutional coordination, stakeholder involvement, or adaptive governance systems in isolation[20, 31].

Enhancing ecosystem-based tourism management in Inle Lake requires improved cross-sectoral coordination, increased stakeholder participation, and strengthened environmental monitoring and evidence-based planning.

Combining ecological management with local livelihood strategies is likely to increase the long-term strength of both the lake and the tourism economy.

This study adds to the expanding body of research on sustainable tourism governance in developing economies. By combining qualitative methods with a policy-based SWOT analysis, the analysis delivers an in-depth understanding of opportunities that may support the sustained viability of tourism in Inle Lake. Future research needs to further examine stakeholder perceptions, the effectiveness of governing bodies, and environmental monitoring systems to strengthen evidence-based tourism policy and management in the region.

## ACKNOWLEDGMENT

This research was supported by the PSU-Graduate Scholarship Program in the Academic Year 2024, Graduate School, Prince of Songkla University, Hat Yai Campus, Thailand. Research ethics (IRB No.SCPHYLIRB-2568/919) approved by Sirindhorn College of Public Health, Yala.

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# Family Involvement in Preventing Digital Media Addiction in Early Childhood : An Integrative Literature Review and Conceptual Framework

Alan Sadeen<sup>1, a)</sup> and Abdullah Chelong<sup>1</sup>

Author Affiliations

<sup>1</sup>Faculty of Liberal Arts, Prince of Songkla University, Songkhla, 90110, Thailand

Author Emails

<sup>a)</sup>Corresponding author: sadeen2@gmail.com

**Abstract.** The increasing availability of digital technology has enabled young children to access digital media and electronic screens at progressively earlier ages. Although digital media can offer educational benefits, excessive or inappropriate use may lead to negative consequences for children's behavior, self-regulation, and developmental outcomes. Consequently, the role of the family has become increasingly important in guiding and managing children's media use. This study aimed to synthesize existing knowledge on family involvement in preventing digital media addiction among early childhood children and to develop an integrative conceptual framework that explains the relationships between family context, digital media management practices, and children's behavioral outcomes. An integrative literature review was conducted by systematically collecting, analyzing, and synthesizing empirical studies and academic publications related to early childhood digital media use, parental media mediation, and prevention strategies. The findings led to the development of an integrative framework consisting of four interrelated components: (1) family and community context, (2) family involvement in digital media management through rule-setting, active mediation, and co-viewing practices, (3) outcomes related to children's media use behavior and developmental processes, and (4) supportive factors from community and policy environments. The study provides a conceptual foundation for developing family-centered strategies and intervention programs aimed at preventing digital media addiction and promoting healthy digital media use among young children.

**Index Terms**— digital media addiction, early childhood, family involvement, parental mediation; integrative conceptual framework

## I. INTRODUCTION

The rapid proliferation of digital technology has significantly transformed the lifestyles of people across all age groups. Early childhood children, in particular, are growing up in environments where digital media and electronic screens are increasingly pervasive and often unavoidable. While early access to digital media can offer opportunities for learning through interactive and multimodal content, the absence of appropriate parental guidance and supervision may pose risks to children's behavioral development, learning processes, and self-regulation in the long term (Wartella et al., 2020). The World Health Organization (World Health Organization [WHO], 2019) recommends that children under the age of five should not exceed one hour of screen time per day. However, empirical evidence from several countries, including Thailand, indicates that many young children exceed this recommendation, with average daily screen time often surpassing three hours (National Statistical Office, 2022). This discrepancy highlights a critical gap between policy recommendations and actual family practices.

Existing literature suggests that excessive digital media use among young children is not solely attributable to individual behavior but is closely associated with family context and parenting practices. Factors such as the use of digital media as a convenient parenting tool, limited digital literacy within households, and a lack of alternative activities that promote interaction and shared learning have been identified as key contributors. (Livingstone & Blum-Ross, 2018) emphasize that families adopting active and positive mediation strategies such as co-viewing and guided interaction are more likely to foster meaningful media engagement and support children's cognitive and socio-emotional development. In contrast, predominantly restrictive approaches without explanation or parental involvement may be less effective in promoting sustainable and healthy media habits. These findings underscore the critical role of family involvement as a preventive mechanism in managing young children's digital media use.

Despite the growing body of international research, studies within the Thai context remain limited, particularly those that systematically integrate theoretical perspectives on family involvement, digital media management mechanisms, and early childhood developmental outcomes. Most existing studies tend to examine these dimensions in isolation rather than as

interconnected systems. This lack of integrative understanding constrains the development of effective prevention strategies and intervention programs, which often lack a clear conceptual foundation that reflects the socio-cultural realities of Thai families.

To address this gap, the present study proposes an integrative conceptual framework of family involvement in preventing digital media addiction in early childhood. By synthesizing relevant literature, theoretical perspectives, and empirical findings from both national and international sources, this study aims to explain the systemic relationships among family roles, digital media management mechanisms, and children's behavioral and developmental outcomes. In doing so, the study advances a more holistic understanding of how family-based processes can influence children's media use patterns in the digital era.

This article contributes to the literature in three main ways. First, from a theoretical perspective, it integrates concepts of family involvement, parental media mediation, and holistic child development into a unified and systematic conceptual framework. Second, from a practical perspective, it provides conceptual guidance for designing preventive programs and interventions aimed at reducing inappropriate digital media use among young children, particularly in ways that align with the context of Thai families and communities. Third, from a policy perspective, it supports the development of systematic and sustainable strategies to promote early childhood well-being in the digital age.

### Objective

To synthesize the key components and relationships of family involvement and digital media management in early childhood, and to develop an integrative conceptual framework for preventing digital media addiction among young children.

## II. LITERATURE REVIEW

The literature review in this study is conducted under the framework of an **integrative literature review**, which aims to collect, analyze, and synthesize knowledge from empirical studies, academic publications, and policy documents related to digital media use in early childhood, the role of families in guiding and regulating children's media use, and strategies for preventing digital media addiction. Relevant sources from both domestic and international contexts are included in the review.

This literature review does not merely summarize existing knowledge but emphasizes content analysis, conceptual comparison, and theoretical synthesis. The purpose is to integrate key theoretical perspectives and research findings into a systemic understanding that supports the development of an integrative conceptual framework for this study.

### 2.1 Concepts Related to Early Childhood and Digital Media

Early childhood is a developmental period characterized by rapid growth in physical, emotional, social, and cognitive domains, making children particularly sensitive to environmental influences, including digital media, which plays an increasingly prominent

role in their daily lives (Papalia & Martorell, 2021; WHO, 2019). Developmental theories suggest that children learn through sensory experiences, behavioral imitation, and social interaction. Digital media can function both as a learning tool and as a potential developmental risk if not managed appropriately (Hirsh-Pasek et al., 2015).

Key components of this perspective include:

- (1) learning through sensory experiences and direct engagement,
- (2) imitation of behaviors from role models,
- (3) social interaction and communication, and
- (4) maintaining a balance between media-related activities and real-life experiences.

This perspective assumes that appropriate digital media use can support learning among young children, whereas excessive use may lead to behavioral and developmental problems, including the risk of digital media addiction (American Academy of Pediatrics [AAP], 2016).

Previous studies have found that early childhood children spend several hours per day using digital media, and that parental supervision and regulation play a crucial role in reducing potential negative impacts (Radesky et al., 2016; Madigan et al., 2019). In the Thai context, research has shown that setting limits on screen time and selecting age-appropriate content can help reduce the risk of excessive media use among children (National Statistical Office of Thailand, 2022).

### 2.2 Concepts of Digital Media Addiction in Early Childhood

The concept of digital media addiction in early childhood refers to a condition in which children engage in excessive and persistent use of digital media that negatively affects their physical, emotional, social, and cognitive development. Such behaviors are understood as the result of interactions among the child, family environment, and the broader digital context (Domoff et al., 2019).

Key characteristics include:

- (1) excessive screen time beyond recommended limits,
- (2) preoccupation with digital media and limited self-control,
- (3) reduced social interaction, and
- (4) negative impacts on physical and psychological well-being.

These characteristics are consistent with the concept of Screen Dependency Disorder (SDD), which describes excessive reliance on screen-based media among young children (Park et al., 2018).

Empirical studies indicate that children who spend more than two to three hours per day on screens tend to demonstrate lower levels of attention and social skills and are more likely to exhibit behavioral problems (Madigan et al., 2019). At the same time, numerous studies emphasize the role of parents in establishing screen time limits, mediating media use, and engaging in high-quality interactions with children to reduce such risks (Nikken & Jansz, 2014).

### 2.3 Social Learning Theory of Albert Bandura

Albert Bandura’s Social Learning Theory explains that human behavior is learned through observation and imitation of models within social environments, even without direct personal experience (Bandura, 1986). The theory identifies four key processes involved in observational learning: attention, retention, reproduction, and motivation.

According to this theory, children can learn new behaviors by observing individuals they perceive as significant or influential. Research has shown that young children tend to imitate digital media use behaviors exhibited by parents as well as behaviors observed in digital media content (Lauricella et al., 2015).

### 2.4 Theories of Family Involvement in Guiding Children’s Digital Media Use

Parental Mediation Theory explains the role of parents in supervising, guiding, and regulating children’s media use through several key strategies, including **restrictive mediation**, **active mediation**, and **co-viewing** (Valkenburg et al., 2013).

A substantial body of research indicates that positive guidance, effective communication, and co-use of digital media between parents and children are important mechanisms for reducing risks associated with digital media use and for promoting children's learning (Livingstone et al., 2017). Furthermore, parental supervision and active involvement have been found to be associated with lower levels of risky behaviors and reduced excessive media use among children (Collier et al., 2016).

### 2.5 Digital Media Literacy

Digital media literacy refers to the ability to access, analyze, evaluate, and use media critically and responsibly (Hobbs, 2010). Its key components include access, analysis, evaluation, creation and communication, and responsible participation in digital society.

Several studies have indicated that parents with media literacy skills are able to effectively promote appropriate digital media use among children. Through guidance, communication, and proper supervision of media use, children can learn to engage with media critically, reduce their exposure to inappropriate content, and develop analytical thinking and decision-making skills (Buckingham, 2015).

In addition, research highlights that the role of parents as guides and regulators of children’s media use is crucial in shaping appropriate media behaviors. Parental involvement such as co-viewing media with children, discussing and explaining media content, and setting clear boundaries for media use can help reduce the risk of excessive media use and promote positive learning outcomes among children (Livingstone et al., 2017).

### 2.6 Concepts Related to Model Development

The concept of **Research and Development (R&D)** provides a systematic approach that integrates theoretical knowledge with practical implementation through stages of analysis, design, validation, experimentation, and refinement (Borg &

Gall, 2003; Creswell & Plano Clark, 2018).

The objective is to develop a model that is contextually appropriate, practically applicable, and capable of producing sustainable outcomes

This approach emphasizes the integration of theory and practice to achieve empirical change at individual, organizational, and community levels. The key stages include:

- (1) analyzing problems and needs of the target group
- (2) designing and developing a model based on relevant theoretical frameworks
- (3) validating the feasibility and appropriateness of the model
- (4) implementing and evaluating the model’s effectiveness and
- (5) refining the model prior to large-scale implementation.

Research on model development in educational and community contexts indicates that research and development (R&D) and design-based research approaches provide systematic frameworks for designing and refining practical models suitable for real-world applications. These approaches involve iterative cycles of design, implementation, evaluation, and revision, contributing to continuous improvement and contextual relevance (Borg & Gall, 2003; Reeves, 2006; Plomp, 2013).

Based on the review of concepts, theories, and related studies concerning early childhood, digital media use, digital media addiction behaviors, and the role of families—drawing from both national and international academic sources (Bandura, 1986; Valkenburg et al., 2013; Hobbs, 2010; WHO, 2019; Madigan et al., 2019) the researcher synthesized the key ideas and interrelationships among these concepts. This synthesis served as the foundation for constructing the research conceptual framework through an analytical approach to conceptual framework development, as presented in **Table 2.1**.

**Table 2.1** *Synthesis of Concepts and Theories Used in the Study*

No	Concept / Theory	Core Idea of the Concept	Key Variables / Components	Research Implications
1	Early Childhood and Digital Media Concept	Young children are particularly sensitive to the influence of digital media, which may affect multiple aspects of their development.	- Sensory-based learning - Behavioral imitation - Social interaction - Balance between media activities and real-life activities	Used as the foundation for defining the target population and explaining the relationship between digital media exposure and early childhood development.
2	Digital Media Addiction Behavior in Early Childhood	Excessive digital media use may affect children’s self-regulation, emotions, and behavioral development.	- Screen time duration - Media preoccupation - Self-regulation - Behavioral and health impacts	Used to define dependent variables and to guide the development of measurement tools for assessing digital media addiction behaviors in young children.

3	Social Learning Theory	Children's behaviors are acquired through observing and imitating role models in their social environment.	<ul style="list-style-type: none"> <li>- Attention</li> <li>- Retention</li> <li>- Behavioral imitation</li> <li>- Motivation</li> </ul>	Used to explain the mechanisms through which children imitate media use behaviors and to highlight the role of parents as behavioral models.
4	Family Involvement in Media Mediation Theory	Families play a crucial role in guiding and regulating children's media use.	<ul style="list-style-type: none"> <li>- Restrictive mediation</li> <li>- Active mediation</li> <li>- Co-viewing</li> </ul>	Used as the central framework for designing components of the family involvement model aimed at preventing digital media addiction.
5	Digital Media Literacy Concept	The ability to access, analyze, and use digital media critically and responsibly.	<ul style="list-style-type: none"> <li>- Access</li> <li>- Analysis and evaluation</li> <li>- Responsible use and media creation</li> </ul>	Used to guide strategies for strengthening parents' capacity to evaluate and supervise children's digital media use.
6	System-Based Model Development (R&D) Concept	Innovation development based on real-world data through systematic research and development processes.	<ul style="list-style-type: none"> <li>- Problem analysis</li> <li>- Model design</li> <li>- Model validation</li> <li>- Pilot testing and refinement</li> </ul>	Used as the methodological framework for developing a family involvement model suitable for the study context.

**Source:** Synthesized from concepts, theories, and related studies on early childhood development, digital media use and addiction, Social Learning Theory, family involvement, digital media literacy, and system-based model development. The synthesis was based on relevant documents and research from both national and international sources (Bandura, 1986; Bronfenbrenner, 1979; Livingstone & Helsper, 2010; WHO, 2019; Supang Chantavanich, 2018; Thai Health Promotion Foundation, 2021).

### Synthesis of Theoretical Perspectives and Development of the Integrative Conceptual Framework

Table 2.1 illustrates that the theoretical concepts and perspectives employed in this study are systematically interconnected. The synthesis begins with an understanding of early childhood developmental characteristics and the potential impacts of digital media exposure. This is followed by an explanation of digital media addiction behaviors, the mechanisms of social learning, and the role of families in guiding children's media use. These perspectives are integrated with the concepts of digital media literacy and system-based model development. The resulting synthesis serves as a foundation for constructing the research conceptual framework and for developing a systematic model of family involvement in preventing digital media addiction among young children.

### 2.7 Synthesis of the Integrative Conceptual Framework of Family Involvement in Preventing Digital Media Addiction in Early Childhood

Based on the synthesis of relevant concepts and theories, the relationships among factors influencing digital media use behavior in early childhood can be explained from a systemic perspective. Digital media addiction in young children does not emerge solely from individual characteristics of the child but rather results from interactions among developmental processes, social learning mechanisms, family roles, and the broader digital environment in which children live and learn.

At a fundamental level, early childhood represents a developmental stage characterized by rapid growth in physical, emotional, social, and cognitive domains. Children at this stage learn primarily through sensory experiences, behavioral imitation, and interactions with significant individuals in their environment. Digital media therefore can function both as a tool that supports learning and as a potential developmental risk factor when its use is not appropriately managed. Due to their developmental sensitivity, young children are particularly vulnerable to excessive media use and long-term dependence on digital devices.

From the perspective of digital media addiction behavior, several defining characteristics can be identified, including excessive screen time, compulsive media engagement, limited self-regulation, and reduced social interaction. These behavioral patterns may negatively influence children's emotional development, social competence, and learning processes. Consequently, digital media addiction should be viewed as a systemic issue closely associated with parenting practices and the home environment, rather than as an individual behavioral problem of the child alone.

Social Learning Theory provides an important explanation for how young children internalize and imitate media-related behaviors from close role models, particularly parents and family members. Parental media use behaviors therefore function as both stimuli and normative references that shape children's patterns of media engagement. This mechanism suggests that preventing digital media addiction cannot rely solely on controlling children's behavior but must also involve adjustments in parental practices and family roles.

From the perspective of family-based management, the concept of family involvement in digital media mediation proposes that effective parental guidance should include appropriate rule-setting, rational explanation and guidance, and interactive co-use of digital media. This perspective highlights that mediation strategies emphasizing positive relationships and shared learning experiences are more effective than purely authoritarian control. Such approaches help promote children's self-regulation skills and the development of critical and responsible media use.

In addition, the concept of digital media literacy plays a significant role as a supporting mechanism that enhances parents' capacity to evaluate digital content, understand potential impacts, and guide children's media use appropriately. The

development of digital media literacy within families is therefore an essential condition for reducing risks associated with digital media while promoting balanced and constructive media use for learning and development.

By integrating these theoretical perspectives, an integrative conceptual framework can be synthesized in which the prevention of digital media addiction in early childhood is centered on **family involvement as the core mechanism**. Within this framework, families play a proactive role in guiding, regulating, and shaping an appropriate digital media environment while considering children's developmental characteristics, social learning processes, and the enhancement of parental digital media literacy.

The integrative conceptual framework developed through this synthesis serves as the foundation for designing a model of family involvement aimed at preventing digital media addiction among young children. The model will be developed through a research and development process to ensure its suitability within the study context, its practical applicability, and its capacity to produce sustainable behavioral change at the levels of children, families, and communities.

These concepts provide the theoretical foundation for developing the conceptual framework of this study.

### III. METHODOLOGY

This study employed an **integrative literature review design** to develop a conceptual framework of family involvement in preventing digital media addiction in early childhood. The approach followed the guidelines proposed by (Whittemore & Knafl, 2005; Torraco, 2005)., enabling the synthesis of theoretical perspectives and empirical findings from diverse sources into a unified conceptual model. This study is **non-experimental and qualitative in nature**, focusing on conceptual development rather than numerical analysis.

The review process included problem identification, literature search, data evaluation, data analysis, and presentation, as recommended in integrative review methodology (Whittemore & Knafl, 2005).

#### 3.1 Data Sources and Search Strategy

Relevant studies were retrieved from major academic databases, including Scopus, Web of Science, ERIC, and Google Scholar. A systematic search strategy was applied using predefined keywords such as "digital media," "early childhood," "family involvement," and "parental mediation." Boolean operators (AND, OR) were used to refine the search and ensure comprehensive coverage of relevant literature.

#### 3.2 Inclusion Criteria and Selection Process

The inclusion criteria consisted of:

- (1) peer-reviewed journal articles,
- (2) empirical and theoretical studies related to early childhood and digital media use, and

- (3) studies addressing family roles or parental involvement in media management.

The study selection process followed systematic stages, including **identification, screening, eligibility, and inclusion**, to ensure transparency and rigor in the selection of relevant literature.

#### 3.3 Data Analysis and Synthesis

The selected studies were analyzed using **content analysis and thematic synthesis** (Braun & Clarke, 2006). Content analysis was used to extract key concepts, variables, and findings from the literature, while thematic synthesis was applied to identify patterns, relationships, and recurring themes across studies. These analytical processes enabled the integration of fragmented knowledge into a coherent conceptual structure.

#### 3.4 Conceptual Framework Development

The conceptual framework was developed through a systematic synthesis of the analyzed data. Key components and their interrelationships were identified, categorized, and organized into a structured model. The framework aims to explain the systemic relationships among contextual factors, family involvement mechanisms, and developmental outcomes in early childhood.

For clarity, the framework is organized into four interrelated components:

- (1) Family and Community Context (FCC)
- (2) Family Involvement in Digital Media Management (FIDM)
- (3) Expected Outcomes (EO) and
- (4) Supporting Factors (SF).

#### 3.5 Description of Framework Components

##### 3.5.1 Family and Community Context (FCC)

Family and community contexts represent foundational factors shaping parenting practices and children's digital media use behaviors. These include family structure, communication patterns, parental values and attitudes toward digital media, and broader socio-cultural influences such as community norms and support systems. These factors influence the level and effectiveness of family involvement.

##### 3.5.2 Family Involvement in Digital Media Management (FIDM)

Family involvement is the central mechanism of the framework, reflecting the proactive role of parents in guiding and regulating children's media use. This component includes three dimensions:

1. **Media mediation practices** (e.g., active mediation, restrictive mediation, and co-use),
2. **Home environment management** (e.g., screen time rules and provision of alternative activities), and

3. **Promotion of executive function (EF) and positive behavioral skills**, including self-regulation, problem-solving, and cognitive flexibility.

### 3.5.3 Expected Outcomes (EO)

Outcomes are categorized into child-level and family-level outcomes.

Child-level outcomes include appropriate media use behaviors, reduced risk of digital media addiction, and improved emotional, social, and executive function development.

Family-level outcomes include strengthened family relationships, increased awareness, and enhanced parental capacity for consistent media management.

### 3.5.4 Supporting Factors (SF)

Supporting factors enhance the sustainability and effectiveness of the framework. These include government policies, collaboration among families and educational institutions, and the involvement of community organizations and local support networks.

### 3.6 Systemic Relationships within the Conceptual Framework

The framework adopts a systemic perspective in explaining the relationships among components. Family and community context (FCC) influences family involvement (FIDM), which in turn shapes digital media management practices and leads to expected outcomes (EO). Supporting factors (SF) strengthen the implementation and sustainability of these processes.

Furthermore, positive outcomes generate a **feedback loop**, reinforcing family awareness and promoting sustained involvement in managing children’s digital media use. The relationships among these components are illustrated in Figure 1.

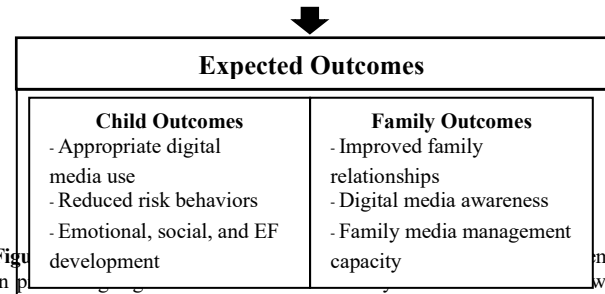
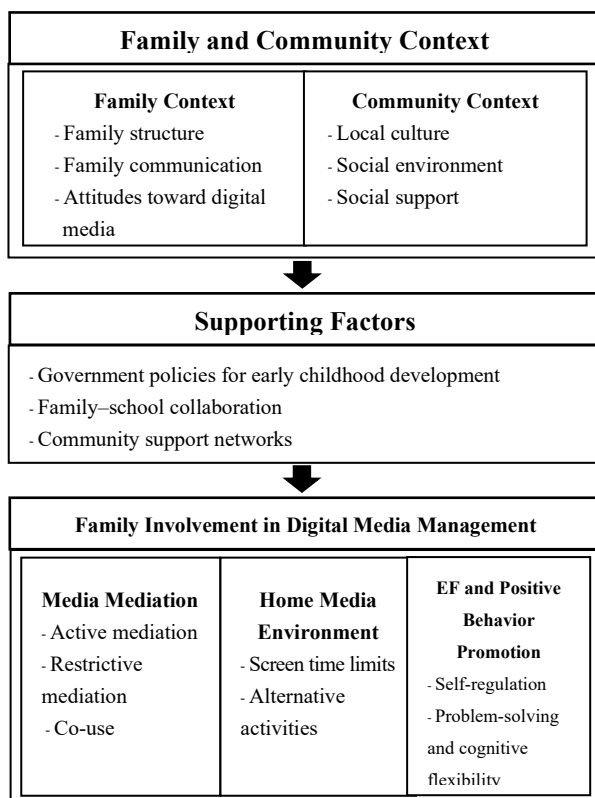


Figure 1 illustrates the systemic relationships among family and community contexts, family involvement in digital media management, children’s behavioral and developmental outcomes, and supporting factors. (Source: Alan Sadeen, 2025).

## IV. RESULTS AND DISCUSSION

The findings derived from the integrative literature review indicate that the prevention of digital media addiction in early childhood is a **multidimensional and systemic process**, consistent with the methodological approach of synthesizing theoretical and empirical evidence. Rather than relying on a single intervention, the results demonstrate that **family involvement functions as the central mechanism**, interacting dynamically with contextual and structural factors.

The developed conceptual framework integrates three key dimensions: antecedent conditions (family and community context), mediating processes (family involvement in digital media management), and developmental outcomes (children’s behavioral and developmental trajectories). This structure is consistent with ecological and developmental systems theories, which emphasize the interaction between individuals and their environments.

Importantly, the synthesis reveals that family involvement extends beyond controlling children’s screen time. In line with previous studies (Livingstone & Blum-Ross, 2018; Wartella et al., 2020), the findings highlight that **active parental engagement**, including co-use and guided interaction, contributes significantly to children’s cognitive development, self-regulation, and socio-emotional skills. This supports the argument that digital media use can be developmentally beneficial when mediated appropriately.

### 4.1 Family-Level Implications

At the family level, the results reinforce the role of parents as **primary agents of digital media regulation and learning facilitation**. The framework demonstrates that effective family involvement consists of three integrated practices: (1) active mediation, (2) structured home environment management, and (3) promotion of executive function (EF) skills.

Consistent with developmental psychology theories, early childhood is a critical period for developing self-regulation and cognitive flexibility. The findings suggest that families who provide structured routines, clear boundaries, and alternative non-digital activities can significantly reduce children’s dependence on screen-based media. Furthermore, parental

engagement in co-viewing and discussion enhances children's ability to critically process media content, aligning with constructivist learning perspectives.

#### 4.2 Educational and Community Implications

From an educational perspective, the findings suggest that early childhood education systems should integrate **digital literacy and parental engagement strategies** into their programs. Educational institutions can serve as key platforms for promoting awareness and providing guidance to parents on effective media mediation practices.

At the community level, the framework highlights the importance of **collaborative support systems**, including early childhood development centers, local organizations, and community networks. These entities can facilitate training programs, workshops, and shared learning activities that strengthen parental capacity and reduce children's excessive screen exposure.

The results are consistent with ecological systems theory (Bronfenbrenner), emphasizing that children's development is influenced not only by the family but also by broader social systems. Therefore, strengthening connections between families and community institutions is essential for sustainable outcomes.

#### 4.3 Policy Implications

At the policy level, the findings underscore the need for **integrated and context-sensitive policy interventions**. Policies should not focus solely on limiting screen time but also promote **family-based approaches** that support active parental involvement.

Practical policy measures may include the development of national guidelines on digital parenting, public awareness campaigns, and the promotion of community-based programs that encourage creative and interactive activities for young children. These strategies align with recommendations from international organizations such as (WHO, 2023) which emphasize balanced approaches to children's screen use.

Furthermore, the framework contributes to policy development by providing a **conceptual foundation** that links micro-level family practices with macro-level policy structures, enabling more coherent and sustainable intervention strategies.

#### 4.4 Implications for Research and Practice

The conceptual framework developed in this study provides a foundation for future **empirical and experimental research**. Researchers can apply the framework to design intervention programs, measurement tools, and longitudinal studies that examine the long-term effects of family involvement on children's digital media behaviors.

In practice, the framework can guide the development of **family-centered intervention programs**, such as parent training modules, community-based workshops, and early

childhood curricula that integrate digital media management with developmental goals.

A key contribution of this study is the identification of a **positive feedback loop**, where improved child outcomes reinforce parental awareness and sustained engagement. This mechanism highlights the potential for long-term behavioral change and sustainable prevention strategies.

#### 4.5 Limitations and Future Research

Despite its contributions, this study has several limitations. First, as an integrative literature review, the findings are based on synthesized evidence and do not include direct empirical validation. Second, variations in cultural, social, and policy contexts across the reviewed studies may affect the generalizability of the framework.

Future research should focus on **empirical testing and validation** of the proposed framework through experimental, quasi-experimental, or longitudinal designs. Studies conducted in real-world community settings, particularly within the Thai context, would be valuable in assessing the framework's applicability, effectiveness, and long-term sustainability.

### V. CONCLUSION AND RECOMMENDATIONS

#### Conclusion

This study aimed to synthesize theoretical and empirical knowledge on family involvement in preventing digital media addiction in early childhood through an integrative literature review. The findings resulted in the development of an integrative conceptual framework that explains the systemic relationships among family and community contexts, family involvement in digital media management, and children's behavioral and developmental outcomes.

The study confirms that digital media addiction in early childhood is a multifactorial and systemic issue rather than an individual problem. It arises from the interaction between children's developmental characteristics, family practices, and digital environments. Within this system, family involvement plays a central role as the primary mechanism for guiding appropriate media use and supporting children's holistic development.

From a theoretical perspective, this study contributes by integrating concepts of family involvement, parental mediation, and early childhood development into a unified framework. From a practical perspective, it highlights the importance of active parental engagement, structured home environments, and the promotion of executive function and positive behavioral skills as key elements for preventing excessive digital media use.

At the policy level, the findings emphasize the need for integrated support systems that enhance parental capacity and foster collaboration among families, educational institutions, and community organizations. These efforts are essential for ensuring sustainable and contextually appropriate

approaches to managing digital media use among young children.

## Recommendations

### 1. Practical and Policy Recommendations

Based on the proposed conceptual framework, several recommendations can be made across different levels.

At the family level, parents should adopt proactive and supportive roles in managing children's digital media use. Emphasis should be placed on positive mediation strategies, including setting age-appropriate guidelines, explaining media use rules, and engaging in meaningful co-use of digital media. Additionally, families should promote alternative activities such as play, reading, and social interaction to support balanced child development.

At the community and institutional levels, early childhood development centers and related organizations should design programs that strengthen collaboration between families and institutions. Parenting programs, shared guidelines on children's media use, and family-based activities can help reduce excessive screen time while enhancing family interaction and learning environments.

At the policy level, stakeholders should promote family-centered strategies through integrated support systems. Collaboration among educational institutions, public health agencies, and community organizations is essential for developing sustainable approaches to digital media management in early childhood.

### 2. Recommendations for Future Research

Future research should focus on empirically testing and refining the proposed conceptual framework through experimental studies or research-and-development approaches in real-world contexts. Such investigations would help assess the effectiveness, feasibility, and long-term sustainability of family-based interventions.

In addition, further studies should explore diverse socio-cultural and economic contexts to enhance the adaptability and generalizability of the framework. Longitudinal research is also recommended to examine the long-term impact of family involvement on children's media use behaviors and developmental outcomes.

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# Learning Management for Promoting Environmental Literacy among Youth: An Integrative Conceptual Review

Asfaronee Umar<sup>1,a)</sup> and Abdullah Chelong<sup>2</sup>

Author Affiliations

<sup>1</sup>Faculty of Liberal Arts, Prince of Songkla University, Songkhla, 90110, Thailand

Author Emails

<sup>a)</sup>Corresponding author: asfaronee.u@gmail.com

**Abstract.** One of the primary goals of contemporary education is to prepare individuals to become environmentally literate citizens. A major challenge in educational provision under the paradigm of future-oriented education and skills lies in identifying effective approaches to addressing environmental problems within the context of a world entering the era of “global boiling.” This article aims to synthesize relevant concepts, theories, and their interconnections concerning instructional approaches that promote environmental literacy among youth. The study employs a documentary research methodology. The synthesis led to the development of an integrated conceptual framework for instructional management, comprising three complementary learning approaches: (1) self-directed learning, as articulated by Gardner, which emphasizes learners’ ownership of their learning, intrinsic motivation, and lifelong learning capacity; (2) experiential learning, proposed by David A. Kolb, which highlights direct engagement, reflective observation, and systematic understanding; and (3) social learning theory, developed by Albert Bandura, which focuses on learning through observation, role modeling, and the development of self-efficacy. These learning approaches collectively contribute to fostering the three core dimensions of environmental literacy: (1) environmental knowledge, defined as an understanding of key ecological concepts and the interrelationships among beliefs, politics, and values; (2) environmental attitudes, encompassing the abilities to analyze, synthesize, and evaluate environmental issues; and (3) environmental behaviors, characterized by active participation in addressing environmental problems. This article offers a theoretical contribution by proposing an integrated conceptual framework that can serve as a foundation for future research design and the development of instructional practices aimed at sustainably enhancing environmental literacy among youth.

**Index Terms—** Environmental literacy, Self-directed learning, Experiential learning, Social learning

## I. INTRODUCTION

Environmental conditions and population dynamics are closely interrelated and mutually influential. In areas with high population density, there tends to be a negative relationship with the quality of natural resources and the environment (Hamzah, 2023). The Secretary-General of the United Nations, António Guterres, has declared that the world is entering the “global boiling” era, reflecting the continuous rise in global average temperatures and the increasing frequency of severe environmental disasters in many regions, such as heatwaves, wildfires, and marine animal strandings (World Meteorological Organization, 2022). The root causes of environmental problems at various levels are largely associated with human behavior. Therefore, modifying human behavior has become the ultimate goal of environmental education, which aims to cultivate citizens who demonstrate desirable environmental behaviors and possess a strong sense of environmental responsibility (Hungerford & Volk, 1990). This perspective is consistent with the framework proposed by the North American Association for Environmental Education (NAAEE, 2011) which emphasizes that pro-environmental

behavior is a key indicator of genuine environmental learning outcomes. However, environmental behavior is often difficult to change because such behaviors typically generate collective benefits for society while individuals may not receive direct personal benefits (Department of Environmental Quality Promotion, 2015). Many scholars have argued that environmentally responsible behavior has been the central objective of environmental education since the 1970s (Gough, 2013). Nevertheless, alternative perspectives suggest that environmental education can be approached through two primary pathways: behavior change and learner empowerment (Sterling, 2010). The empowerment approach is often associated with participatory and action-based learning methods, which are closely linked to the concept of environmental citizenship. In the context of Thailand, environmental education has been recognized as a significant objective within the national education system. This emphasis is reflected in the National Education Act B.E. 2543, which states that educational institutions must provide learners with knowledge and experiences enabling them to manage natural resources and the environment sustainably (Office of the Basic Education Commission, 2018).

A review of the literature indicates that factors

contributing to environmental problems are closely associated with the components of environmental literacy. Roth (1992) synthesized the concept of environmental literacy into four primary dimensions: knowledge, skills, affective aspects (including environmental sensitivity, values, and attitudes), and behavior. Environmental literacy should therefore be conceptualized in terms of observable behaviors that reflect individuals' understanding and engagement with environmental issues. In this regard, the researcher is interested in developing an environmental learning model for youth. One group that is often overlooked in addressing environmental challenges is young people—individuals who are growing into the primary driving force of society. Environmental responsibility should not be perceived as a concern that emerges only in adulthood; rather, it represents a foundational awareness that should be cultivated from an early age. Youth are not only future recipients of environmental consequences but also potential agents of change in the present.

Therefore, this study aims to propose an integrated conceptual framework of environmental literacy for youth through the synthesis of academic documents, theoretical perspectives, and related research from both domestic and international sources. The objective is to explain the interconnections among learning concepts that promote environmental literacy among youth and to provide a foundation for developing effective environmental learning approaches.

## II. OBJECTIVE

To synthesize the components of and connect the learning management concepts to promote environmental intelligence for young people

## III. LITERATURE REVIEW

This documentary research was conducted through a literature review, including research studies and academic articles, in order to examine the conceptual foundations underlying current environmental learning issues among youth. The study also synthesized relevant concepts, theories, and research related to environmental literacy that influence contemporary learning management models for youth. The key details are as follows:

### (1) Concepts and Theories Related to Environmental Learning

The concept of environmental literacy is considered to have one important goal: preparing the population to become environmentally literate citizens. One of the major challenges in education, according to the concepts of education and future skills for the year 2030, is the need to develop solutions to environmental problems, climate change, and the rapid depletion of natural resources (Organization for Economic Co-operation and Development, 2018). In this regard, science education and environmental education share a common objective: to educate and prepare learners to become responsible citizens (Volk, 1984).

Previous research by Sirada Naiphongsri (2023) studied the development of a non-formal education process to enhance environmental literacy, and found that the average level of environmental literacy increased. The study also emphasized that local context plays an important role, particularly in relation to the social context, values, and culture of specific communities. Similarly, Osuji, C. U., and Nwuke, T. J. (2024) found that promoting environmental literacy is not merely an educational initiative but also a key driving force for positive change. Investing in environmental literacy therefore serves as a foundation for empowering the younger generation.

### (2) Concepts and Theories Related to Learning Management Models

A learning management model refers to the fundamental concepts and principles of a learning approach that are designed to serve as a foundation for achieving clearly defined learning objectives. It involves selecting appropriate learning content that leads to the planning of learning activities emphasizing practice and learner participation. These activities are supported by a variety of instructional media and learning resources. The main mechanisms of a learning management model include: (1) Principles and Foundational Concepts (2) Goals and Objectives (3) Content and Learning Process (4) Instructional Management (5) Assessment and Evaluation. Learning theories are integrated into the learning management process in order to promote environmental literacy, including the following:

#### (2.1) Self-Directed Learning Theory

The concept of self-directed learning emphasizes that learners should take ownership of their own learning and be able to learn throughout their lives. Self-directed learning must arise from intrinsic motivation and personal responsibility. Most scholars emphasize the importance of continuous and lifelong learning, followed by the learner's responsibility for learning and the pursuit of knowledge independently (Gardner, 1992; Rogers, 1969; Overstreet, 1949; Faure et al., 1972; Guglielmino, 1977; Paitoon, 2009; Thongchan, 2008).

Previous studies have shown that Thammakun (2022) found that students had opportunities to exchange knowledge, interact within and between groups, practice teamwork, express opinions confidently, engage in discussions, and accept the opinions of others. Similarly, Towijit (2024) found that learners construct meaningful knowledge by themselves, enabling them to practice organizing their thinking, planning systematically, and developing problem-solving skills. This process also promotes systems thinking and positive attitudes toward environmental conservation. In addition, media and technology can support learners in developing the ability to learn independently.

#### (2.2) Experiential Learning Theory

Experiential learning refers to the process of learning through the construction of knowledge derived from experience. In this process, learners directly engage in experiences and then reflect critically in order to understand

the relationship between actions and their consequences, ultimately constructing knowledge that is meaningful to themselves and can be applied in new situations. Existing knowledge serves as a foundation for learning from new experiences, forming a continuous learning cycle. Effective learning requires motivation and active learner participation (Kolb & Kolb, 2009).

Previous research by Rittipakdee (2025) found that the development of 21st-century learning through community-based approaches emphasizes learning from real-life experiences within community contexts. This approach aims to develop knowledge and skills that can be applied to solving real social and environmental problems. The design of learning activities aligns with important competencies such as creative thinking, critical thinking, problem-solving skills, communication skills, and collaboration. Similarly, Bradberry and De Maio (2019) found that experiential learning enables learners to gain deep understanding of information, apply knowledge in real-world situations, and develop abilities in data analysis, information synthesis, and critical decision-making.

### (2.3) Social Learning Theory

Social Learning Theory explains the influence of personal experiences, the actions of others, and environmental factors on individual behavior. It also highlights the importance of social support, which can be developed through the cultivation of expectations, self-efficacy, and learning through observation and reinforcement (Bandura, 2004).

Previous studies have shown that Kongyungyuen (2022) found that youth learning through role modeling and collaborative group learning plays an important role in youth leadership development activities. Similarly, Koskela (2023) found that youth learning within the framework of sustainability transformation occurs through observation and interaction with both social and physical environments. In addition, youth who possess self-efficacy, or belief in their own capabilities (Ladd & Mize, cited in Sakol Woracharoensri, 2007), are more likely to engage in positive behavioral development. Research has shown that social learning theory, particularly through observation, role-playing, and peer group interaction, has strong influence on programs designed to develop life skills and social skills. As a result, many researchers widely apply social learning theory when designing programs for life skills development.

## IV. METHODOLOGY

### Research Methodology

This study employed a documentary research approach, drawing upon various concepts and theories to synthesize the components of an environmental literacy learning management model for youth. The research focused on two main areas of conceptual and theoretical foundations as follows:

(1) Concepts and theories related to environmental literacy, which were analyzed to synthesize the core components of environmental literacy.

(2) Concepts and theories related to learning management models, which were examined to synthesize the components

of learning management, including learning tools and learning processes.

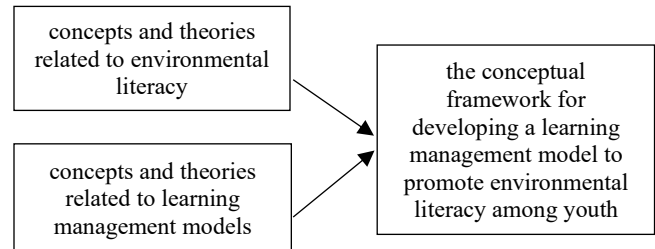


Fig. 1. the conceptual framework used to analyze and identify the components of an environmental literacy learning management model for youth.

### Data Analysis

Data were analyzed using secondary documentary sources. The selection of relevant documents followed specific criteria to ensure the quality and reliability of the data. These criteria included: (1) Authenticity – The documents must originate from credible and reliable sources and be accurate, complete, and consistent with the contextual conditions of the period in which they were published. (2) Credibility – The documents must be free from errors and distortions of information. (3) Representativeness – The documents must adequately represent the characteristics of similar types of documents and provide information that can serve as a representative description of the relevant population or body of literature. (4) Meaning – The documents must be clear, understandable, and relevant to the objectives and significance of the research. These criteria were adopted in accordance with the framework proposed by Mpho Mogalakwe (2006), which provides guidelines for evaluating the quality and suitability of documentary sources in qualitative research.

## V. RESULTS

Based on the review of concepts, theories, and related studies concerning environmental literacy learning management for youth, from both national and international academic sources, the researcher synthesized the key ideas and relationships among these concepts. These were used as the foundation for developing the research conceptual framework through analytical synthesis, as presented in Table 1.

N O .	Concepts and theories	Key components	implications for research
1	Environmental Literacy	1) Environmental Knowledge 2) Environmental Attitudes 3) Environmental Behaviors	These components are used to define the dependent variables and serve as the basis for developing an assessment instrument for evaluating environmental literacy among youth.
2	Self-Directed Learning	1) Serves as a guideline for assessing learners' basic skills 2) Helps identify learners' starting points	These principles are used to design environmental learning activities that promote self-directed

		3) Assists in selecting appropriate materials and learning media 4) Facilitates the evaluation process 5) Enables learners to learn according to their own abilities	learning, fostering intrinsic motivation and continuous lifelong learning.
3	Experiential Learning	1) Concrete Experience 2) Reflective Observation 3) Abstract Conceptualization 4) Active Experimentation	These are applied to connect knowledge with practical application in organizing environmental learning activities for youth.
4	Social Learning Theory	1) Learning through Observation 2) Internal Reinforcement 3) Behavior learned through Modeling	These concepts are used to explain the mechanisms of environmental behavior imitation and to design role-model-based environmental learning activities.

Table 1. Synthesis of Concepts and Theories Used in the Research

Based on the results of synthesizing relevant integrated concepts and theories and the development of the research framework in this study, it reflects that the development of environmental literacy among youth needs to be implemented in the form of a learning ecosystem. Such an ecosystem should be able to appropriately connect real-life experiences, social interactions, and continuous self-regulation. The integrated conceptual and theoretical framework developed in this study helps to illustrate the holistic causal relationships among the key components.

In the context of environmental problems in Thailand, the promotion of environmental literacy is highly necessary. Thailand is currently facing environmental challenges in many dimensions, including forest degradation, air pollution (particulate matter), solid waste management problems, and the impacts of climate change. These issues are interconnected with economic, social, and cultural factors. Moreover, the Thai education system still places strong emphasis on content-based knowledge transmission, while learning management aimed at developing systems thinking skills, participation in public issues, and environmental decision-making abilities has not yet been sufficiently emphasized. Therefore, the integrated conceptual framework plays an important role in transforming learning approaches from information acquisition toward the development of environmental citizenship. According to the study of Saowapong Yamaphat (2022), designing curricula or learning models that are appropriate to learners' developmental stages can enhance learning across multiple dimensions and provide broader access to learning opportunities for youth. Youth represent the population group with the greatest potential to drive change and address environmental problems, as these problems originate from human thoughts, behaviors, and ways of life.

From the synthesis of relevant integrated concepts and theories, it can be stated that the development of environmental literacy is not merely the result of knowledge transmission. Rather, it is a process of behavioral

transformation that requires direct experiences, social interactions, and individual self-regulation. The integration of these three theories therefore connects the cognitive domain, the affective domain (emotions and values), and the behavioral domain in a systematic manner. This integration aims to develop environmentally responsible youth who are capable of making critical and informed decisions in the context of highly complex environmental problems, while also promoting sustainable environmental participation.

The self-directed learning theory proposed by Knowles (1975) emphasizes that learners should play an active role in setting learning goals, planning, implementing, and evaluating their own learning processes. This process helps strengthen personal responsibility and a sense of ownership of learning. In the context of environmental education, providing opportunities for youth to design their own conservation projects or environmental activities can foster a stronger connection with environmental issues and promote sustainable behavioral change.

The experiential learning theory of Kolb (1984) suggests that learning occurs through a four-stage cycle: (1) Concrete Experience (2) Reflective Observation (3) Abstract Conceptualization (4) Active Experimentation. This process reflects the continuous and dynamic nature of learning. In developing environmental literacy, youth need to encounter environmental problems within the real contexts of their communities in order to develop systemic understanding and connect knowledge with practical action. Therefore, organizing learning activities that emphasize exploration, analysis, and reflection on environmental problems is an important mechanism for fostering meaningful learning.

Social Learning Theory proposed by Bandura (1977, 1986) suggests that human behavior results from the interaction among personal factors, behavior, and the environment, a concept known as Reciprocal Determinism. The learning process occurs through observational learning and social reinforcement. The concept of self-efficacy plays an important role in determining whether individuals decide to take action. If youth believe that they have the capability to solve environmental problems, they are more likely to demonstrate environmentally responsible behaviors. Therefore, organizing activities that allow youth to work collaboratively, exchange ideas, and observe positive behavioral role models can strengthen their confidence and motivation to change their behaviors.

## VI. CONCLUSION AND DISCUSSION

The results of synthesizing relevant integrated concepts and theories and developing the research framework in this study indicate that the development of environmental literacy among youth can be effectively promoted through the integration of learning theories. Learning management designed to enhance environmental literacy among youth is based on the concept of environmental literacy, which consists of three components: (1) Environmental knowledge (2) Environmental attitudes (3) Environmental behaviors, according to the concept proposed by Roth (1992), individuals with environmental literacy should be able to

connect knowledge, values, and decision-making with responsible action. This can be achieved through the integration of the following theories (1) Self-Directed Learning Theory (Knowles, 1975) emphasizes providing learners with opportunities to take an active role in designing their own learning based on their local context. This approach helps develop personal responsibility, promotes the sustainability of behavioral change, and enables learners to connect their values with real-life practices. (2) Experiential Learning Theory (Kolb, 1984) suggests that learning management should be developed into a learning ecosystem that connects schools, communities, society, and real environmental problem contexts. Community-based learning should be implemented to allow stakeholders to participate in designing learning activities aimed at solving local environmental problems. Youth should be exposed to real-world issues in order to develop knowledge and analytical skills, as well as enhance their ability to make rational decisions. (3) Social Learning Theory (Bandura, 1977) promotes teamwork, knowledge sharing, the use of role models for positive reinforcement, and social reinforcement mechanisms. This approach contributes to the development of attitudes and motivation, strengthens self-efficacy, and supports sustainable behavioral change.

Limitations of the Article for Practical Application in Thai Society, Although the synthesis of integrated concepts and theories in this study provides clear theoretical explanations and systematically describes the learning process, several limitations remain. These include issues related to cultural congruence with Thai learning contexts, differences in community and social contexts, and measurement and evaluation methods. Furthermore, this study relied on an integrative literature review, and therefore the proposed framework has not yet been empirically tested in practice. Future research should apply and further develop this framework through experimental studies conducted within real community contexts. Such studies would help verify the effectiveness of the framework and its ability to sustainably enhance environmental literacy among youth.

## VII. RECOMMENDATIONS

**Recommendations for Community Development and Policy Formulation:** The community should not be viewed merely as a context for learning, but as a key mechanism in developing environmental literacy among youth. This development requires engagement with real environmental problems within local areas, as well as the presence of role models and social networks. Therefore, educational policies should support collaboration among educational institutions, local administrative organizations, and civil society sectors in order to develop practice-based learning environments that allow youth to engage directly with environmental issues.

**Recommendations for Research and Practical Application:** This conceptual framework can be applied to develop learning activities aimed at examining the relationships between learning components and environmental behaviors. Future research should apply this framework through experimental research or action research

within real community contexts in order to evaluate the effectiveness of learning management models designed to promote environmental literacy among youth. Furthermore, this model is consistent with the principles of sustainable development, particularly in relation to quality education and climate change action. Educational and environmental policy formulation should therefore emphasize the development of systems thinking competencies and long-term responsibility, rather than focusing solely on short-term quantitative achievements.

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# The Use of Web-Based Interactive Role-Play in a Flipped Classroom to Enhance Students' Speaking Ability: A Case Study of KMITL-Chumphon

Yenying Chongchit<sup>1,a)</sup>, Naphasrapee Sittiwatjana<sup>2</sup>, Raymund Palayon<sup>1,b)</sup>  
and Naruethai Chanthap<sup>1</sup>

## Author Affiliations

<sup>1</sup> Department of General Science, King Mongkut's Institute of Technology Ladkrabang, Prince of Chumphon Campus, Chumphon, 86160, Thailand

<sup>2</sup> Department of Information Engineering, King Mongkut's Institute of Technology Ladkrabang, Prince of Chumphon Campus

## Author Emails

<sup>a)</sup>Corresponding author: [yenying.ch@kmitl.ac.th](mailto:yenying.ch@kmitl.ac.th)

<sup>b)</sup>[raymund.pa@kmitl.ac.th](mailto:raymund.pa@kmitl.ac.th)

**Abstract.** This case study examines the impact of a web-based interactive role-play application in a flipped classroom on the English oral proficiency of students at KMITL, Prince of Chumphon Campus. The study involved 15 randomly selected students enrolled in an “English for Tourism” course during the first semester of 2025. A pre-test and post-test design was employed to assess students’ oral proficiency across five situational modules: Airport, Recreational Activities, Tourist, Shopping, and Restaurant. Students were evaluated on speech organization, wording, and delivery through recorded performances. The results show that a flipped classroom supported by a web-based application improved students’ tourism-specific English proficiency. The integration of digital role-play activities helped reduce performance anxiety and provided a stronger linguistic foundation. In addition, the difference between automated and teacher assessments was minimal (0.33%), indicating high scoring reliability. However, qualitative findings suggest that students still experience difficulties in structural organization and precise wording. The study concludes that while web-based interactive role-play is effective in improving delivery, it should be complemented with targeted instruction in speech structure and vocabulary to further enhance learning outcomes.

**Index Terms**— CALL model, flipped classroom, English Language Skills, Web Application, Tourism English

## I. INTRODUCTION

English has solidified its role as the predominant global medium for international discourse, contemporary pedagogy, and the dissemination of scholarly knowledge [3, 6]. Within higher education, students must attain high levels of linguistic proficiency to engage with peer-reviewed research and international academic forums [9]. Despite these requirements, empirical observations at King Mongkut's Institute of Technology Ladkrabang, Prince of Chumphon Campus (KMITL-Chumphon), indicate that “English for Tourism” students often demonstrate restricted competence in grammatical structures, listening, and speaking. These challenges are particularly significant in tourism contexts, where effective oral communication is essential. To address these needs, this study examines a web-based interactive role-play application developed as a remedial tool for the curriculum.

The synergy between Computer-Assisted Language Learning (CALL)—defined as the systematic study and application of computer technologies to improve language

acquisition [13]—and the Flipped Classroom Model (FCM)—a pedagogical framework that inverts the conventional instructional sequence by shifting direct teaching to the student’s individual learning space [8]—has been widely recognized as an effective approach to language learning [1,11]. This transition allows active, participatory tasks, previously assigned as independent homework, to be integrated into a collaborative classroom environment. Previous studies have shown that these approaches can enhance learner engagement, autonomy, and overall proficiency. However, many of these studies focus primarily on general English learning and give limited attention to context-specific communication, such as tourism-related interaction.

Historically, CALL has evolved from basic structural drills to an integrative approach that fosters authentic communication across multiple skills [2, 4]. By relocating lectures to an electronic format accessible outside of class, this model enables students to individualize their

learning pace and fosters autonomy through unlimited access to materials [5]. Consequently, the classroom is transformed into a dynamic environment dedicated to high-level communicative activities, such as collaborative debates and role-plays [11], which has been shown to enhance self-regulated learning and overall proficiency [8]. Nevertheless, previous research has given limited attention to the integration of web-based interactive role-play applications that simulate real-life professional contexts and support both learning and assessment.

The platform developed for this study organizes content into five units specifically tailored to the tourism context of Chumphon: 1) The Airport, 2) Recreational Activities, 3) Tourist Attractions, 4) Shopping for Souvenirs, and 5) Restaurants [7]. Each unit follows a structured pedagogical path: Presentation (students acquire key vocabulary and listen to model conversations), Practice (students engage in interactive question-and-answer activities and simulated conversations), and Production (students produce spoken responses to simulate real-world interactions).

Despite the increasing use of CALL and flipped classroom approaches, there remains a lack of research examining how web-based interactive role-play applications can support the development of tourism-specific speaking skills in authentic contexts. In particular, limited attention has been given to how such tools contribute to both measurable speaking performance and assessment reliability. By analyzing the system's database—specifically the frequency of practice attempts and the accuracy of responses—this study demonstrates how the platform effectively accommodates the specific learning needs of English for Specific Purposes (ESP) students. Furthermore, by incorporating evaluations from face-to-face classroom interactions, this research investigates measurable improvements in students' speaking proficiency, thereby addressing the gap between digital practice and real-world communication performance.

## OBJECTIVES

The primary objectives of this study are as follows:

- 1) To evaluate the improvement in students' speaking ability across five situational tourism modules after utilizing a web-based interactive role-play platform
- 2) To validate the reliability of the web application as an assessment tool by comparing automated digital scores with expert teacher evaluations

- 3) To identify the qualitative learning outcomes and challenges regarding speech organization, wording, and delivery within a flipped classroom framework

## II. METHODOLOGY

The methodology of this study is structured into three primary phases: (1) the pedagogical procedure utilizing the flipped classroom model and the data tracking mechanism via the backend database, (2) the face-to-face interaction phase, which provides opportunities for teacher–student interaction based on the online platform, and (3) data synthesis and validation. The research was conducted over a four-month period, during which a dedicated web-based interactive role-play application served as the primary instructional tool. By shifting content delivery to a digital platform, the model allows classroom time to be dedicated to high-level interpersonal interaction.

The study involved 15 students enrolled in an “English for Tourism” course. While this sample size allows for in-depth analysis, it may limit the generalizability of the findings.

This study is guided by three research questions: (1) To what extent does the web-based interactive role-play application improve students' oral proficiency? (2) What is the degree of consistency between automated system scoring and teacher assessment? and (3) What are the specific linguistic strengths and limitations experienced by students within a flipped classroom context?

### 3.1 Digital Learning Phase

The instructional procedure follows a sequential learning cycle designed to build a strong linguistic foundation before face-to-face simulation:

**3.1.1 Pre-test Phase:** Students first complete a 20-item multiple-choice assessment on the website to establish a baseline proficiency level. This phase provides baseline data for addressing Research Question 1.

**3.1.2 Sequential Learning Cycles:** Learners engage with five tourism-specific units—Airport, Recreational Activities, Tourist Attractions, Shopping, and Restaurant.

**3.1.3 The PPP Framework:** This framework consists of three sequential stages designed to facilitate language learning as follows:

- **Presentation:** Students focus on vocabulary acquisition and listening to model conversations.
- **Practice:** Interactive role-play is conducted with a virtual partner, allowing students to choose roles such as "employee" or "tourist".

- **Production:** Students record vocal responses to system-generated questions to evaluate their oral proficiency.

The design of these activities reflects real-life tourism communication scenarios, supporting the validity of the instrument in measuring context-specific speaking ability.

### 3.2 Face-to-Face Interaction Phase

Following the digital production stage, the teacher conducts live performance assessments to capture nuanced communicative behaviors that automated systems may overlook. Student performance is measured using a standardized rubric centered on three linguistic pillars:

- Speech Organization
- Wording (Lexical and Grammatical Precision)
- Delivery (Fluency and Phonology)

This phase provides data to address Research Questions 1 and 3, particularly in identifying students' strengths and limitations in real-world communication.

To ensure reliability, both automated system scoring and teacher evaluation were based on the same assessment criteria. The consistency between these two measures supports the reliability of the instrument. In addition, the use of a standardized rubric enhances scoring consistency across evaluations.

### 3.3 Data Synthesis and Validation

In the final phase, the researcher cross-references the quantitative scores generated by the web application's backend with the qualitative assessments provided by the teacher. This comparison directly addresses Research Question 2 by examining the correlation between automated and human evaluation.

By synthesizing digital tracking data with expert human observation, the study constructs a holistic profile of each student's speaking proficiency and development over the four-month duration. This triangulation of data sources further strengthens the validity of the findings by providing multiple perspectives on student performance.

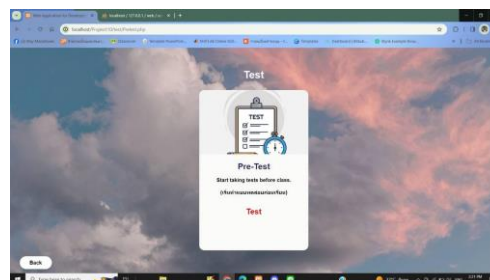


Figure 1 Pre-test Phase

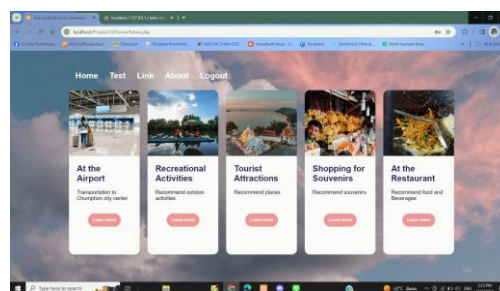


Figure 2 The five tourism-specific units

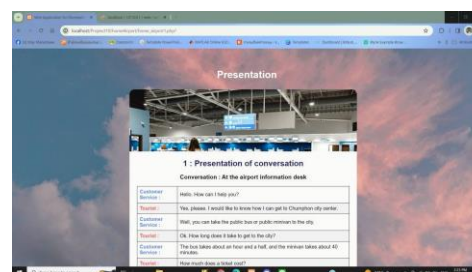


Figure 3 The presentation of conversation based on the unit

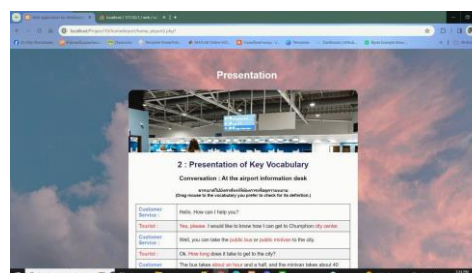


Figure 4 The presentation of Key Vocabulary based on the unit

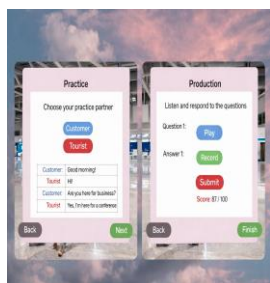


Figure 5 The practice of an interactive roleplay with a virtual partner



Figure 6 Speaking Test where students recorded the response

### III. RESULTS AND DISCUSSION

The experimental results focus on the technical reliability of the data retention system and the pedagogical impact on student performance during the four-month study period. The findings indicate a high level of consistency between automated and teacher-based assessments, as well as measurable improvement in students' speaking proficiency.

#### 4.1 Correlation between Automated and Teacher Assessment

The results show a high level of agreement between the two assessment methods. The difference between the digital score (73.00%) and the teacher's evaluation (72.67%) is only 0.33%, indicating strong consistency.

**Table 1. Summary of Assessment Results**

Sample Size (n)	15 students
Digital Proficiency ( $\bar{x}$ web)	73.00%
Teacher Assessment ( $\bar{x}$ teacher)	72.67%
Difference	0.33%

This small difference suggests that the web-based interactive role-play application provides a reliable estimate of students' speaking performance in face-to-face contexts.

#### 4.2 Validation of Learning Outcomes

The findings indicate that the linguistic foundation developed during the digital Practice and Production phases transferred to classroom performance, as reflected in teacher evaluations. This suggests that the flipped classroom model, supported by a web-based application, contributes to the development of tourism-specific English proficiency.

Qualitative observations further reveal that students demonstrated increased confidence and fluency during spoken interaction. The use of digital role-play prior to classroom activities allowed students to engage in repeated practice, which helped reduce performance anxiety and strengthen their linguistic preparation.

#### 4.3 Linguistic Strengths and Limitations

While students showed notable improvement in delivery, particularly in fluency and confidence, they continued to experience challenges in speech organization and grammatical wording. This suggests that the digital platform is effective in supporting communicative fluency but less effective in developing structural accuracy.

#### 4.4 Discussion

The findings of this study are consistent with previous research on Computer-Assisted Language Learning (CALL) and flipped classroom approaches, which have been shown to enhance learner engagement, autonomy, and language performance. Similar to earlier studies, the present findings indicate that digital learning environments provide opportunities for repeated practice, leading to improvements in speaking fluency.

However, unlike many previous studies that focus on general English proficiency, this study highlights the importance of context-specific communication, particularly in tourism-related interactions. The use of interactive role-play in realistic scenarios appears to support the development of practical communicative skills required in professional contexts.

From a theoretical perspective, the findings can be explained through the principles of the flipped classroom model and CALL. The flipped classroom allows students to engage with learning materials independently before class, which supports cognitive preparation and reduces anxiety during in-class interaction. This may explain the observed improvement in students' confidence and delivery.

In addition, CALL environments provide immediate feedback and opportunities for repeated practice, which are essential for language acquisition. The integration of interactive role-play further supports communicative language learning by simulating authentic situations, enabling learners to develop fluency and pragmatic competence.

Despite these positive outcomes, the findings also indicate that technology alone is not sufficient to address all aspects of language development. While students improved in delivery, their difficulties in organization and grammatical accuracy suggest the continued importance of teacher guidance. This aligns with previous research emphasizing

the role of instructor feedback in developing higher-level linguistic competence.

It should also be noted that the relatively small sample size ( $n = 15$ ) may limit the generalizability of the findings. Future research with larger samples is recommended to further validate these results.

#### IV. CONCLUSION

This study demonstrates that a flipped classroom model, supported by a specialized web-based interactive role-play application, can enhance the speaking proficiency of English learners in a tourism context. Over the four-month study period, the sequential transition from digital vocabulary acquisition to virtual role-play, and finally to live classroom interaction, provided an effective pedagogical framework for developing students' speaking ability.

A primary finding of this research is that the model helps reduce performance anxiety among students. By allowing learners to record and re-record their responses during the digital production phase, they developed the confidence necessary to engage in face-to-face simulations. Furthermore, the minimal 0.33% difference between the automated system scores (73.00%) and teacher evaluations (72.67%) indicates that the web application provides a reliable measure of students' speaking performance.

Overall, the findings suggest that the model effectively bridges the gap between digital practice and authentic communication, supporting both skill development and assessment in a flipped classroom environment.

From a practical perspective, this study offers several implications for teaching and learning. First, teachers can integrate web-based interactive role-play activities into their courses to provide students with additional speaking practice outside the classroom. Second, the flipped classroom approach allows instructors to use class time more effectively for communicative activities, such as simulations and role-plays, rather than direct instruction. Third, the use of automated assessment tools can support teachers in monitoring student progress and providing timely feedback. However, teachers should complement these tools with explicit instruction and feedback, particularly in areas such as speech organization and grammatical accuracy.

#### 5.1 Limitations

While the web-based role-play application proved effective in improving delivery and confidence, qualitative analysis indicates that students still face challenges with speech organization and grammatical accuracy. Consequently, digital role-play is most effective when integrated with targeted instructor support.

In addition, the relatively small sample size ( $n = 15$ ) may limit the generalizability of the findings. Future studies with larger and more diverse samples are recommended.

#### 5.2 Recommendations for Future Research

To build upon these findings, the following recommendations are proposed:

**5.2.1 Pedagogical Implementation:** Teachers should design more interactive role-play scenarios that require students to shift roles dynamically, fostering greater speaking confidence and conversational flexibility.

**5.2.2 Technical Enhancements:** Web developers should integrate automated phonetic and grammatical feedback into the production phase to help students identify and correct errors before participating in live simulations.

**5.2.3 Engagement:** Gamification elements should be incorporated into the digital platform to further enhance student motivation and engagement.

This study contributes to the field of technology-enhanced language learning by demonstrating how web-based role-play and flipped classroom pedagogy can be effectively applied in English for Specific Purposes (ESP) contexts, particularly in tourism education.

#### ACKNOWLEDGMENT

The author would like to express sincere gratitude for the invaluable academic guidance and constructive feedback provided by the advisors and reviewers. Specially thanks to the funding as this work was financially supported by King Mongkut's Institute of Technology Ladkrabang [grant number KREF186325].

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# A Documentary Synthesis of Contemporary Art Learning and Action Research in Community Product Creation

Tidarat Nakbut<sup>1,a)</sup>, Punya Tepsing<sup>1,b)</sup>, and Sakawrat Boonwanno<sup>1,c)</sup>

## Author Affiliations

<sup>1</sup>Faculty of Liberal Arts, Prince of Songkla University, Songkhlam, 90110, Thailand

## Author Emails

<sup>a)</sup>Corresponding author: 6711130008@psu.ac.th

<sup>b)</sup>punya.t@psu.ac.th

<sup>c)</sup>sakawrat.b@psu.ac.th

**Abstract.** This documentary research aims to synthesize concepts, theories, and related studies on contemporary art learning and action research in the creation of community products. The study examines the role of contemporary art as a social learning process that connects artists, communities, and researchers. The research employed a documentary analysis method by reviewing academic documents, books, research articles, and related reports. The documents were selected based on relevance, academic credibility, and publication scope, and were analyzed using content analysis and thematic synthesis to develop a conceptual framework for contemporary art learning programs in community contexts. The findings reveal that contemporary art has expanded its role from producing aesthetic value to functioning as a process of learning, communication, and social practice that supports community development. The integration of contemporary art with action research provides opportunities for collaborative learning, creative experimentation, and reflective practices among participants. The synthesized results indicate that contemporary art learning for community product development consists of three key components: (1) participation of artists, community members, and researchers throughout the process; (2) a creative learning environment that encourages experimentation, knowledge exchange, and reflection grounded in cultural contexts; and (3) learning outcomes that lead to the creation of community products reflecting local identity and enhancing community capacity. These findings suggest that contemporary art can serve as a significant tool for social learning development and provide a foundation for designing learning programs that integrate cultural, economic, and community capacity-building dimensions.

**Index Terms**—Contemporary Art, Action Research, Social Learning, Community Product

## I. INTRODUCTION

Over the past several decades, the concept of contemporary art has evolved and expanded its role from merely producing artworks for aesthetic value to becoming an important tool for learning, communication, and social interaction. Contemporary art is no longer confined to the spaces of museums, galleries, or exhibition venues; instead, it has increasingly expanded into social spaces and the everyday lives of people. As a result, many contemporary artists have begun to engage with social, cultural, and community-related issues, emphasizing participatory processes and creating spaces for knowledge exchange among artists, communities, and other stakeholders in diverse contexts.

This perspective has led contemporary art to function as a social learning space, where individuals can exchange experiences, ideas, and diverse perspectives through creative processes. In this sense, art does not merely serve as a medium for aesthetic expression or the communication of ideas, but also as a process that stimulates questioning, reflection, and deeper understanding of complex social and cultural issues. Artistic practices of this nature are often manifested in forms

such as community-based art or participatory art, which emphasize collaborative learning processes between artists and communities within real-life contexts.

At the same time, contemporary approaches to community development have increasingly emphasized the use of cultural capital and local wisdom as fundamental resources for economic and social development. This is particularly evident within the context of the creative economy, which focuses on utilizing knowledge, culture, and creativity to generate added value for community products and services. In this context, community product development is not merely a process of producing goods for commercial purposes, but also a process that reflects cultural identity, local knowledge, and the ways of life of people within specific communities. The creation of distinctive community products therefore has the potential to become an important mechanism for strengthening community capacity in economic, social, and cultural dimensions.

However, previous studies have indicated that community product development in many areas still tends to rely primarily on the transfer of technical knowledge from experts to local communities. Such processes often take the form of training

programs or design and production consultations. Although these approaches can enhance the technical skills of community producers to some extent, they often have limitations in terms of creating opportunities for communities to actively participate in analyzing, reflecting, and co-creating knowledge. Consequently, development processes that rely predominantly on one-way knowledge transfer may not effectively promote deep learning or sustainable community capacity development in the long term.

In this context, the concept of Action Research has gained attention as an important approach for fostering collaborative learning among researchers, artists, and communities. Action research emphasizes the active participation of stakeholders throughout the research process, including situation analysis, problem identification, experimentation with possible solutions, reflection, and the collective development of knowledge. Through this process, research becomes not only a means of studying phenomena from an external perspective but also a process that facilitates change and learning within communities.

When the concept of action research is connected with contemporary art learning, it becomes evident that both approaches share common characteristics, particularly their emphasis on learning processes, participation, and creative experimentation. Contemporary art can serve as a tool for opening spaces where individuals can explore their own experiences, question social and cultural contexts, and collaboratively develop new ideas through creative practices. Meanwhile, action research supports these processes by providing a systematic framework that enables such collaborative learning to lead to the development of knowledge and practices that are appropriate to the specific context of the community.

Based on these perspectives, the researcher is interested in applying contemporary art learning processes in combination with action research to create community products that reflect cultural identity and the potential of local contexts. This learning approach does not focus solely on the final outcome in the form of products, but also emphasizes the processes of learning, knowledge exchange, and capacity development among community members through creative activities.

Therefore, this study synthesizes concepts, theories, and related research on contemporary art learning and action research in order to develop a conceptual framework for designing contemporary art learning programs aimed at community product creation. The framework emphasizes the integration of creative learning processes, community participation, and the development of products that reflect cultural identity within the context of the creative economy. The conceptual framework derived from this synthesis can serve as a foundation for designing contemporary art learning programs in community settings, thereby promoting systematic learning, creativity, and community capacity development.

Despite the growing body of literature on contemporary art and community development, previous studies have

primarily focused on either artistic practices or community product development separately. Limited attention has been given to the integration of contemporary art learning with action research as a systematic approach to developing community products. Therefore, there remains a gap in synthesizing conceptual frameworks that connect these dimensions within a coherent learning process.

#### Objective

To synthesize concepts, theories, and related research on contemporary art learning and action research in the creation of community products in order to develop a conceptual framework for designing contemporary art learning programs in community contexts.

### Literature Review

This documentary research was conducted through a review of relevant literature, including books, research studies, and academic articles. The purpose was to examine concepts and theories that form the fundamental basis for understanding the role of contemporary art as a social learning process, as well as the application of creative learning processes in the development of community products within the context of the creative economy.

The study aims to synthesize related concepts, theories, and research in order to establish a knowledge base for developing a conceptual framework for designing contemporary art learning programs for community product creation. The literature review covers several key areas, including concepts of contemporary art and socially engaged art, concepts of social learning and creative learning, the concept of action research, and concepts related to community product development and the creative economy.

Based on the literature review, the concepts and theories relevant to this study can be categorized into the following key areas:

#### 2.1 Contemporary Art and Society

Contemporary art represents a form of creative practice that reflects the social, cultural, and political contexts of the present world. It emphasizes critical thinking, experimentation, and questioning of social phenomena. In the contemporary era, art is no longer limited to the production of works for aesthetic appreciation or artistic expression alone; rather, it also functions as a space for communication, inquiry, and reflection on the meanings of contemporary life (Bishop, 2012). Many concepts of contemporary art have evolved into what is often referred to as Socially Engaged Art, which emphasizes participatory processes involving people in society. In this approach, artists function as facilitators who create situations or spaces for the exchange of experiences and dialogue, rather than solely producing art objects (Helguera, 2011). This perspective transforms art into a social process that allows diverse groups of people to participate in the collective construction of meaning.

From the perspective of Bourriaud (2002), contemporary art can function as a space of “Relational Aesthetics,” which emphasizes relationships among people and the creation of social interactions through artistic activities. In this form, art is not merely an object observed by audiences as passive viewers; rather, it provides opportunities for audiences to become active participants in the processes of creative production and collective learning.

The key characteristics of contemporary art concepts that are connected with society can be described as follows:

- (1) Critical questioning of social contexts. Contemporary art often serves as a space for questioning social, cultural, and identity-related issues, using creative processes to reflect on or critique phenomena occurring in society,
- (2) Interaction and audience participation. Many forms of contemporary art open spaces for audiences to play active roles in constructing the meaning of artworks through activities, dialogue, or collaboration between artists and communities.,
- (3) Art as a process of social learning. In this approach, art functions as a tool for collaborative learning, allowing people to exchange experiences, knowledge, and diverse perspectives, and
- (4) Linking art with community development. Socially engaged art is often used as a tool to encourage community participation, strengthen local identity, and enhance the capacities of people within a given area.

These perspectives are based on the assumption that art can serve purposes beyond aesthetic production, functioning instead as a process for learning and social development (Kester, 2013). Particularly in community-based contexts, art can create spaces for dialogue, reflection on lived experiences, and the development of shared understanding of social issues. Previous studies indicate that socially engaged art processes can promote community participation, social awareness, and the development of participants’ capacities across multiple dimensions (Bishop, 2012; Helguera, 2011). Furthermore, the use of contemporary art within community contexts provides opportunities for collaborative learning among artists, researchers, and community members, leading to the creation of new knowledge and the development of creative activities that are responsive to local contexts.

## 2.2 Social Learning

Social learning is a concept that explains that human learning does not occur solely through individual cognitive processes, but also emerges through interactions with others and the surrounding social environment. The exchange of experiences, dialogue, and collective reflection among individuals within a group are important processes that enable learners to construct new understandings and develop their perspectives on the world and society (Bandura, 1977).

The concept of social learning is rooted in the theory proposed by Bandura (1977), which suggests that individuals learn through observing the behaviors of others, imitation, and interpreting experiences that occur within social

contexts. In addition, Vygotsky (1978) emphasized that learning takes place through social interaction and communication. According to this perspective, individual learning can develop more effectively when activities are carried out collaboratively with others in environments that support learning.

From the perspective of collaborative learning, the exchange of opinions and discussions among group members creates opportunities for learners to develop analytical thinking skills, questioning abilities, and the capacity to generate new knowledge from shared experiences (Johnson & Johnson, 2009). Therefore, this process does not focus solely on learning outcomes but also emphasizes the interactive processes that occur among learners within a learning community.

In the context of contemporary art learning, social learning can occur through collaborative creative activities, artistic experimentation, and the exchange of ideas among artists, researchers, and community members. Such processes allow participants to learn through direct experience, collaborative work, and reflection on the meanings of the artworks created.

The key components of social learning can be described as follows:

- (1) Learning through social interaction. Dialogue, the exchange of ideas, and collaborative activities enable learners to develop deeper and more diverse understandings,
- (2) Learning through observation and imitation. Learners can develop new skills and ideas by observing the working processes of others and experimenting through practice,
- (3) Co-construction of knowledge. Knowledge is not created by a single individual but emerges through collective exchange and shared meaning-making within a group, and
- (4) Reflective learning. Reflecting on experiences and engaging in discussions after activities enable learners to analyze their experiences and develop new understandings.

This concept is based on the assumption that learning derived from participatory social processes can enhance learners’ thinking skills, communication abilities, and understanding of diverse perspectives (Bandura, 1977; Vygotsky, 1978). This is particularly relevant in the context of contemporary art activities, which provide opportunities for participants to create shared experiences through experimentation, dialogue, and interpretation of artworks. Previous studies have shown that social learning processes can promote learner participation, foster critical thinking skills, and enhance understanding of social issues in the contexts of art education and community learning (Illeris, 2015). Furthermore, using artistic activities as spaces for collaborative learning helps create an environment for the exchange of ideas and experiences, leading to the development of new knowledge that aligns with the context of communities and society.

### 2.3 Action Research (AR)

Action Research (AR) is a research approach that focuses on developing and addressing problems that occur in real-world contexts. It emphasizes the participation of stakeholders throughout the research process, involving them as co-learners, co-analysts of problems, and collaborators in developing strategies for change. This perspective views research not merely as a process of generating knowledge, but also as a process that can lead to improvements in practice and social transformation (Lewin, 1946).

The concept of action research was developed by Kurt Lewin, who proposed that social change should emerge from processes in which stakeholders collaboratively analyze problems, experiment with possible solutions, and continuously reflect on the outcomes of their actions. This process follows a cyclical pattern consisting of planning, action, observation, and reflection (Plan–Act–Observe–Reflect), enabling learning from real experiences and allowing practices to be adjusted according to changing contexts (Kemmis & McTaggart, 1988).

In the fields of education and community development, action research has been widely used as a tool to foster collaborative learning among researchers, practitioners, and community members. The research process creates opportunities for stakeholders to participate in defining problems, designing activities, experimenting with new approaches, and evaluating the outcomes of implementation (Stringer, 2014). This approach aligns with the principles of social learning, which emphasize the exchange of experiences and the co-construction of knowledge.

In the context of contemporary art development and community learning, action research can function as a process that connects artistic creativity with social development. It creates spaces where artists, researchers, and community members can collaboratively explore social issues, experiment with creative activities, and reflect on the meanings of shared experiences. Such processes not only contribute to the development of artistic knowledge but also strengthen communities through participatory learning and collective creative practices.

The key components of action research can be described as follows:

- 1) Participation. The research process provides opportunities for stakeholders within the context of the problem to take active roles in analyzing situations, designing activities, and evaluating outcomes.
- 2) Learning through action. Implementing and experimenting with new activities or approaches in real situations allows participants to learn from experience and continuously improve their practices.
- 3) Reflection. Reflecting on the outcomes of actions is an essential step that enables participants to analyze their experiences and develop improved approaches for subsequent cycles of action.

- 4) Improvement and change. The primary goal of action research is to improve practices and facilitate meaningful changes that are appropriate to the specific context.

The concept of action research is based on the assumption that knowledge can emerge from processes of action and collective reflection among stakeholders (Kemmis & McTaggart, 1988). Therefore, this form of research does not focus solely on generating theoretical knowledge but also emphasizes the improvement of practice and the empowerment of participants within the learning process. Numerous studies have shown that applying action research in the contexts of art and community development can promote community participation, enhance creativity, and foster awareness of social issues through artistic processes (Reason & Bradbury, 2008). Furthermore, such processes create spaces for collaborative learning among artists, researchers, and communities, leading to the development of new knowledge and practices that are aligned with the cultural context of the area.

### 2.4 Community Product Creation

Community product creation refers to the process of developing goods and services through the integration of cultural resources, local wisdom, and the skills of community members with design concepts and product development strategies. This process aims to generate economic, social, and cultural value for communities. Therefore, community product development is not limited to the production of goods for commercial purposes; it also emphasizes the preservation and transmission of local cultural identity through products that reflect ways of life, beliefs, and indigenous knowledge.

The concept of community product development is closely related to the notion of cultural capital, which suggests that culture, knowledge, and skills embedded within communities can serve as important resources for economic and social development (Bourdieu, 1986). Applying cultural elements to product design helps enhance the value and uniqueness of products, allowing them to reflect the distinctive identity of a specific locality and create differentiation in the marketplace.

In the process of community product development, the participation of community members is considered a crucial component, as communities possess knowledge and experience related to local resources, raw materials, and traditional production processes. Collaboration among designers, artists, and community members creates opportunities for the exchange of knowledge between local wisdom and contemporary design approaches. Such collaboration can lead to the development of products that possess both cultural significance and economic potential.

The integration of contemporary art concepts into community product development can provide new

perspectives in product design. Contemporary art encourages experimentation with forms, meanings, and creative processes. Applying these ideas within collaborative processes with communities can create spaces for learning and creative experimentation among artists, designers, and community members.

The key components of community product creation can be described as follows:

- 1) Utilization of local resources and wisdom. Using raw materials, skills, and knowledge available within the community as the foundation for product development.
- 2) Design reflecting cultural identity. Developing product forms, colors, patterns, and concepts that communicate the lifestyle and culture of the local area.
- 3) Collaborative creation between artists and communities. Cooperation between individuals with artistic expertise and community members facilitates knowledge exchange and the development of new product forms.
- 4) Development of economic and social value. Creating products that generate income for communities while strengthening pride in local identity.

The concept of community product development therefore extends beyond product design processes; it also involves the creation of collaborative learning processes within communities. These processes enable community members to develop their capacities and generate cultural innovations that align with the local context (UNESCO, 2013). In the context of contemporary art learning, community product creation can function as a space for artistic experimentation and the development of creativity. It provides opportunities for artists and communities to collaboratively explore the meanings of local culture and transform this knowledge into products that hold artistic, cultural, and economic value for the community.

Based on the review of documents and concepts related to the development of contemporary art learning and community product creation, four key conceptual areas can be synthesized as the foundation for this study. These include: contemporary art and society, social learning, action research, and community product creation.

From the synthesis of these concepts, the conceptual and theoretical foundations used in this study can be summarized in a table of synthesized concepts and theories, as presented in **Table 2.1**.

**Table 2.1**  
*Synthesis of Concepts and Theories Used in the Study*

No	Concept / Theory	Core Idea of the Concept	Key Variables / Components	Research Implications
1	Contemporary Art and Society	Art serves as a tool for communicating social and cultural	Artistic creation / Social communication	Used as a conceptual framework for designing contemporary

		issues, creating spaces for questioning and the exchange of perspectives.	n / Cultural interpretation	art learning activities that are connected to community contexts.
2	Social Learning	Learning that arises through interaction, dialogue, the exchange of experiences, and the co-creation of knowledge.	interaction, discussion, reflection, and collaborative learning.	used as a guideline for designing learning processes that create opportunities for artists and community members to participate in collaborative learning.
3	Action Research	Research aimed at developing and solving problems in real contexts through participatory processes and learning from practice.	planning, action, observation, and reflection.	used as a framework for conducting the research process and developing contemporary art learning programs within the community.
4	Community Product Creation	The use of local wisdom and cultural resources to develop products that reflect the identity of the community.	local resources, community wisdom, creative design, and cultural identity.	used as a guideline for developing learning activity outcomes that lead to the creation of products with cultural and economic value.

**Source:** Synthesized from concepts, theories, and related studies on contemporary art, social learning, action research, and community product creation, based on both national and international literature and research.

## II. METHODOLOGY

This study employed documentary research aimed at synthesizing concepts, theories, and related studies concerning contemporary art learning and action research in the creation of community products. The objective was to understand the role of contemporary art as a social learning process that can connect artists, communities, and researchers, and to contribute to the development of guidelines for designing contemporary art learning programs within community contexts.

The documentary research focused on reviewing and analyzing knowledge from relevant academic sources, including books, academic textbooks, research articles, and

reports related to contemporary art, social learning, action research, and community product development. The collected information was analyzed, compared, and synthesized in order to develop a systematic understanding of key concepts and components associated with contemporary art learning for community development.

The study also emphasized examining the relationship between contemporary art concepts and learning processes within social contexts, as well as the role of action research as a participatory process that creates opportunities for community members to experiment, create, and reflect collectively on their learning experiences. Through this document analysis, the study reveals trends in the use of contemporary art as a tool for fostering learning processes, communication, and community capacity development through the creation of community-based products.

### **Research Methodology**

The documentary research process in this study consisted of the following key steps:

#### **1) Document and Data Collection**

The researcher collected documents and academic sources related to the research topic, including books, academic textbooks, research articles, and research reports from both national and international sources. The review focused on content related to contemporary art concepts, social learning, action research, and community product development. These sources served as the primary database for analyzing and synthesizing relevant knowledge. The selection of documents was based on the following criteria: (1) relevance to contemporary art, social learning, action research, and community product development; (2) academic credibility, including peer-reviewed journal articles, academic books, and research reports; and (3) publication scope, focusing on both national and international sources.

#### **2) Data Selection and Categorization**

The collected documents were screened based on their relevance to the research issues. The researcher then categorized the content into key thematic areas, including concepts of contemporary art, social learning, action research, and community product development. This categorization enabled a systematic approach to data analysis.

#### **3) Knowledge Analysis and Synthesis**

The selected documents were analyzed using content analysis to understand the essential concepts and theories related to the study. The information was then synthesized to identify patterns, trends, and relationships among bodies of knowledge related to contemporary art learning and action research in the creation of community products.

#### **4) Conclusion and Development of the Conceptual Framework**

The synthesized knowledge was summarized and developed into a conceptual framework reflecting the key components of contemporary art learning for community product creation. The framework emphasizes the participation of artists, community members, and researchers, the creation of a creative learning environment, and learning outcomes that lead to the development of community products reflecting the cultural identity of the local context. To ensure reliability and validity, the researcher applied systematic document screening, cross-referencing of multiple sources, and consistency checks throughout the data analysis and synthesis process. This approach enhances the trustworthiness and rigor of the documentary research.

### **III. RESULTS**

The synthesis of concepts, theories, and related studies indicates that contemporary art learning for community product development can be understood as a social learning process that emerges through interactions among artists, researchers, and community members. In this context, contemporary art does not function solely as a means of aesthetic expression but also serves as a tool for stimulating learning, exchanging ideas, and creating spaces for experimentation in both thought and practice. Such learning processes can contribute to community capacity development and the creation of products that reflect local cultural identity.

From the synthesis of the literature, the key components of contemporary art learning for community product development can be categorized into three main dimensions: the participation dimension, the creative learning dimension, and the development outcome dimension, as described below.

#### **4.1 Participation Dimension**

The participation dimension is considered a fundamental component of contemporary art learning processes in community contexts. Artistic creation in contemporary society often occurs through collaboration among various stakeholders, including artists, researchers, and community members. The involvement of these groups facilitates the exchange of diverse forms of knowledge, including artistic knowledge, academic knowledge, and local wisdom.

Within this process, the community does not merely act as a recipient of knowledge but plays an essential role as a co-creator of knowledge. Community members contribute their experiences, ways of life, and cultural practices to the process of designing and creating artworks or products. Such participatory processes help foster a sense of shared ownership and ensure that the development of community products aligns with the social and cultural context of the local area.

#### **4.2 Creative Learning Dimension**

The creative learning dimension refers to a learning process that allows participants to experiment with ideas, practices, and experiences through contemporary art activities. These activities emphasize questioning, exploring new ideas, and reflecting on experiences gained from practical engagement. Such a learning environment encourages open-ended learning and supports the continuous development of creative potential among participants.

Creative learning also facilitates the integration of contemporary art with local culture. Participants are able to incorporate cultural experiences, local materials, and traditional artistic forms into contemporary artistic concepts. This process not only generates new creative ideas but also promotes reflective learning, which is an important element of community-based learning processes. These findings are consistent with previous studies (e.g., Illeris, 2015; Craft, 2005), which emphasize that creative learning processes can enhance participants' critical thinking and innovation skills through experiential and participatory approaches.

#### 4.3 Development Outcome Dimension

The outcomes of contemporary art learning processes in communities can be reflected in the creation of community products that possess distinctive characteristics and cultural meaning. These products are not merely commodities for sale but also represent the stories, identities, and local wisdom of the community.

Furthermore, the learning process strengthens community capacity in several aspects, including creativity, collaboration, and the development of a culture-based economy. Therefore, the creation of community products can be viewed as the outcome of a social learning process that integrates artistic, cultural, and community development dimensions in a holistic manner.

#### Discussion

The findings of this study indicate that contemporary art learning for community product development can be understood as a learning process emerging from interactions among multiple stakeholders, including artists, researchers, and community members. This process is not limited to the transmission of artistic knowledge but involves the creation of a shared learning space where participants can exchange experiences, ideas, and diverse perspectives. These findings align with participatory learning perspectives, which emphasize that learning occurs through social interaction and the co-construction of knowledge among learners and stakeholders involved in the process.

One important issue identified in this study is the role of participation in the contemporary art learning process. Participation plays a crucial role in linking artistic knowledge with the social and cultural context of the community. The involvement of community members allows the learning process to authentically incorporate local experiences, ways of life, and indigenous knowledge into the

creative process. The findings suggest that contemporary art can function as a medium for dialogue and collective learning among people within the community, thereby strengthening a sense of ownership and participation in community development.

At the same time, the findings highlight that creative learning processes are a key component in fostering the development of participants' potential. Providing opportunities for participants to experiment with ideas, engage in practical activities, and reflect on their experiences promotes open-ended learning and supports the development of creative thinking. Such processes enable participants to flexibly connect contemporary art knowledge with local cultural contexts, leading to the generation of new ideas for designing and developing community products.

Another significant finding concerns the outcomes of the learning process, which can lead to the development of community products that reflect the cultural identity of the local area. Products developed through such learning processes are not merely commercial goods but also represent the stories, histories, and cultural meanings of the community. Integrating contemporary art with community product development therefore creates new value for local cultural resources and contributes to strengthening the potential for sustainable community development.

Furthermore, the findings reveal that the use of action research in the contemporary art learning process creates opportunities for continuous learning. Through this approach, participants can collaboratively explore, experiment with, and refine creative ideas and practices through reflective processes. As a result, the development of community products becomes not only the outcome of short-term activities but also part of a longer-term learning process that enhances the capacity and development of the community.

In conclusion, this study demonstrates that contemporary art learning within community contexts can serve as an important mechanism for integrating artistic, cultural, and community development dimensions. Such processes not only contribute to the creation of culturally distinctive products but also promote collaborative learning, creative development, and the strengthening of community capacity, which are fundamental elements for sustainable community development.

#### IV. RECOMMENDATIONS

This study aimed to synthesize knowledge related to contemporary art learning and action research in order to develop a conceptual framework for designing contemporary art learning processes for community product development. The synthesis of concepts, theories, and related studies from both national and international sources indicates that contemporary art functions not only as a medium of aesthetic expression but also as an important tool for promoting

learning processes, participation, and the development of community capacity.

The integration of contemporary art learning with action research approaches helps create participatory spaces where artists, researchers, and community members can collaborate. This process facilitates the exchange of different forms of knowledge, including academic knowledge, artistic knowledge, and local wisdom. Such interactions allow participants to explore, experiment, and reflect on their practical experiences, leading to the generation of new ideas and the development of products that reflect the identity of the community.

The synthesis of knowledge further suggests that contemporary art learning in community contexts should consist of three key dimensions: the participation dimension, the creative learning dimension, and the development outcome dimension. These three dimensions are interconnected and mutually supportive. The participation dimension fosters collaboration among stakeholders, the creative learning dimension encourages artistic experimentation and creative thinking, and the development outcome dimension leads to the creation of community products that reflect cultural identity and can contribute to the economic and social development of the community.

The conceptual framework developed from this study can serve as a foundation for designing contemporary art learning programs aimed at community product development. Such programs should emphasize participatory learning processes and co-creation, enabling the integration of cultural, economic, and community capacity development dimensions. Furthermore, this framework may be applied in the development of projects or learning activities that utilize contemporary art as a tool for community development in various local contexts.

In terms of policy implications, this study suggests that educational institutions and cultural organizations can adopt contemporary art as a strategic tool for promoting participatory learning and community engagement. The findings also support the development of art-based learning programs that align with creative economy policies and contribute to sustainable community development. Furthermore, this framework can be applied in designing educational curricula and community-based projects that integrate artistic, cultural, and socio-economic dimensions.

## Recommendations

### 1) Policy and Practical Implications

Organizations and agencies involved in community and cultural development should support the use of contemporary art as a tool for creating learning processes within communities. This can be achieved by encouraging collaboration among artists, academics, and community members to develop products that reflect cultural identity while also generating economic value.

### 2) Practical Recommendations

The design of contemporary art learning programs in communities should emphasize participatory learning processes. Community members should be provided with opportunities to experiment with creative practices, exchange experiences, and reflect collectively on their learning. Such processes can help strengthen creative potential and support the sustainable development of community products.

### 3) Recommendations for Future Research

Future studies should apply the conceptual framework developed from this synthesis to implement contemporary art learning programs in real community contexts. This would allow researchers to examine the outcomes of the learning process in terms of community capacity development, product creation, and the generation of cultural v a l u e .

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General

# LABROOM



CABINET



LABORATORY CHAIR

📍 48/3 Moo 6 Soi Virunrard, Settakit Rd.,  
Thamai, Kratumban, Samut Sakhon 74110  
Thailand  
48/3 หมู่ 6 ซอยวิรุณราชบุรี ถนนเศรษฐกิจ ตำบลท่าไม้  
อำเภอกระทุ่มแบน จังหวัดสมุทรสาคร 74110

☎ Tel. +66 2 431 6061-6  
✉ E-mail : sales@skpower.co.th





**HANGING CABINET**



**BALANCE TABLE**



**ISLAND BENCH**



**CONTACT INFORMATION**

48/3 Moo 6 Soi Virunrard, Settakit Rd., Thamai, Kratumban, Samut Sakhon 74110 Thailand  
48/3 หมู่ 6 ซอยวิรุณราชบุรี ถนนเศรษฐกิจ ตำบลท่าไม้ อำเภอกะหฤ์มแบบ จังหวัดสมุทรสาคร 74110

Tel. +66 2 431 6061-6 | E-mail : sales@skpower.co.th

