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The objectives of the Journal of ASEAN PLUS+ Studies are to promote research study and development in the area of government policy, business practice, and cultural development, and to provide a platform for researchers and academics to exchange their views and publish the results of their studies. It was designed specifically to help produce a clear and concise article, publish original and leading-edge academic research, and disseminate these research results to the global community.

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1. Scope of contents comprises the fields of government policy, business practice, cultural development, and other related fields in ASEAN and its partners such as countries in the Asia Pacific.
2. Types of academic work comprise research articles and academic articles.
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Foreword

This issue strives to have a balanced approach of qualitative and quantitative methods on a variety of topics, including tourism narratives, Climate Smart Agriculture, brand image, co-working spaces, talent in the New Energy Vehicle (NEV) sector, and Self-Regulated Learning (SRL) in the context of ASEAN and the region.

Nick Alfred Umadhay, Sunny Gabinete from the Philippines, and Jitlada Piyatat from Thailand explore the holiday-tourism narratives of ASEAN students in Thailand with the Descriptive Phenomenological Method. Iterative coding and thematic synthesis reveal six themes, indicating that holiday tourism extends beyond recreation, serving as an informal intercultural classroom and a means of fostering ASEAN identity.

Napat Kamthonsiriwimol et al. review the current situation of rice production in Thailand and the problems of Greenhouse Gas (GHG) emissions. They present the key dimensions of Climate Smart Agriculture (CSA) and its practice and impact in Vietnam, Malaysia, and Thailand. Challenges and opportunities for CSA Implementation in Thailand's rice production are analyzed for recommendations to key stakeholders.

Rithsereyvath Hang and Akaraphun Ratasuk expand the Stimulus-Organism-Response (S-O-R) model in the case of boutique hotels in Siem Reap, Cambodia, demonstrating the pivotal mediating role of perceived value. They suggest boutique hotel managers should strategically focus on pricing, atmosphere, CSR, and CRM initiatives to enhance perceived value and strengthen brand image.

Veerisa Chotiyaputta et al. examine the influence of space creativity on Entrepreneurial Opportunity Recognition and Exploitation (EORE) within co-working spaces in Thailand, with particular attention to the mediating role of social climate, based on survey data collected from 350 individuals in the Bangkok metropolitan area. The findings advance theory by integrating physical and social dimensions of entrepreneurial ecosystems under the Thai context.

Chao Wang and Ruyao Zheng from China study the talent supply and demand in the New Energy Vehicle (NEV) sector in Nanning, an emerging inland hub of the country. They identify acute skill polarization—specifically, surpluses in low-skilled operational roles alongside critical shortages in high-value R&D and engineering functions. A strategy of talent ecosystem development is proposed to bridge the gap between national strategic ambitions and local implementation realities.

Duangta Jaipetch, Apisara Sritulanon, and Naruemol Pechrasuwan provide a comparative analysis of secondary school curricula in Thailand, Singapore, and Malaysia, focusing on integrating Self-Regulated Learning (SRL) and life and career planning skills. Based on the findings, they propose a reform framework emphasizing SRL integration, dedicated life planning modules, enhanced cocurricular programs, teacher mentorship, and diversified assessment.

Prof. Dr. Tang Zhimin
Editor-in-Chief

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Books and Borders: Exploring the Holiday-Tourism Narratives of ASEAN Students Studying in Thailand

Nick Alfred Umadhay[1*], Sunny Gabinete[2], and Jitlada Piyatat[3]

Abstract

This qualitative study explored the holiday-tourism narratives of ASEAN students in Thailand, highlighting leisure travel as a vital aspect of personal development and well-being. Using a descriptive phenomenological method, semi-structured interviews were conducted with eight undergraduates from Myanmar, Cambodia, Laos, and the Philippines. Data were analyzed through iterative coding and thematic synthesis, revealing six themes: Rejuvenation and escape, nature-centric destinations, group travel logistics, cultural immersion, identity development, and coping with constraints. Findings indicate that holiday tourism extends beyond recreation, serving as a form of stress relief, an informal intercultural classroom, and a means of fostering ASEAN identity. Despite barriers related to finances, academic schedules, and visas, students employed adaptive strategies such as cost-sharing, short trips, and digital tools, transforming obstacles into opportunities for growth. The study highlights tourism's role in supporting mental health, intercultural learning, and regional belonging, and proposes practical measures such as student-friendly travel packages, flexible calendars, and language assistance initiatives. This research contributes to broader understandings of youth mobility and social dimensions of tourism in Southeast Asia.

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Introduction

Holiday travel has become an integral aspect of ASEAN students' experiences in Thailand, contributing to their personal development, intercultural appreciation, and psychological well-being. As Southeast Asia's leading tourism hub, Thailand offers a blend of modern attractions and traditional cultural heritage, making it an ideal environment for students to engage in leisure activities that foster reflection, enjoyment, and learning (Sirivadhanawaravachara, 2024a). Beyond recreation, wellness tourism has become particularly attractive, with opportunities such as meditation retreats, hot springs, herbal therapies, and alternative medicine, all of which support students' holistic health. This aligns with Sangkhathat's (2023) observation that wellness tourism reflects a broader view of health, encompassing mental clarity, stress relief, and overall well-being, in addition to conventional treatment.

Furthermore, Thailand has emerged as a key gateway for intra-ASEAN mobility, where initiatives such as the Intra-ASEAN Student Program (IASP) highlight tourism's role in fostering regional cooperation, cultural appreciation, and identity formation (ASEAN Secretariat, 2025). Despite this potential, most existing scholarship has focused on institutional frameworks, policy structures, or mobility trends, with less attention given to the lived experiences of students themselves. Specifically, how ASEAN students narrate their holiday travels, negotiate symbolic and practical borders, and derive meaning from these experiences remains underexplored (Jampaklaya et al., 2022).

To address this gap, the present study employs a descriptive phenomenological method to capture students' narratives of holiday tourism in Thailand. Phenomenology is well-suited to this inquiry, as it seeks to reveal the essence of lived experience through participants' perspectives. Colaizzi's (1978) systematic seven-step approach from familiarization to validation ensures that findings remain grounded in authentic accounts while preserving the integrity of participants' lived meanings and experiences. This interpretation is further reinforced by Morrow, Rodriguez, and King (2015), who clarified and operationalized Colaizzi's method for contemporary qualitative research. This framework enables a deeper understanding of how ASEAN students make sense of holiday tourism as both a coping mechanism and a developmental resource.

Research Objectives

This study's primary goal was to explore and understand the holiday-tourism experiences of ASEAN students in Thailand. Specifically, the research aimed to:

1. Investigate the holiday-tourism narratives of students, focusing on their motivations, preferences, and lived experiences.

2. Examine how holiday tourism contributes to students' personal growth, coping strategies, and the development of an ASEAN identity.

3. Generate recommendations that address the constraints students face and enhance their overall holiday-tourism experiences.

Literature Review

Conceptual Foundations: Books and Borders

The title of this study, "Books and Borders", encapsulates the dual nature of ASEAN students' holiday-tourism experiences. This framework provides the conceptual anchor for understanding their travel narratives.

The term "books" represents the narratives of joy, discovery, and personal growth that students construct from their journeys. They are the stories students tell to interpret their cultural encounters and make sense of their experiences. This aligns with Moscardo's (2020) argument that stories are central to the tourism experience, as they transform passive travel into a meaningful, lived narrative.

The term "borders" refers to the tangible and symbolic boundaries that students must navigate. Tangible borders encompass logistical challenges such as visa regulations, financial constraints, and academic schedules. Symbolic borders encompass intangible barriers, such as language differences and cultural misunderstandings. As Timothy and Gelbman (2022) explain, these borders are not static but are dynamic cultural and social constructs that shape mobility and identity.

Taken together, the "Books and Borders" framework allows us to analyze how students narrate (their "books") and negotiate (their "borders") their travel experiences. This duality will be employed in the discussion to illustrate how the six emergent themes from the study, rejuvenation, cultural immersion, and coping strategies, directly reflect the interplay between narrative possibility and practical constraint.

ASEAN Youth and Student Tourism Narratives

Recent scholarship on ASEAN youth tourism reveals a layered and evolving understanding of how students' travel narratives are shaped by cultural, social, and psychological factors. The "Books" dimension of their experiences, which represents their lived stories, is consistently framed by a desire for meaningful engagement and personal growth. Studies by Phakdee-Auksorn et al. (2023) and Panyadee and Wetprasit (2018) establish that motivations such as cultural richness and adventure are central to Thai youth tourism, a finding that is directly mirrored in the narratives of ASEAN students. This literature moves beyond viewing students as passive sightseers, with Liu (2019) illustrating their active role as cultural ambassadors and Khamkhong et al. (2024) highlighting how Filipino students leverage travel for intercultural understanding. Kou and Chang (2024) further extend this concept by linking novelty-seeking to creative travel engagement, reinforcing that students' journeys are a form of self-expression and discovery. This body of research collectively affirms that students' narratives are deeply interwoven with cultural learning, peer interactions, and self-development, creating a rich "book" of experiences that contributes to their personal and regional identity.

This perspective is further supported by research on youth involvement in responsible tourism. The work of Liew et al. (2022) underscores that young people are not merely consumers, but active agents in shaping sustainable and authentic travel experiences. This perspective aligns with the idea that holiday tourism for ASEAN students is more than a simple leisure activity; it functions as a space for intercultural learning, regional solidarity, and personal well-being. Both structured responsible tourism initiatives and informal holiday journeys are recognized as having the transformative potential to foster sustainability, cultural preservation, and community engagement in Southeast Asia.

However, students' narratives are not solely shaped by freedom and opportunity. The "Books" of their experiences are always being written within the confines of "Borders". Research by Anantamongkolkul (2020, 2021) on the Theory of Planned Behavior reveals how perceived limitations from financial constraints to time directly influence travel intentions. This is echoed by Ramesh Babu et al. (2021), who found a strong preference for low-cost group trips, and by

Thrane (2008), who highlighted that intrinsic motivations often outweigh demographic factors. This body of work collectively demonstrates that students' narratives are a product of both enabling opportunities and limiting constraints, creating a dynamic interplay that this study seeks to explore.

Tourism, Mobility, and Intercultural Education in Thailand

Thailand's role as a regional gateway for ASEAN student mobility provides a critical context for understanding how students negotiate these "Borders". These boundaries are not only political and physical but are also academic and cultural. Jampaklaya et al. (2022) stress the importance of transcending classroom borders through travel and intercultural experiences, while UNICEF Thailand (2019) documents how inclusive education policies for migrant learners promote social cohesion. These studies collectively highlight how a student's journey across both educational and physical borders contributes to holistic well-being and personal growth.

The inclusive education policy of Thailand, while a gateway to integration for many, also highlights the complexities of these "Borders". Despite policies offering 15 years of free schooling to all children regardless of nationality, migrant students still face significant challenges related to language barriers, financial constraints, and documentation issues (UNICEF Thailand, 2019). These dynamics resonate with the broader experiences of ASEAN students, who must also navigate these limitations to achieve belonging and resilience.

The broader tourism scholarship provides a final layer of context, positioning students' narratives within global debates on identity and mobility. Cohen's works on authenticity and mobility (King, 2018) provide a framework for understanding how students negotiate cultural meaning through travel. Kılınç et al. (2020) demonstrated that studying abroad fosters intercultural adaptation and resilience. Educational tourism is becoming a key strategy for Thailand to expand its global influence by promoting mobility, cultural exchange, and skill development. According to Sirivadhanawaravachara (2024b), Thailand's cultural heritage, language programs, and training opportunities make it a top destination for educational tourism, which includes academic exchanges, cultural immersion, and language learning. Despite its potential to align with ASEAN student mobility trends, the sector faces significant challenges in infrastructure, quality, and sustainability, requiring stakeholder collaboration. This shows that for ASEAN students, tourism is increasingly a tool for education and personal development, not just leisure.

Methodology

Data Collection

In phenomenological research, Creswell (2013) recommends a sample size ranging from approximately three to twenty-five homogeneous participants to generate meaningful descriptions of lived experiences. This guideline is supported by Alase (2017), who likewise emphasized that a small, purposively selected group typically between five and fifteen participants ensures depth and richness of qualitative data. Guided by these principles, eight respondents were purposively selected, as their insights were deemed sufficient to address the study's aims. Data collection was conducted through semi-structured, in-depth interviews in English.

The interview guide, developed in line with Creswell's framework for phenomenological inquiry, was validated by three experts to ensure its clarity and alignment with the research objectives. Questions were open-ended and probing, designed to elicit rich descriptions of participants' travel habits, motivations, intercultural encounters, emotional experiences, challenges, and the personal implications of their holiday tourism. Each interview lasted approximately 30-45 minutes, was audio-recorded with participants' informed consent, and was supplemented with field notes and reflective memos to strengthen interpretative validity.

Analysis

The study utilized Colaizzi's descriptive phenomenological method, a structured framework frequently employed in qualitative research. Table 1 outlines the seven systematic steps of this approach, which served as the basis for analyzing participants' narratives.

Table 1 Steps in Colaizzi's Descriptive Phenomenological Method

Steps	Description
1. Familiarization	The researcher familiarises him or herself with the data by reading through all the participant accounts several times.
2. Identifying significant statements	The researcher identifies all statements in the accounts that are of direct relevance to the phenomenon under investigation.
3. Formulating meanings	The researcher identifies meanings relevant to the phenomenon that arise from a careful consideration of the significant statements.
4. Clustering themes	The researcher clusters the identified meanings into themes that are common across all accounts.
5. Developing an exhaustive description	The researcher writes a full and inclusive description of the phenomenon, incorporating all the themes produced in Step 4.
6. Producing the fundamental structure	The researcher condenses the exhaustive description down to a short, dense statement that captures just those aspects deemed to be essential to the structure of the phenomenon.
7. Seeking verification of the fundamental structure	The researcher returns the fundamental structure statement to all participants to ask whether it captures their experience.

Source: Morrow et al. (2015); Colaizzi's (1978) descriptive phenomenological method

Sampling Method and Inclusion Criteria

A criterion sampling technique was employed to ensure all participants met specific inclusion criteria (Creswell, 2013). Participants were screened based on the following qualifications: they had to be ASEAN nationals, currently enrolled as students in Thailand, and engaged in domestic holiday tourism during their stay. To maintain ethical confidentiality, the eight undergraduate student participants were assigned pseudonyms, as shown in Table 2.

Table 2 Summary of Participant Demographics and Study Context

Participants	Age	Gender	Country	Program of Study	Length of Stay
Amy	21	F	Myanmar	Aviation Business Management	3 Years
Chok	22	M	Cambodia	International Modern Trade Management	3 Years
Greg	22	M	Philippines	English Communication	13 Years
Lyn	23	F	Philippines	English Communication	5 Years
Kiki	21	F	Myanmar	International Modern Trade Management	2 Years
Alas	21	M	Myanmar	International Modern Trade Management	3 Years
Eric	22	M	Myanmar	International Modern Business Management	2 Years
Jake	22	M	Laos	Hospitality and Tourism Management	3 Years

Result

Six themes emerged from the study, each offering insight into how students experience and interpret their holiday travel within the context of studying abroad. The themes Rejuvenation and Escape, Nature-Centric Destinations, Group Travel Logistics, Cultural Immersion and Exchange, Personal and ASEAN Identity Development, and Constraints and Coping Strategies reflect the layered intersections of leisure, culture, and identity in shaping ASEAN students' narratives. Together, these themes illuminate the complex ways holiday tourism contributes to personal well-being, intercultural learning, and the broader meaning of mobility across borders while pursuing education in Thailand.

Table 3 Six Emergent Themes

Theme	Description	Supporting Participants Narratives
Rejuvenation & Escape	Traveling as a way to find mental and emotional relief from academic pressure, manage stress, and relax personally	*"It helps me to relax and not think about exams. After beach trips, I feel more ready to study again."* – Jake, Laos. *"I recharge when I go out of the city."* – Lyn, Philippines
Nature-Centric Destinations	Preference for beaches, mountains, parks, and scenic locales; nature as a setting for reflection and enjoyment	*"Hua Hin beach is my favorite place. I like to feel the wind and ocean."* – Jake, Laos. *"I always go to Doi Inthanon. The nature is so peaceful."* – Kiki, Myanmar

Table 3 Six Emergent Themes (Con.)

Theme	Description	Supporting Participants Narratives
Collective Travel Logistics	Planning and traveling with friends or peers; group travel as economical, social, and safer	*"We always plan together. It's cheaper and more fun."* – Greg, Philippines *"My classmates and I booked a van, split the gas."* – Chok, Cambodia
Cultural Immersion & Exchange	Engaging with local Thai culture and heritage, food, language, and festivals, travel an informal education	*"I learned more about Buddhism when we visited Chiang Mai temples."* – Eric, Myanmar. *"Trying Thai food during trips makes me feel more connected."* – Alas, Myanmar
Personal Growth & Identity Building	Travel reinforces self-awareness, independence, and appreciation of regional identity	*"I feel more ASEAN because I can explore different cultures within one region."* – Jake, Laos. *"Traveling alone made me more confident."* – Lyn, Philippines
Constraints & Coping Strategies	Financial, time, or visa-related barriers; creative problem-solving to make travel possible	*"Sometimes I don't have enough money, so I just go to nearby places."* – Chok, Cambodia. *"I wait for long weekends and promotions."* – Greg, Philippines

ASEAN students in Thailand treat short, nature-focused group getaways as an affordable way to de-stress, deepen intercultural understanding, and hone life skills. The same trips simultaneously highlight and help them overcome practical hurdles of money, language, and logistics, reinforcing both personal competence and regional belonging.

Across the eight interviews, six themes emerged, each clearly illustrated by the participants' own words.

Theme 1: Rejuvenation and Escape

One of the most prominent motivations behind students' holiday travel was the need to mentally and emotionally recover from academic responsibilities. Participants described travel as a coping mechanism for stress and a way to sustain their mental well-being.

Jake from Laos shared:

"It helps me to relax and not think about exams. After beach trips, I feel more ready to study again."

Similarly, Kiki from Myanmar emphasized:

"When I go to nature places, it's like I forget all the school problems. It refreshes me."

Lyn from the Philippines echoed this sentiment:

"I need time away sometimes. Even short trips make a big difference in my mood."

Amy, also from Myanmar, noted how holiday trips energized her:

"Traveling gives me something to help me recharge. When I come back, I feel more motivated and refreshed."

Eric from Myanmar explained that traveling helped him *"open (his)" mind* and feel less burdened by school routines. These reflections underscore that travel is not merely leisure but an essential activity that revitalizes mind and spirit, reinforcing the therapeutic value of tourism in students' lives.

As the integrative review by Yan et al. (2023) highlights, while everyday leisure is known to support health, vacation-taking as an extraordinary leisure type is increasingly recognized for its distinct contribution to subjective well-being. The study's themes of "Rejuvenation and Escape" directly support this idea, as the review synthesizes research showing how people use holiday trips to "recharge" and find mental relief. This demonstrates a clear connection to the research that investigates the "how and why" of travel's positive effects on well-being, confirming that for many, tourism is not just a leisure activity but a necessary tool for maintaining their mental and emotional health (Yan et al., 2023).

Theme 2: Nature-Centric Destinations

Participants consistently expressed a strong preference for natural environments such as beaches, mountains, waterfalls, and national parks.

Jake explained:

"Hua Hin beach is my favorite place. I like to feel the wind and ocean."

Kiki highlighted:

"I enjoy Doi Inthanon. The cool weather and nature help me reflect."

Greg, from the Philippines, described his preference:

"Most of the time, I choose quiet and green places. Not malls or cities."

Alas from Myanmar added:

"Of course, it's Kanchanaburi. The rivers and waterfalls make me feel fresh."

Amy likewise described her affinity for coastal destinations:

"I love beach cities because I enjoy the relaxing energy of the sea and local life."

These perspectives reveal that nature is not only a backdrop for relaxation but also a setting for reflection, healing, and a deeper connection with place. Natural environments have been shown to deliver strong restorative benefits for stressed individuals, with forests and lakesides providing the highest recovery effects compared to paved squares or grass plots (Li et al., 2023). In parallel, ASEAN students in Thailand consistently expressed a preference for beaches, mountains, waterfalls, and other green destinations. For them, these natural settings were more than scenic spots; they functioned as places for relaxation, healing, and reflection. Whether feeling the ocean breeze, enjoying the cool air of mountain parks, or refreshing themselves in rivers, participants highlighted nature's ability to restore energy and uplift mood. These lived narratives affirm empirical evidence that natural spaces promote both emotional relief and deeper connections with place.

Theme 3: Collective Travel Logistics

Travel was most often undertaken with peers, reflecting the importance of group support, cost-sharing, and companionship.

Greg remarked:

"We always plan together. It's cheaper and more fun."

Chok from Cambodia agreed:

"My classmates and I rented a van, split the gas. We help each other."

Alas also shared:

"Group travel is better. We cook together, and we share the budget. No one feels left out."
Amy explained her preference:
"I usually travel with my friends. It's more fun and easier to share experiences."
Lyn added that traveling with friends helped her overcome fears of getting lost due to language barriers:
"I don't speak Thai much, so I usually go around with someone I can rely on for directions."
This theme illustrates how ASEAN students rely on social networks to enable tourism, making it a communal practice rather than an individual luxury. According to Zion Market Research (2023), the travel and tourism spending market is increasingly shaped by millennial and Gen Z tourists, who are motivated by a desire to explore new destinations while remaining highly budget-conscious. The students' remarks about "splitting the gas" and "sharing the budget" reflect this broader trend, demonstrating how their micro-level practices align with a documented shift toward more resourceful and collaborative travel among young people.

Theme 4: Cultural Immersion and Exchange

Holiday travel provided rich opportunities for intercultural encounters.
Eric reflected:
"I learned more about Buddhism when we visited Chiang Mai temples."
Alas shared:
"Trying Thai food during trips makes me feel more connected. It's a way to learn."
Jake described linguistic immersion:
"When we go to provinces, I try to talk with locals and learn a few Thai words."
Chok recalled celebrating the Thai New Year:
"During Songkran, I saw how similar and different it is from Cambodian culture. It was exciting to learn and exchange stories."
Greg added:
"When I went to Chiang Mai, the way people lived there reminded me more of Filipino culture than Bangkok."
These insights reveal that travel acts as an informal education, broadening intercultural understanding and strengthening ASEAN identity through shared experiences. Cultural immersion through tourism not only allows students to engage with local practices and traditions but also mirrors broader dynamics observed in heritage tourism. Wang et al. (2025) illustrate through their research on the Fahai Temple Murals in Beijing that tourism functions both as a platform for cultural transmission and as a contested space where authenticity, accessibility, and meaning are continually negotiated. Similarly, the students' encounters with Thai food, festivals, and language demonstrate how holiday travel reframes cultural knowledge into lived experiences, enhancing understanding while also reshaping identity.

Theme 5: Personal Growth and ASEAN Identity

Participants connected travel with self-discovery, independence, and regional identity.
Lyn shared:
"Traveling alone made me more confident. I used to be shy, but now I can manage things by myself."

Jake reflected:

"I feel more ASEAN because I can explore different cultures within one region."
Kiki emphasized:
"When I travel, I don't just see the place. I see how we are similar in Southeast Asia."
Amy described:
"I feel like I've grown a lot. Traveling helped me become stronger and more independent."
Chok admitted:
"At first, I was introverted, but traveling opened me up to people and taught me how to solve problems during trips."

These narratives show how tourism nurtures resilience, cultural pride, and the sense of being part of a regional community. Recent research on Vietnamese mobility students in Indonesia highlights that intra-ASEAN student mobility significantly contributes to fostering regional identity, particularly through cultural exposure, quality of interpersonal contact, and the use of local language (Du, 2022). This aligns with participants' narratives in the present study, where holiday tourism in Thailand not only supported personal growth and resilience but also deepened their sense of belonging to a shared ASEAN community.

Theme 6: Constraints and Coping Strategies
Despite enthusiasm for travel, participants faced barriers such as finances, language, and academic workload.
Chok explained:
"Sometimes I don't have enough money, so I just go to nearby places."
Greg stated:
"I wait for long weekends and promotions. I always look for budget trips."
Eric shared his thoughts:
"I cannot travel far because of a visa, but I try to enjoy what's near me."
Amy described her preparation strategies:
"Sometimes it's hard to find transportation, so I research schedules and use apps like Grab or Bolt to adjust my plans."
Lyn added:
"The biggest challenge is the language barrier, but I learned some Thai phrases and used translation apps to manage."

These coping strategies highlight students' adaptability and creativity in navigating constraints while still finding ways to engage in meaningful travel. Constraints such as language barriers, homesickness, and cultural adjustment are not unique to holiday tourism but are also evident in broader mobility experiences. A study on short-term exchange programs in Southeast Asia found that Vietnamese students similarly faced challenges of adapting to unfamiliar cultural norms and communication difficulties; however, they overcame these through cultural immersion, support networks, and proactive coping strategies (Thinh, 2024). This mirrors the coping behaviors of ASEAN students in Thailand, who relied on planning, peer collaboration, and technology to navigate financial, linguistic, and logistical constraints while still engaging meaningfully in travel.

Discussion

The findings of this study demonstrate how holiday tourism functions as a multidimensional experience shaped by both opportunities and constraints. The six key themes, Rejuvenation and Escape, Nature-Centric Destinations, Collective Travel Logistics, Cultural Immersion and Exchange, Personal Growth and ASEAN Identity, and Constraints and Coping Strategies, each offer insight into how ASEAN students negotiate leisure, identity, and belonging while pursuing education abroad.

Holiday Tourism a Coping Mechanism

The theme of Rejuvenation and Escape highlights the therapeutic role of travel for international students. As prior research has shown, recovery experiences derived from leisure and tourism are critical for enhancing overall well-being and relieving stress (Yan et al., 2023; Zhou, 2021). Similar to findings from wellness tourism research in Thailand (Sangkhathat, 2023), students in this study emphasized the value of holiday trips for mental health recovery and maintaining academic motivation. For these participants, travel was not merely recreational; it was a survival strategy that enabled them to balance academic responsibilities with emotional well-being. These insights reinforce prior findings that leisure activities among international students significantly contribute to psychological resilience and academic persistence (Kılınç et al., 2020).

The Restorative Power of Nature

The central role of natural landscapes in students' holiday choices is highlighted by the theme of Nature-Centric Destinations. Beaches, mountains, waterfalls, and rural parks were favored not only for their aesthetic appeal but also for their restorative qualities, aligning with research by Phakdee-Auksorn et al. (2023) on youth tourism behavior in ASEAN. The student narratives suggest that these natural settings provide a crucial space for reflection and self-renewal, confirming that natural environments deliver strong restorative benefits for stressed individuals (Li et al., 2023).

Tourism as a Form of Intercultural Education

As Oyenuga and Akwen (2025) emphasize, mobility and cultural encounters enable tourists to develop intercultural sensitivity. This is mirrored in the theme of Cultural Immersion and Exchange, which reveals that holiday tourism serves as a parallel form of education, extending classroom learning into lived cultural encounters. Students' stories about learning Thai customs, tasting local food, and celebrating festivals align with Liu's (2019) findings that international students act as cultural intermediaries. By framing tourism as "books" of lived stories (Moscardo, 2020), the findings affirm that travel narratives are central to students' intercultural development and to the formation of regional connections within ASEAN.

Fostering Identity and Belonging

The findings also show that tourism contributed to Personal Growth and ASEAN Identity. Traveling enhanced students' confidence, independence, and resilience while also strengthening their identification as part of a Southeast Asian community. This complements the ASEAN Secretariat's (2025) observation that student mobility fosters regional consciousness. The study confirms that holiday tourism complements formal education by deepening students' sense of being ASEAN citizens, a perspective also reflected in Anantamongkolkul's (2020, 2021) application of the Theory of Planned Behavior to student tourism.

Negotiating Borders: Constraints and Coping

The Constraints and Coping Strategies theme demonstrates that students' tourism is shaped by both structural and personal limitations. Barriers included finances, visa rules, academic schedules, and language challenges. Yet, students showed resilience by finding affordable options, traveling nearby, or using apps and translation tools. This aligns with Timothy and Gelbman's (2022) argument that borders are not only political but also social and cultural constructs that shape mobility. The students' coping strategies represent active forms of "debordering", where resourcefulness allows them to transcend limitations and continue engaging in meaningful travel.

Integrating "Books" and "Borders"

Taken together, the six themes illustrate how ASEAN students' holiday-tourism experiences are simultaneously stories of possibility and constraint. Their "books" are narratives of joy, discovery, and growth, while their "borders" are the financial, institutional, and cultural boundaries they must navigate. This duality enriches our understanding of international student life in Thailand, situating tourism not as a luxury but as an integral dimension of education, cultural immersion, and identity formation.

Implications

These findings have several important implications. For higher education institutions in Thailand, there is an opportunity to support student well-being by facilitating affordable and culturally enriching travel opportunities. For tourism policymakers, recognizing international students as a distinct market segment can strengthen Thailand's role as a hub for ASEAN mobility and integration. Finally, for students themselves, holiday tourism provides pathways not only to relaxation but also to resilience, intercultural competence, and a stronger sense of regional identity.

Conclusion

This study indicates that holiday tourism among ASEAN students in Thailand transcends mere leisure, functioning as a vital mechanism for stress relief, an informal platform for intercultural education, and a means of cultivating a shared regional identity. Travel is fundamentally woven into the student experience, serving as both a coping strategy and a pathway for personal growth. Students primarily engage in short excursions to natural destinations such as beaches, mountains, and waterfalls, which facilitate emotional and physical renewal and support their overall well-being. Collective travel is also a prevalent practice, as it mitigates costs, enhances a sense of security, and reinforces social bonds, underscoring the collaborative dimension of student tourism.

Beyond personal rejuvenation, tourism also operates as an intercultural classroom. By participating in local festivals, sampling indigenous cuisine, and learning Thai customs, students deepen their cultural appreciation while building resilience, confidence, and a sense of ASEAN belonging. Although financial constraints, academic demands, and visa and language barriers remain significant, students demonstrate adaptability by employing adaptive strategies such as cost-sharing and the use of digital tools that transform these obstacles into opportunities for growth.

Ultimately, the study reveals that the holiday-tourism narratives of students embody a duality of possibility and constraint. Their "books" are rich narratives of joy, discovery, and learning, while their "borders" represent the institutional and cultural challenges they must navigate. This paradigm enriches our understanding of the international student experience in Thailand, positioning holiday tourism not as a luxury but as an integral dimension of education, cultural immersion, and identity formation. The study contributes to tourism and education scholarship by highlighting how leisure travel serves as a pedagogical and psychosocial resource within the ASEAN context.

Recommendations

Informed by the findings, the following recommendations are proposed to address the barriers ASEAN students face in engaging with holiday tourism in Thailand. These strategies aim to transform constraints into opportunities, supporting well-being, intercultural learning, and ASEAN identity formation.

1. Financial limitations can be addressed through student-friendly travel packages that provide discounts on transportation, accommodation, and entry fees. Additionally, cultural immersion grants from universities or ASEAN programs can reduce financial burdens and ensure equitable access to travel experiences that support both leisure and learning.

2. Tight academic schedules may be alleviated by introducing flexible academic calendars and designated cultural field trip weeks. By integrating travel into reflective journals or intercultural projects, tourism can be recognized as part of holistic education, rather than as a distraction from academic responsibilities.

3. Visa and mobility restrictions require strengthened intra-ASEAN student travel agreements and the establishment of student travel desks to assist with immigration processes. These measures would enable smoother cross-border mobility and improve compliance with travel regulations.

4. Language barriers can be reduced by offering short Thai crash courses focused on practical travel phrases, supplemented with multilingual travel guides and mobile applications. These tools will equip students with essential communication skills and foster meaningful engagement with local communities.

5. The need for safety, cost-sharing, and companionship can be addressed through peer-led travel clubs, ASEAN student councils, and affordable group packages. These initiatives can enhance students' sense of security, lower costs, and build stronger social networks during travel.

6. The limited recognition of tourism's educational role should be reframed by positioning holiday tourism as an extension of student development. Storytelling platforms such as blogs, exhibitions, and ASEAN narratives can highlight tourism as intercultural learning, reinforcing both personal growth and regional solidarity.

Table 4 Recommendations for Enhancing ASEAN Students' Holiday-Tourism Experiences

Constraint Identified	Recommended Strategy	Expected Outcome
Financial Limitations	Develop student-friendly travel packages with discounts on transport, accommodation, and entry fees; provide cultural immersion grants through universities or ASEAN programs.	Reduced financial burden; greater access to travel opportunities.
Tight Academic Schedules	Introduce flexible academic calendars and designated "cultural field trip weeks"; integrate travel into reflective journals or intercultural projects.	Balanced academic workload and travel; recognition of tourism as part of holistic education.
Visa and Mobility Restrictions	Strengthen intra-ASEAN student travel agreements; establish student travel desks to guide immigration and permits.	Easier mobility across Thai regions and ASEAN borders; improved compliance with travel regulations.
Language Barriers	Offer short Thai crash courses focused on practical travel phrases; create multilingual travel guides and mobile applications.	Improved communication with locals; more meaningful cultural immersion.
Need for Safety, Cost-Sharing, and Companion-Ship	Facilitate peer-led travel clubs or ASEAN student councils; partner with tour operators for affordable group packages.	Safer, cheaper, and more enjoyable travel experiences; stronger student networks.
Limited Recognition of Travel's Educational role	Reframe tourism as part of student development; encourage storytelling platforms (blogs, exhibitions, ASEAN narratives) to share experiences.	Holiday tourism is valued as intercultural learning, and it strengthens ASEAN identity among students.

By addressing barriers such as cost, time, mobility, and language, universities and policymakers can transform student travel into an accessible and enriching educational tool. Aligning tourism with education ensures stronger ASEAN solidarity and sustainable development.

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Climate-Smart Rice Production in Thailand: Challenge and Opportunity

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Abstract

Rice, a staple diet for over half the global population, with over eighty percent of production concentrated in Asia, faces significant challenges from climate change, particularly in Thailand. This review analyzes the current situation of rice production in Thailand, its contribution to Greenhouse Gas (GHG) emissions, and the impacts of climate change on productivity, drawing insights from existing literature. Findings indicate that Thailand's rice production has gradually declined, potentially affecting global food security through reduced exports. Thai farmers contend with rising temperatures, erratic rainfall, and extreme weather events, which heighten production risks and disrupt planting schedules, especially for rain-fed systems. Additionally, rice cultivation is a notable source of GHG emissions, releasing methane (CH_4) and Nitrous Oxide (N_2O) under flooded conditions, which favor anaerobic decomposition. To mitigate these circumstances, Climate-Smart Agriculture (CSA) practices are being widely introduced as a holistic approach. Common strategies observed across Vietnam, Malaysia, and Thailand include Alternate Wetting and Drying (AWD) and the use of climate-tolerant rice varieties, which help mitigate water scarcity and extreme climate conditions. The review emphasizes, however, that the selection of appropriate CSA practices must consider diverse regional and local contexts. To facilitate broader CSA adoption and enhance climate resilience, this review recommends further research into high-potential microorganisms for efficient rice straw decomposition and addressing the scarcity of skilled service providers and machinery for Laser Land leveling. Ultimately, adopting climate-smart rice production will enable Thai farmers to adapt to sustainable practices and enhance their global competitiveness in the rice market.

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Introduction

Rice is a staple grain that feeds more than half of the world's population and is cultivated in over one hundred countries globally (Fukawa & Ziska, 2019). According to 2024/2025 United States Department of Agriculture (USDA) reports, global rice production was 532.7 million tons, with over eighty percent originating from nine Asian countries: China, India, Bangladesh, Indonesia, Vietnam, Thailand, the Philippines, Burma, and Pakistan (USDA, n.d.). This concentration means the stability of global food security largely relies on rice production in the Asia region (Bandumula, 2018).

However, food security currently faces severe threats, prominently climate change. Farmers worldwide are grappling with rising temperatures, erratic rainfall patterns, and increased frequencies of extreme weather events, all of which directly impact crop growth cycles and rice yields. For Thailand, a leading rice producer and exporter, these climate-induced disruptions pose a critical threat not only to its national economy and farmer livelihoods but also to its pivotal role in global food supply chains. With the United Nations projecting the global population to reach 9.7 billion by 2050 (Food and Agriculture Organization of the United Nations [FAO], 2018) and total food demand expected to increase by 35% to 56% between 2010 and 2050 (van Dijk et al., 2021), ensuring access to sufficient and nutritious food requires farmers to urgently adapt to fluctuating weather, extreme temperatures, drought, and heavy rainfall. This necessitates a proactive and robust approach to agricultural development.

CSA, introduced by the FAO has gained widespread recognition and is being broadly implemented to mitigate climate change impacts. Governments and international organizations in Asian countries, including Vietnam (Tran et al., 2020; Luu, 2020; Duc Truong et al., 2022) and Thailand (Khamkhunmuang et al., 2022), are applying various CSA practices to boost rice productivity while reducing GHG emissions. For Thailand, methane (CH_4) from rice cultivation accounts for 40% of emissions in the agriculture sector (The Nation, 2025). Therefore, the environmental impact of GHG emissions, particularly from agriculture, has emerged as a critical national concern. Given Thailand's significant global role and particular vulnerability to climate shifts, effectively addressing existing obstacles and capitalizing on emerging opportunities to enhance climate-smart rice production is paramount for its agricultural resilience and global competitiveness.

Against this critical backdrop, the first aim of this review study is to focus on the current situation and effects of climate change on rice production in Thailand. Secondly, we summarize CSA practices and technologies in Vietnam, Malaysia, and Thailand to provide a clear understanding of their achievements. Finally, we will outline the challenges and future opportunities to enhance CSA for rice production in Thailand, highlighting areas for strategic intervention.

Content

Current Situation of Rice Production in Thailand

Rice has been cultivated in Thailand for many thousands of years and serves as the foundation of both food security and economic stability (Castillo, 2011). Initially, most of the rice production in Thailand highlighted the significance of smallholder farming systems where family labor and conventional methods were dominantly applied. An objective of rice production in Thailand was for self-consumption in farmer households and exchanging with other goods in

the local community (Buddhaboon et al., 2022). Since 1976, or the fourth National Economic and Social Development Plan (NESDP), the Thai government has understood that further expansion of farmland would not be a mere answer for increasing agricultural production. Thus, the government decided to start a new program to elevate agricultural production by introducing modern agricultural technologies such as High-Yield Varieties (HYV) seed, modern farm machinery, fertilizer, and pesticides (Thepent & Chamsing, n.d.). Therefore, these efforts resulted in a significant increase in production capacity.

While existing literature offers extensive documentation on Thailand's general rice production trends and the broad impacts of climate change, this review provides a crucial, updated synthesis. It uniquely positions the current challenges within the evolving landscape of CSA strategies adopted across major Southeast Asian rice-producing nations, thereby highlighting specific, actionable insights and opportunities for enhancing Thailand's rice sector's resilience and competitiveness.

The Rice production system in Thailand can be categorized into wet and dry seasons. The rice cultivation area is about 10 million hectares annually. Rice production in the wet and dry seasons accounts for 82% and 18% of annual production, respectively, as shown in Figure 1. Rice production is dominant in northern and northeastern regions in the wet season, while most of the rice production is from the central region. In terms of ecosystem alignment, rice production areas can also be classified from upstream to downstream into upland rice, rain-fed rice, irrigated rice, and deep-water and floating rice production systems, as shown in Figure 2. Rain-fed rice and irrigated rice are the most important rice-growing systems in Thailand. The cultivation areas are about 75% and 24% of the total rice-growing area, respectively (Buddhaboon et al., 2022). Rain-fed rice is usually grown once per year in the wet season when Monsoon rain is the sole source of water supply for rain-fed rice cultivation (FAO, 2000). As an irrigated rice cultivation, it can grow in both wet and dry seasons under the availability of an irrigation water supply. The rice production in Thailand in 2013 was approximately 36.7 million tons and declined to 33.1 million tons in 2023 (FAO, 2025). The decline in rice production would affect global food security, according to the decrease in the amount of rice that is exported from Thailand.
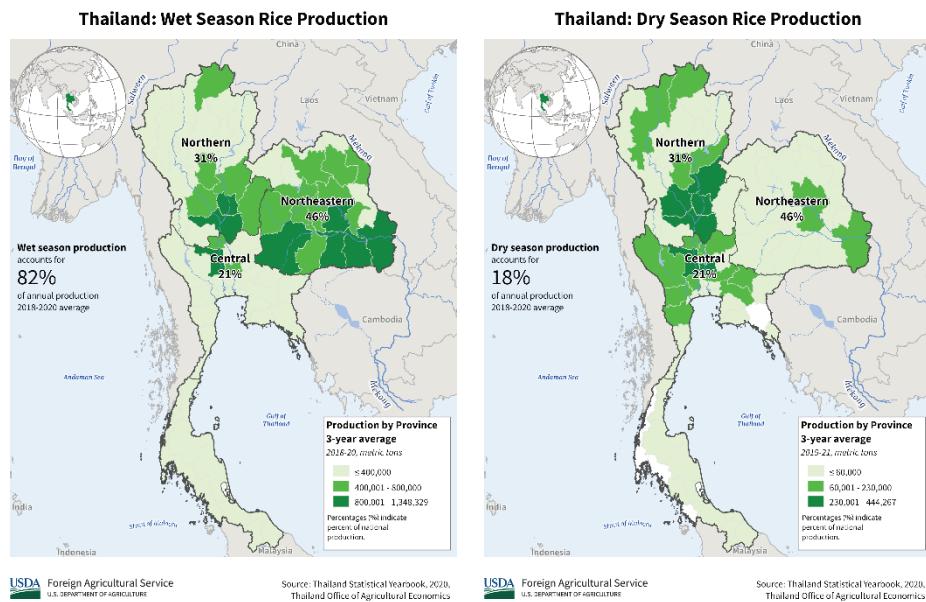
Figure 1 Rice Production in Wet and Dry Seasons in 2020

Source: USDA (2020)
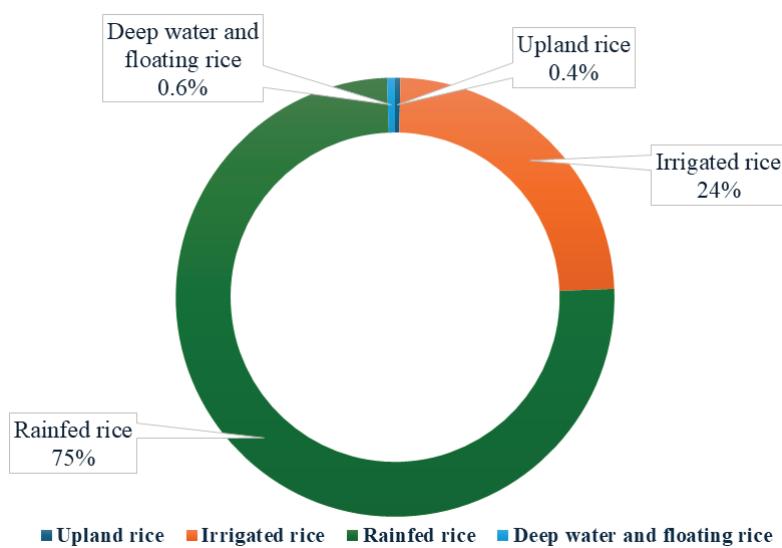
Figure 2 Percentage of Area of Rice Cultivation in Thailand

Source: Modified from Buddhaboon et al., 2022

Climate Change and Rice Production in Thailand

Climate change is one of the various causes that affect the yield of rice production in Thailand. Farmers are facing rising temperatures, changes in rainfall patterns, and extreme weather phenomena. As of 2016, 354 $MtCO_2$ were emitted from Thailand. The greatest proportion of GHG emissions was from the energy sector, which accounted for 71.65% of total emissions, followed by the agricultural sector, which accounted for 14.72%, as shown in Figure 3.

The agricultural sector was the second greatest contributor of total GHG emissions in Thailand, whit 52 $MtCO_2$ of GHG emissions emitted from farm activities. From total GHG emissions in the agricultural sector in Thailand, rice cultivation was the biggest contributor to total GHG emissions. It shared about 51% at 27 $MtCO_2$ of GHG emissions, as shown in Figure 4.
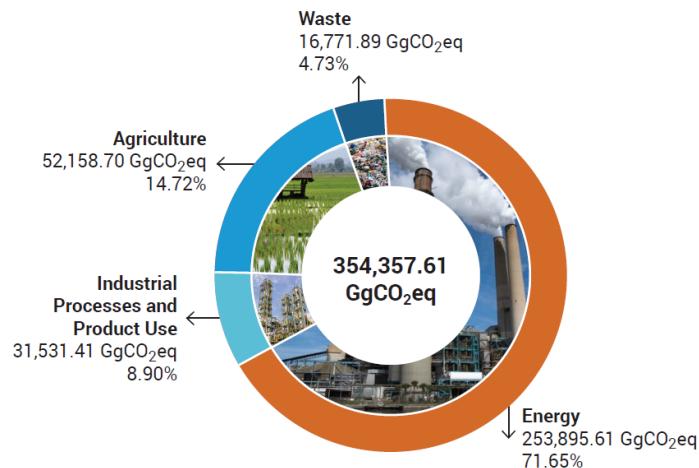
Figure 3 Total GHG Emissions from Different Sectors in Thailand

Source: Office of Natural Resource and Environmental Policy and Planning, 2020
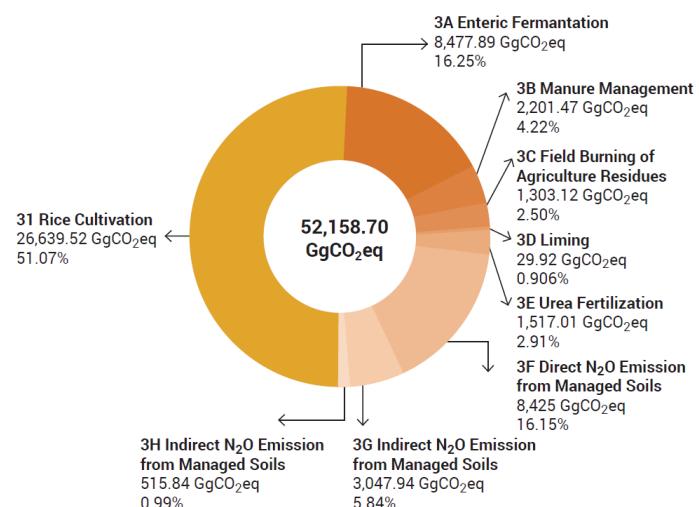
Source: Thailand's Third Biennial Update Report (ONEP 2020).

Figure 4 GHG Emissions in Agricultural Sectors in Thailand

Source: Office of Natural Resource and Environmental Policy and Planning, 2020

Rice has become one of the greatest GHG emission contributors in the agricultural sector. It is a concern due to the farm practices by the farmers could emit potent GHG emissions such as methane (CH_4) and Nitrous Oxide (N_2O). During the flooding period of rice production, methane could be produced from organic matter in the soil, such as organic fertilizers, root exudates, plant residues, and weed residues under anaerobic conditions (Rajendran et al. 2024). Besides GHG emissions, the temperature has increased across Thailand. The annual mean temperature in Thailand also rose by approximately 1˚C from 1981 to 2020, as shown in Figure 5. A great

temperature fluctuation has been observed since 1996. For the annual mean rainfall in Thailand during 1952-2019, it was around 1400-1900 mm, as shown in Figure 6. The annual mean rainfall during 1977-1993 displayed the tendency that the amount of rainfall was continuously below the normal baseline, as shown in Figure 7.
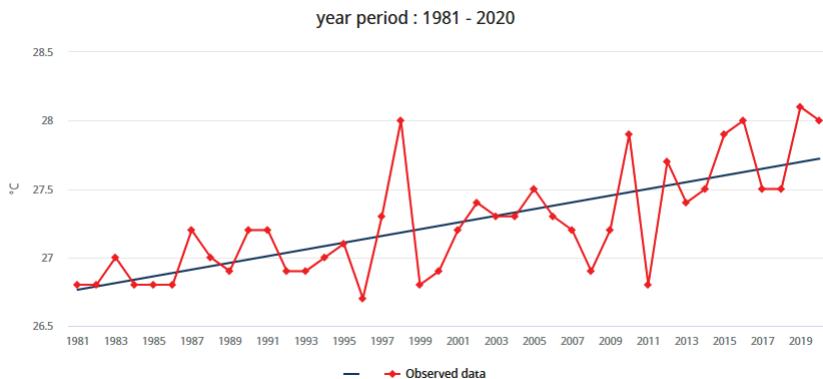
Figure 5 Annual Mean Temperatures in Thailand

Source: Thai Meteorological Department, 2022
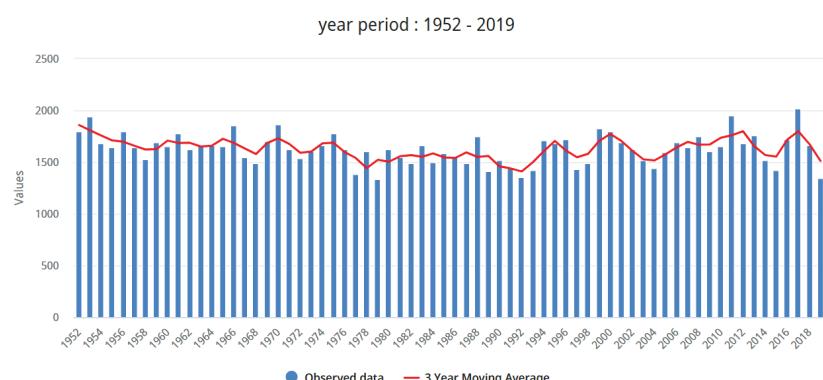
Figure 6 Annual Mean Rainfall in Thailand (mm)

Source: Thai Meteorological Department, 2022
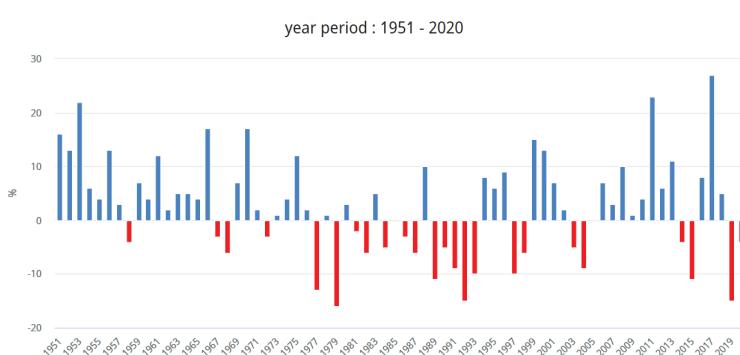
Figure 7 Percentage of Annual Rainfall Differed from Normal Rainfall in Thailand during 1951-2022

Source: Thai Meteorological Department, 2022

Since the temperature tends to increase while the rainfall is below the normal baseline and follows severe drought conditions. Therefore, rain-fed rice growers would be the ones who suffer the most from insufficient rainfall. Moreover, the drought may affect the irrigated rice farmers' farm practices by delaying their planting period (Phuong, 2016). The risk of rice production is also higher when the temperature increases. Pakeechai et al. (2020) noted that the risk of rice production will increase by 52.8% in the central region of Thailand when the temperature increases by 1%. Attavanich (2023) estimated the results of climate change in rice production, especially that the total yield of rice and total rice harvested area were projected to decrease around 10.3-14.4% and 0.2-1.3%, respectively. This may lead to a decrease in the production of rain-fed rice and irrigated rice from the baseline around 25.7-34.6% and 10.2-13.3%, respectively.

Climate Smart Agriculture in Rice Production

CSA is a holistic approach to assist farmers in adapting their farm practices and surviving the effects of climate change. CSA was initially introduced at the 2010 Hague Conference on Agriculture, Food Security, and Climate Change.

CSA is an approach that directs the farmers about the actions that need to be done for transforming and reorienting agricultural production systems and food value chains to ensure food security in a changing climate (FAO, 2013). The aims of CSA are described by Sebastian and Bernardo (2019) as follows:

1. Sustainable increase in agricultural productivity and incomes
2. Adapt and build resilience to climate change
3. reduce and or remove greenhouse gas emissions

To implement Climate-Smart Rice (CSR) for the farmers, there are many crucial aspects, including water-smart, nutrient-smart, carbon-smart, energy-smart, weather, and knowledge-smart, as shown in Table 1 (Das et al., 2024).

Table 1 Key Dimensions of Climate-Smart Rice

Key Dimensions	Examples
Water Smart	- Alternate Wetting and Drying (AWD) - Weather prediction-based irrigation
Nutrient Smart	- 4R concept (right time, right rate, right source, and right place) - Slow-release nitrogen fertilizer application - Sub-surface nitrogen fertilizer application - Real-time and site-specific nutrient management
Carbon Smart	- Residue incorporation and retention - Biochar application - Zero tillage or minimum tillage
Energy Smart	- Zero tillage or minimum tillage - Direct-seeded rice - Laser soil levelling

Table 1 Key Dimensions of Climate-Smart Rice (Con.)

Key Dimensions	Examples
Weather Smart	- Weather forecasts - Weather-based crop agro-advisory - Stress-tolerant crops
Knowledge Smart	- Precision farming - Crop insurance

Rice was recognized early on as a key sector for CSA practices due to its significant contribution to greenhouse gas emissions. The Global Alliance for Climate-Smart Agriculture (GACSA) was established in 2014 to promote CSA globally, including in rice production systems (FAO, 2021). Implementation of CSA in rice production involves adopting practices that enhance productivity, strengthen resilience to climate change and reduce greenhouse gas emissions. Practical experiences in Asia and Africa indicate that CSA practices in rice farming have generated tangible gains in both productivity and environmental outcomes, paving the way for a shift toward more climate-resilient agricultural systems (Bhusal et al., 2025; Khamkhunmuang et al., 2022; Sanago et al., 2023).

Considering these key dimensions could be implemented to secure rice production, there are also some more concerns that farmers need to take into consideration. Since each farmland or rice field is quite different, farmers need to consider which technique or method is suitable for their rice production. As shown in Table 2, the CSA practices and their impact on rice production in Vietnam, Malaysia, and Thailand were summarized.

Table 2 CSA Practice and Impact on Rice Production

Country	CSA Practice	Impact on Rice Production	References
Vietnam	System of Rice Intensification (SRI) - Alternate Wetting and Drying (AWD) - Early planting - Reduced plant density - Reduced fertilizer application	- Increase rice yield - Increase resistance to unfavorable conditions: Drought, flood, disease - Mitigation of GHG emissions	World Bank, n.d.
	Flood-resistant varieties	- Increase land and crop productivity per unit of water - Increases resistance to heavy rain or flood - Moderate reduction in GHG emissions per unit of food produced	World Bank, n.d.

Table 2 CSA Practice and Impact on Rice Production (Con.)

Country	CSA Practice	Impact on Rice Production	References
	Integrated Crop Residue Management (ICM) - Decomposition of rice straw by using microorganisms - Reduced plant density - Reduced fertilizer application	- Reduction of herbicide use for rice straw - Increase land and crop productivity per unit of water - Increases rice yield by 20%	Vernooy et al., 2018
Malaysia	Use of microorganisms to improve rice straw degradation	- Reduction of 10.14% in GHG in the form of decreasing anaerobic methane during the cultivation season	Rahman et al., 2023
	System of Rice Intensification (SRI)	- Mitigation of GHG emissions by 30-55%	
	Drought-tolerant varieties	- Increases plant growth and yield	
Thailand	Laser Land Levelling (LLL)	- Optimized water use and reduction of waterlogging - Increase rice yields - Mitigation of GHG emissions	Gesellschaft für International Zusammenarbeit (GIZ), 2024
	Alternate Wetting and Drying (AWD)	- Reduction of overuse of fertilizer - Mitigation of GHG emissions	
	Site-Specific Nutrient Management	- Reduction of overuse of fertilizer - Improvement of soil health	
	Rice straw and stubble management by using straw balers	- Mitigation of GHG emissions	
	Drought-tolerant and flood tolerant varieties	- Increase plant growth and yield	Kawasaki, 2024

A similar pattern of CSA practices is found in Vietnam, Malaysia, and Thailand. AWD and climate-tolerant rice varieties are selected and applied in all countries according to the fluctuation of annual rainfall and water scarcity. The climate-tolerant rice varieties are developed and promoted to farmers to increase productivity under extreme climate conditions. Rice Straw

management is done in different ways. In Vietnam and Malaysia, microorganisms are used to decompose rice straw in the paddy field, while farmers opt to collect the rice straw using straw balers. In the case of Thailand, the rice would be used for feeding cattle or sold to earn more income. However, farmers may face some difficulty accessing the modern farm machinery and collecting the rice straw from the paddy field. Therefore, the application of microorganisms appears to be a suitable alternative for managing rice straw and stubble. This may be an opportunity for researchers to develop high-potential microorganisms that can rapidly decompose rice straw and stubble.

For Thailand, Deutsche GIZ GmbH established the Thai Rice NAMA project to encourage local smallholder farmers to implement low-emission rice farming. The Half-Half co-payment scheme was introduced to the farmers and agripreneurs in six pilot provinces of Chainat, Singburi, Angthong, Ayutthaya, Pathumthani, and Suphanburi. Laser Land Levelling (LLL), which can optimize water use and reduce waterlogging in the paddy field, was promoted by this Half-Half co-payment campaign (GIZ, 2024). However, the main constraint for LLL application in Thailand was the lack of service providers who can operate the LLL with proper skills. Moreover, there is not enough number of LLL in Thailand for land levelling service. This may be a great challenge for local agripreneurs or local service providers to serve the needs of LLL service.

Challenges and Opportunities for CSA Implementation in Thailand's Rice Production

CSA presents a promising pathway to enhance productivity, resilience, and emissions reduction in Thailand's rice sector. However, its effective implementation requires addressing key challenges across multiple dimensions, involving farmers, policymakers, researchers, and the private sector.

Thailand's rice production is dominated by smallholder farmers with limited access to capital, technology, and agronomic knowledge, which constrains the scalability of CSA practices that rely on collective action or infrastructure development. One significant barrier is the limited availability of timely and site-specific climate and agronomic information, such as weather forecasts and soil data, which constrains farmers' ability to make informed decisions and adopt water and nutrient-efficient practices. Policy misalignment also limits CSA uptake. Although national strategies on climate change exist, support mechanisms like subsidies, credit, and insurance are often inconsistent with CSA goals. Technical constraints, including inadequate irrigation systems and limited access to stress-tolerant rice varieties, further reduce the feasibility of CSA techniques such as AWD. Behavioral resistance, especially among older, risk-averse farmers, remains a significant challenge. The absence of clear short-term benefits or trusted peer models often leads to reluctance in adopting new practices. Addressing these barriers calls for integrated efforts, including targeted extension services and participatory learning, to facilitate behavioral change and promote CSA at scale.

Conversely, several enabling factors support CSA implementation in Thailand. Strong institutional support from entities such as the Department of Rice, Ministry of Agriculture, and Kasetsart University has facilitated the piloting of CSA technologies, including AWD and the System of Rice Intensification. Rising sustainability awareness at both domestic and international levels has increased demand for certified rice such as GAP, organic, and low-carbon rice has created strong market incentives for CSA adoption. Moreover, youth engagement offers strong potential with younger farmers more open to innovation and smart farming technologies that relate to CSA practices.

Conclusions

Climate change presents a multifaceted challenge for global rice production, necessitating adaptive farm practices to ensure food security. Rice producers worldwide, including Thailand, confront rising temperatures, erratic rainfall, and extreme weather phenomena. As in Thailand, the agricultural sector was the second biggest GHG emitter, especially during the flooding period. To mitigate the effects and impacts of climate change, CSA was introduced to farmers in various countries. Similar patterns of CSA practices, such as AWD and the use of climate-tolerant rice varieties, were observed across Vietnam, Malaysia, and Thailand. These shared strategies are instrumental in mitigating water scarcity and enhancing resilience against extreme climatic conditions, thereby directly lessening the effects of climate change on rice production. However, effectively applying CSA requires careful consideration: The optimal CSA practices for rice production in each region must be precisely selected based on its unique local context, encompassing specific climate vulnerabilities, resource availability, and socio-economic factors. Such tailored CSA practices offer alternative farm activities that enable Thai farmers to grow rice with consideration for the sustainability of rice production, thereby increasing competitiveness in the global rice market.

Recommendations

CSA practices are new alternative farm activities that could elevate Thai farmers to promising sustainability. However, there are more practical actions that need to be implemented to achieve CSA practices.

For Government Entities:
• Collaboration with national or international organizations to initiate specific training programs, pilot projects, and demonstrations of CSA practices by training the local government officers and farmers.
• Development of a specific training program for LLL operators and maintenance technicians.
• Providing financial support such as subsidies or low-interest loans for arbitrageurs to invest in agricultural machinery and establish service centers in key rice-producing regions.

For Educational Institution and Industry Experts:
• Offering of upskilling and reskilling programs to implement CSA practices, especially rice production, for local government officers and farmers.
• Fostering collaboration between educational institutions and industry experts to develop low-cost agricultural machinery that is suitable for rice production in Thailand and equip the local knowledge to the local technicians.

For Rice Production Farmers:
• Participation in the training programs, pilot projects and demonstrations to update the necessary knowledge about CSA practices from local government officers or educational institutes.
• Strengthen the accessibility to agricultural machinery by organizing the machinery ring.

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The Impact of Marketing Factors on Brand Image: A Case Study of Boutique Hotels in Siem Reap

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Abstract

This study examined how key marketing factors, service quality, price reasonableness, hotel atmosphere, location, social media marketing, Corporate Social Responsibility (CSR), and Customer Relationship Management (CRM), influence brand image through perceived value as a mediating variable in Siem Reap's boutique hotel sector. Using stratified purposive sampling, data were collected from 436 boutique hotel guests aged 18+ and analyzed through PLS-SEM with bootstrapping for mediation effects. Results showed significant direct effects on brand image from perceived value ($\beta = 0.182$, $p < 0.001$), price reasonableness ($\beta = 0.210$, $p < 0.001$), hotel atmosphere ($\beta = 0.219$, $p < 0.001$), location ($\beta = 0.114$, $p = 0.008$), CSR ($\beta = 0.126$, $p = 0.004$), and CRM ($\beta = 0.156$, $p < 0.001$). Perceived value significantly mediated relationships between service quality ($\beta = 0.033$, $p = 0.013$), price reasonableness ($\beta = 0.043$, $p = 0.004$), CRM ($\beta = 0.067$, $p = 0.002$), and brand image. Theoretically, this research expands the Stimulus-Organism-Response (S-O-R) model by demonstrating perceived value's pivotal mediating role in emerging tourism markets. Practically, findings suggest boutique hotel managers should strategically focus on pricing, atmosphere, CSR, and CRM initiatives to enhance perceived value and strengthen brand image.

Keywords: Boutique Hotel, Marketing Mix, Perceived Value, Brand Image, S-O-R Model

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Introduction

The global hospitality industry has shifted significantly, with travelers increasingly favoring boutique hotels that offer personalized, culturally immersive experiences over conventional chain accommodations (Kokkhangplu & Auemsuvarn, 2024). In Cambodia, Siem Reap has become a major tourism hub due to its rich cultural heritage and proximity to Angkor Wat (Ivan, 2020). In 2019, Cambodia welcomed over 6.6 million international tourists, with Siem Reap alone receiving approximately 2.6 million visitors and generating $1.3 billion in tourism revenue (Ford & Im, 2023b). As the number of visitors continued to increase, many newly built hotels emerged, especially in Siem Reap (Nhep et al., 2019). In Siem Reap, boutique hotels are one of the key players in the accommodation business and hold a substantial market share thanks to their distinctive offerings and the increasing demand for unique, culturally immersive experiences among both domestic and international travelers (Ivan, 2020). However, tourism sharply declined during the COVID-19 pandemic, dropping to 1.3 million international visitors in 2020 and only 196,459 in 2021. The sector rebounded in 2022 and 2023, recording 2.27 million and 5.45 million arrivals, respectively (Eijdenberg et al., 2024; Ministry of Tourism, 2023).

With over 1,090 registered accommodation providers in Siem Reap, boutique hotels now face intense competition, amplified by changes in consumer behavior and post-pandemic recovery pressures (Ford & Im, 2023b). To survive and thrive in this saturated market, boutique hotels must differentiate themselves through effective brand image strategies (Martin & Nasib, 2021). Brand image plays a vital role in shaping customer perceptions, influencing emotional attachment, satisfaction, and loyalty (Ihzaturrahma & Kusumawati, 2021; Lyreaksmey & Ratasuk, 2024). Guest develops a brand image of a boutique hotel in their mind through a marketing campaign and their own experience during and after receiving the service; therefore, fostering a favorable brand image is crucial for the business's long-term success (Keller, 2013). Perceived value plays a crucial role in shaping consumer behavior; when consumers perceive higher value, they are more likely to develop a favorable brand image (Zulwarni et al., 2022). Several previous studies have found that marketing factors have a positive contribution to enhancing brand image and ongoing support of the business (Ratasuk & Buranasompob, 2021; Ratasuk & Gajesanand, 2020). Therefore, based on the Stimulus-Organism-Response (S-O-R) Model, external Stimuli (S), including service quality, price reasonableness, atmosphere, location, Social Media Marketing (SMM), Corporate Social Responsibility (CSR), and Customer Relationship Management (CRM), are proposed to influence the development of a favorable brand image (R). At the same time, perceived value (O) is proposed as a mediating mechanism linking these marketing factors to brand image.

Although prior studies have examined the effects of the seven marketing factors on brand image, few have focused specifically on boutique hotels in Siem Reap (Nugraha et al., 2024; Ratasuk & Buranasompob, 2021; Ratasuk & Gajesanand, 2020; Yang & Ratasuk, 2024). This gap underscores the need to investigate how key marketing mix elements, both directly and indirectly through perceived value, influence the brand image of boutique hotels in this increasingly competitive market. Understanding this intricate relationship through the lens of the S-O-R Model is crucial for businesses to promote their sustainable competitive advantage and strategically leverage their marketing efforts for effective brand differentiation.

Guided by the S-O-R Model, this research investigates which of the seven marketing factors most strongly impacts the brand image of boutique hotels in Siem Reap and examines

the mediating role of perceived value in the relationship between these factors and brand image. The study aims to contribute theoretically by expanding the S-O-R Model and offering empirical insights into the brand-building process of boutique hotels in Siem Reap. The findings are expected to offer valuable managerial and strategic implications for boutique hotel operators, helping them enhance their brand image and customer engagement in an increasingly competitive market.

Research Objective

Grounded in the Stimulus-Organism-Response Model, this research examines the direct impact of seven marketing mix elements on brand image and investigates the perceived value's mediating role in these relationships. The study aims to provide practical managerial implications for Siem Reap boutique hotel owners to enhance brand image and achieve sustainable competitive advantage through strategic marketing efforts for effective brand differentiation and long-term success.

Literature Review

To address the gap in understanding how seven marketing mix factors influence brand image in Siem Reap's boutique hotel sector, particularly through the mediating role of perceived value, this section reviews the theoretical foundation and relevant literature. It begins with general information of a boutique hotel in Siem Reap, followed by the S-O-R Model as the guiding framework, definitions, and discussions of brand image, perceived value, and the seven marketing mix factors, leading to hypothesis development on their direct and indirect relationships.

Boutique Hotel in Siem Reap

As of 2022, there were 232 hotels officially registered with the Siem Reap Provincial Department of Tourism (Ford & Im, 2023a). Among the registered accommodations in Siem Reap, boutique hotels are the most preferred, typically offered within a price range of USD 50 to 100 per night (Ray, 2022). Meanwhile, room rates at high-end luxury boutique hotels can reach several hundred USD per night. Boutique hotels continue to maintain a strong presence in Siem Reap's accommodation market, largely attributed to their distinctive features such as locally inspired architecture, personalized services, and the incorporation of Khmer cultural elements, which appeal to the increasing demand for authentic and culturally immersive experiences among both domestic and international visitors (Ivan, 2020).

Stimulus-Organism-Response (S-O-R) Model

This research adopts the S-O-R model, a foundational framework in environmental psychology and consumer behavior, as its theoretical underpinning. The model posits that external Stimuli (S) trigger internal cognitive and affective processes within an Organism (O), which ultimately lead to a specific Response (R) (Hiranrithikorn & Banjongprasert, 2022). The S-O-R model has been applied in various business contexts such as fashion, hot springs, educational tourism, and so on (Guo et al., 2022; Ilmalhaq et al., 2024; Thomas, 2023). In the context of this study, the S-O-R Model is applied as follows: Stimuli (S) refer to external marketing factors such as service quality, price reasonableness, atmosphere, location, social media marketing, CSR, and CRM that influence guest perceptions. The Organism (O) is a perceived value, representing guests' internal evaluation of the benefits relative to the costs of

their hotel experience. The Response (R) is brand image, reflecting guests' overall impression of the hotel.

By applying the S-O-R model, this study aims to understand how these external marketing Stimuli (S) influence guests' perceived value (O), which in turn shapes the overall brand image (R) of boutique hotels in Siem Reap. The model provides a structured framework for examining both the direct effects of the marketing factors on brand image and the indirect effects mediated by perceived value.

Brand Image

Brand image is defined as the perception of a brand in consumers' minds based on their direct and indirect experiences (Ihzaturrahma & Kusumawati, 2021). In the hospitality industry, and particularly for boutique hotels, brand image plays a crucial role in influencing trust, emotional connection, and competitive positioning (Martin & Nasib, 2021; Tahir et al., 2024). Unlike standardized hotel chains, boutique hotels differentiate themselves through distinctive design, personalized service, and cultural authenticity, making brand image vital for attracting and retaining customers (Loureiro et al., 2020; Sukendar et al., 2025). In competitive tourism destinations such as Siem Reap, understanding the drivers of brand image is essential for survival and growth. This study focuses on seven marketing factors, service quality, price reasonableness, hotel atmosphere, location, social media marketing, CSR, and CRM, which have been empirically linked to favorable brand image and ongoing support of the business (Ratasuk & Buranasompob, 2021; Ratasuk & Gajesanand, 2020). Therefore, identifying the key drivers of brand image is essential for boutique hotels seeking to strengthen their position in competitive destinations like Siem Reap.

Perceived Value

Perceived value is defined as the customer's overall assessment of the utility of a product or service based on perceptions of what is received and what is given (Li & Shang, 2020). It typically involves four dimensions: perceived price fairness, fulfillment of expectations, quality relative to price, and the overall value exchange (Dam, 2020). It has been found to promote various business outcomes, such as brand image, purchase intentions, repurchase intentions, and others (Hafidz & Huriyahnuryi, 2023; Kong & Ratasuk, 2024; Niu et al., 2025; Zulwarni et al., 2022). On the other hand, research shows that it can be created by several factors, such as marketing activities and social media marketing (Bazrkar et al., 2021; Kong & Ratasuk, 2024). Within the S-O-R framework, this study conceptualizes perceived value as the "organism", the internal evaluative process through which customers interpret external marketing stimuli, ultimately shaping their perception of the hotel's brand image.

Marketing Mix Factors

In this study, the concept of the marketing mix was adapted to fit the context of the boutique hotel business by including seven marketing factors in the model (Ratasuk & Buranasompob, 2021; Ratasuk & Gajesanand, 2020). These factors were selected due to their direct relevance to customer experience and their strategic importance in shaping brand image within highly competitive tourism destinations such as Siem Reap. Each factor represents a critical touchpoint through which boutique hotels can differentiate their offerings, enhance perceived value, and influence customer perceptions, ultimately contributing to a stronger, more favorable brand image.

Service Quality: In the hospitality industry, especially for boutique hotels emphasizing personalized experiences, service quality is a fundamental differentiator and a strong driver of customer satisfaction and brand perception (Ali et al., 2021).

Price Reasonableness: Given the varying price sensitivities of tourists and the need for boutique hotels to justify their often premium pricing, the perceived reasonableness of prices directly influences perceived value and brand image (Ratasuk & Buranasompob, 2021).

Hotel Atmosphere: Boutique hotels often focus on unique design and ambiance to create memorable experiences. The atmosphere is a tangible aspect of the offering that significantly contributes to emotional connection and brand differentiation (Ratasuk, 2022).

Location: Proximity to key attractions, transport hubs, and other conveniences is a critical factor for tourists when selecting accommodation, directly impacting their overall experience and perception of the hotel's value (Salim et al., 2020).

Social Media Marketing (SMM): In the digital age, SMM is crucial for building brand awareness, engaging with potential guests, managing online reputation, and influencing booking decisions, making it a vital marketing tool for boutique hotels (Li et al., 2021).

Corporate Social Responsibility (CSR): refers to the hotel's commitment to ethical and sustainable practices, including environmental protection, social responsibility, and community engagement (Le et al., 2022).

Customer Relationship Management (CRM) is conceptually defined as a strategic approach focused on building and maintaining strong, long-term relationships with customers. Effective CRM practices involve understanding customer needs, personalizing interactions, and providing excellent service throughout the customer journey. The goal of CRM is to enhance customer satisfaction, foster loyalty, and ultimately improve business performance (Dastane, 2020).

These seven factors collectively represent a comprehensive set of marketing levers that boutique hotel managers can utilize to influence perceived value and ultimately shape a strong and positive brand image in the competitive Siem Reap market.

Hypothesis Development

Building a strong brand image is essential for boutique hotels to enhance customer loyalty and sustain a competitive advantage. Influenced by seven key marketing factors, brand image is also shaped by perceived value, defined as the customer's evaluation of benefits received relative to sacrifices made, which serves as a critical mediating variable. This section examines both the direct and mediated relationships between these factors and brand image.

Perceived Value and Brand Image

Brand image is a key determinant of customer loyalty and a source of competitive advantage for boutique hotels (Martin & Nasib, 2021). Perceived value, reflecting customers' overall evaluation of the benefits received relative to the costs incurred, is a key determinant of brand image (Zeithaml, 1988). A high perceived value leads to a favorable perception of the brand, strengthening customers' emotional and cognitive associations with it (Miao et al., 2022). Prior studies suggest that when customers perceive high value in terms of service quality, pricing, and unique experiences, their perception of a brand becomes more positive, reinforcing its reputation in the marketplace (Fauzi et al., 2024; Zulwarni et al., 2022). Thus, the following hypothesis is proposed:

H1: Perceived Value has a positive impact on brand image.

Service Quality, Perceived Value, and Brand Image

Service quality, defined as the degree to which a service meets or exceeds customer expectations (Ali et al., 2021), is a fundamental driver of brand perception in the hospitality industry. Higher service quality enhances customer satisfaction, increases trust, and strengthens brand credibility, all of which contribute to a positive brand image (Ratasuk & Buranasompob, 2021). Given the personalized and exclusive experiences that boutique hotels offer, exceptional service quality can significantly enhance brand differentiation, making the hotel more attractive to guests (Ratasuk, 2022). Moreover, service quality has been found to positively influence perceived value, as customers perceive better service to justify the price they pay, thus enhancing their evaluation of the brand (Azzahra & Kusumawati, 2023; Liu, 2024). Previous studies have consistently demonstrated a positive relationship between service quality and perceived value, as well as brand image, in the hospitality sector (Fauzi et al., 2024; Miao et al., 2022). Thus, the following hypothesis is proposed:

H2: Service quality has a positive impact on brand image.

H3: Perceived value mediates the relationship between service quality and brand image.

Price Reasonableness, Perceived Value, and Brand Image

Price reasonableness reflects the customers' perception of whether the price they pay for a service corresponds to the benefits they receive (Ratasuk & Gajesanand, 2020). Research indicates that reasonable pricing enhances customer satisfaction and brand image by increasing perceived fairness and trust in the brand (Ratasuk & Buranasompob, 2021). A competitive and fair pricing strategy enhances customers' perceived value, as they associate the price with the quality and benefits of the boutique hotel experience (Chen, 2024; Rady et al., 2023). When customers perceive a hotel as offering reasonable prices, their perceived value of the service increases, ultimately leading to a positive brand image (Fauzi et al., 2024). Thus, the following hypothesis is proposed:

H4: Price reasonableness has a positive impact on brand image.

H5: Perceived value mediates the relationship between price reasonableness and brand Image

Hotel Atmosphere, Perceived Value, and Brand Image

The hotel atmosphere, encompassing interior design, ambiance, and overall aesthetic appeal, is a crucial factor influencing customers' perceptions of a brand. A well-curated hotel atmosphere contributes to the emotional experience of guests, making their stay more enjoyable and enhancing their perception of the hotel's image (Danthanarayana & Arachchi, 2020; Ratasuk, 2022). Research suggests that a positive hotel atmosphere leads to higher perceived value, as guests feel that a pleasant and well-designed environment justifies the price paid for their stay. This led to higher brand perception and a stronger emotional connection to the brand (Phillips, 2024). Studies have indicated that a positive hotel atmosphere enhances perceived value and brand image (Al-Gharaibah, 2020; Slack et al., 2021; Zulwarni et al., 2022). Thus, the following hypothesis is proposed:

H6: Hotel atmosphere has a positive impact on brand image

H7: Perceived value mediates the relationship between hotel atmosphere and brand image.

Location, Perceived Value, and Brand Image

Location is a key determinant in customers' hotel choices, influencing their perceptions and overall satisfaction (Hartadi et al., 2023). A strategic and convenient hotel location enhances accessibility and convenience, which positively affects its brand image (Nugraha et al., 2024). Proximity to tourist attractions, shopping centers, and transport hubs increases a hotel's perceived value, as it minimizes travel time and enhances the overall experience (In, 2023). Therefore, a favorable location contributes to enhanced customer-perceived value, ultimately strengthening the hotel's image (Hafidz & Huriyahnuryi, 2023; Lin & Zhou, 2022). Thus, the following hypothesis is proposed:

H8: Location has a positive impact on brand image.

H9: Perceived value mediates the relationship between location and brand image.

Social Media Marketing, Perceived Value, and Brand Image

SMM plays a significant role in shaping brand image by enhancing brand awareness, customer engagement, and brand advocacy (Malarvizhi et al., 2022). Engaging and interactive social media marketing strategies foster a sense of connection between customers and boutique hotels, positively impacting brand perception and loyalty (Bazrkar et al., 2021; Budiman, 2021; Fatima et al., 2022). Additionally, a strong social media presence influences perceived value by providing customers with relevant information, promotional offers, and interactive experiences that enhance their perception of the hotel's offerings (Hewei & Youngsook, 2022; Purba et al., 2021). Customers who find valuable content through social media platforms are more likely to form a positive impression of the brand (Aji et al., 2020). Thus, the following hypothesis is proposed:

H10: Social media marketing has a positive impact on brand image.

H11: Perceived value mediates the relationship between social media marketing and brand image.

Corporate Social Responsibility, Perceived Value, and Brand Image

CSR has emerged as a key factor influencing consumers' perceptions of brands, particularly in the hospitality industry, where ethical considerations play a growing role in customer decision-making (Raza et al., 2020). CSR initiatives, such as environmental sustainability programs, community engagement, and ethical business practices, contribute to a positive brand image by enhancing customers' perceptions of the hotel's credibility and commitment to social well-being (Araújo et al., 2023; Phan et al., 2021). Furthermore, CSR activities improve perceived value, as customers tend to evaluate brands more favorably when they believe the company is socially responsible (Abbass et al., 2023; Abdou et al., 2022; Farrukhjon & Don-Yoon, 2023). This enhanced perceived value, in turn, strengthens the overall brand image of boutique hotels (Hamzah et al., 2023; Widodo, 2023). Thus, the following hypothesis is proposed:

H12: Corporate social responsibility has a positive impact on brand image.

H13: Perceived value mediates the relationship between corporate social responsibility and brand image.

Customer Relationship Management, Perceived Value, and Brand Image

CRM is a vital strategic tool that enhances customer satisfaction, loyalty, and brand image in the hospitality sector (Gil-Gomez et al., 2020). Effective CRM practices, including personalized communication, customer engagement, and after-sales services, strengthen customer

relationships and foster a favorable brand image (Y. Ibrahim et al., 2021a, 2021b). A well-implemented CRM strategy enhances perceived value by ensuring that customers receive personalized experiences, superior service, and a sense of recognition, which ultimately strengthens their attachment to the brand (Azhari & Utari, 2023; Bupu et al., 2023). Consequently, a positive perceived value resulting from effective CRM efforts can further enhance the overall brand image of boutique hotels in Siem Reap (Purba et al., 2021). Thus, the following hypothesis is proposed:

H14: Customer relationship management has a positive impact on brand image.

H15: Perceived value mediates the relationship between customer relationship management and brand image.

Methodology

This research employed a quantitative method using self-administered surveys among guests over 18 years old who received boutique hotel services in Siem Reap. Siem Reap was selected due to its cultural heritage, temples, and attractions that make it a thriving boutique hospitality destination. The minimum sample size was determined using the formula by Cochran (1977) at a 95% confidence level, requiring at least 385 respondents. Stratified sampling across Siem Reap's 12 administrative districts ensured geographic representation, reflecting variations in boutique hotel concentration and guest experiences. Initially, 40 participants were approached per district, totaling 480, to ensure comprehensive coverage and reliable data for robust statistical analysis. Before questionnaire distribution, respondents were informed about response confidentiality, their right to withdraw, and that information would be used solely for study purposes.

Measurement Items

All measurement items for latent variables were adapted from validated prior studies with Cronbach's alpha above 0.70 and AVE above 0.50, using a five-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree). Service quality used five items from Abror et al. (2020). Price reasonableness employed five items from Hasan (2022) and Ratasuk and Gajesanand (2020). The hotel atmosphere utilized six items from Dhisasmito and Kumar (2020) and Ratasuk (2022). Location was measured with six items from Ratasuk and Gajesanand (2020). Social media marketing used six items from Ibrahim et al. (2021). Corporate social responsibility employed five items from Le et al. (2022). Customer relationship management utilized five items from Dastane (2020). Perceived value was assessed with six items from Jeong and Kim (2020). Lastly, brand image was measured using a five-item scale adapted from Šerić and Mikulić (2020).

Data Analysis

The collected data were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM), suitable for prediction-oriented research with complex models and non-normally distributed data (Ratasuk, 2024b; Ratasuk & Gajesanand, 2023; Sabol et al., 2023). Analysis began with descriptive statistics, followed by measurement model evaluation for reliability and validity. Internal consistency was assessed using Cronbach's Alpha and Composite Reliability (CR), while convergent validity was examined through factor loadings, CR, and Average Variance Extracted (AVE). Discriminant validity was assessed using the Fornell-Larcker criterion and the Heterotrait-Monotrait Ratio (HTMT). Multicollinearity and common method bias were tested using the Variance Inflation Factor (VIF). PLS-SEM was chosen over Covariance-Based SEM

due to its robustness with non-normal distributions and smaller sample sizes (Dash & Paul, 2021; Hair Jr et al., 2014; Purwanto & Sudargini, 2021; Ratasuk, 2023). The structural model was assessed through path coefficient significance, R^2 values, and model fit indices, with mediation analysis performed using bootstrapping to test indirect effects.

This research was approved by the Research Ethics Committee (REC), Approval Number PIM-REC 062/2567, with data collection commencing upon approval.

Results

A survey of boutique hotel service users in Siem Reap achieved an 86.3% response rate, with 436 out of 480 invited participants completing the questionnaire. The sample was predominantly young, educated, and middle-income: 53% male, 50.7% aged 18-25, 87.8% holding Bachelor's degrees, and 54.8% earning $251-500 USD monthly.

Table 1 Sample Characteristics

Characteristics	Categories	Descriptive Statistics	
		Frequency (f)	Percentage (%)
Gender	Male	231	53%
	Female	205	47%
Age	18 - 25	221	50.7%
	26 - 30	115	26.4%
	31 - 40	62	14.2%
	41 - 50	20	4.6%
	51 - 60	11	2.5%
	61 or older	7	1.6%
Education	High School or Lower	24	5.5%
	Associate Degree	3	0.7%
	Bachelor's Degree	383	87.8%
	Master's Degree	26	6%
	Doctoral Degree	0	0
Income	$250 and below	65	14.9%
	$251 - $500	239	54.8%
	$501 - $750	92	21.1%
	$750 - $1,000	20	4.6%
	$1,001 - $2,000	13	3%
	$2,001 - $3,000	2	0.4%
	$3,000 or above	5	1.2%

Prior to PLS-SEM analysis, data validation confirmed convergent validity through three key measures following recommended minimum thresholds of 0.7 and 0.5, respectively (Niu et al., 2025; Ratasuk, 2024a; Zhu & Ratasuk, 2024). Factor loadings exceeded the 0.5 minimum threshold, with most surpassing 0.7, indicating strong contribution to their respective constructs (Sathyanarayana & Mohanasundaram, 2024). Composite Reliability (CR) values ranged from 0.857 to 0.914, well above the 0.7 threshold proposed by Haji-Othman and Yusuff (2022) and Schuberth (2021). confirming internal consistency. Average Variance Extracted (AVE) values ranged from 0.545 to 0.656, all exceeding the 0.5 minimum, indicating substantial variance capture by constructs rather than error (Hair Jr et al., 2021). These results demonstrate satisfactory convergent validity, with constructs meeting established criteria as shown in Table 2.

Table 2 Convergent Validity: Factor Loading, Composite Reliability (CR), Average Variance Extracted (AVE)

Variables	Question Items	Factor Loadings	CR	AVE
Brand Image	BI1 This boutique hotel has a unique brand image that sets it apart from others.	0.823	0.905	0.656
	BI2 The good service quality at this boutique hotel contributes positively to its brand.	0.795		
	BI3 This boutique hotel creates a comfortable atmosphere that enhances its brand image.	0.838		
	BI4 The inviting room environment reflects the standards of this boutique hotel's brand.	0.824		
	BI5 The feeling of safety and security during my stay enhances my perception of this hotel's brand image.	0.768		
Perceived Value	PV1 I believe the services offered by this boutique hotel are worth it.	0.728	0.894	0.584
	PV2 I feel that the experiences offered by this boutique hotel are well worth it.	0.762		
	PV3 I believe that the value I received from this boutique hotel was great.	0.805		
	PV4 I feel that the benefits I received from this boutique hotel met my expectations.	0.776		
	PV5 I feel that my choice to stay at this boutique hotel was a good decision.	0.783		
	PV6 I feel that the boutique hotel offers excellent value compared to similar options.	0.729		
Service Quality	SQ1 Employees of this boutique hotel serve customers in a good manner.	0.684	0.857	0.545
	SQ1 Employees of this boutique hotel always help customers.	0.800		
	SQ3 Employees of this boutique hotel are willing to solve customer problems.	0.738		
	SQ4 Boutique hotel offers a quick and hassle-free service.	0.717		
	SQ5 Boutique hotel employees provide individualized attention to customers.	0.748		

Table 2 Convergent Validity: Factor Loading, Composite Reliability (CR), Average Variance Extracted (AVE) (Con.)

Variables	Question Items	Factor Loadings	CR	AVE
Price Reasonableness	PR1 The room prices at this boutique hotel are reasonable.	0.769	0.861	0.553
	PR2 The price charged by this boutique hotel is appropriate compared to any other hotel.	0.701		
	PR3 The boutique hotel offers good value for the price charged.	0.782		
	PR4 The room price at this boutique hotel is fair.	0.704		
	PR5 The room price at this boutique hotel is acceptable.	0.759		
Hotel Atmosphere	HA1 The boutique hotel has a comfortable atmosphere.	0.758	0.9	0.601
	HA2 The atmosphere in this boutique hotel is familiar to me.	0.779		
	HA3 It is comfortable to spend my time at this boutique hotel.	0.789		
	HA4 The boutique hotel makes me feel relaxed.	0.832		
	HA5 The boutique hotel is a pleasant place to stay.	0.791		
	HA6 The boutique hotel layout is well-organized and designed.	0.696		
Location	L1 The boutique hotel is located near the city center and is in an attractive location.	0.753	0.9	0.599
	L2 The location of the boutique hotel is easily accessible.	0.739		
	L3 The boutique hotel has a convenient location.	0.800		
	L4 The boutique hotel is situated within a short walking distance from a convenience store, restaurant, or coffee shop.	0.779		
	L5 Boutique hotel has a convenient parking space.	0.797		
	L6 The boutique hotel is situated within a short walking distance from a convenience store, restaurant, or coffee shop.	0.775		
Social Media Marketing	SMM1 Social media content of the boutique hotel is engaging.	0.803	0.914	0.638
	SMM2 The content of the boutique hotel's social media is interesting.	0.795		
	SMM3 The content shown on the boutique hotel's social media is the newest information.	0.816		
	SMM4 Conversation or opinion exchange with others is possible through the boutique hotel's social media.	0.820		
	SMM5 The boutique hotel's social media enables information sharing with others.	0.820		
	SMM6 I would like to pass along information about the brand and services from boutique hotel social media to my friends.	0.738		
Corporate Social Responsibility	CSR1 The boutique hotel makes contributions to charity.	0.772	0.885	0.607
	CSR2 The boutique hotel has made positive contributions to environmental protection.	0.664		
	CSR3 The boutique hotel cares about the social issues in a timely manner.	0.814		
	CSR4 I feel respected through accurate information communicated by the boutique hotel.	0.823		
	CSR5 I am treated honestly by the boutique hotel.	0.812		

Table 2 Convergent Validity: Factor Loading, Composite Reliability (CR), Average Variance Extracted (AVE) (Con.)

Variables	Question Items	Factor Loadings	CR	AVE
Customer Relationship Management	CRM1 Boutique hotel attends to my complaints promptly.	0.759	0.874	0.583
	CRM2 Boutique hotel pays attention to maintaining high-quality service.	0.625		
	CRM3 Boutique hotels often inquire about guests' stay experiences.	0.806		
	CRM4 Boutique hotel offers customers a personalized service.	0.795		
	CRM5 Boutique hotel places importance on building ongoing relations with customers.	0.816		

The discriminant validity of the constructs was evaluated using the Heterotrait-Monotrait (HTMT) ratio of correlations, following the guidelines of Rasoolimanesh (2022) and Rönkkö and Cho (2022). As shown in Table 3, all HTMT values were below the recommended threshold of 0.85, as suggested by Lim (2024), confirming that the constructs are empirically distinct. Notable HTMT values include 0.760 between brand image and perceived value, 0.779 between brand image and service quality, and 0.775 between perceived value and price reasonableness. The HTMT value of 0.760 between brand image and perceived value, while the highest among the reported values, still falls comfortably below the 0.85 threshold, indicating sufficient discriminant validity despite the theoretically expected close relationship between these constructs. These consistently low values indicate that the constructs effectively measure separate aspects of the studied phenomena, thereby reinforcing the validity of the measurement model (Lyu & Ratasuk, 2024; Ratasuk, 2020). The findings demonstrate that the constructs do not exhibit excessive overlap, ensuring their conceptual distinctiveness within the research framework.

Table 3 HTMT Ratio

Variables	BI	PV	SQ	PR	HA	L	SMM	CSR	CRM
BI									
PV	0.760***								
SQ	0.779***	0.749***							
PR	0.832***	0.775***	0.840***						
HA	0.789***	0.621***	0.809***	0.727***					
L	0.724***	0.536***	0.685***	0.704***	0.831***				
SMM	0.546***	0.524***	0.566***	0.497***	0.615***	0.588***			
CSR	0.646***	0.565***	0.648***	0.529***	0.641***	0.606***	0.781***		
CRM	0.810***	0.826***	0.793***	0.847***	0.690***	0.662***	0.621***	0.694***	

Source *** = $p \leq 0.001$, ** = $p \leq 0.01$. * = $p \leq 0.05$; BI=Brand Image, PV=Perceived Value, SQ=Service Quality, PR=Price Reasonableness, HA=Hotel Atmosphere, L=Location, SMM=Social Media Marketing, CSR=Corporate Social Responsibility, and CRM=Customer Relationship Management

The discriminant validity was further assessed using the correlation matrix based on the Fornell and Larcker (1981) criterion. The diagonal values in parentheses represent the square root of the Average Variance Extracted (AVE) for each construct, all of which exceed the corresponding inter-construct correlations. For instance, the square root of AVE for brand image (0.81) is greater than its correlations with perceived value and service quality (0.654 and 0.644), indicating that each construct is conceptually distinct. This pattern was consistent across all constructs, confirming satisfactory discriminant validity. Construct reliability was evaluated using Composite Reliability (CR) and Cronbach's Alpha, both exceeding the recommended threshold of 0.70, indicating strong internal consistency (Sathyanarayana & Mohanasundaram, 2024). As shown in Table 4, CR values ranged from 0.857 (service quality) to 0.914 (social media marketing), while Cronbach's Alpha ranged from 0.79 to 0.886, demonstrating the robustness of the measurement model. Multicollinearity was assessed using the full collinearity Variance Inflation Factor (VIF), with values ranging from 2.083 (social media marketing) to 3.035 (hotel atmosphere), all below the recommended threshold of 3.3. This suggests no serious multicollinearity among constructs. To address Common Method Bias (CMB), VIF values were also reviewed, following the guidelines of Kock (2015) and Lim (2024), confirming that CMB is unlikely to affect the results. These findings collectively affirm the reliability, validity, and statistical adequacy of the measurement model.

Table 4 Correlation, Reliability, and Multicollinearity

Variables	BI	PV	SQ	PR	HA	L	SMM	CSR	CRM
BI	(0.810)								
PV	0.654***	(0.764)							
SQ	0.644***	0.616***	(0.738)						
PR	0.691***	0.639***	0.663***	00.744)					
HA	0.683***	0.534***	0.668***	0.600***	(0.775)				
L	0.629***	0.461***	0.565***	0.581***	0.718***	(0.774)			
SMM	0.479***	0.456***	0.473***	0.412***	0.537***	0.514***	(0.799)		
CSR	0.550***	0.478***	0.526***	0.427***	0.543***	0.513***	0.672***	(0.779)	
CRM	0.658***	0.693***	0.640***	0.684***	0.585***	0.562***	0.529***	0.576***	(0.764)
Composite Reliability (CR)	0.905	0.894	0.857	0.861	0.900	0.900	0.914	0.885	0.874
Cronbach's Alpha	0.869	0.857	0.790	0.797	0.866	0.866	0.886	0.836	0.818
Full Collin. VIF	2.970	2.379	2.531	2.715	3.035	2.428	2.083	2.299	2.887

Source *** = p ≤ 0.001, ** = p ≤ 0.01. * = p ≤ 0.05; BI=Brand Image, PV=Perceived Value, SQ=Service Quality, PR=Price Reasonableness, HA=Hotel Atmosphere, L=Location, SMM=Social Media Marketing, CSR=Corporate Social Responsibility, and CRM=Customer Relationship Management

The model fit indices confirm the robustness and validity of the structural model. The significant ARS (0.688, p<0.001) and AARS (0.681, p<0.001) indicate that the model explains a substantial portion of the variance in brand image. The GoF index (0.704), which is considered

large (following thresholds of 0.10 for small, 0.25 for medium, and 0.36 for large), suggests a strong overall model fit. The APC (0.119, p<0.01) confirms significant relationships between constructs. The AVIF (2.190) and AFVIF (2.127) values are below the commonly recommended threshold of 3.3 (or 5), indicating ideally low multicollinearity. Additionally, the SPR (1.000), RSCR (1.000), and SSR (1.000) are at their ideal values, ensuring model stability, consistency, and absence of suppression effects. The NLBCDR (1.000) being at its acceptable maximum confirms the predominance of linear relationships, further supporting the theoretical framework. These results demonstrate that the model is well-specified and reliable in assessing the direct and indirect effects of seven marketing factors on brand image through perceived value in Siem Reap's boutique hotel sector.

Table 3 PLS-SEM Model Fit Indices

Model fit indices	Coefficient	Result
Average Path Coefficient (APC)	0.119**	Significant
Average R-Squared (ARS)	0.688***	Significant
Average Adjusted R-Squared (AARS)	0.681***	Significant
Average block VIF (AVIF)	2.190	Ideally
Average Full Collinearity VIF (AFVIF)	2.127	Ideally
Tenenhaus GoF Index (GoF)	0.704	Large
Simpson's Paradox Ratio (SPR)	1.000	Ideally
R-squared Contribution Ratio (RSCR)	1.000	Ideally
Statistical Suppression Ratio (SSR)	1.000	Acceptable
Nonlinear Bivariate Causality Direction Ratio (NLBCDR)	1.000	Acceptable

Source *** = $p \leq 0.001$, ** = $p \leq 0.01$.

Moreover, the normality test confirmed that none of the variables were normally distributed, further justifying the use of PLS-SEM for this study (Hair Jr et al., 2014; Ratasuk, 2024b). The overall quality of the research model was confirmed to be satisfactory, allowing for the testing of all proposed hypotheses. Figure 1 displays the results of the PLS-SEM analysis.
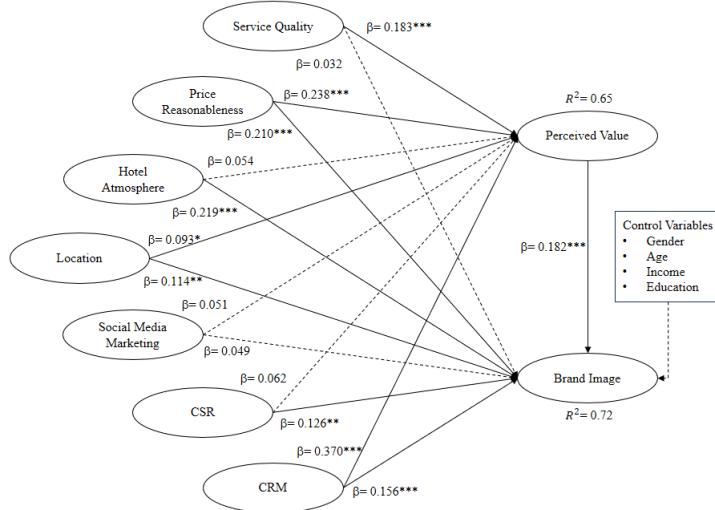
Figure 1 Structural Equation Model results

Source: *** = p ≤ 0.001, ** = p ≤ 0.01. * = p ≤ 0.05, respectively; BI=Brand Image, PV=Perceived Value, SQ=Service Quality, PR=Price Reasonableness, HA=Hotel Atmosphere, L=Location, SMM=Social Media Marketing, CSR=Corporate Social Responsibility, and CRM=Customer Relationship Management

Figure 1 presents the PLS-SEM analysis results as follows:

Hypothesis 1 suggested that perceived value positively influences brand image ($\beta = 0.182$, p<0.001). The analysis demonstrated a significant positive relationship, thus supporting Hypothesis 1.

Hypothesis 2 suggested that service quality positively influences brand image ($\beta = 0.032$, p = 0.250). The analysis demonstrated no significant relationship, thus rejecting Hypothesis 2.

Hypothesis 3 suggested that service quality positively influences brand image through perceived value ($\beta = 0.033$, p = 0.013, effect size = 0.022). The analysis demonstrated a significant positive indirect effect. The effect size of 0.022 suggests a small indirect effect. Thus, Hypothesis 3 is supported.

Hypothesis 4 suggested that price reasonableness positively influences brand image ($\beta = 0.210$, p<0.001). The analysis demonstrated a significant positive relationship, thus supporting Hypothesis 4.

Hypothesis 5 suggested that price reasonableness positively influences brand image through perceived value ($\beta = 0.043$, p = 0.004, effect size = 0.003). The analysis demonstrated a significant positive indirect effect. The effect size of 0.003 suggests a very small indirect effect. Thus, Hypothesis 5 is supported.

Hypothesis 6 suggested that hotel atmosphere positively influences brand image ($\beta = 0.219$, p<0.001). The analysis demonstrated a significant positive relationship, thus supporting Hypothesis 6.

Hypothesis 7 suggested that hotel atmosphere positively influences brand image through perceived value ($\beta = 0.010$, p = 0.142, effect size = 0.007). The analysis demonstrated no significant indirect effect, thus rejecting Hypothesis 7.

Hypothesis 8 suggested that location positively influences brand image ($\beta = 0.114$, p = 0.008). The analysis demonstrated a significant positive relationship, thus supporting Hypothesis 8.

Hypothesis 9 suggested that location positively influences brand image through perceived value (β = 0.017, p = 0.051, effect size = 0.011). The analysis demonstrated no significant indirect effect, thus rejecting Hypothesis 9.

Hypothesis 10 suggested that social media marketing positively influences brand image (β = 0.049, p = 0.151). The analysis demonstrated no significant relationship, thus rejecting Hypothesis 10.

Hypothesis 11 suggested that social media marketing positively influences brand image through perceived value (β = 0.009, p = 0.131, effect size = 0.004). The analysis demonstrated no significant indirect effect, thus rejecting Hypothesis 11.

Hypothesis 12 suggested that CSR influences brand image (β = 0.126, p = 0.004). The analysis demonstrated a significant positive relationship, thus supporting Hypothesis 12.

Hypothesis 13 suggested that CSR influences brand image through perceived value (β = 0.011, p = 0.154, effect size = 0.007). The analysis demonstrated no significant indirect effect, thus rejecting Hypothesis 13.

Hypothesis 14 suggested that CRM influences brand image (β = 0.156, p<0.001). The analysis demonstrated a significant positive relationship, thus supporting Hypothesis 14.

Hypothesis 15 suggested that CRM influences brand image through perceived value (β = 0.067, p = 0.002, effect size = 0.046). The analysis demonstrated a significant positive indirect effect. The effect size of 0.046 suggests a small indirect effect. Thus, Hypothesis 15 is supported.

Discussions

The findings of this study offer meaningful insights into the antecedents of brand image in the context of boutique hotels in Siem Reap, applying the Stimulus-Organism-Response (S-O-R) framework. The results firmly established that perceived value significantly influences brand image, aligning with the foundational theoretical argument of Zeithaml (1988) regarding the crucial role of consumers' overall value assessment in forming favorable brand associations. This finding resonates with empirical studies in the broader hospitality industry by Fauzi et al. (2024) and Zulwarni et al. (2022), who also identified perceived value as a critical driver of brand image.

Unexpectedly, service quality did not exhibit a significant direct effect on brand image, which diverges from earlier studies that emphasized service excellence as a direct brand enhancer (Ratasuk, 2022; Ratasuk & Buranasompob, 2021). One possible explanation is that in the boutique hotel segment, guests may assume a high level of service as a basic standard; thus, service quality alone may not contribute distinctively to brand perception. This suggests that in the Siem Reap context, where boutique hotel guests may already expect high service standards, the brand impact of service quality is conditional on the perception of value received. Such a finding supports studies by Azzahra and Kusumawati (2023) and Fauzi et al. (2024), which argue that value perception is the mechanism through which service impacts brand-related outcomes in saturated or experience-driven markets.

Both the direct and indirect effects of price reasonableness on brand image were statistically significant, reinforcing the assertions of prior studies (Chen, 2024; Fauzi et al., 2024; Ratasuk & Buranasompob, 2021; Ratasuk & Gajesanand, 2020) that fair pricing enhances customers' value perceptions and fosters loyalty, thereby strengthening brand image.

Similarly, hotel atmosphere exerted a strong direct positive influence on brand image, consistent with research by Danthanarayana and Arachchi (2020) and Ratasuk (2022), indicating that the physical environment significantly shapes consumer affect and brand perception. However, the insignificant indirect effect of hotel atmosphere through perceived value contrasts with studies suggesting that atmospheric cues primarily impact brand image via emotional responses rather than cognitive value evaluations (Al-Gharaibah, 2020; Phillips, 2024; Slack et al., 2021; Zulwarni et al., 2022). One possible explanation is that in Siem Reap, where boutique hotels often emphasize cultural and aesthetic themes, atmosphere contributes more to immediate affective impressions than to calculated evaluations of value. This reveals a contextual distinction between sensory appeal and cognitive appraisals of worth.

The location of the hotel demonstrated a significant direct positive effect on brand image, supporting the finding by Nugraha et al. (2024) that location enhances destination image. However, location showed no significant mediation through perceived value. This finding contrasts with studies where location-related convenience contributes to perceived value (Hafidz & Huriyahnuryi, 2023; In, 2023; Lin & Zhou, 2022). A plausible explanation is that in Siem Reap, the location itself may function as a symbolic cue of prestige or convenience, influencing brand image through reputation or visibility rather than through value judgment. This underscores the importance of recognizing destination-specific dynamics when evaluating place-based brand attributes.

The most striking divergence from prior literature was observed with Social Media Marketing (SMM). Neither direct nor indirect effects of SMM on brand image were statistically significant, a finding inconsistent with numerous studies that position social media as a key brand-building tool (Aji et al., 2020; Bazrkar et al., 2021; Fatima et al., 2022; Hewei & Youngsook, 2022; Malarvizhi et al., 2022; Purba et al., 2021). This discrepancy could reflect a mismatch between the content or strategy of social media efforts and the preferences of target guests, or a general overreliance on digital platforms that fail to translate into meaningful brand perceptions. It also suggests that regional or platform-specific factors, such as language use, digital trust, or influencer relevance, may limit the effectiveness of SMM in this context. Future research could explore how platform choice, content type, or consumer digital literacy mediate this relationship. Regarding Corporate Social Responsibility (CSR), the direct effect on brand image was significant, consistent with studies highlighting its symbolic and ethical value (Araújo et al., 2023; Phan et al., 2021; Raza et al., 2020). However, the insignificant indirect effect of CSR on brand image through perceived value contradicts prior literature (Abbass et al., 2023; Farrukhjon & Don-Yoon, 2023; Widodo, 2023), suggesting that CSR initiatives in Siem Reap are perceived more as moral signals than as economic or functional enhancements. This again highlights a separation between emotional and cognitive brand evaluations, emphasizing the affective over rational dimension of CSR in this market.

In contrast to the above contradictions, CRM demonstrated both direct and indirect significant effects on brand image, supporting the dual mechanism through which relationship-building enhances both emotional loyalty and perceived benefit (Ibrahim et al., 2021a, 2021b). This reinforces the critical role of CRM in enhancing perceived value and fostering favorable customer brand perception in the hospitality sector (Azhari & Utari, 2023; Bupu et al., 2023; Purba et al., 2021).

Results emphasize strategically separating marketing activities that directly shape brand image from those mediated by perceived value, prioritizing price fairness and relationship-building investments.

Conclusions

The findings reveal that perceived value plays a crucial mediating role, particularly in the relationships involving service quality, price reasonableness, customer relationship management, and brand image. While several factors, such as price reasonableness, hotel atmosphere, location, corporate social responsibility, and customer relationship management, directly enhanced brand image, not all effects were mediated by perceived value. These insights clarify which marketing efforts influence guest perceptions directly and which rely on cognitive evaluations of value. This study contributes to hospitality marketing by identifying strategic areas where Siem Reap boutique hotels can strengthen brand image through initiatives focused on value creation and relationship building.

Academic Contributions

This study contributes to hospitality and branding literature by applying the S-O-R model to examine comprehensive marketing factors and brand image relationships in Siem Reap's boutique hotels. Unlike prior research examining variables in isolation or developed markets, this study uniquely highlights perceived value as a crucial mediating mechanism, particularly showing how service quality, price reasonableness, and customer relationship management enhance brand image through guests' value assessments. The study provides comparative empirical evidence on the differential impacts of marketing levers spanning tangible aspects (hotel atmosphere, location) to intangible elements (social media marketing, corporate social responsibility), offering a nuanced understanding of brand-building strategies in service-dominant contexts. By focusing on Siem Reap, this research extends established branding theories to an under-researched emerging tourism market, providing context-specific insights for future academic inquiries in similar heritage-rich destinations.

Practical Contributions

This study offers actionable insights for Siem Reap boutique hotel managers seeking enhanced brand image and competitive advantage. The findings underscore enhancing perceived value as a central strategy. Given the significant direct and indirect impact, managers should implement transparent, competitive pricing by clearly communicating value propositions (unique amenities, cultural immersion packages) and regularly monitoring competitor pricing. Customer relationship management's strong effects highlight building genuine guest relationships through personalized communication and loyalty programs that remember preferences and reward repeat business. While corporate social responsibility showed direct effects, engaging in locally relevant CSR activities and authentic communication enhances brand image. Even factors like social media marketing and location, despite less direct impact, should strategically support value delivery and relationship building. Ultimately, boutique hotel managers should prioritize customer-centric strategies that improve interaction quality, foster long-term relationships, and ensure price fairness to enhance customer value evaluations, leading to stronger brand associations, increased loyalty, and sustainable competitive advantage in Siem Reap's unique tourism.

Limitations

This study, while offering valuable insights, is subject to several inherent limitations. First, the focus on boutique hotels in Siem Reap, Cambodia, limits the generalizability of the findings. Second, the cross-sectional research design restricts the ability to establish causal relationships over time. Third, the reliance on self-reported data introduces the possibility of

social desirability bias, which may affect the accuracy of the responses. Lastly, although the study includes key external marketing stimuli, it did not account for potential moderating variables that could influence the relationships among marketing factors, perceived value, and brand image.

Recommendations for Future Research

Future research should broaden the scope by including other hotel segments (luxury resorts, budget hotels, guesthouses) and conducting comparative studies in culturally rich destinations to validate model applicability. Longitudinal designs using panel studies or time-series analysis are recommended to explore brand image and perceived value evolution over time. Incorporating objective data sources like online reviews, social media sentiment analysis, and behavioral metrics (repeat bookings, length of stay) would enhance the robustness. Additionally, researchers should investigate the moderating effects of individual characteristics (personality traits, travel motivations, cultural orientation) and situational factors (travel purpose, online travel community engagement) to deepen the understanding of brand image formation in hospitality.

Reference

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The Mediating Role of Social Climate on the Pathway between Spatial Creativity and Entrepreneurial Opportunity in Co-Working Spaces

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Abstract

This research examines the influence of space creativity on Entrepreneurial Opportunity Recognition and Exploitation (EORE) within co-working spaces in Thailand, with particular attention to the mediating role of social climate. Although co-working environments have been widely investigated in Western contexts, empirical evidence remains limited in Asian settings where cultural and institutional conditions differ significantly. Drawing on broaden-and-build theory, this study proposes a framework to test how spatial design creativity directly and indirectly affects entrepreneurial behaviors through social dynamics. The empirical analysis is based on survey data collected from 350 individuals with current or prior experience using co-working spaces in the Bangkok metropolitan area, a rapidly expanding hub for start-ups and digital entrepreneurs. Measurement constructs were adapted from validated scales of creativity, social climate, and opportunity recognition, with data analyzed using structural equation modeling and bootstrapping techniques. The results reveal that space creativity significantly enhances EORE ($\beta = 0.221$, $p < .01$), while social climate exerts a stronger direct effect on EORE ($\beta = 0.502$, $p < .001$). Moreover, social climate partially mediates the relationship between space creativity and EORE ($\beta = 0.339$, $p < .001$), indicating that supportive and collaborative climates amplify the benefits of creative spatial design. These findings advance theory by integrating physical and social dimensions of entrepreneurial ecosystems, demonstrating how spatial creativity contributes to opportunity-driven entrepreneurship in emerging economies under the Thai context. Practically, the study underscores the importance of designing workspaces and communities that cultivate collaboration and innovation to drive local economic growth. Practically, this research highlights that investments in creative spatial design and community-building strategies can serve as effective levers to stimulate opportunity-driven entrepreneurship and foster local economic development.

Keywords: Entrepreneurial Opportunity Recognition and Exploitation, Social Climate, Mediation Role, Space Creativity, Thailand

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Introduction

In recent years, co-working spaces have emerged as a noticeable feature of entrepreneurial ecosystems, particularly in innovation-oriented economies. The global shift towards more flexible, collaborative, and resource-efficient work environments reflects broader transformations in the business landscape, where conventional office layouts are gradually substituted by dynamic spaces that cultivate creativity, interaction, and experimentation (Sukatendel et al., 2025). This evolution shows not merely a spatial reconfiguration but also a paradigm shift in how entrepreneurial opportunities are recognized, evaluated, and acted upon. The increasing prevalence of co-working spaces worldwide reflects the broader trend toward open innovation and inter-organizational learning, where spatial proximity and social interaction foster cognitive alertness essential for entrepreneurial opportunity recognition (Sukatendel et al., 2025).

In Thailand, the co-working industry has evolved into one of the most dynamic segments within the commercial real estate and entrepreneurial support ecosystem. According to the Thailand Co-Working Space Market Report (Haritwal, 2024), the sector was valued at USD 106.7 million in 2023 and is expected to reach USD 550.8 million by 2030, signifying a compound annual growth rate of 26.2% between 2024 and 2030. Bangkok, recognized as Thailand's primary start-up hub and ranked 74th globally in the 2023 StartupBlink Index, functions as the center of this transformation, accommodating the majority of professional and conventional co-working facilities. The combination of affordable leasing models, strategic urban locations, and community-driven service designs has made these spaces essential infrastructure for Thailand's entrepreneurial economy (Haritwal, 2024).

The concept of "space creativity" refers to the deliberate and strategic design of physical environments that stimulate innovation, collaboration, and creative thinking among customers. It can encompass spatial, aesthetic, and functional dimensions that interact to influence how individuals perceive, engage, and generate ideas within a workspace (Thoring, 2020). Specifically, space creativity integrates three related aspects, namely functional adaptability that concerns how spatial arrangements allow flexibility and multiple modes of working; aesthetic stimulus that includes design elements such as color, lighting, and materials that arouse creative emotions and cognitive engagement; and social affordance that accentuates how spatial arrangements foster communication, serendipitous encounters, and knowledge sharing (Elsbach & Pratt, 2007). Within co-working spaces, space creativity therefore extends beyond mere architectural form to incorporate the symbolic and emotional qualities of the environment that stimulate entrepreneurial behavior and innovative collaboration.

To outline this discussion more clearly, the emergence of co-working spaces can be understood as both a global socio-economic phenomenon and a theoretical lens for examining entrepreneurial cognition. The first aspect underscores the structural transformations in work culture, while the second centers on how spatial design interacts with individual cognitive mechanisms underlying opportunity recognition (Girija et al., 2024). This distinction strengthens the rationale for exploring spatial creativity as a determinant of entrepreneurial processes rather than treating it as a mere contextual feature. This trend has not only redefined the methods in which entrepreneurs and small enterprises operate but has also positioned co-working spaces as essential enablers of entrepreneurial activity and local economic development. Their importance is particularly evident in contexts where entrepreneurship is recognized as a crucial engine of economic growth and competitiveness, such as in Thailand and other emerging economies

(Sukatendel et al., 2025). However, Thailand's co-working ecosystem provides a uniquely fruitful ground for scrutinizing these mechanisms, as its entrepreneurial landscape is characterized by collectivist social norms, Buddhist-inspired relational values that mediate how spatial and social dimensions influence entrepreneurial cognition (Chumnangoon et al., 2023). Dissimilar to Western contexts accentuate individualistic and technology-driven entrepreneurship, Thai entrepreneurs often rely on communal trust, social reciprocity, and adaptive creativity, making it an especially meaningful setting for extending theories of spatial-social entrepreneurship (Chumnangoon et al., 2023).

Understanding the role of co-working spaces is imperative because such environments provide not only physical infrastructure, but also function as social and creative platforms where entrepreneurs can access diverse networks and resources, share information and knowledge, and generate creative and innovative ideas (Girija et al., 2024). Early researches suggest that co-working spaces can motivate collaboration and support entrepreneurial resilience in uncertain economic circumstances (Girija et al., 2024). In this regard, space creativity can be seen as an important antecedent to entrepreneurial opportunity recognition and exploitation, as it directly shapes how entrepreneurs interact with their environment, identify opportunities, and transform ideas into tangible ventures. Hence, a theoretically explicit connection between spatial creativity and opportunity recognition enriches understanding of how environmental design can trigger opportunity alertness, a cognitive process central to entrepreneurship (Thoring et al., 2020). This link elucidates how spatial affordances not only enhance creativity but also facilitate the transformation of creative insights into actionable business opportunities.

A clear and early definition of this concept provides a stronger theoretical underpinning for probing the mechanisms through which the spatial characteristics of co-working environments facilitate innovation and entrepreneurship. Yet, in spite of growing acknowledgment of their economic and social relevance, the mechanisms through which co-working spaces outline entrepreneurial processes remain inadequately understood. In particular, while the design creativity within shared spaces has been recognized as a valuable asset, its association with how entrepreneurs pinpoint and act upon opportunities has not been effectively explored (Wu & Zhang, 2024). This theoretical opening highlights the necessity for empirical models that connect spatial, cognitive, and social dimensions of entrepreneurship, especially within collectivist and emerging-market settings like Thailand, where institutional logics and informal networks shape entrepreneurial decision-making. The existing literature has primarily examined co-working from managerial, spatial, or community-building aspects, often accentuating their role in reducing operational costs, enhancing networking, or facilitating innovation. However, there is still limited empirical work that directly addresses the relationship between spatial creativity and Entrepreneurial Opportunity Recognition and Exploitation (EORE) (Krauss & Tremblay, 2024). Much of the prevailing research is conceptual or qualitative in nature, with relatively few studies employing systematic case-based or quantitative methodologies to investigate how co-working environments influence entrepreneurial outcomes (Vogl et al., 2024). Furthermore, the majority of research has focused on Western contexts, leaving a discrepancy in comprehending how these dynamics unfold in Asian cultural contexts such as Thailand, where cultural, institutional, and economic conditions differ significantly. By conducting this research within the Thai context, the study not only addresses this geographical imbalance but also contributes to broadening entrepreneurship studies by offering understandings from Southeast Asian regions that focus relational creativity and contextual adaptability.

This research aims to bridge the existing literature gaps by assessing the linkage between space creativity and EORE as well as the mediating role of social climate within such a dynamic relationship under Thai co-working environments in Thailand. By incorporating a theoretically grounded conceptualization of space creativity as a multidimensional construct, this research provides a coherent framework for understanding how spatial features influence entrepreneurial cognition and behavior. Thus, it aligns with emerging research on spatial entrepreneurship that views the built environment as an active participant in shaping entrepreneurial action and innovation processes (Thoring et al., 2020). By focusing on this relationship, this study contributes to both theoretical and practical domains. Theoretically, this research advances the understanding of how spatial creativity serves as an antecedent of entrepreneurial processes and how social climate mediates this dynamic relationship, thus expanding knowledge on both co-working and entrepreneurship literature under the Thai cultural context. Practically, the research provides insights for policymakers, co-working managers, and entrepreneurs into how space design, collaborative and supportive environments can be leveraged to stimulate opportunity-driven entrepreneurship and business growth. Moreover, by clarifying how spatial design interacts with social climate, this research extends the dialogue on entrepreneurial ecosystems, validating how culturally embedded spatial practices can strengthen opportunity ecosystems in emerging markets.

Research Objectives

The objectives of this research are twofold: First, to investigate how the creative features of co-working spaces impact individuals' ability to recognize and exploit entrepreneurial opportunities, and second, to evaluate the mediation role of social climate plays during the processes that space design creativity contributes to entrepreneurial development within the Thai context. To align with these objectives, the central research questions are, first, how does the creativity of space in co-working environments influences the recognition and exploitation of entrepreneurial opportunities? Secondly, does the social climate of co-working spaces mediate the relationship between space creativity and EORE under Thailand context?

Literature Review

Theoretical Support

The Broaden-and-Build (B&B) theory proposed by Fredrickson (2001) provides a useful psychosomatic framework for understanding how emotive experiences translate into lasting cognitive, social, and behavioral outcomes. The central proposition of the theory is that affirmative emotions, such as joy, interest, and curiosity, can broaden individuals' momentary thought–action repertoires by broadening attentional scope, enhancing cognitive flexibility, and stimulating exploratory behavior. Over time, these recurrent episodes of broadened cognition and action accrue to construct lasting personal and social resources, including knowledge, skills, and social ties (Fredrickson, 2001; Cohn et al., 2009). When considered in relation to the co-working context, the theory advocates that creative spatial design can function as a stimulus for eliciting positive affect. Features such as flexible layouts, aesthetic richness, playful design, and spaces that encourage informal interaction can generate feelings of enthusiasm, curiosity, and autonomy (Dul & Ceylan, 2014; Blomberg & Kallio, 2022). These affective responses, aligning with

the B&B framework, broaden cognitive processing and cultivate openness to exploration and spontaneous engagement with others. For instance, a spatially creative co-working atmosphere may encourage members to initiate conversations with individuals who are outside their immediate domain, thereby extending their informationa2l and relational prospects.

However, while the B&B framework elucidates the psychosomatic pathway from affect to cognition and resource accumulation, it has been criticized for overlooking the influence of environmental affordances that condition such processes (Withagen et al., 2018). By integrating Gibson's (2014) environmental affordance theory, it provides a complementary ecological perspective, postulating that the spatial environment offers actionable possibilities that known as the affordances, which invite or constrain creative and social behavior. This integration grounds the psychological mechanisms of the B&B theory in material and cultural context, thus enhancing the ecological soundness of the conceptual model (Maier & Fadel, 2009). In co-working spaces, for instance, open plan designs or communal zones afford collaboration, while modular furniture affords adaptive use and experimentation. Within Thailand's entrepreneurial ecosystem, where collectivist tendencies and high-context communication prevail, such affordances can be interpreted through culturally specific norms that underline harmony and indirect engagement (Miura, 2024). Therefore, spatial and social mechanisms may operate differently compared to Western contexts, as Thai entrepreneurs tend to prioritize relational harmony and community orientation, aligning with environmental affordances that promote social cohesion over individual autonomy. This cultural moderation underscores the need to situate B&B processes within localized socio-ecological frames.

The repeated experience of positive emotional states in co-working can also contribute to the gradual accrual of social resources. These resources include trust, reciprocity, shared norms of knowledge exchange, and the realization of diverse relational ties (Fredrickson, 2001; Barsade, 2002). Collectively, they shape the social climate of the co-working space, cultivating an environment where partnership, openness, and mutual support are anticipated and reinforced. This emergent social climate functions as an essential role in entrepreneurial processes, particularly in relation to opportunity recognition and exploitation. A widened cognitive frame, together with exposure to diverse knowledge and outlooks, can enhance the likelihood of discovering novel business opportunities through synchronizing the previously disparate cues (Shane, 2000; Ardichvili et al., 2003). In the meantime, the social resources embedded in a supportive climate facilitate the exploitation of these opportunities by providing access to collaborators, early customers, and feedback channels, as well as by reducing transaction costs through norms of trust and reciprocity (Bouncken & Reuschl, 2018). Recent scholarship further demonstrates that spatial and social factors jointly mediate entrepreneurial learning within co-working settings (Girija et al., 2024). Post-pandemic co-working research emphasizes hybrid affordances, both digital and physical that sustain social creativity even under spatial constraints (Mariotti & Manzini, 2021). Integrating these contemporary insights ensures the theoretical framework remains current and adaptable to Thailand's rapidly evolving digital-entrepreneurial ecosystem. The B&B theory, therefore, provides a process model that explains the mechanism through which spatial creativity in co-working environments can translate into entrepreneurial outcomes. By mapping out the trail from space design, through the elicitation of affirmative response and the expansion of cognition and social collaboration, to the subsequent cultivation of a favorable social climate, B&B theory links environmental design to the recognition and exploitation of entrepreneurial opportunities. Through this, B&B highlights the significance of considering

co-working spaces more than simply functional workplaces, but as socio-psychological ecosystems where spatial creativity and positive experience congregate to yield entrepreneurial potential.

Spatial Creativity

A growing number of studies highlight the importance of workplace design, particularly its architectural form and spatial arrangement, in fostering creativity and motivation among individuals (Magadley & Birdi, 2009). Within the specific context of co-working environments, the concept of spatial design refers to the physical dimension of design, which can influence organizational outcomes by shaping how space is structured and experienced (Dul & Ceylan, 2011). Increasingly, organizations have recognized that physical settings are not simply backdrops to work, but rather critical determinants of innovation potential (Martens, 2011). Thus, many co-working spaces adopt design concepts similar to those of well-known technology firms such as Google and Apple, where creative architecture and interior design serve as catalysts for innovative behaviors. These features are intentionally aligned with the cognitive and social processes of tenants, encouraging creative idea generation and collaborative interactions.

The design outline of co-working, including its layout, aesthetics, and architectural choices, plays a crucial role in shaping behavioral patterns (Magadley & Birdi, 2009). Prior researches demonstrate that spaces intentionally constructed to promote creative thinking, such as innovation laboratories or brainstorming zones, often differ from the rigidity of conventional office arrangements by replacing rectangular layouts with flexible, adaptive, and visually stimulating alternatives (Kristensen, 2004). Grounding on these principles, co-working spaces frequently integrate diverse workrooms, circular seating arrangements, informal exhibition areas, cafés, and symbolic cues like artwork or nontraditional geometrical designs. Such features not only enhance users' creative capacity but also provide an inspiring atmosphere that supports collaboration. According to B&B theory, environments that reliably evoke positive emotions can broaden attention and encourage approach behaviors, thus creative design features such as aesthetic appeal, flexible zones will function as stimuli that increase momentary positive affect and approach orientation, which in turn increase the likelihood of spontaneous interactions.

A well-designed spatial layout can also further facilitate the circulation and exchange of knowledge. Co-working environments are often designed with openness and visibility in mind, creating an atmosphere conducive to interaction and communication (Parrino, 2015). Spatial openness and visibility have been found to support collaborative communication, teamwork, and unanticipated encounters, allowing for unplanned interactions that inspire knowledge transfer and idea sharing (Blomberg & Kallio, 2022). In this way, co-working spaces are not simply physical constructs but function as social and conceptual arenas where collaboration, learning, and experimentation occur jointly (Spinuzzi, 2012). The physical closeness among members additionally supports informal exchanges and provides opportunities to access shared resources, reinforcing the linkage between design and knowledge acquisition (Bouncken & Reuschl, 2018). Moreover, the creative design of co-working spaces is intended to meet participants' needs by providing an environment that fosters diverse and productive activities. A well-designed space attracts entrepreneurs and independent professionals, offering them a sense of comfort that encourages interaction and engagement with both the physical and social dimensions of the environment. Space creativity thus enhances tenants' cognitive processes by encouraging curiosity, exploration, and the pursuit of new knowledge. At the same time, it promotes informal

learning and collaboration by allowing tenants to exchange complementary resources and experiences within the community. Such dynamics increase the likelihood of discovering innovative ideas and exploring new opportunities. On this basis, the following hypothesis is postulated: Hypothesis 1: Space creativity of co-working spaces is positively related to opportunity recognition and opportunity exploitation.

Social Climate

Innovative ideas and opportunities rarely occur in isolation; instead, they tend to emerge through iterative processes that are embedded in social contexts where collaboration and interaction take place (Musenze et al., 2024). Social climate can be understood as the collective perception of the relational and normative conditions that shape interactions within a group or setting. It comprises dimensions such as interpersonal trust, feelings of psychological security, norms of reciprocity and mutual assistance, the perceived frequency and quality of social exchanges, and an overall orientation toward cooperation and shared learning (Amabile et al., 1996). Within co-working environments, the notion of social climate refers to how participants interpret the community's readiness to provide support, the strength of collaborative ties, and the organizational mechanisms that encourage constructive engagement. It can also be described as a socially constructed resource that emerges through repeated interactions and becomes a relatively stable attribute of the community. This characteristic influences how knowledge flows, how participation norms develop, and how resources are mobilized (Bouncken & Reuschl, 2018; Rese et al., 2021).

Social climates characterized by trust, openness, and knowledge exchanges provide broader and more diverse informational inputs, reduce barriers to idea sharing, and create psychological safety for exploratory decision-making. According to B&B theory, climates built through repeated positive interactions broaden group cognition and encourage associative thinking, thus improving individuals' ability to observe and recombine cues into entrepreneurial opportunities. Co-working arrangements reintroduce opportunities for socialization into contemporary work practices. These environments are not simply physical infrastructures but also social communities that provide a productive platform for networking and professional relationship building (Spinuzzi, 2012). Professionals who select co-working spaces often prefer flexible work styles and contexts that are cultivated by other independent or creative individuals who recognize the benefits of networking and the advantages of collaboration (Gandini, 2015). Within such an environment, entrepreneurs and freelancers gain opportunities to exchange experiences in an atmosphere that fosters mutual understanding and shared values, with a constructive social climate serves a critical role in strengthening collaboration and collective learning.

Unlike traditional organizations, where hierarchical structures or exterior motivations often shape interactions, co-working communities tend to facilitate more organic forms of relational engagement (Garrett et al., 2017). McMillan and Chavis (1986) denote communities as being founded in four interconnected dimensions, including membership, influence, integration, and emotive connection, which is pivotal to the way social climate is conceptualized, emphasizing trust, reciprocity, and interpersonal relationships as its underpinning (Blanchard, 2007; Lewicki et al., 1998). Thus, co-working spaces may be recognized as trust-based, community-oriented ecosystems designed to foster encounters, motivate collaboration, and encourage entrepreneurial effort (Merkel, 2015). Trust within such environments has been found to encourage knowledge

exchange, enhance coordination between members, and encourage the collective pursuit of entrepreneurial opportunities and activities (Cvitanovic et al., 2021).

An accommodating social climate also lessens friction among members and contributes directly to the well-being and performance of organizations embedded among co-working communities. Psychological safety, the perception that one can share ideas, take risks, and voice dissent without worrying about the negative consequences, is particularly valuable in such contexts, as it allows members to experiment, learn, and explore more freely (Edmondson, 1999). Moreover, overlapping expertise and opportunities for knowledge dissemination are more likely to occur in an atmosphere marked by mutual respect and trust, thereby enabling members to collaborate and explore (Fleming et al., 2007).

Co-working spaces also serve as hubs for creative individuals, bringing together people from various backgrounds who share an orientation toward innovation and exploitation. This can form collective cognitive frames, shifting emphasis from routine tasks execution toward creative problem solving (Capdevila, 2015). Early researchers found that exposure to the creativity of peers can inspire individuals to discover and enhance their own explorative capacity in response to the behaviors and outputs of others (Kilduff, 2006). Such processes are more easily expedited when the immediate climate is cooperative and low in interpersonal conflict, because this reduces resistance to unconventional approaches and promotes acceptance of experimentation. In all, above explanations and findings offer a theoretical foundation for suggesting that co-working spaces with a strong, positive social climate are more conducive to the entrepreneurial opportunity recognition and opportunity exploitation. Thus, the following hypothesis was posited: H2: Social climate in co-working spaces positively influences opportunity recognition and opportunity exploitation.

Entrepreneurial Opportunity Recognition and Exploitation

The identification and development of opportunities constitute a principal dimension of entrepreneurial activity (Shane, 2000) and form a central element of the innovative strategies pursued by established organizations (Zahra & Wright, 2011). Timmons (1999) explains entrepreneurial opportunity as a prospect that is attractive, durable, and timely, and it is commonly embedded in a product or service and capable of creating value for its user. Opportunity recognition can thus be described as the cognitive and behavioral efforts devoted to discovering and framing such prospects (Baron, 2008; Shane & Venkataraman, 2000). This process is extensively recognized as a fundamental contributor to sustainable competitive advantage and outstanding firm performance (Eckhardt & Shane, 2003), and opportunity exploitation, in turn, emphasizes the acquisition and integration of knowledge. Accessing diverse knowledge environments not only enables the discovery of new opportunities but also facilitates their effective exploitation, creating pathways for firms to enhanced competitiveness (Ardichvili et al., 2003). From this standpoint, opportunities are not fully realized at the moment of recognition but necessitate following development, evaluation, and subsequent exploitation. This broader understanding is captured under the construct of opportunity recognition and exploitation that comprises of both the discovery and the applied realization of opportunities.

Co-working environments present conditions particularly conducive to ORE, for instance, the creative design of physical space, through openness, flexibility, and aesthetic stimulation, encourages spontaneous interaction, collaborative work, and the exchange of innovative ideas. Such environments function as incubators in which diverse participants can

connect, exchange perspectives, and experiment with emerging concepts. In this respect, space creativity enhances cognitive alertness to the unmet needs, unsolved problems, and innovative resource configurations (Ardichvili et al., 2003), therefore, members are positioned to engage more actively in the recognition and exploitation of opportunities. Also, according to the B&B theory, creative design elicits positive affect or the immediate broadening response, which encourages affiliating and exploratory behaviors. These repeated occurrences of broadened engagement will lead to the building of social resources that alter the co-working space's social climate, including trust, reciprocity, and psychosomatic safety. This social climate is the proximate social mechanism through which design affects both the cognitive stage of opportunity recognition, such as exposure and diverse cues recombination, as well as the behavioral stage of exploitation, such as resource mobilization and cooperation.

Empirical evidence can be found to support this mediation effect of social climate, for instance, experimental and review work on creative spaces identifies affective, cognitive, and social constructs as plausible mediators between physical space and individual exploratory behaviors (McTeague, 2024; Lee & Lee, 2023). Other co-working research also explicitly modeled chain relationships where structural/design features result in supporting social dynamics which then bring about enhanced creative outcomes (Rese et al., 2021; Bouncken & Reuschl, 2018; Parrino, 2015). Moreover, one recent work underscores that an innovation climate positively influences creative role identity, which in turn fosters innovative behaviors (Deng et al., 2022). Therefore, this research supports the mediation logic implied by B&B theory and postulates the following hypothesis: spatial design elicits positive affect and social processes that explain how creative design translates into opportunity recognition and exploitation. Hypothesis 3: Social Climate positively mediates the relationship between space creativity and EORE in co-working spaces. Therefore, the conceptual framework of this study, including all proposed hypotheses, is illustrated in Figure 1.
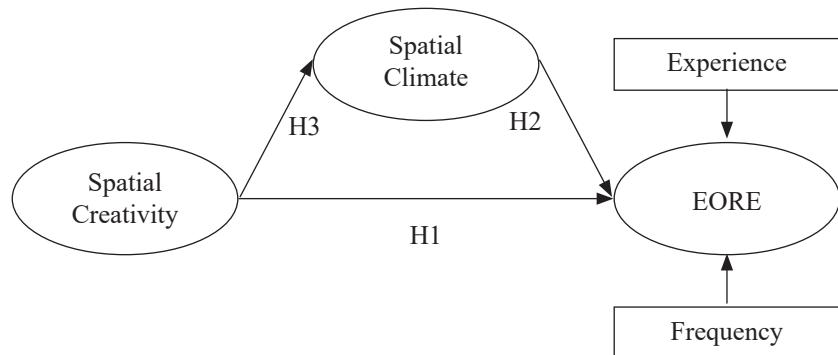
Figure 1 Proposed Research Framework

Methodology

Research Context and Population

The present research was conducted among customers who either currently use or have previous experience of engaging with coworking spaces within the Bangkok metropolitan area. This urban center was selected as the research setting because of its rapid expansion of entrepreneurial hubs, digital start-up culture, and the increasing popularity of flexible work environments tailored to younger cohorts. Coworking spaces in Bangkok not only provide access

to physical infrastructure but also foster interaction, creativity, and resource sharing, making them particularly relevant for examining patterns of opportunity recognition and exploitation. Moreover, recent statistics indicate that the percentage of flexible workspaces in Bangkok grew by 80% compared to the year before the pandemic with users, ranging from freelancers to start-up founders (Srisuwon & Anantsuksomsri, 2025). Such diversity in users reflects the heterogeneity of the entrepreneurial ecosystem in Thailand and supports the generalizability of the research's findings beyond a single urban context. Bangkok's positioning as a regional innovation hub also reflects broader patterns observed in Southeast Asia's emerging economies, where digital transformation and flexible workspaces drive new forms of entrepreneurial collaboration (Srisuwon & Anantsuksomsri, 2025). Consequently, while the current findings are based on the Thai context, they hold theoretical implications for understanding coworking dynamics in other rapidly developing economies with similar socio-economic structures (Srisuwon & Anantsuksomsri, 2025).

Sampling and Data Collection

In this research, purposive sampling was employed to ensure the inclusion of respondents who met the predefined eligibility criteria. However, as the overall size of the target population cannot be determined, the sample size is determined by applying Cochran's (1977) formula, with a 95 percent confidence level, which resulted in a minimum of 385 participants. After screening and removing the unusable questionnaires, 350 usable questionnaires were yielded for subsequent data analysis, which is close to the estimated required minimum sample size and can provide adequate statistical power for multivariate testing. Data collection was conducted through an online survey administered between February and March 2025. Recruitment was facilitated through digital platforms such as LinkedIn, Facebook groups, and entrepreneurship forums that cater to start-up communities, freelancers, and remote workers in Thailand. Before accessing the main survey, participants were required to complete screening questions on coworking spaces using frequency and experience to verify their eligibility. Survey respondents were also informed that their participation was strictly voluntary, together with the research objectives, anonymity provisions, and their right to withdraw at any stage. Although the total population size was classified as unknown (Pichayakul & Tangtong, 2023), purposive sampling was justified on the basis of its suitability for targeting specialized user groups whose characteristics align with the study objectives (Etikan et al., 2016). The logic behind this approach lies in ensuring that respondents possess relevant experiential knowledge of coworking environments, rather than representing a random cross-section of the general population (Pichayakul & Tangtong, 2023). Inclusion criteria were thus limited to individuals who had utilized coworking spaces for at least three months within the past year, while exclusion criteria applied to those who had only attended short-term events or virtual coworking communities. Data quality was verified through multiple mechanisms, including attention-check items embedded in the questionnaire, duplicate responses check, and monitoring of survey completion times to identify inattentive participation (Meade & Craig, 2012).

Research Instruments and Measures

The measurement constructs and scales items applied in this study are adopted from existing literature. For instance, space creativity was adopted through the measurement scale proposed by Amabile et al. (1996), while social climate was borrowed from the measurement scale developed by Garrett et al. (2017). And the measurement scale for opportunity recognition

and exploitation dimension was adopted from the one designed by Shane & Venkataraman (2000). All scale items were evaluated on a five-point Likert scale ranging from strongly disagree (1) to strongly agree (5). Scale reliability and validity were confirmed through pilot testing and existing literature, with measurement adaptation following standard guidelines for instrument development. To ensure contextual validity, all measurement items were carefully adapted to the Thai coworking environment through a translation–back translation process following Brislin's (1986) guidelines. This involved linguistic review by bilingual experts to confirm text equivalence. A pilot test with 150 participants was conducted prior to the main data collection to evaluate clarity and reliability, yielding Cronbach's α values exceeding 0.80 across all constructs and Average Variance Extracted (AVE) values above the recommended threshold of 0.50, indicating strong internal consistency and convergent validity (Hair et al., 2019).

Data Analysis and Control Variables

Data analysis was carried out using IBM SPSS and AMOS programs, where descriptive statistics were first generated to summarize the demographic information of the respondents, followed by the normality testing, multicollinearity testing, common method bias testing, reliability, and validity examination. Following these checks, Structural Equation Modeling (SEM) and path analysis served as the main statistical techniques for hypothesis testing. Furthermore, the bootstrapping method will be applied to evaluate the mediating role of social climate. Control variables such as coworking space usage frequency and prior coworking experience were included to account for individual differences that might influence the dependent variable. The inclusion of these control variables was conceptually grounded in previous evidence suggesting that the frequency of coworking space usage can affect perceptions of spatial creativity and collaboration intensity, as repeated exposure enhances social embeddedness and creative engagement (Bouncken & Aslam, 2019). Similarly, individuals with previous coworking experience may exhibit heightened sensitivity to environmental affordances and social cues, which could influence their evaluation of spatial and social climates differently compared to first-time users (Spinuzzi, 2012). Integrating these factors thus can ensure more robust estimation of the hypothesized relationships.

Results

The demographic and usage frequency information of the sampled participants are summarized in Table 1, which indicates that the majority of participants had engaged with coworking spaces for one to two years, with the largest group (31.4%) having one year of experience, followed by 2 years (25.1%), 4 years (22.6%), and 3 years (20.9%). On the other hand, the frequency of coworking usage varied, with 33.4 percent of the participants attending less than one time per month, 18.3 percent attending once per week, 22.3 percent participating a few times per month, and the smallest proportion attending 2-3 times per week or not at all. These distributions reflect diverse engagement patterns among Thai users in Bangkok coworking spaces.

Table 1 Demographic Information

Frequency	Percent	Valid Percent
Less Than 1/ Month	117	33.4
1/ Week	64	18.3
A Few Times/ Month	78	22.3
2-3 Times/ Week	27	7.7
Daily	64	18.3
Total	**350**	**100.0**
Experience		
Less Than 1/ Month	117	33.4
2-3 Times/ Week	27	7.7
1/ Week	64	18.3
A Few Times/ Month	78	22.3
Daily	64	18.3
Total	**350**	**100.00**

The assessment of skewness and kurtosis values indicated that all values were ranging from -.632 to -.918, and from -.494 to .099, respectively, indicating that the data approximated a normal distribution. The assessments of reliability and validity confirmed that all constructs achieved acceptable measurement standards, where the Cronbach's alpha values for space creativity, social climate, and EORE were 0.796, 0.864, and 0.879 (in Table 2), respectively, indicating internal consistency. The convergent validity for all constructs was also supported, where in Table 2, the factor loadings were satisfactory across items ranging from 0.764 to 0.840 for space creativity, 0.667 to 0.813 for social climate, and from 0.748 to 0.825 for EORE. And the composite reliability for space creativity, social climate, and EORE were 0.796, 0.864, and 0.880, respectively.

Table 2 Convergent Validity

Component		Factor Loading	Reliability	CR	AVE
SCR			.796	.796	.566
SCR_1	-	.764	-	-	
SCR_2	-	.796	-	-	-
SCR_3	-	.840	-	-	
EORE			.879	.880	.595
EORE_1	.801	-	-	-	-
EORE_2	.825	-	-	-	-
EORE_3	.748	-	-	-	-
EORE_4	.782	-	-	-	-
EORE_5	.750	-	-	-	-
SOC		-	.864	.864	.559
SOC_1	-	.667	-	-	-
SOC_2	-	.745	-	-	-
SOC_3	-	.793	-	-	-
SOC_4	-	.733	-	-	-
SOC_5	-	.813	-	-	-

Source: SCR-Space Creativity; EORE- Entrepreneurial Opportunity Recognition & Exploitation; SOC-Social Climate

And the respective average variance extracted were 0.566, 0.559, and 0.595. Moreover, the discriminant validity test in Table 3 yielded satisfactory results, which were further confirmed by the heterotrait–monotrait ratios in Table 4. These values, ranging from 0.534 to 0.945, were all below the recommended threshold of 0.95, thereby verifying discriminant validity for all three constructs. Additionally, multicollinearity concern was investigated through the Variance Inflation Factor (VIF) values. The VIF scores for the independent variables, including space creativity (1.388) and social climate (1.388), were well below the threshold value of 3.3 (Petter et al., 2007), signifying that the multicollinearity issue was not shown in the structural model of the current study. Furthermore, the testing of Common Method Bias (CMB) was assessed by Harman's single-factor test. The result showed that the largest variance explained by a single factor was not over 46 percent, which is below the satisfactory threshold of 50 percent. This offers evidence that the CMB issue was not present in the research.

Table 3 Discriminant Validity

Variable	SOC	SCR	EORE
SOC	.748	-	-
SCR	.597	.752	-
EORE	.619	.495	.771

Source: SCR-Space Creativity; EORE- Entrepreneurial Opportunity Recognition & Exploitation; SOC-Social Climate

Table 4 Heterotrait-Monotrait (HTMT) Ratio

Variable	SCR	SOC	EORE
SCR	1.00	.945	.534
SOC	.945	1.00	.563
EORE	.534	.563	1.00

Source: SCR-Space Creativity; EORE- Entrepreneurial Opportunity Recognition & Exploitation; SOC-Social Climate

Table 5 Path Analysis Estimate

Path Relationship			Estimate	S.E.	P
SOC	<---	SCR	.676	.084	***
EORE	<---	SCR	.221	.083	.008
EORE	<---	SOC	.502	.075	***
EORE	<---	Frequency	.043	.026	.091
EORE	<---	Experience	.015	.039	.693

Source: SCR-Space Creativity; EORE- Entrepreneurial Opportunity Recognition & Exploitation; SOC-Social Climate; Model fit indices: $\chi2$ = 88.478 (P < 0.00), df = 62, $\chi2$/df = 1.427, CFI = .988, GFI = .963, NFI = .960, TLI =. 984, RMSEA = .035, *** = .001 significance level
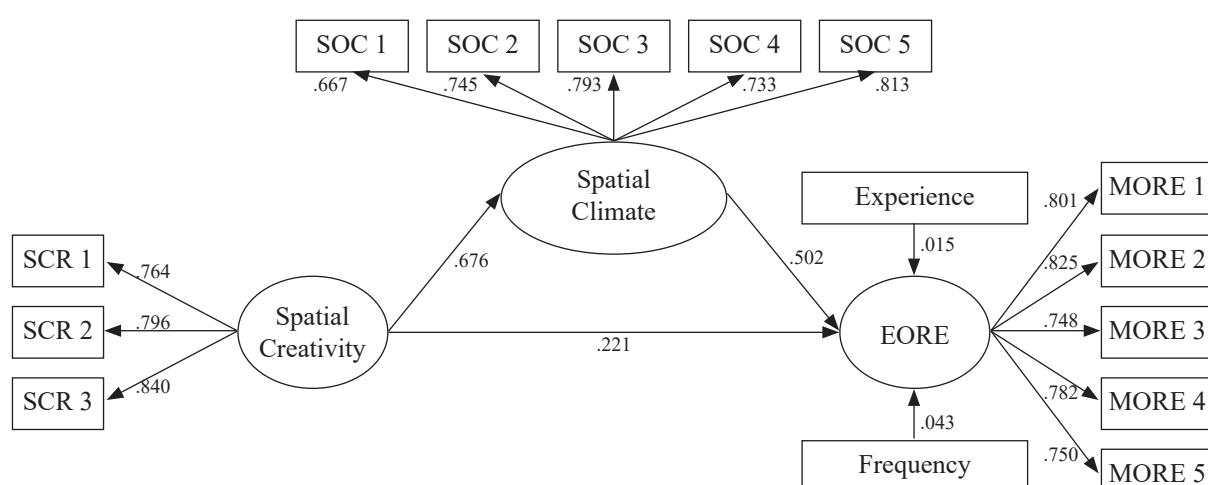

Figure 2 Modified Research Framework

In this study, structural equation modeling was employed to test the hypothesized relationships, and the results from Table 5 indicated that the proposed model demonstrated satisfactory fit, with chi-square to degrees of freedom ratio (1.427), goodness-of-fit index (.963), comparative fit index (.988), and root mean square error of approximation (.035) all fell within the thresholds, thus supporting the adequacy of the model. Moreover, the path analysis results in Table 5 confirmed a significant positive effect of space creativity on EORE (β=.205, p=.014), which indicates that coworking environments designed to foster creativity directly enhance Thai users' ability to identify and act on business opportunities, thus H1 is supported. Similarly, the results shown in Table 5 supported the positive impact that social climate exerts on EORE ($\beta = 0.502$, p < .001), which suggested that supportive and collaborative coworking environments contribute to entrepreneurial behaviors, thus H2 is supported. Regarding the effects of control variables in this research, the results in Table 5 illustrate that coworking space usage frequency and experiences both have a positive influence on business opportunities identification, although the impact of experiences was not significant.

Table 6 Mediation Effect of Social Climate

Relationship	Estimate	Bootstrapping Bias-Corrected 95% CI		2 Tailed Significance
Direct Effects	-	LB	UB	-
SCR - SOC	.676	.493	.899	.001
SCR - EORE	.221	.020	.457	.029
SOC - EORE	.502	.343	.699	.001
Indirect Effects				
SCR - EORE	.339	.220	.530	.000

Furthermore, in Table 6, the results showed that space creativity had a significant impact on social climate ($\beta = .676$, p < .001), and the indirect impact of space creativity on opportunity recognition and exploitation via social climate was also significant ($\beta = .339$, p < .001). As the direct effect of space creativity on EORE ($\beta = .221$, p = .029) remained significant after including the mediator, confirming partial mediation rather than full mediation, which supports the assertion that coworking spaces can influence entrepreneurial opportunity both directly and indirectly. These findings conclude that social climate partially mediates the relationship, highlighting the importance of social factors in translating spatial creativity into actionable opportunities, thus H3 is supported. Figure 2 further illustrate this pathway, showing arrows from space creativity to social climate and then to EORE, with a direct arrow from space creativity to EORE retained to emphasize partial mediation. Additionally, consistent with the B&B theory (Fredrickson, 2001), spatial creativity fosters positive social dynamics that enhance opportunity-driven entrepreneurship by broadening cognitive repertoires and building lasting social resources.

Discussion

The findings from this research confirmed that space creativity positively affects EORE. This result aligns with an early study that has accentuated the significance of creative environments in motivating entrepreneurial cognition. For instance, grounded in resource-based theory, Bouncken et al. (2018), in their empirical study of 184 participants across co-working spaces, suggested that spatial design supporting creativity improves entrepreneurial learning and opportunity pursuit. Similarly, under the Spanish context and entrepreneurial ecosystem theory, Capdevila (2019) surveyed 247 participants and found that spaces designed for creativity facilitated knowledge sharing, which in turn expanded business opportunity recognition. These findings suggest that co-working spaces are not only physical infrastructures but also incubators that embed creative cues to trigger opportunity recognition. The results of the current study in Bangkok provide additional evidence that spatial creativity can function as a strategic lever in shaping entrepreneurial behavior in Asian contexts. Moreover, the partial mediation effect of social climate demonstrates that while the physical environment stimulates opportunity recognition directly, it also operates indirectly by creating supportive social networks, thereby validating the socio-material interplay between space design and social mechanisms.

The results from this study also validated the affirmative relationship between social climate and EORE. This relationship is also evident in the existing literature, for instance, empirical research conducted by Garrett et al. (2017), who studied 246 U.S.-based co-working users across various industries and found that communal support enhances both perceived belonging and opportunity recognition. Also, Parrino (2015) applied a qualitative method in the Italian co-working spaces context and demonstrated that shared climate and collective trust enhanced users' capacity to access market opportunities. The Bangkok findings align with prior research that underscores that a collaborative social climate is one key antecedent in co-working spaces that motivates opportunity exploitation. The research findings extend this by signifying that social climate functions as an outlet through which spatial creativity translates into entrepreneurial action, consistent with the B&B theory, which postulates that positive environmental spurs broaden cognitive and social resources, expediting opportunity recognition and exploitation (Fredrickson, 2001). The results from this research also confirmed that social climate partially mediates the relationship between space creativity and business opportunity recognition, which suggests that the influence of creative space design on opportunity recognition can be amplified by social climate. This mediation effect is consistent with the socio-materiality perspective (Orlikowski, 2007), which suggests that material arrangements and social practices as mutually constitutive. Empirical evidence can also be drawn from the findings of research conducted by Garrett et al. (2017), who outlined that physical design affected social dynamics, which in turn impacted community-level outcomes. Thus, the Bangkok findings extend early studies by confirming that the benefits of creative space design are not merely aesthetic or functional but operate indirectly through their ability to build relational climates that support entrepreneurial cognition.

Conclusion

This research has confirmed that all three hypothesized relationships were supported, and collectively, these findings will advance both theoretical understanding and practical knowledge.

From an academic perspective, the results extend the entrepreneurial ecosystem and B&B framework by demonstrating how spatial creativity functions as a contextual antecedent to social and entrepreneurial processes. Early research often treated spatial design and social climate separately (Brown, 2017; Capdevila, 2019), but the current study empirically integrates them, illustrating that creative spatial designs indirectly enhance business opportunity recognition by strengthening social climates. Moreover, such findings accentuate the mechanism through which socio-spatial configurations facilitate entrepreneurial cognition, suggesting that physical environments do not merely host social interaction but actively shape entrepreneurial behaviors. This fills in the void in co-working literature by providing empirical validation of a socio-spatial model that connects physical space, social structures, and entrepreneurial cognition. By explicitly joining these elements, this research advances theory beyond descriptive aspect, providing a more nuanced explanation of how entrepreneurial ecosystems operate at the micro level and offering a framework for integrating socio-spatial factors into broader ecosystem studies.

From a practical perspective, the findings offer actionable insights for co-working operators, policymakers, and business development agencies. For operators, investing in creative workspace designs can cultivate stronger social climates, which in turn enhance entrepreneurial opportunity recognition among members. For policymakers, the research findings suggest that co-working spaces can be utilized as part of urban innovation strategies in Bangkok and other similar metropolitan regions. This underlines the role of designed environments as catalysts for regional entrepreneurship, indicating that urban policy interventions should consider the spatial and social configuration of workspaces, rather than focusing solely on financial or regulatory support. This is particularly relevant for governments aiming to foster entrepreneurship in knowledge economies, as co-working spaces provide accessible platforms for SMEs and entrepreneurs to engage in business opportunity recognition. For organizations and industry leaders, the research findings highlight that co-working is more than cost-efficient office space, but rather a strategic environment that fosters innovation and entrepreneurial activity that can be harnessed to stimulate local economic development. Therefore, strategic investments in co-working infrastructure can produce measurable economic and social yields, as these spaces facilitate the emergence of novel collaborations, knowledge spillovers, and ecosystem-level synergies (Spinuzzi, 2012).

Limitations and Future Research

Despite its contributions, several limitations of this study need to be acknowledged. Firstly, the cross-sectional design of this research restricts its causal inference. While the study revealed significant associations between creativity, social climate, and opportunity recognition, the temporal dynamics remain unknown. Future longitudinal studies could also explore potential feedback loops, where entrepreneurial outcomes further strengthen social climates and spatial creativity, providing a dynamic model of co-working ecosystem evolution. Thus, future longitudinal research could consider tracking users' experiences over time to validate the causality between variables. Secondly, the sample size limitation arises from the use of Bangkok-based participants only. Although Bangkok is a major regional hub for co-working, cultural and institutional contexts may vary significantly in other Asian or Western cultural settings. Such contextual sensitivity indicates that socio-spatial interactions may exhibit different patterns depending on cultural customs of collaboration, trust, and social cohesion. Thus, comparative cross-national studies in future research could assess whether the socio-spatial model holds across diverse ecosystems.

Thirdly, this research adopted a quantitative method, which relied on self-reported measures that may be subject to response biases or social desirability effects. Integrating observational and ethnographic studies, or digital trace data, could validate the findings, offering richer insights into how spatial design translates into social and cognitive outcomes. Future study, thus, could employ mixed-method approaches such as combining ethnographic observation with quantitative modeling, in order to capture deeper nuances of user interaction and validate perceptual measures. Fourthly, this research is limited by its context and industry scope as it focused primarily on co-working users and excluded virtual co-working or hybrid digital-physical models. Provided the accelerated adoption of remote work and digital collaboration apparatuses, understanding how virtual and hybrid spaces mediate socio-spatial mechanisms signifies a critical frontline for research in entrepreneurial ecosystems. With the rise of remote and hybrid work, future research should assess how digital interfaces mediate the interplay between creativity, social climate, and opportunity recognition. Lastly, the selective inclusion of variables means that other potentially relevant antecedents, such as perceived trust, psychological safety, or innovation outcomes, were not included. Therefore, future research could expand the model to integrate such constructs and offer a more comprehensive comprehension of co-working dynamics. In particular, examining mediating and moderating mechanisms, such as network density or cognitive diversity, could theoretically and practically broaden our comprehensions of how co-working environments function as reagents for entrepreneurial ecosystem development.

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Strategic Research on Talent Supply and Demand in the New Energy Vehicle Industry Chain: A Case Study of Nanning

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Abstract

The global automotive industry's accelerated transition toward electrification and intelligentization has positioned talent as a critical determinant of competitive advantage in the New Energy Vehicle (NEV) sector. While existing scholarship extensively examines mature coastal clusters, a significant gap remains in understanding talent dynamics within emerging inland hubs.

This study addresses this gap by presenting a granular analysis of Nanning's NEV talent ecosystem, integrating Human Capital and Cluster Theories to investigate the structural interdependencies between policy, industry, and education. Through quantitative analysis of regional data (2017-2024) and comparative benchmarking, the research identifies acute skill polarization—specifically, surpluses in low-skilled operational roles alongside critical shortages in high-value R&D and engineering functions within the core components segment. These imbalances are exacerbated by wage competitiveness gaps, nascent industrial clustering, and misaligned training pipelines. The study's primary contribution lies in its development of an integrated, closed-loop strategy framework for talent ecosystem development, which synergizes industry-education integration, high-end project attraction, and urban livability enhancement. The findings offer a replicable model for policy-makers in similar emerging industrial cities aiming to bridge the gap between national strategic ambitions and local implementation realities.

Keywords: New Energy Vehicles, Talent Supply-Demand, Industry-Education Integration, Workforce Retention, Industrial Clustering

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Introduction

Global Context of the NEV Industry

The twenty-first century has witnessed an unprecedented shift in the global automotive sector, driven by climate change mitigation, technological innovation, and industrial restructuring. Governments worldwide have enacted stringent emissions regulations and invested heavily in clean transportation technologies. The European Union's Fit for 55 package mandates a 55% reduction in greenhouse gas emissions by 2030, effectively phasing out new Internal Combustion Engine (ICE) sales by 2035 (European Commission, 2021). The United States offers substantial incentives for EV adoption. At the same time, Japan and South Korea have set ambitious electric mobility targets supported by strong R&D investments (Organization for Economic Co-operation and Development [OECD], 2023).

Against this global backdrop, NEVs-including Battery Electric Vehicles (BEVs), Plug-In Hybrid Electric Vehicles (PHEVs), and Fuel Cell Vehicles (FCVs)-are no longer a niche but a central competitive arena in the automotive industry. The rapid technological convergence of electrification, autonomous driving, and connected mobility has expanded the skill requirements for automotive professionals beyond traditional mechanical engineering into fields such as artificial intelligence, big data analytics, battery chemistry, and human-machine interface design (Frey & Osborne, 2017).

China's National Strategy and NEV Industry Development

China, as the world's largest NEV market, exemplifies this shift. National strategies, including the "Made in China 2025" initiative and the NEV Industry Development Plan (2021-2035), explicitly link technological leadership to the cultivation of a robust human capital base (Ministry of Industry and Information Technology [MIIT], 2020). However, the implementation of these national blueprints is characterized by significant regional disparities. While scholarly and policy attention has predominantly focused on established coastal hubs like Shanghai and Shenzhen, the role of inland cities—which are increasingly critical to China's industrial geography—remains underexplored.

Guangxi and Nanning's Strategic Position

Guangxi's integration into China's Belt and Road Initiative and its role as a bridge to ASEAN markets provide unique advantages for NEV industry expansion. Nanning benefits from proximity to emerging Southeast Asian EV markets, lower operating costs compared to coastal cities, and increasing infrastructure investment. Flagship projects such as BYD's 45GWh power battery plant have positioned the city as a potential western China hub for NEV production (Guangxi Talent Service Platform, 2022).

However, Nanning also faces significant constraints: wage competitiveness, incomplete industrial ecosystems, and a limited pipeline of high-end R&D professionals. Unlike Shanghai or Shenzhen, where dense supplier networks and established innovation ecosystems naturally attract talent, Nanning is still in the early stages of industrial clustering (OECD, 2023).

Research Objectives

While substantial research exists on China's NEV industry, most studies focus on coastal megacities or national-level trends. There is limited literature addressing inland, emerging hubs

like Nanning, particularly in relation to talent ecosystem dynamics. This paper addresses this gap by:

   • Mapping the structural characteristics of Nanning's NEV talent supply and demand.
   • Identifying core deficits in skill categories across the value chain.
   • Comparing Nanning's situation with leading NEV hubs.
   • Proposing targeted strategies for talent attraction, training, and retention.

Literature Review

NEV Industry Development in the Global Context

Over the last two decades, the automotive industry has undergone a paradigm shift driven by decarbonization policies, advancements in battery technology, and consumer demand for sustainable mobility. According to the International Energy Agency (IEA) (2023), global electric car sales exceeded 14 million units in 2023, representing 18% of total car sales worldwide. Europe's aggressive regulatory measures, such as the EU's CO_2 emission standards and the Fit for 55 initiative, have accelerated market penetration (European Commission, 2021). Japan and South Korea focus on hybrid technology leadership and hydrogen fuel cell vehicles (OECD, 2023).

China's National NEV Strategy and Regional Implementation

China has rapidly ascended to become the largest NEV market globally, backed by targeted subsidies, infrastructure investment, and industrial policy (MIIT, 2020). This aligns with the strategic goals outlined in the New Energy Vehicle Industry Development Plan (2021-2035) issued by MIIT, which emphasizes technological advancement, supply chain integration, and talent cultivation. The NEV Industry Development Plan (2021-2035) emphasizes core technological breakthroughs, industrial cluster formation, and talent ecosystem enhancement. Empirical studies show that policy-induced market expansion is closely tied to regional talent attraction and retention China Automotive Technology and Research Center (CATARC, 2021).

In inland provinces, however, challenges such as limited R&D platforms, weaker salary competitiveness, and slower industrial clustering hinder alignment with national strategic goals (OECD, 2023).

Talent Supply-Demand Dynamics in Emerging Industries

Human Capital Theory (Becker, 1993) provides a foundation for understanding the role of education, training, and skill accumulation in economic productivity. In the NEV sector, talent requirements have shifted from traditional mechanical engineering to a hybrid skill set incorporating electrical engineering, software development, and data analytics (Frey & Osborne, 2017).

Chinese studies indicate that supply-demand imbalances in NEV talent are particularly acute in the midstream (vehicle manufacturing) and upstream (core components) due to long training cycles and rapid technological change (Guangxi Talent Service Platform, 2022). Aftermarket services, in contrast, often show relative equilibrium thanks to shorter skill acquisition timelines and higher market flexibility.

International Models of Industry-Education Integration

Germany's "dual system" vocational education model has been widely cited for its ability to align industrial needs with educational output, especially in the automotive sector (Euler, 2013). Students split their time between classroom instruction and paid apprenticeships within companies, ensuring that skills remain relevant to evolving technologies.

China-ASEAN collaborations, such as the Luban Workshops in Laos and the China-Indonesia Automotive Academies, have demonstrated that cross-border industry-education partnerships can accelerate skill development in strategic emerging industries (Liuzhou City Vocational College, 2023).

Theoretical Foundations: Human Capital and Cluster Theory

This study is anchored in two complementary theoretical frameworks. Human Capital Theory (Becker, 1993) provides a microeconomic rationale for investing in education and training, positing that skills are a form of capital that enhances productivity and innovation. In the context of the NEV sector, the theory explains why rapid technological change creates persistent skill mismatches—the high cost and long lead time of developing specialized human capital often lag behind industry expansion.

Industrial Clustering and Talent Ecosystem Theory

Porter's Cluster Theory (Porter, 1998) posits that geographic concentration of interconnected companies, suppliers, and associated institutions enhances competitiveness by facilitating knowledge spillovers and specialized labor markets. Applied to NEV development, successful clusters such as Shanghai and Shenzhen have leveraged dense supplier networks, high research intensity, and favorable lifestyle conditions to attract high-caliber talent (OECD, 2023). However, Nanning's NEV cluster is still in its formative stage, with limited supplier diversity, fragmented industrial linkages, and underdeveloped professional service ecosystems. This constrains the city's ability to generate the self-reinforcing talent attraction and retention effects observed in mature clusters.

Identified Research Gaps

While the literature extensively covers coastal megacities and mature industrial bases, fewer empirical studies address inland, early-stage NEV hubs such as Nanning. Three specific gaps emerge:

Regional Talent Ecosystem Development-Most existing research focuses on national-level policy impacts or case studies from established clusters like Shanghai, Shenzhen, and Beijing (OECD, 2023). There is a lack of granular, city-level analysis for inland regions where industrial ecosystems are still forming.

Interdisciplinary Skill Integration-The NEV sector increasingly demands hybrid competencies that span automotive engineering, ICT, and renewable energy systems (Frey & Osborne, 2017). Few studies examine how education and training systems can effectively integrate these domains, particularly in regions without a strong pre-existing industrial base.

Talent Retention in Emerging Industrial Cities-While talent attraction has been studied in the context of high-income, globally connected cities, there is limited research on retention strategies for inland cities with less developed urban amenities and lower wage competitiveness (OECD, 2023).

Methodology

Research Design

This study employs a quantitative research design to systematically evaluate the talent supply-demand dynamics within Nanning's NEV industry chain. The research focuses on measurable indicators-such as employment figures, vacancy rates, and wage levels-collected from authoritative statistical sources and enterprise records.

Data Sources
Official Statistical Data

Guangxi Talent Service Platform: Annual datasets (2017-2024) on workforce demand and supply, broken down by industry segment, occupation, and skill category.

National Bureau of Statistics: Sectoral employment, wage levels, and output statistics for the automotive manufacturing and NEV sectors.

China Association of Automobile Manufacturers (CAAM): National NEV production, sales, and industry workforce reports.

Enterprise-Level Recruitment Data

Recruitment announcements of major NEV enterprises in Nanning.

Internal HR bulletins detailing unfilled positions, required qualifications, and recruitment timelines.

Variable Definition and Segmentation

The NEV industry was segmented into:

• Upstream - Core component manufacturing (e.g., batteries, motors, electronic control systems)

• Midstream - Complete vehicle manufacturing and assembly

• Downstream-Aftermarket services, including maintenance, sales, charging infrastructure, and recycling

Key variables:

• Talent Demand (TD) - Number of positions posted during the survey period

• Talent Supply (TS) - Number of qualified candidates available

• Talent Gap (TG) - TD-TS; positive values indicate shortages

• Shortage Rate (SR) - TG ÷ TD × 100%

Results

National and Regional NEV Talent Trends (2017-2024)

Between 2017 and 2024:

• NEV manufacturing demand increased from 68.62% to 72.82% of total industry demand (+4.2 percentage points).

• Core components demand fell by 9 percentage points.

Aftermarket services grew by 4.6 percentage points (Guangxi Talent Service Platform, 2024).

Interpretation: Midstream manufacturing absorbed most new demand due to expansion projects, while upstream components faced volatile investment cycles. Aftermarket growth reflects the market's transition toward service infrastructure.

Table 1 Segment-Wise Talent Supply–Demand Gap

Segment	Demand Share 2023	Supply Share 2023	Gap (pp)	Shortage Severity
Vehicle Manufacturing	72.82%	78.50%	+5.68	Moderate
Core Components	19.28%	14.19%	-5.09	Severe
Aftermarket Services	7.90%	7.31%	-0.59	Balanced

Source: Guangxi Talent Service Platform (2022)

Interpretation: Core components suffer the most acute shortage, with supply lagging demand by over 5 percentage points. Manufacturing shows a surplus in aggregate, but this is concentrated in low-skill roles.

This table highlights the segmental imbalance in Nanning's NEV industry, where upstream technical roles are underfilled despite overall growth in manufacturing. It also underscores the need to differentiate between aggregate surplus and skill-specific shortages.

Occupational-Level Shortages

Top shortage categories by number of positions:

Entry-Level Technical Operators-1,400 (BYD Nanning Yongning Project)
• Electrical Welding Maintenance Workers-828
• Software Development Engineers-44
• Surface Engineers-43
• Vehicle Engineers-43

Trend: While entry-level operators dominate numerically, strategic shortages occur in software and design engineering, which are critical for long-term competitiveness.

Wage-Shortage Correlation

Pearson correlation between average annual wages and shortage rates across 25 occupational categories in Nanning's NEV industry (2021): $r = -0.68$, $p < 0.01$. Interpretation: Higher wages are associated with lower shortage rates, supporting the hypothesis that compensation is a key determinant of talent availability (CATARC, 2021).

Table 2 Comparative Benchmarking: Nanning vs. Shanghai & Chongqing

Indicator	Nanning	Shanghai	Chongqing
Avg. Annual Wage (RMB '000)	90	145	105
Shortage Rate (%)	38.2	21.5	33.7
Share of R&D Roles (%)	7	18	9

Interpretation: Nanning's lower wage levels and smaller proportion of R&D roles partly explain its higher shortage rate. Shanghai's mature cluster attracts more high-end talent; Chongqing's structure is closer to Nanning but benefits from a longer automotive history.

This comparative table illustrates how regional disparities in wages and R&D intensity contribute to talent shortages. It suggests that Nanning must enhance both compensation and innovation capacity to remain competitive.

Time-Series Analysis: Policy Impact Windows
Two inflection points in demand growth:
2019: Local subsidies for NEV purchases triggered a spike in aftermarket service demand.
2021: Vehicle manufacturers' large-scale battery production plan expanded manufacturing demand significantly.

Structural Insights
Three key characteristics emerge:
• Skill Polarization - Surplus in low-skill roles, shortage in high-skill technical positions.
• Segmental Imbalance - Severe gaps in core components despite manufacturing expansion.
• Wage Elasticity - Strong statistical link between pay and talent scarcity.

Discussion

Skill Polarization and Structural Talent Gaps
Quantitatively, the results reveal a clear pattern of skill polarization: An oversupply of low-skilled operational positions alongside chronic shortages in high-skilled technical and R&D roles. This aligns with Human Capital Theory (Becker, 1993), which posits that in knowledge-intensive industries, the long lead time and high cost of skill formation create persistent mismatches when industrial expansion outpaces the cultivation of talent.

Such mismatches are particularly acute in the core components segment. Data show that the share of available talent in this segment trails demand by over five percentage points. These roles-such as battery systems engineers-form the technological heart of NEV competitiveness, requiring expertise in electrochemistry, materials science, and thermal management.

Wage Competitiveness and Regional Disparities
In comparison to Shanghai and Chongqing, Nanning's average annual salary is approximately 62% of Shanghai's, with R&D roles accounting for a significantly lower share of total positions (7% vs. 18% in Shanghai). Correlation analysis confirms that higher wages are strongly associated with lower shortage rates.

Industrial Clustering and Agglomeration Effects
Porter's Cluster Theory (Porter, 1998) suggests that mature industrial clusters enhance competitiveness through dense supplier networks, knowledge spillovers, and specialized labor markets. While Nanning's NEV chain spans upstream, midstream, and downstream activities, supplier density is low, and enterprises remain geographically dispersed.

Talent Mobility Patterns
Supply–demand trends suggest a three-phase talent mobility pattern in Nanning's NEV sector:
• Graduation Phase - Output of local NEV-related graduates is roughly aligned with overall enterprise demand, but skills matching is suboptimal.
• Outflow Phase - High-achieving graduates gravitate toward the Pearl River Delta for better pay and career opportunities.

• Return Phase - A small cohort of mid-career technical and managerial staff return after gaining experience elsewhere.

This pattern mirrors those in OECD countries, but successful regions often turn return migration into a stable talent stock through simultaneous industrial upgrading and urban environment improvement (OECD, 2023).

Policy Implementation Gaps

Despite Nanning's talent initiatives - such as the "Talent Green Card" program-execution challenges remain:

• Low awareness among firms and professionals.
• Slow processing of subsidies and residency incentives.
• Poor alignment with enterprise needs.

International Experiences and Applicability

Germany's automotive transition leveraged the dual system of vocational education (Euler, 2013). Japan has relied on in-house long-term training, pairing lifetime employment with cross-department rotations. ASEAN countries such as Thailand and Malaysia have co-located training centers with foreign-invested vehicle plants.

For Nanning, three practices are readily adaptable:

• Rapid establishment of industry - education alliances.
• Leveraging anchor projects to create training-to-placement pipelines.
• Regional internationalization to attract multinational automakers and global talent.

Synthesis of Key Findings

The structural causes of Nanning's NEV talent imbalances can be summarized as:

• Economic Factors - Wage competitiveness lags.
• Industrial Factors - Incomplete supply chain, weak clustering effects.
• Educational Factors - NEV-specialized education started late.
• Urban Livability Factors - Industrial parks are distant from city centers.

Strategic Recommendations

• Deepening Industry–Education Integration

Establish joint NEV colleges, embed dual-qualification faculty models, and create modular training pipelines aligned with industry certification schemes.

• Attracting High-End Projects and Global Talent

Target strategic investors, implement "one enterprise, one policy" talent packages, and leverage ASEAN market access.

• Strengthening Skilled Workforce Training

Host regional NEV skills competitions, create continuing education pathways, and formalize enterprise-based apprenticeships.

• Optimizing Talent Support and Urban Livability

Develop NEV-focused HR service sub-parks, improve on-site amenities in industrial zones, and enhance transport infrastructure.

• Establishing Interdisciplinary NEV Academic Majors

Integrate automotive engineering with computer science, data analytics, and electrochemistry; adopt modern apprenticeship structures; and promote international faculty exchange.

• Monitoring and Evaluation

Implement KPI frameworks, conduct annual talent audits, and establish feedback loops between industry and academia.

Conclusion

The rapid expansion of China's New Energy Vehicle (NEV) industry has elevated talent as a strategic resource, particularly in emerging inland hubs like Nanning. This study provides a comprehensive analysis of Nanning's NEV talent ecosystem, revealing structural mismatches between supply and demand, pronounced skill polarization, and regional disparities in wage competitiveness and industrial clustering. Through empirical data and comparative benchmarking, the research identifies critical shortages in high-skilled roles—especially within core components and R&D functions—and highlights the influence of wage elasticity and urban livability on talent retention.

Drawing on Human Capital Theory and Cluster Theory, the findings underscore the need for integrated strategies that align education, industry, and urban development. International experiences from Germany, Japan, and ASEAN countries offer valuable lessons, while Nanning's unique position within the China-ASEAN corridor presents opportunities for regional internationalization and strategic investment.

To address these challenges, the paper proposes a six-pronged strategy encompassing industry–education integration, high-end project attraction, workforce training, urban optimization, interdisciplinary academic development, and continuous monitoring. These recommendations aim to transform Nanning's NEV talent landscape from reactive recruitment to proactive ecosystem building.

Ultimately, this study contributes to the literature by bridging national policy frameworks with city-level implementation insights, offering a replicable model for other inland NEV hubs seeking to accelerate industrial upgrading through talent-driven development. Future research may extend this framework to longitudinal studies and cross-regional comparisons, further enriching the discourse on sustainable talent strategies in strategic emerging industries.

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A Comparative Analysis of Secondary School Curricula in Thailand, Singapore, and Malaysia: Integrating Self-Regulated Learning and Life Planning Skills

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Abstract

In the twenty-first century, secondary education is increasingly expected to move beyond academic achievement to equip students with the competencies to navigate complex, rapidly changing social and economic contexts. Among these, Self-Regulated Learning (SRL) and life and career planning skills are essential for fostering autonomy, adaptability, and lifelong learning. This article provides a comparative analysis of secondary school curricula in Thailand, Singapore, and Malaysia, focusing on how SRL and life planning are incorporated within each system.

The analysis reveals that Singapore incorporates SRL and life planning coherently through initiatives such as Character and Citizenship Education (CCE), Education and Career Guidance (ECG), subject-based banding reforms, and portfolio-based assessment. Malaysia adopts a balanced approach, embedding Kemahiran Insaniah (soft skills) across academic and co-curricular domains, guided by the Malaysia Education Blueprint, 2013-2025, and School-Based Assessment (PBS/Pentaksiran Berasaskan Sekolah). In contrast, Thailand's Basic Education Core Curriculum, 2008, remains largely exam-oriented, providing limited opportunities to cultivate SRL and life planning competencies.

Drawing on these findings, the article proposes a reform framework emphasizing SRL integration, dedicated life planning modules, enhanced co-curricular programs, teacher mentorship, and diversified assessment. Aligned with the Organization for Economic Co-operation and Development (OECD)'s vision for "future-ready learners", the model aims to balance academic rigor with essential life competencies.

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Introduction

In the twenty-first century, education systems worldwide face increasing pressure to move beyond the transmission of academic knowledge and incorporate the soft skills necessary for navigating complexity in modern societies. The OECD. Future of Education and Skills 2030 emphasizes that today's learners must be adaptable, autonomous, and capable of making informed life decisions in uncertain contexts (OECD, 2018). Among these competencies, Self-Regulated Learning (SRL)—the ability to plan, monitor, and evaluate one's own learning—and life planning—the capacity to envision personal and career trajectories—stand out as indispensable.

Self-regulated learning is not an innate ability but a definable skill set that can be developed to help students direct their own learning processes. It is a self-directive process and a set of behaviors whereby learners transform their mental abilities into skills and habits. This includes cognitive, metacognitive, motivational, and emotional aspects of learning, encompassing abilities such as goal setting, self-monitoring, and the strategic selection of learning approaches. Similarly, life planning skills are foundational executive function skills that enable students to organize their time, manage workloads, and set short- and long-term goals for both academic and personal success. These competencies are essential for fostering a mindset of lifelong learning and adaptability.

In the ASEAN region, Thailand, Singapore, and Malaysia have each undertaken significant educational reform over the past two decades. These countries share cultural and developmental similarities but differ in how they integrate SRL and life planning into secondary school curricula. Singapore is recognized globally for its performance on international assessments, supported by systemic reforms that embed flexibility and future readiness. Malaysia's reforms highlight holistic development and soft skills, particularly through the Malaysia Education Blueprint 2013-2025 (Ministry of Education Malaysia [MEM], 2013). Thailand, however, continues to operate within a heavily exam-driven paradigm under the Basic Education Core Curriculum B.E. 2551 (Ministry of Education Thailand [MOE], 2008), which provides limited scope for SRL and life planning.

This study undertakes a comparative curriculum analysis to (1) examine how SRL and life planning are addressed in the secondary school curricula of Thailand, Singapore, and Malaysia; (2) highlight the distinctive features and challenges within each system; and (3) propose a model for embedding SRL and life planning into Thailand's curriculum.

Comparative Curriculum Analysis

The secondary school curricula of Thailand, Singapore, and Malaysia reveal both shared goals and divergent approaches to soft skills education. All three countries acknowledge the importance of developing students beyond academic achievement; however, the extent and manner of integration differ considerably.

In Thailand, despite a stated commitment to modern educational principles, the education system is marked by a profound contradiction between policy and practice. The Basic Education Core Curriculum (BECC) was designed with the intention of fostering holistic development and key competencies such as self-management, communication, and advanced thinking. The document, for instance, states goals of "knowledge and skills for communication, thinking, problem-solving, technological know-how, and life skills" (MOE, 2008). However, as expert analyses and student feedback reveal, the system remains largely constrained by a persistent and deeply entrenched exam-driven culture. For example, it has been noted that "the Ministry plans to revamp the Basic

Education Core Curriculum B.E. 2551 (MOE, 2008) for Thai students to focus more on developing analytical skills and career goals", showing recognition of this deficit (Bangkok Post, 2020). Critics argue that reforms often fail to materialize in the classroom, with changes being superficial rather than substantive shifts in pedagogy, though direct empirical studies are fewer. This fundamental disconnect is rooted in a number of systemic barriers.

The system is highly centralized and bureaucratic, which hampers efforts at school-level autonomy and instructional leadership. While the Basic Education Core Curriculum B.E. 2551 (MOE, 2008) envisages a "learner-centered approach" and expects schools and communities to participate in curriculum preparation, in practice, reports highlight a significant lack of resources, particularly in rural schools, where overcrowding is a major issue and access to qualified teachers is limited. Teachers themselves are often overwhelmed with administrative tasks, which reduces the time and energy available for effective instruction.

The central challenge in Thailand's context is not a lack of vision but a fundamental failure of implementation and political will to overcome these structural obstacles. The BECC 2008 contains the right language, but a student-centered curriculum is almost impossible to implement within a rigid, centralized system that prioritizes rote memorization for high-stakes examinations. This leads to a profound policy–practice gap, where the rhetoric of reform fails to translate into a changed classroom reality. This systemic inertia, in turn, helps explain Thailand's performance on international assessments—such as PISA—which remains consistently low. There appears to be a discernible link between the centralized administrative structure and resource imbalances, which may hinder effective implementation and widen the gap between policy and practice, ultimately influencing student outcomes in international assessments (Line Today, 2024; Merzouk, 2025; The Asia Foundation, 2025).

For Thailand to truly prepare its students for the twenty-first century, it must move beyond superficial reforms and address the core structural issues that impede meaningful educational change.

By contrast, Singapore's education system serves as a powerful case study in the strategic, top-down implementation of a holistic vision for student development. The Singapore Ministry of Education's long-term vision is centered on nurturing the "joy of learning" and developing "multiple pathways to cater to the different strengths and interests of our students" (Singapore Ministry of Education, 2022). This vision is operationalized through a cohesive ecosystem of institutionalized frameworks that synergistically cultivate self-regulated learning and life-planning skills, moving beyond mere policy rhetoric to achieve tangible, systemic change (SEAMEO RECSAM, 2016).

One critical mechanism is the Character and Citizenship Education (CCE) curriculum. CCE is not confined to a single subject; it is integrated across various platforms, including weekly lessons, National Education events, co-curricular activities, and daily teacher–student interactions. For example, its learning outcomes include developing self-awareness and self-management skills, social awareness and interpersonal skills, resilience, and reflection for community, national, and global issues. Complementing this is the ECG framework, which provides a structured, developmental approach to life planning—awareness, exploration, and planning—with dedicated counsellors and resources enabling students to explore their interests, skills, and make informed decisions about their education and careers. Finally, the structural reform known as Full Subject-Based Banding (Full SBB) allows students to take individual subjects at levels that match their learning needs, giving them greater agency in their academic

journeys. The success of Singapore lies not in any single program but in the synergistic and institutionalized nature of its educational ecosystem. The advocacy of multiple pathways is made possible by structural reform (Full SBB), supported by guidance (ECG) and values/character education (CCE). Its student outcomes on PISA and TIMSS reflect a system that develops self-aware, proactive, and resilient learners (National Center for Education Statistics, 2023; Ngee Ann Secondary School, 2025; NUS High School of Mathematics and Science, 2025; Singapore Ministry of Education, 2023; Workforce Singapore, 2025).

In Malaysia, the education system is currently in a deliberate and long-term transition, guided by the Malaysia Education Blueprint (MEB) 2013-2025 (MEM, 2013). This comprehensive plan is a multi-phase, 13-year transformation designed to elevate the entire system to meet global standards. The blueprint is built on five core aspirations—Access, Quality, Equity, Unity, and Efficiency—and it explicitly aims to develop "higher order thinking skills" and values-driven citizens, signifying a clear policy intent to move beyond a traditional, exam-centric model. A core tenet of this approach is the integration of "Kemahiran Insaniah" (soft skills) across the curriculum. These skills are intended to be central to student development, embedded in both academic subjects and co-curricular activities. For example, the Blueprint explicitly states that by 2016, higher-order thinking questions will make up 80% of UPSR questions covering a range of formats, including multiple-choice and subjective questions; 80% of form 3 central assessment; and 75% of SPM core subjects: English language, Mathematics, and History. A key structural reform has been the shift to School-Based Assessment (PBS/Pentaksiran Berasaskan Sekolah) as well as the abolition of centralized exams (UPSR and PT3) in favour of more holistic assessment, including co-curricular and psychometric evaluation (Bernama, 2022; Bangkok Post, 2020; British Council, 2025; Cerebrate Education, 2025; Chongfu School, 2025; Chung Cheng High School (Main), 2025; Malaysia Ministry of Education, 2013; Myprivatetutor. my, 2025).

Malaysia's framework demonstrates a strong, top-down intent for reform, but its outcomes suggest a system in the process of change rather than one that has fully matured. The nation's performance in international assessments remains significantly below that of Singapore, though above Thailand in some cases. This illustrates a crucial point: An ambitious, long-term policy is necessary, but not sufficient; its success depends upon deep implementation and embedding of practices across the system.

A comparative synthesis of the three nations reveals a clear continuum of educational reform maturity. Singapore is at the stage of integrated, institutionalized reform, where policies work in concert to develop future-ready learners. Malaysia is in an active, multi-year transition, actively working to implement a comprehensive blueprint that shifts the focus towards holistic development. Thailand, however, remains a system where the stated vision of reform is fundamentally undermined by a deeply entrenched exam-driven culture and system barriers that prevent meaningful change.

The effectiveness of each approach is empirically validated by its performance on international assessments. Singapore's world-leading PISA and TIMSS scores (TIMSS & PIRLS International Study Center, 2019; The Global Economy.com, 2022) reflect a system that has successfully fostered the very skills of critical thinking, problem-solving, and self-regulation that these tests measure (see Table 1). Malaysia's scores, which are at or near the international average, demonstrate that its reform efforts are beginning to yield results. However, the system has not yet fully closed the gap with global leaders. Thailand's consistently below-average performance serves as a stark indicator of the policy–practice gap and the challenges of a system

that still prioritizes rote memorization over the cultivation of essential competencies.

Table 1 PISA 2018 and 2022 scores

Country	Math		Reading		Science	
	2018	**2022**	**2018**	**2022**	**2018**	**2022**
Malaysia	440	409	415	388	438	416
Singapore	569	575	549	543	551	561
Thailand	419	394	393	379	426	409
OECD Average	489	472	487	476	489	485

Source: OECD, 2023
*PISA is an abbreviation for Program for International Student Assessment. The test assesses the mathematical, reading, and scientific abilities of 15-year-old students.

Table 2 Summarizes the Key Elements of Self-Skills and Life-Skills Integration in the Secondary Curricula of the Three Countries

Aspect	Thailand	Singapore	Malaysia
Curriculum Framework	Core Curriculum (Basic Education Core Curriculum) – focuses on academic subjects with life skills as part of "Learner Development Activities"	National Curriculum with strong emphasis on Character and Citizenship Education (CCE)	Integrated Secondary School Curriculum – includes Kemahiran Insaniah (soft skills) and co-curricular activities
Soft Skills Focus	General life skills, moral education, guidance & counselling	CCE emphasizes values, resilience, decision-making, and self-management	Explicit soft skills integration: Teamwork, communication, leadership, problem-solving
Life Planning Compo-nents	Limited: Mainly in advisory/guidance periods, and teacher counselling	Education and Career Guidance (ECG) frame-work, portfolio system, structured career guidance	Career planning is embedded in the Life Skills subject and the School-Based Assessment
Self-Regulated Learning (SRL)	An implicit, teacher-centered approach limits student autonomy	Strong SRL through project work, inquiry-based learning, and reflection journals	Some SRL via project-based tasks, group assignments, and student leadership roles

Table 2 Summarizes the Key Elements of Self-Skills and Life-Skills Integration in the Secondary Curricula of the Three Countries (Con.)

Aspect	Thailand	Singapore	Malaysia
Teaching Approach	Predominantly exam-focused, teacher-led, and limited project-based learning	Student-centered, blended learning, emphasis on reflection & goal-setting	A combination of academic and co-curricular activities, emphasis on holistic development
Assessment	National exams (O-NET, etc.) dominate, with less on soft skills assessment	Holistic assessment: Academic + portfolio + CCE reflections	School-Based Assessment (PBS) includes academic + co-curricular participation
Strengths	Strong academic foundation, structured curriculum	Well-structured integration of values & life planning; clear support for SRL	Explicit soft skills integration; balanced co-curricular focus
Weaknesses/ Gaps	Soft skills not clearly embedded; life planning underdeveloped	Heavy academic pressure may limit creativity	Implementation challenges the urban-rural gap in resources

Overall, while Singapore demonstrates a highly structured integration of SRL and life planning, and Malaysia highlights explicit soft skills within co-curricular activities, Thailand still faces significant gaps in embedding these competencies within its curriculum.

Theoretical Framework

The integration of Self-Regulated Learning (SRL) and life planning skills into secondary school curricula has become increasingly relevant in the 21st century, as students must adapt to rapidly changing educational and career landscapes. These skills are not only essential for academic achievement but also for lifelong learning and personal development.

Self-Regulated Learning (SRL)

Self-Regulated Learning (SRL) has been widely conceptualized as a cyclical process through which learners take active control of their cognitive, motivational, and behavioral engagement in learning tasks. According to Zimmerman (2002), SRL comprises three interrelated phases: forethought (goal setting and strategic planning), performance (self-monitoring and regulation), and self-reflection (evaluation and adaptation). These phases emphasize that SRL is not an innate trait but a set of skills and strategies that can be explicitly taught and developed.

Research consistently demonstrates that SRL is positively associated with autonomy, resilience, adaptability, and academic achievement (Panadero, 2017). Learners who acquire SRL skills are better able to direct their own learning, transfer strategies across contexts, and sustain motivation in the face of challenges. In practice, SRL can be cultivated in classrooms

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via project-based learning, portfolio assessment, peer feedback, and reflective journaling—approaches that foster metacognitive awareness and empower students to assume ownership of their educational trajectories, preparing them for lifelong learning and adaptability beyond the classroom (Teaching Excellence in Adult Literacy Center [TEAL], 2010; Teaching and Learning Lab, 2025; Structural Learning, 2025).

Life Planning Skills

Life planning refers to the capacity of learners to set academic, career, and personal goals, make informed decisions, and design pathways toward achieving them. At its core, life planning involves decision-making, problem-solving, and career exploration, aligning closely with Savickas' (2013) framework of career construction, which emphasizes adaptability and future orientation. These skills are not innate but can be developed through deliberate educational interventions that foster self-reflection, exploration of opportunities, and strategic action planning.

In practice, life planning is frequently supported by structured programs within secondary education. For example, Singapore's ECG program systematically equips students with tools to envision future aspirations and align them with academic pathways. Similarly, Malaysia embeds life skills subjects and co-curricular activities into its curriculum to prepare learners for both academic and non-academic trajectories. Such initiatives illustrate how educational systems can cultivate life planning skills by integrating mentorship, career guidance, and experiential learning opportunities. Ultimately, life planning fosters learners' capacity to organize their time, manage transitions, and sustain long-term adaptability, thereby equipping them to navigate the uncertainties of the twenty-first century.

ASEAN Educational Philosophies

Both SRL and life planning align with regional philosophies of holistic education. Malaysia's National Education Philosophy emphasizes intellectual, spiritual, emotional, and physical development. Singapore's Desired Outcomes of Education include self-management, critical thinking, and lifelong learning. Thailand's curriculum aspires to learner development but remains constrained by centralized exams and rote learning.

For Thailand, the integration of SRL and life planning within the curriculum remains underdeveloped. While advisory sessions and guidance activities exist, they often lack systematic implementation and measurable outcomes. To address this gap, Thailand could adopt a more structured approach by embedding SRL strategies into core subjects and providing dedicated modules on life planning. Activities such as student-led goal-setting workshops, reflective learning portfolios, and career exploration projects could encourage students to take responsibility for their learning while also envisioning and preparing for their future.

A Proposed Integration Model for Thailand

To bridge the persistent gaps in Thailand's secondary school curriculum and better equip students with both academic knowledge and essential soft skills, this study proposes an integration model for embedding Self-Regulated Learning (SRL) and life planning. Rather than positioning these competencies as supplementary add-ons, the model emphasizes their systematic incorporation into existing curricular structures. Grounded in insights drawn from the successful practices of Singapore and Malaysia, the proposed framework is strategic and multi-layered, designed to address Thailand's structural and pedagogical challenges. It aims to connect policy intentions with classroom realities by embedding SRL into subject teaching, integrating dedicated

life-planning modules, strengthening co-curricular opportunities, enhancing teacher training, and diversifying assessment practices (Darling-Hammond et al., 2020; Sarasean, 2024).

1. Embed SRL in core subjects through learning journals, project work, and inquiry-based learning.

SRL strategies can be integrated directly into academic subjects such as mathematics, science, and languages. For instance, teachers may guide students to set specific learning goals at the beginning of each unit, track their progress through learning journals, and reflect on strategies that work best for them. Project-based learning and inquiry-based tasks can also encourage self-management and critical thinking, helping students become active participants rather than passive recipients.

2. Establish dedicated life planning modules, including career weeks, alumni mentoring, and reflective portfolios.

Life planning should be developed as a structured component within the curriculum. This could include:

• Goal-setting workshops where students define short- and long-term academic and personal goals.

• Career exploration activities, such as job shadowing, alumni talks, or career weeks.

• Personal development portfolios where students record aspirations, achievements, and reflective essays about their progress.

3. Strengthen co-curricular integration with student leadership, clubs, and service projects tied to reflection activities.

Co-curricular programs offer practical avenues to practice soft skills. Student clubs, leadership roles, and community service projects provide authentic contexts for students to develop teamwork, communication, and decision-making abilities. Embedding reflection sessions within these activities ensures that students connect their experiences with learning, linking to life planning and SRL principles.

4. Enhance teacher training with SRL-focused professional development and mentorship systems.

Teachers play a pivotal role in modeling SRL and guiding life planning. Professional development programs should train teachers to incorporate reflective learning techniques, coaching strategies, and mentoring approaches. In addition, mentorship systems—where teachers or senior students mentor younger learners—can reinforce the application of these skills in real-life contexts.

5. Adopt alternative assessments such as portfolios, self-assessments, and student-led conferences.

To monitor the effectiveness of integration, schools can adopt alternative assessment methods such as portfolios, self-assessment checklists, and student-led conferences. These tools not only evaluate student progress in soft skills but also encourage accountability and continuous improvement.

Summary of the Model
The proposed integration model emphasizes:
1. Embedding SRL within core academic subjects.
2. Establishing dedicated life planning modules.
3. Utilizing co-curricular activities for experiential learning.

4. Empowering teachers as facilitators and mentors.

5. Using alternative assessments to capture student growth in soft skills.

For clarity, an example of a curriculum integration model for Thai secondary schools is provided in Appendix A.

By adopting this framework, Thailand's secondary education system can achieve a stronger balance between academic rigor and the cultivation of essential life competencies, thereby preparing students not only for examinations but also for long-term success in both personal and professional domains.

Conclusions

This comparative analysis highlights divergent approaches to embedding future-ready competencies within secondary education in Singapore, Malaysia, and Thailand. Singapore demonstrates a highly structured interaction of SRL and life-planning, while Malaysia highlights explicit soft-skills integration within co-curricular and school-based assessment frameworks. Thailand, however, remains constrained by exam-driven traditions that limit the cultivation of SRL and life-planning skills.

To address these gaps, Thailand must move beyond policy statements and embrace structured reforms that strategically embed SRL and life planning within its secondary curriculum. This involves integrating SRL into core subjects, introducing dedicated life-planning modules, strengthening teacher mentorship, leveraging co-curricular opportunities, and diversifying assessment practices. Such reforms would foster learners who are autonomous, adaptable, and resilient, bridging the divide between academic achievement and the competencies demanded by the twenty-first century.

Ultimately, the integration of SRL and life planning is not only a pedagogical necessity but also a socio-economic imperative. Equipping Thai students with the ability to regulate their own learning, envision personal and career pathways, and make informed decisions will enhance individual educational outcomes while contributing to the broader goal of cultivating resilient, responsible, and future-ready citizens.

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Introductions for Manuscript Preparation

Manuscript Printing

The submitted manuscript must have the following specifications:

1) It must be 10 – 15 pages in length, printed on one side of A4 paper, with the margins (top, bottom, left, and right) of 1 inch (2.54 cm.). Set to single columns.

2) Manuscript should be as concise and precise as possible.

3) Abstract printed in 1 column.

4) All contents and references are printed in 1 column with 1 cm of indentation.

5) The simplified font is Times New Roman, with details as specified below:

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

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

The Examples of Presentation of Tables, Figures, and Charts

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

Sources or Remarks: Details……..

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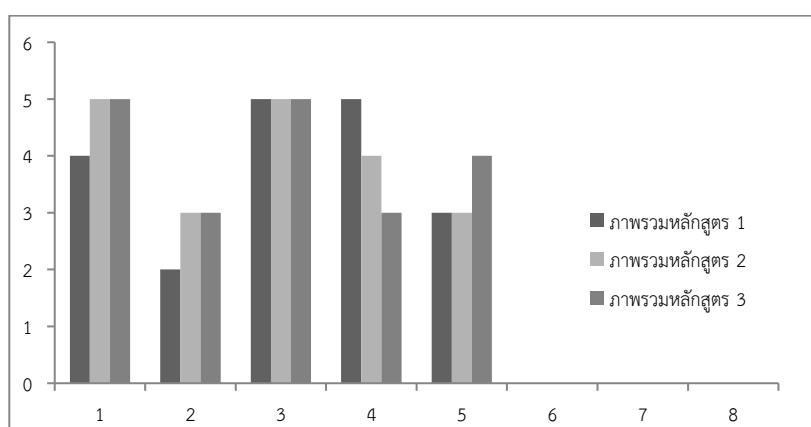As such, Tables, Figures, Charts, and Equations can be printed in one column, depending on the size, clarity, and appropriateness.

Quotations
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1. Quotations in the Contents

Format	Quotation (In front of the sentence)	Quotation (At the end of the sentence)
One author	Coghlan (1993)	(Coghlan, 1993)
Two authors	Mohsen and Mohammad (2011)	(Mohsen & Mohammad, 2011)
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Organization	Ministry of Education (2020)	(Ministry of Education, 2020)
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All documents that have been quoted must be listed in the References at the end of the article. The list must be alphabetically ordered based on the reference sources and surname of the author. The reference format should follow that of APA (7th edition).

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2.2.1 Journals
1) Journal (Printed)

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

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

2) Journal (Electronic)

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

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

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

2.2.2 Books
1) Book (Printed)

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* In case of no publication date, put n.d.
* In case of first edition, do not specify the edition.
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Ritcharoon, P. (2016). *Principles of measurement and evaluation.* House of Kermyst.
Yamane, T. (1967). *Statistics: An introductory analysis* (2nd ed.). Harper and Row.

2) Book (Electronic without DOI)

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

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

3) Chapter in a Book

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

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

2.2.3 Thesis
1) Thesis (Printed)

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

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

2) Thesis (Electronic)
First Format

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

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

Second Format

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

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

2.2.4 Research Report

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

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

2.2.5 Electronic Media

Surname,/First alphabet of name being a capital letter./(A.D. year,/month/date)./*Article title.*/
////////Name of website./URL
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* In case of only A.D. year appears, put only A.D. year
* In case of the author's name and the website name being the same, cut the website name

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

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

2.2.6 Articles/documents presented in academic conference (Proceedings)

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

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

2.2.7 Documents for the Conference

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

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

2.2.8 Interview Documents

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

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

2.2.9 Newspapers
1) Newspaper (Printed)

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

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

2) Newspaper (Electronic)

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

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