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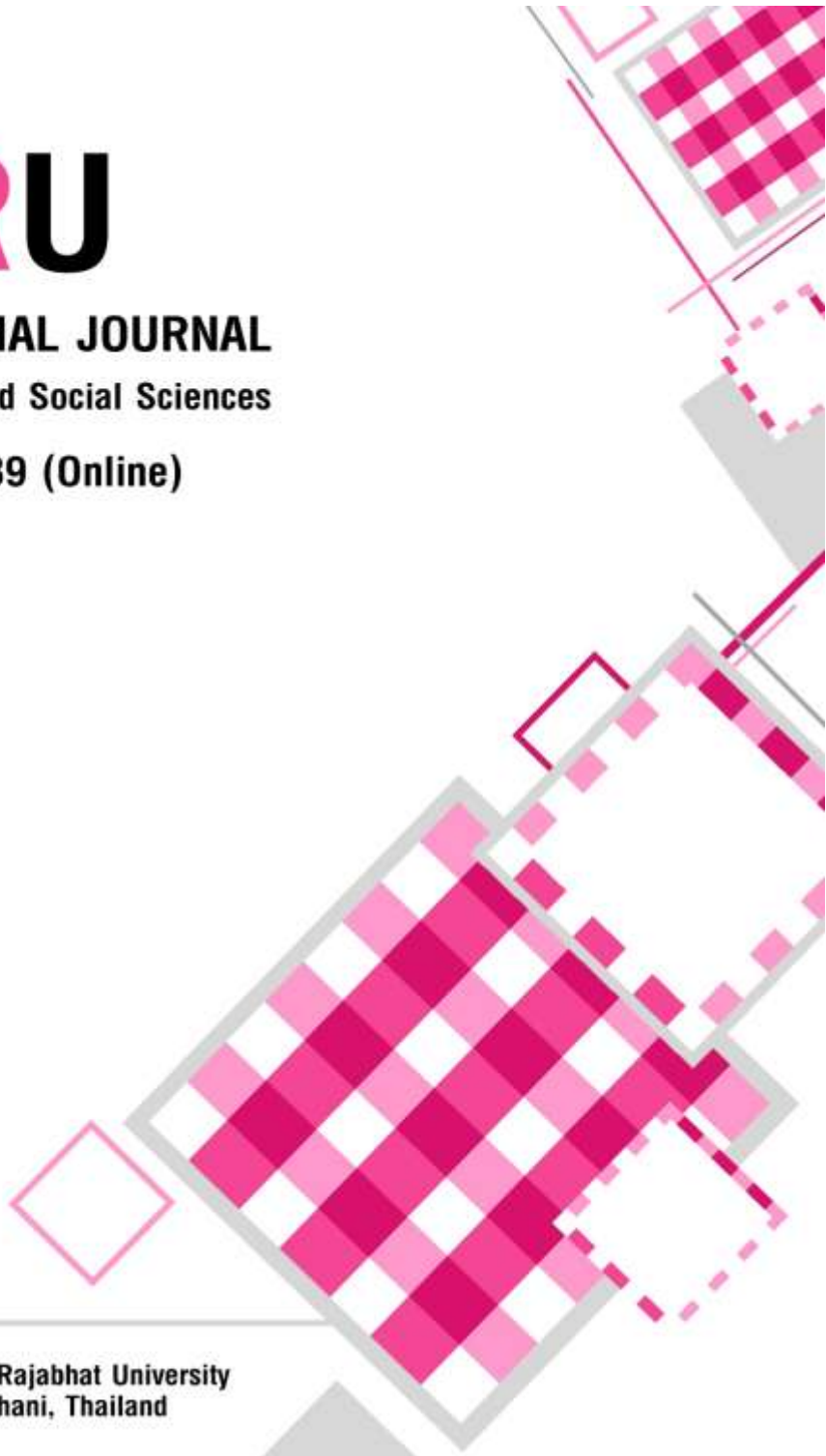
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As mentioned above the aim of this journal is to provide a platform and a means for disseminating and exchanging of knowledge and experience pertaining to academic advancement and research findings which may be beneficial for academy and society as a whole.

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The UBRU INTERNATIONAL JOURNAL is a four-month academic journal (4 months per issue or 3 issues per year); the first issue is from January-April; the second from May-August; and the third from September-December.

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EDITORIAL

Dear Esteemed Readers and Contributors,

On behalf of the Editorial Board, it is my privilege to extend our formal greetings as we enter the year 2026. We wish all members of the academic community continued success, good health, and scholarly advancement in the year ahead. Time progresses rapidly, and each academic year presents both challenges and opportunities for knowledge creation and dissemination.

Throughout 2025, the journal has remained steadfast in its commitment to upholding rigorous academic standards and ethical publishing practices. We have focused on the careful selection, peer review, and publication of high-quality research articles that contribute meaningfully to the advancement of knowledge across disciplines. Our objective has been to strengthen the journal's role as a credible academic platform that supports scholarly inquiry, critical analysis, and evidence-based discussion at both national and international levels.

The publication of Volume 6, Number 2 (May-August 2026) reflects our ongoing dedication to academic excellence and continuous improvement in editorial quality, review processes, and dissemination standards. In line with this commitment, we cordially invite researchers, scholars, and practitioners to submit original research articles, review papers, and academic studies for consideration in future issues of the journal.

Manuscripts and further information regarding submission guidelines are available through the ThaiJo online journal system at: <https://so04.tci-thaijo.org/index.php/ubruij>

We trust that the articles published in this issue will provide scholarly value, stimulate critical reflection, and support the academic and professional endeavors of our readership. The Editorial Board sincerely appreciates the continued trust, cooperation, and contributions of authors, reviewers, and readers, which remain essential to the journal's sustained development and academic standing.

Sincerely,



Assistant Professor Dr. Pimook Somchob
Editor

UBRU International Journal
August 2026

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Empowering Teachers' Performance in Educational Institutions Under the Jurisdiction of The Ubon Ratchathani and Amnat Charoen Secondary Educational Service Area Office

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Abstract

The purposes of this research were to 1) examine teachers' performance empowerment 2) compare teachers' performance empowerment classified by position, work experience, and school size and 3) propose guidelines for enhancing teachers' performance empowerment. The sample consisted of 349 school administrators and teachers, determined using the Krejcie and Morgan table. The research instruments included a five-point Likert scale questionnaire with a reliability of .98 and structured interviews. Data were analyzed using percentage, mean, standard deviation, t-test, and F-test, while qualitative data were analyzed through content analysis.

The findings revealed that: 1) teachers' performance empowerment was overall at a high level (Mean = 4.48, S.D. = 0.50). The highest mean score was professional training and development (Mean = 4.51, S.D. = 0.55) followed by confidence and capacity building (Mean = 4.51, S.D. = 0.56). 2) Significant differences were found by position, work experience and school size. School administrators reported higher empowerment levels (Mean = 4.72, S.D. = 0.30) than teachers (Mean = 4.47, S.D. = 0.51) at the .05 level. Respondents with more than 10 years of experience (Mean = 4.57, S.D. = 0.44) and those from extra-large schools (Mean = 4.57, S.D. = 0.42) reported higher empowerment levels than other groups at the .01 level. 3) The guidelines consisted of professional development, confidence and capacity building, delegation and autonomy, morale and motivation and supportive working environment.

Keywords: Empowerment Teachers' Performance, Motivation, Professional Development, Educational Leadership, School Leadership, Secondary Education

Introduction

Education in the 21st century has undergone rapid economic, social and technological changes, significantly affecting the role of teachers as a key mechanism in improving educational quality. Teachers are no longer responsible only for transferring knowledge but are also expected to develop learners' competencies and essential skills necessary for living and competing in the modern world. Consequently, teachers must continuously adapt themselves to educational reforms, technological advancement and changing societal expectations. However, many teachers still encounter several limitations, including increasing workloads, insufficient supporting resources and limited opportunities for professional development. These challenges may reduce teachers' motivation, autonomy and empowerment in performing their duties, which can ultimately affect the effectiveness of teaching and learning as well as students' educational outcomes.

Thailand has established the 20-Year National Strategy (2018-2037) and the National Education Plan (2017-2036) both of which emphasize human resource development and educational quality improvement. The policies highlight the importance of developing teachers and educational personnel so that they are capable of organizing learning in accordance with social and technological changes. In this regard, teacher empowerment is considered an important mechanism for enhancing teachers' professional competencies, self-confidence and participation in organizational decision-making processes (Paengcharoen, 2019; Romsri et al., 2024).

Previous studies have consistently indicated that teacher empowerment positively influences teachers' work performance, organizational commitment and instructional effectiveness. Empowerment contributes to strengthening teachers' confidence, professional autonomy and participation in school administration processes, leading to improved educational outcomes (Sanukul, 2022). In addition, the promotion of Professional Learning Communities (PLC) has been recognized as an important approach for encouraging collaborative learning and professional development among teachers, while supportive leadership from school administrators plays a significant role in creating conducive working environments, delegating authority, providing motivation and ensuring adequate resource support (Kaewprom et al., 2023). Furthermore, Klinhom (2016) emphasized that limitations in professional development systems, particularly training programs that focus primarily on theoretical knowledge rather than practical application, together with insufficient supportive environments and limited professional resources, may hinder teachers' professional growth and empowerment.

Although the concept of teacher empowerment has been widely discussed, most previous studies have focused primarily on general educational contexts or national-level perspectives. There remains limited empirical evidence reflecting the specific context of the Secondary Educational Service Area Office Ubon Ratchathani Amnat Charoen, which consists of schools located in both urban and rural areas with differences in school size, resources, opportunities for professional development and organizational support systems. In particular, schools in this educational area demonstrate substantial disparities in educational resources, technological accessibility, teacher workload and opportunities for professional development between urban and rural schools, especially among small- and medium-sized schools located in remote communities. Teachers in these schools are often required to perform multiple responsibilities beyond instructional duties due to limitations in personnel and institutional support systems, which may directly affect their motivation, autonomy and

professional effectiveness (Meerat, 2019). These contextual conditions may influence teachers' empowerment in different ways.

Moreover, previous studies have not clearly explained how factors such as position, work experience and school size contribute to differences in teacher empowerment levels within this specific educational context. Although teacher empowerment has been recognized as an important mechanism for improving teachers' professional competencies, confidence and instructional effectiveness (Paengcharoen, 2019; Sanukul, 2022; Romsri et al., 2024), empirical studies specifically examining teacher empowerment in schools under the Secondary Educational Service Area Office Ubon Ratchathani Amnat Charoen remain limited. Existing studies have largely emphasized general educational administration contexts without sufficiently addressing the unique organizational and socioeconomic characteristics of schools in Northeastern Thailand. Therefore, a research gap remains regarding the understanding of teacher empowerment in relation to contextual inequalities, organizational conditions and school environments within this educational service area.

In addition, the educational context of Ubon Ratchathani and Amnat Charoen is considered significant because the region contains schools with highly diverse contexts in terms of geography, community economy, school size and access to educational resources. Such diversity may lead to differences in teachers' professional experiences, participation in school administration and access to supportive environments for professional growth. Investigating teacher empowerment in this context is therefore essential for identifying key factors and effective approaches for enhancing teachers' professional capacity, strengthening supportive organizational environments and reducing educational inequality sustainably. The findings of this study may also provide useful empirical evidence for educational administrators and policymakers in formulating context-based strategies for teacher development and educational quality improvement at both regional and national levels.

Based on the problems and research gaps mentioned above, the objectives of this research were as follows:

1. To examine teachers' performance empowerment in schools under the Secondary Educational Service Area Office Ubon Ratchathani Amnat Charoen.
2. To compare teachers' performance empowerment classified by position, work experience and school size.
3. To propose guidelines for enhancing teachers' performance empowerment in schools under the Secondary Educational Service Area Office Ubon Ratchathani Amnat Charoen.

Literature Review

Concept of Teacher Empowerment

Teacher empowerment refers to the process of enhancing teachers' ability, authority and confidence in performing their professional roles effectively. Empowerment enables teachers to participate in decision-making, develop professional competence and improve their instructional practices. Empowered teachers are more motivated and committed to their work which leads to improved teaching performance and educational outcomes. Educational administrators play a crucial role in creating an environment that supports empowerment by providing opportunities for professional growth, collaboration and autonomy in instructional practices (Putra et al., 2020).

Teacher empowerment is also closely associated with leadership practices in schools. When school administrators adopt empowering leadership behaviors, teachers tend to

experience greater job satisfaction, professional commitment and work effectiveness. Empowerment allows teachers to take initiative, share responsibilities and actively contribute to school development (Özer & Çelikten, 2023).

Psychological Empowerment in Educational Organizations

Psychological empowerment is considered a key factor influencing teachers' motivation and performance in educational institutions. It reflects teachers' perceptions of meaning, competence, self-determination and impact in their work environment. When teachers feel psychologically empowered, they tend to demonstrate higher levels of creativity, engagement and commitment to teaching and learning processes (Ambad et al., 2021).

Previous studies have shown that psychological empowerment significantly contributes to teacher effectiveness and professional development. Teachers who perceive a strong sense of empowerment are more likely to engage in continuous learning and improve instructional quality in schools (Crispo, 2025).

Empowering Leadership in Educational Administration

Empowering leadership refers to leadership behaviors that delegate authority, encourage participation in decision-making and promote professional autonomy among teachers. School leaders who practice empowering leadership create an organizational climate that fosters trust, collaboration and professional growth among teachers (Kilag et al., 2024).

Research indicates that empowering leadership can improve teacher well-being and organizational commitment. It also reduces negative organizational behaviors and promotes a supportive working environment in schools (Okçu, Cemaloğlu, & Ay, 2025).

Motivation Theories Related to Teacher Empowerment

Several motivational theories provide a theoretical foundation for understanding teacher empowerment in educational organizations. Maslow's hierarchy of needs explains that individuals are motivated by the fulfillment of different levels of needs, ranging from basic physiological needs to self-actualization. In educational contexts, teachers who receive recognition, professional support and opportunities for self-development are more likely to achieve higher levels of job satisfaction and performance (Maslow, 1970).

Similarly, Herzberg's two-factor theory suggests that motivation in the workplace is influenced by both hygiene factors and motivational factors. Recognition, achievement and professional growth are key motivators that can enhance teachers' commitment and performance in educational institutions (Herzberg, Mausner, & Snyderman, 1959).

Teacher Professional Development and Empowerment

Professional development is another important element related to teacher empowerment. Continuous training and learning opportunities enable teachers to improve their knowledge, instructional skills and classroom management abilities. Effective professional development programs can strengthen teachers' professional capacity and promote lifelong learning (Hargreaves & Fullan, 2020).

Furthermore, research indicates that teacher empowerment contributes significantly to school effectiveness and educational quality. Empowered teachers tend to collaborate more actively, share knowledge with colleagues and contribute to school improvement initiatives (Burhan & Khan, 2024).

Research Methodology

This study employed quantitative research with qualitative data collection to investigate teachers' performance empowerment under the Ubon Ratchathani Amnat Charoen Secondary Educational Service Area Office.

Population

The population used in this field research consisted of school administrators and teachers under the jurisdiction of the Secondary Educational Service Area Office Ubon Ratchathani Amnat Charoen, covering 81 schools. The population included 211 school administrators and 3,494 teachers with a total of 3,705 participants.

Sample

The sample used in this study consisted of school administrators and teachers under the jurisdiction of the Secondary Educational Service Area Office Ubon Ratchathani Amnat Charoen in the academic year 2025, totaling 349 participants. The sampling procedures were as follows

1. The sample size was determined using the Krejcie and Morgan table (Srisawat, 2017). From the total population of 3,705 individuals, a sample of 349 participants was obtained.
2. Stratified random sampling was employed, using school size as the stratification criterion, as shown in Table 1.

Table 1: Population and Sample Distribution

School Size	Position				Total	
	Administrators		Teachers			
	Population	Sample	Population	Sample	Population	Sample
Small	9	1	54	6	63	7
Medium	83	8	912	86	995	94
Large	52	5	828	78	880	83
Extra-large	67	6	1,700	159	1,767	165
Total	211	20	3,494	329	3,705	349

3. The target group for structured interviews consisted of 8 participants, including 4 school administrators and 4 teachers. They were selected using purposive sampling. The selection criteria were as follows.

1. holding positions as school administrators or teachers and
2. having recognized and outstanding achievements that reflect teacher empowerment, including being acknowledged or awarded for excellence in school administration, teaching, or professional development.

The interview participants were sufficient to achieve data saturation and provide diverse perspectives from both administrators and teachers. The questionnaire demonstrated acceptable content validity with IOC values ranging from 0.80 to 1.00.

Research Instruments

The research instruments consisted of two types.

1. Questionnaire

The questionnaire was designed to examine the empowerment of teachers' performance. It consisted of three sections.

Part 1 General information of respondents including position, work experience and school size.

Part 2 A five-point Likert scale questionnaire measuring teachers' performance empowerment across five aspects.

1. delegation and autonomy,
2. confidence and capacity building,
3. morale and motivation,
4. supportive working environment, and
5. professional training and development.

The questionnaire contained 48 items. The questionnaire consisted of five aspects and was designed using a five-point Likert scale. The rating levels were defined as follows.

- 5 = The empowerment of teachers' performance was at the highest level.
- 4 = The empowerment of teachers' performance was at the high level.
- 3 = The empowerment of teachers' performance was at the moderate level.
- 2 = The empowerment of teachers' performance was at the low level.
- 1 = The empowerment of teachers' performance was at the lowest level

2. Structured Interview

A structured interview was used to gather additional qualitative data regarding guidelines for enhancing teachers' performance empowerment.

Instrument Quality

The questionnaire was examined for content validity by experts using the Index of Item-Objective Congruence (IOC) with values ranging from 0.80 to 1.00. The instrument was then piloted with administrators and teachers outside the sample group. The reliability of the questionnaire was tested using Cronbach's Alpha coefficient which yielded a reliability value of 0.98, indicating a high level of internal consistency.

Data Collection

Data were collected by distributing questionnaires to the selected administrators and teachers in the sample schools. After collecting the completed questionnaires, the data were checked for completeness before proceeding to statistical analysis.

Data Analysis

The collected data were analyzed using descriptive and inferential statistics including percentage, mean and standard deviation to describe the general characteristics of the data. Differences in teachers' performance empowerment were analyzed using t-tests and F-tests. Qualitative data obtained from interviews were analyzed through content analysis to identify guidelines for enhancing teachers' empowerment in educational institutions.

Research Finding

Part 1 Results of Data Analysis.

The results of the data analysis regarding the demographic characteristics of the respondents, classified by position, work experience and school size were analyzed using frequency and percentage as presented in Table 2.

Table 2: Number And Percentage of Respondents Classified by Position, Work Experience and School Size.

Category	Number	Percentage
1. Position		
School Administrators	20	5.73
Teachers	329	94.27
Total	349	100
2. Work Experience		
Less than 5 years	55	15.75
5-10 years	111	31.81
More than 10 years	183	52.44
Total	349	100
3. School Size		
Small schools (119 students or fewer)	7	2.01
Medium schools (120-719 students)	94	26.93
Large schools (720-1,679 students)	83	23.78
Extra-large schools (1,680 students or more)	165	47.28
Total	349	100

Results from Table 2 show that the total number of respondents was 349. When classified by position, the majority were teachers, accounting for 94.27 percent, while school administrators accounted for 5.73 percent, respectively.

In terms of work experience, most respondents had more than 10 years of experience, representing 52.44 percent, followed by those with 5-10 years of experience at 31.81 percent, and those with less than 5 years of experience at 15.75 percent, respectively.

Regarding school size, most respondents were from extra-large schools, accounting for 47.28 percent, followed by medium-sized schools at 26.93 percent, large schools at 23.78 percent, and small schools at 2.01 percent, respectively.

Part 2 Results of the Data Analysis on the Empowerment of Teachers' Performance under the Ubon Ratchathani Amnat Charoen Secondary Educational Service Area Office.

The results of the data analysis regarding the empowerment of teachers' performance under the Ubon Ratchathani Amnat Charoen Secondary Educational Service Area Office were classified into five aspects are delegation and autonomy, confidence and capacity building, morale and motivation, supportive working environment and professional training and development.

The data were analyzed using mean and standard deviation. The analysis was conducted both overall and by each aspect, as presented in Tables 3.

Table 3: Mean And Standard Deviation of Teachers' Performance Empowerment Under the Ubon Ratchathani Amnat Charoen Secondary Educational Service Area Office (Overall).

Teachers' Performance Empowerment	Mean	S.D.	Level	Rank
Delegation and autonomy	4.46	0.53	High	3
Confidence and capacity building	4.51	0.56	Highest	2
Morale and motivation	4.45	0.67	High	4
Supportive working environment	4.42	0.62	High	5
Professional training and development	4.51	0.55	Highest	1
Overall	4.48	0.50	High	

Table 3 shows that school administrators and teachers perceived the overall level of teachers' performance empowerment as high (Mean = 4.48).

When considering each aspect individually, the aspect with the highest mean score was professional training and development (Mean = 4.51), followed by confidence and capacity building (Mean = 4.51), both at the highest level.

The aspect with the lowest mean score was supportive working environment (Mean = 4.42), which was still at the high level.

Part 3 Comparative Analysis of Teachers' Performance Empowerment under the Ubon Ratchathani Amnat Charoen Secondary Educational Service Area Office, classified by position, work experience and school size.

The comparison based on position was analyzed using the t-test. Meanwhile, the variables of work experience and school size were analyzed using one-way analysis of variance (ANOVA) by calculating the F-statistic (F-test), as presented in Tables 4-8.

Table 4: Comparison Of Teachers' Performance Empowerment Under the Ubon Ratchathani Amnat Charoen Secondary Educational Service Area Office Classified by Position.

No.	Teachers' Performance Empowerment	School Administrators (n=20)		Teachers (n=329)		t	p
		Mean	S.D.	Mean	S.D.		
1	Delegation and autonomy	4.59	.42	4.45	.53	-1.18	.23
2	Confidence and capacity building	4.78	.35	4.50	.57	-2.30	.02*
3	Morale and motivation	4.80	.32	4.42	.68	-2.56	.01**
4	Supportive working environment	4.74	.31	4.39	.63	-2.54	.01**
5	Professional training and development	4.68	.33	4.50	.56	-1.50	.13
Overall		4.72	.30	4.47	.51	-2.28	.02*

* $p \leq 0.05$, ** $p \leq 0.01$

Table 4 indicates that school administrators and teachers with different positions had different opinions regarding the empowerment of teachers' performance under the Ubon Ratchathani Amnat Charoen Secondary Educational Service Area Office.

The overall results and individual aspects showed statistically significant differences at the .05 level.

When considering each aspect, Aspect 3: Morale and motivation and Aspect 4: Supportive working environment showed statistically significant differences at the .01 level.

In addition, Aspect 2: Confidence and capacity building showed a statistically significant difference at the .05 level.

However, Aspect 1: Delegation and autonomy and Aspect 5: Professional training and development showed no statistically significant differences.

Table 5: Comparison of the Mean and Standard Deviation of Teachers' Performance Empowerment Under the Ubon Ratchathani Amnat Charoen Secondary Educational Service Area Office Classified by Work Experience.

No.	Teachers' Performance Empowerment	Less than 5 years (n=55)		5-10 years (n=111)		More than 10 yrs (n=183)	
		Mean	S.D.	Mean	S.D.	Mean	S.D.
1	Delegation and autonomy	4.24	.51	4.34	.63	4.60	.42
2	Confidence and capacity building	4.52	.42	4.45	.70	4.55	.50
3	Morale and motivation	4.44	.48	4.38	.87	4.49	.56
4	Supportive working environment	4.47	.43	4.28	.76	4.48	.56
5	Professional training and development	4.58	.41	4.24	.63	4.66	.46
Overall		4.45	.39	4.36	.61	4.57	.44

Table 5 shows that school administrators and teachers with more than 10 years of work experience had the highest overall opinions regarding teachers' performance empowerment which was at the highest level (Mean = 4.57).

The second highest group was respondents with less than 5 years of work experience, whose opinions regarding teachers' performance empowerment were at the high level (Mean = 4.45).

The group with the lowest mean score was respondents with 5-10 years of work experience, whose opinions regarding teachers' performance empowerment were also at the high level (Mean = 4.36).

Table 6: Analysis of Variance of Teacher Empowerment Performance Under the Secondary Educational Service Area Office Ubon Ratchathani Amnat Charoen, Classified by Work Experience.

Aspects Of Teacher Empowerment	Source of Variance	DF	SS	MS	F	P
Delegation and Autonomy	Between Groups	2	7.68	3.84	14.80	.00**
	Within Groups	345	89.28	.26		
	Total	347	96.96			
Confidence and Capacity Building	Between Groups	2	.68	.34	1.08	.34
	Within Groups	344	108.47	.32		
	Total	346	109.15			
Morale and Motivation	Between Groups	2	.85	.43	.96	.38
	Within Groups	345	152.54	.44		
	Total	347	153.39			
Supportive Working Environment	Between Groups	2	3.01	1.51	3.96	.02*
	Within Groups	345	131.08	.38		
	Total	347	134.09			

Aspects Of Teacher Empowerment	Source of Variance	DF	SS	MS	F	P
Professional Training and Development	Between Groups	2	12.50	6.25	23.40	.00**
	Within Groups	346	92.30	.27		
	Total	348	104.80			
Overall	Between Groups	2	3.20	1.60	6.59	.00**
	Within Groups	342	83.09	.24		
	Total	346	86.29			

* $p \leq 0.05$, ** $p \leq 0.01$

From Table 6, it was found that the comparison of school administrators and teachers with different work experience revealed differences in their opinions regarding teacher empowerment performance under the Secondary Educational Service Area Office Ubon Ratchathani - Amnat Charoen. Overall and by individual aspects, the level of teacher empowerment performance showed statistically significant differences at the .01 level.

When considering each aspect, Aspect 1 (Delegation and Autonomy) and Aspect 5 (Professional Training and Development) showed statistically significant differences at the .01 level. Aspect 4 (Supportive Working Environment) showed a statistically significant difference at the .05 level. However, Aspect 2 (Confidence and Capacity Building) and Aspect 3 (Morale and Motivation) showed no significant differences.

Table 7: Comparison of Teachers' Performance Empowerment Under the Ubon Ratchathani Amnat Charoen Secondary Educational Service Area Office Classified by School Size.

Teachers' Performance Empowerment	Small School (n=7)		Medium School (n=94)		Large School (n=83)		Extra-Large School (n=165)	
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
Delegation and autonomy	4.57	.53	4.31	.64	4.38	.48	4.58	.46
Confidence and capacity building	4.64	.64	4.40	.67	4.51	.54	4.58	.49
Morale and motivation	4.66	.74	4.39	.76	4.40	.64	4.49	.62
Supportive working environment	4.64	.69	4.34	.67	4.35	.64	4.48	.58
Professional training and development	4.44	.72	4.36	.63	4.43	.51	4.64	.48
Overall	4.59	.64	4.36	.60	4.43	.48	4.57	.42

Table 7 indicates that school administrators and teachers in small schools had the highest overall opinions regarding teachers' performance empowerment which was at the highest level (Mean = 4.59).

The second highest group was extra-large schools, which also reported teachers' performance empowerment at the highest level (Mean = 4.57).

The group with the lowest mean score was medium-sized schools, whose level of teachers' performance empowerment was at the high level (Mean = 4.36).

Table 8: Analysis of Variance of Teacher Empowerment Performance Under the Secondary Educational Service Area Office Ubon Ratchathani - Amnat Charoen, Classified by School Size

Teacher Empowerment Performance	Source Of Variance	DF	SS	MS	F	P
Delegation and Autonomy	Between Groups	3	5.15	1.72	6.43	.00**
	Within Groups	344	91.82	.27		
	Total	347	96.97			
Confidence and Capacity Building	Between Groups	3	1.99	.66	2.12	.09
	Within Groups	343	101.17	.31		
	Total	346	103.16			
Morale and Motivation	Between Groups	3	1.15	.38	.87	.46
	Within Groups	344	152.24	.44		
	Total	347	153.39			
Supportive Working Environment	Between Groups	3	1.89	.63	1.64	.18
	Within Groups	344	132.20	.38		
	Total	347	134.09			
Professional Training and Development	Between Groups	3	5.56	1.86	6.45	.00**
	Within Groups	345	99.27	.29		
	Total	348	104.83			
Overall	Between Groups	3	3.01	1.00	4.10	.00**
	Within Groups	341	83.28	.24		
	Total	344	86.29			

**p ≤ 0.01

From Table 8, it was found that the comparison of school administrators and teachers from different school sizes revealed differences in their opinions regarding teacher empowerment performance under the Secondary Educational Service Area Office Ubon Ratchathani-Amnat Charoen. Overall and by individual aspects, the level of teacher empowerment performance showed statistically significant differences at the .01 level.

When considering each aspect, Aspect 1 (Delegation and Autonomy) and Aspect 5 (Professional Training and Development) showed statistically significant differences at the .01 level. However, Aspect 2 (Confidence and Capacity Building), Aspect 3 (Morale and Motivation), and Aspect 4 (Supportive Working Environment) showed no significant differences.

Part 4 Results of the Content Analysis from Open-Ended Questions and Structured Interviews.

Delegation and Autonomy. Schools applied decentralized management by assigning responsibilities according to teachers' roles and allowing participation in instructional decision-making. Administrators trusted teachers' professional judgment and encouraged innovation within educational regulations and standards.

Confidence and Capacity Building. Administrators strengthened teachers' confidence through important responsibilities, teamwork and mentoring systems. Schools also provided learning resources and technological support to enhance teachers' professional capabilities.

Morale and Motivation. Schools promoted recognition, positive communication and regular encouragement from administrators. These practices created a supportive climate that enhanced teachers' motivation, commitment and professional dedication.

Supportive Working Environment. Schools emphasized safe, clean and collaborative working environments. The use of technology, such as online documentation systems and virtual meetings, helped reduce administrative workload and supported teaching effectiveness.

Professional Training and Development. Schools supported continuous professional development through training, seminars, classroom research and learning innovation. Professional development was linked to the performance appraisal (PA) system and included the integration of digital technologies and artificial intelligence (AI) to support sustainable professional growth.

Discussion

The findings of this study indicate that school administrators play an important role in promoting and systematically developing teachers' potential in schools under the Ubon Ratchathani Amnat Charoen Secondary Educational Service Area Office. Empowerment in this context reflects not only the delegation of responsibilities but also an organizational culture that values professional autonomy, participation in decision-making and continuous development. This finding supports Sangchoei (2015) who emphasized that empowerment enhances individuals' confidence, abilities and autonomy in organizational performance.

Delegation and autonomy were found at a high level, suggesting that administrators increasingly adopt participative and decentralized leadership approaches in response to educational reforms and the complexity of instructional management. Teachers who participate in planning and decision-making are more likely to develop responsibility and commitment toward organizational goals. This finding is consistent with Sangchoei (2015) and Yao and Ma (2024) who found that distributed leadership positively influences teachers' job satisfaction and organizational commitment. From Herzberg's Two-Factor Theory (Herzberg et al., 1959), delegation and autonomy can also be interpreted as motivational factors that strengthen intrinsic motivation and professional engagement.

Confidence and capacity building received the highest mean score among all dimensions. This may indicate that teachers perceive strong administrative support through trust, encouragement and opportunities for professional learning. According to Maslow's Hierarchy of Needs (Maslow, 1970), professional recognition and development may fulfill esteem and self-actualization needs, encouraging teachers to achieve their professional potential. This finding is consistent with Chonlawit (2015) and Bamrungrat (2020) who emphasized that empowerment and administrative support contribute to teachers' competence and work performance. However, although statistical differences were found, the effect size was moderate, suggesting that teacher empowerment is influenced by multiple contextual and individual factors.

Morale, motivation and supportive working environments were also rated at a high level. According to Herzberg's theory (Herzberg et al., 1959) supportive working conditions primarily function as hygiene factors that reduce dissatisfaction rather than directly increase intrinsic motivation. This may imply that supportive environments alone are insufficient to sustain long-term teacher motivation unless teachers genuinely experience autonomy, recognition and meaningful participation in organizational processes. This finding is consistent with Phuengphop et al. (2021) and Bussaro (2018) who highlighted the importance of supportive environments and adequate resources in enhancing teachers' performance and motivation.

However, supportive working environment received the lowest mean score among all dimensions. This may reflect structural limitations in rural and medium-sized schools where educational resources, staffing and technological support remain insufficient. Teachers often experience heavy workloads, including administrative documentation, policy-driven tasks and student support responsibilities in addition to classroom instruction. Such conditions may reduce opportunities for collaboration, innovation and professional learning. Therefore, although empowerment policies may formally exist, their implementation may not fully

respond to teachers' actual working conditions. The relatively lower mean score and modest effect size suggest that improving working environments requires long-term structural support and resource allocation rather than short-term administrative interventions alone.

Professional training and development were rated at a very high level, indicating that schools strongly emphasize continuous professional learning through training, seminars and educational innovation. According to Maslow's theory (Maslow, 1970) continuous professional development may support teachers' self-actualization and professional growth. This finding is consistent with Donjantrakot (2020) who stated that continuous professional development enhances professional competence and work quality.

Furthermore, administrators reported higher levels of empowerment than teachers. This difference may result from differences in organizational roles and daily experiences. Administrators may perceive that empowerment systems are sufficiently implemented, whereas teachers may still encounter practical limitations related to workload, time constraints and resource availability. This reflects a gap between policy expectations and operational realities. The finding is consistent with Panyasit (2018), who emphasized that empowerment can only be fully achieved when individuals genuinely perceive autonomy and participation in organizational processes.

Conclusion

This study investigated the level of teacher performance empowerment in schools under the Ubon Ratchathani Amnat Charoen Secondary Educational Service Area Office and examined differences based on position, work experience and school size. The results indicated that teacher empowerment was overall at a high level with professional training and development ranked as the highest dimension, followed by confidence and capacity building, delegation and autonomy, morale and motivation and supportive working environment.

Comparative analysis showed significant differences in certain aspects of empowerment according to position, work experience and school size. In addition, qualitative findings revealed that effective empowerment practices include delegating responsibilities, promoting teamwork, recognizing teachers' achievements, providing supportive working conditions and encouraging continuous professional development. These practices contribute to improving teachers' performance, strengthening professional commitment and enhancing the overall effectiveness and sustainability of educational institutions and sustainable development within educational institutions.

Suggestion

Recommendations for Implementation

The findings revealed that morale and motivation as well as supportive working environments had lower mean scores than other aspects. Therefore, school administrators should implement clear and practical policies to enhance teachers' morale through fair recognition systems, performance-based rewards and continuous feedback.

Administrators should also foster supportive working environments by promoting open communication, reducing unnecessary hierarchical barriers and encouraging collaboration through Professional Learning Communities (PLC). In addition, concrete measures should be taken to support teachers' work-life balance, such as reducing non-teaching workloads.

In line with the interview findings, schools should adopt artificial intelligence (AI) and digital systems to manage administrative tasks, such as document preparation, data management and reporting, in order to reduce workload and "return teachers to the classroom."

Furthermore, schools, especially medium-sized and rural schools, should be provided with sufficient resources and technological support to create safe, well-equipped, and effective working environments.

Suggestions for Future Research

Future research should employ in-depth qualitative approaches, such as case studies or phenomenological studies, focusing on schools that demonstrate best practices in enhancing teachers' morale and motivation. These schools can serve as model cases to develop practical frameworks or guidelines that can be adapted and applied in other educational contexts.

Additionally, future studies may examine the impact of digital technologies and AI implementation on teacher empowerment and work efficiency to further expand knowledge in this area.

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The Effects of CSR With Story Mapping on Reading Comprehension and Summary Writing Ability of Grade 5 Learners: A Case Study of Christian School in Thailand

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Abstract

The objectives of this study were to examine the effects of Collaborative Strategic Reading (CSR) supplemented with Story Mapping on 1) English reading comprehension and 2) English summary writing ability among Grade 5 students. The sample group consisted of 32 students from Grade 5 attending a case study of a Christian school in Udon Thani Province. This study employed a one-group pretest-posttest follow-up design. Data were analyzed using one-way repeated-measures ANOVA for assess the Effect of The Learning Management on both The English reading comprehension and summary writing Ability Pre-test. The research instruments were: 1) Six Lesson plans of the learning management in 18 periods and in time total were 900 minutes during 2nd semester in 2025 academic year, 2) A 30-item multiple-choice English reading comprehension test, and 3) An English summary writing test

Result found: Grade 5 students showed significant higher scores in English reading comprehension when tested after (Posttest at $M = 20.56$, $SD = 5.32$) and Follow up after test (2 weeks) ($M = 21.00$, $SD = 6.02$) than Pretest ($M = 16.47$, $SD = 5.55$, $p < .05$). 2) Grade 5 students who were taught using CSR combined with Story Mapping technique, had significant higher scores on English summary writing Ability (Posttest at $M = 12.78$, $SD = 5.89$) and on Follow up after two weeks test ($M = 13.56$, $SD = 5.54$), than Pretest scores ($M = 4.46$, $SD = 4.46$, $p < .05$). Students were able to retain their reading comprehension as well as summarize writing skills.

Keywords: Collaborative Strategic Reading, Story Mapping, Reading Comprehension, Summary Writing Ability, Primary Education

Introduction

English reading and writing skills are essential competencies for learners in the 21st century, particularly in an increasingly globalized and information-driven world. According to the British Council, reading enables learners to access knowledge, expand vocabulary, and understand language structures, while writing allows them to organize ideas and communicate meaning effectively. These two skills are closely interconnected, as regular reading exposure supports the development of accurate and coherent writing. Strong reading and writing abilities contribute not only to academic achievement but also to effective communication and lifelong learning. (British Councils Thailand, 2025)

Despite its significance, many Thai pupils still encounter difficulties in reading comprehension and summarization writing especially at the primary level. A significant percentage of grade 5 students cannot find main ideas or generate coherent summaries, reports show. Instead, they are likely to reproduce sentences verbatim from texts that demonstrate low-order and minimal high-order thinking and poor summarization. The average English O-NET scores for Grade 6 in 2025 from 13,789 students only in Udonthani province have 28.13 as the mean scores which is still lower than the Nation mean scores at 33.49 the proficiency benchmark established by the Ministry of Education. Also National assessment results, like the overall average outcome from the Ordinary National Educational Test (O-NET), show that students' English proficiency still falls below the expected level, particularly in northeastern regions. (NIETS,2025)

Although previous studies, Sriati Usman, Safitri, and Marhum (2019) demonstrated CSR and Story Mapping separately however few research has been done to study the joint effect on reading comprehension and summary writing ability among Thai primary school students. Consequently, this study is intended to examine the effectiveness of learning management with Collaborative Strategic Reading which accompanied by Story Mapping technique for enhancing English reading comprehension and summary writing ability in Grade 5 students.

Collaborative Strategic Reading (CSR) developed by Klingner & Vaughn (2012), the one of the effective instructional approaches to support students' literacy development which include Preview (before reading steps), Click and Clunk (While reading), Get the Gist and Wrap Up (After reading steps). This is one of the cooperative learning with metacognitive strategies. CSR has been associated with enhanced reading comprehension.

Combine with story mapping is a graphic organization template to aid students in identifying essential components, characters, setting and plot structure. This method helps students organize information in a structured manner, thus acting as a transition between reading comprehension and writing. Story mapping, which is able to serve as a writing organization tool and comprehension strategy, has previously been shown to help with both comprehension and story organization. As a visual scaffold, Story Mapping also assists learners in transforming textual information into coherent written summaries.

Based on the previous studies, the researcher is particularly interested in investigating whether the integration of Collaborative Strategic Reading and Story mapping technique can serve as an effective instructional approach to enhance English language learning, specifically in reading comprehension ability and summary writing ability. The following research questions have therefore been formulated: 1) Does the implementation of the Learning Management Using Collaborative Strategic Reading supplemented with Story Mapping techniques significantly improve the English reading comprehension ability of Grade 5 students from pretest to posttest and follow up test? 2) Does the implementation of the Learning Management Using Collaborative Strategic Reading supplemented with Story Mapping techniques significantly improve the English summary writing ability of Grade 5 students from pretest to posttest and follow up test?

Objectives

1. To examine the effects of the Learning Management Using Collaborative Strategic Reading supplemented with Story Mapping techniques on the English reading comprehension of Grade 5 students by comparing their pre-test, post-test, and follow up test scores.
2. To examine the effects of the Learning Management Using Collaborative Strategic Reading supplemented with Story Mapping techniques on the English summary writing ability of Grade 5 students by comparing their pre-test, post-test, and follow up test scores.

Literature Review

Collaborative Strategic Reading (CSR)

Collaborative Strategic Reading (CSR) is an instructional method which combines both cooperative learning with direct instruction of reading strategies to improve students' comprehension of text. CSR is an acronym for four strategies, created by Klingner and Vaughn (2012): Preview, Click and Clunk, Get the Gist, Wrap Up. These strategies help students activate prior knowledge, monitor comprehension, identify main ideas and synthesize information. CSR improves metacognitive awareness and helps students become active readers by coordinating peer interaction. Also, the use of cooperative roles like leader, clunk expert, and gist expert helps promote collaborative learning and accountability. Early research consistently shows that CSR led to text comprehension, identification of main ideas, higher-order thinking processes in students.

In the Philippines, Bermillo and Merto (2022) found that Grade 9 students exposed to CSR not only demonstrated significantly higher reading comprehension Scores but also showed increased motivation to read compared to their peers in the control group.

Story Mapping Technique

The Story Mapping technique is a visual tool that assists learners in identifying and organizing the key components of a story such as character, setting, problem, events and solution. It offers a graphical structure that aids understanding while reinforcing memory. Li (2007) references that story-mapping is based on schema theory and enables learners to map the connection between the elements of a narrative. That more carefully sequenced approach enhances students' skills in writing overall; organizing events logically and crafting a coherent narrative. Research has shown that story mapping improves reading comprehension and writing organization by forcing students to focus on important, relevant information rather than irrelevant ideas.

Sriati Usman, Safitri, and Marhum (2019) applied story mapping technique with Grade 10 students at SMK Negeri 3 Palu and found that students in the experimental group outperformed the control group in narrative writing achievement ($t = 8.462, p < .05$).

English Reading Comprehension

Reading comprehension is the construction of meaning from a piece of text as a result of the interaction among the reader, the text, and its previous knowledge (Grabe, 2011). It consists of cognitive and metacognitive activities that help learners understand, analyze, and assess information. Conceptualizing Comprehension: Miller (1990) delineated four levels of reading comprehension: literal, interpretive, critical and creative. These levels indicate higher complexity of thought, from comprehension to application and even evaluation of ideas. The framework has proven useful in the design of reading assessments and related instructional approaches.

English Summary Writing Ability

Summary writing is defined as the skill of summarizing an author's main ideas using your own voice or words, whilst retaining the original meaning (Pauk & Owens, 2014). It is a top-tier skill that calls for understanding, synthesis and language precision. Effective summary writing requires learners to identify key ideas, distinguish essential from non-essential information, paraphrase using their own words, and organize ideas logically while preserving the original meaning of the source text. The assessment of writing summaries often revolves around criteria such as content, organization, use of language and understanding. An adapted rubric (Weigle, 2002; Mahamontri, 2024) was implemented in this study to measure students' performance of these components.

Integration of Collaborative Strategic Reading (CSR) and Story Mapping

Although Collaborative Strategic Reading (CSR) and Story Mapping have individually been shown to improve students' literacy skills, integrating these two instructional approaches provides a more comprehensive framework for developing both reading comprehension and summary writing ability. CSR promotes strategic reading through cooperative learning and metacognitive processes, enabling students to activate prior knowledge, monitor comprehension, identify main ideas, and summarize information. Story Mapping complements these strategies by providing a visual organizational framework that helps learners identify relationships among story elements and organize information logically before writing. The researcher is interested in the integration of CSR and Story Mapping therefore supports learners throughout the entire reading-to-writing process, beginning with comprehension, progressing through information organization, and culminating in coherent summary writing. This integrated instructional approach forms the conceptual foundation of the present study.

The Learning Management of Collaborative Strategic Reading (CSR) Supplemented with Story Mapping Technique

In This Research has developed by the researcher the CSR adapted from Klingner & Vaughn (2012:4) supplemented with Story mapping technique adapted from Ibnian S.S.K. (2010: 183-184) The procedure for implementing CSR supplemented with Story mapping technique was executed through five steps as follows:

Step 1: Introduction to CSR Supplemented with Story mapping and Roles

Before applying CSR in group settings, students were introduced to the four core CSR strategies by the teacher

Step 2: Pre-Reading Activities (Preview)

The reading process began with the Preview phase. Here, the students activated their background knowledge by examining the title, pictures, and subheadings of the reading passage. Predictions were generated individually and shared within groups.

Step 3: During-Reading (Click and Clunk / Get the Gist)

During reading, students collaborated to process the text in segments

3.1 In the Click and Clunk phase, group members discussed vocabulary or ideas that they did not understand, applying decoding strategies such as re-reading, using context clues, and consulting the group "Clunk Expert."

3.2 In the Get the Gist phase, students summarized each paragraph or section by identifying the most important idea using their own words.

Step 4: Post-Reading (Wrap-Up and Story mapping technique Completion)

After reading, students entered the Wrap-Up phase, where they at this point, students were explicitly instructed to complete a Story mapping worksheet based on the text they had read. The Story mapping technique guided them to extract the narrative structure by

identifying: 1) The main characters 2) The setting (time and place) 3) The central problem or conflict 4) Key events leading to the resolution 5) The final resolution or outcome.

The Story mapping technique served as both a cognitive scaffold and a visual tool that helped bridge reading comprehension and summary writing.

Step 5: Summary Writing

In the final phase, students used their completed Story mapping techniques to write a coherent and structured summary of the text. The summary writing task required students to integrate the elements from the graphic organizer into a unified paragraph or set of paragraphs which well known as Cornell Note-Taking System developed by Dr. Walter Pauk at Cornell University (Pauk, 1957, cited in Mahamontri, 2024: 47). This process emphasized: 1) Identifying the topic 2) Identifying the main ideas 3) Rewriting the summary in clear and well-organized written

Conceptual framework

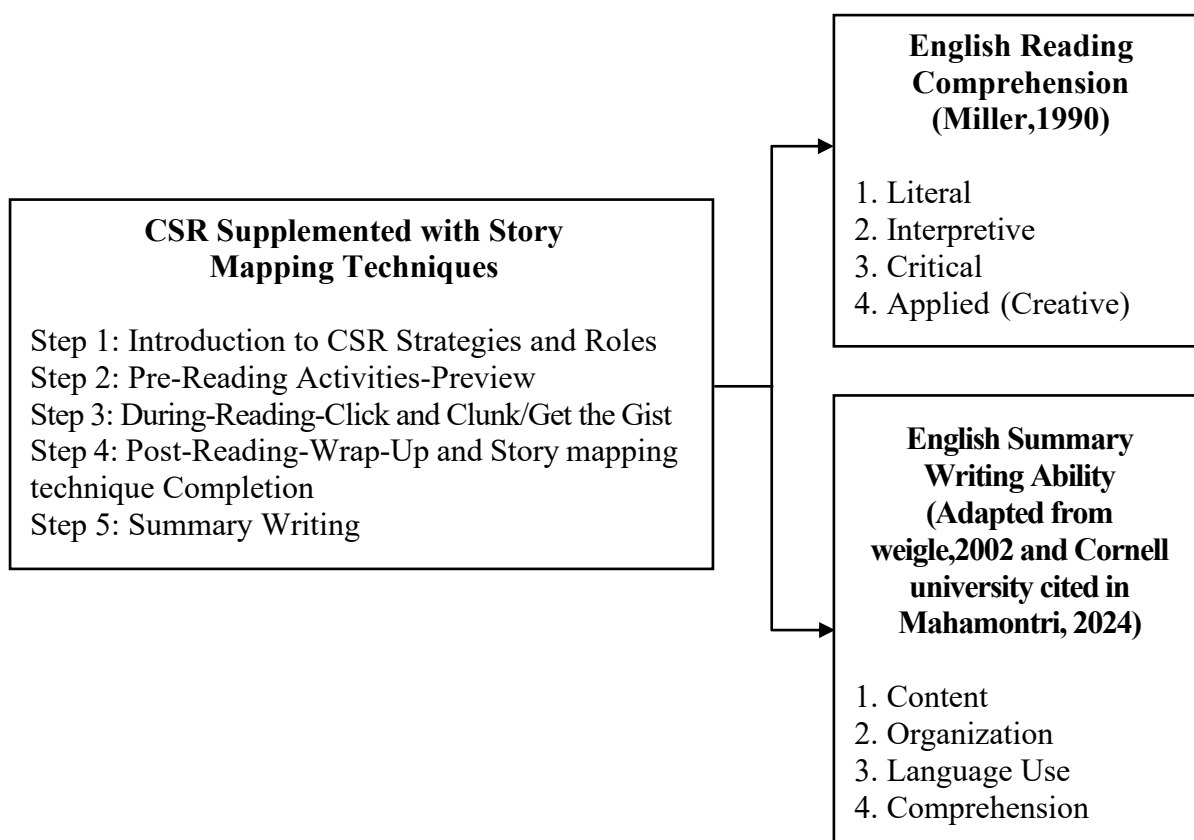


Figure 1: The Steps of CSR Supplemented with Story Mapping Techniques

Research Methodology

Population

The population consisted of 362 Grade 5 students from eight classrooms in Christian schools in Udon Thani Province during the second semester of the 2025 academic year. The research site was a private Christian school implementing the Cambridge Assessment International Education curriculum. The school was selected through purposive sampling because it provided an appropriate context for implementing the instructional intervention throughout the study.

Sample

The participants consisted of 32 Grade 5 students from one intact classroom selected through purposive sampling. This study employed a one-group pretest–posttest follow-up design to investigate the effects of Collaborative Strategic Reading (CSR) supplemented with Story Mapping on students' English reading comprehension and summary writing ability. The participants completed three assessments: a pre-test before the intervention, a post-test immediately after the intervention, and a follow-up test conducted two weeks later to examine the retention of learning outcomes.

Research Instruments

This research was approved by the Human Research Ethics Committee, Graduate School, Udon Thani Rajabhat University, Approval No. 0622.7/568. The ethical approval was valid from 3 November 2025 to 3 November 2026.

Three research instruments were employed in this study.

1. Lesson Plans

Six lesson plans integrating Collaborative Strategic Reading (CSR) supplemented with Story Mapping were developed and implemented over 18 instructional periods. The lesson plans were designed to promote students' English reading comprehension and summary writing ability through cooperative learning and strategic reading activities.

The lesson plans were piloted with Class 5/7 Grade 5 students (30 students) who had characteristics similar to those of the sample group in order to examine the clarity, appropriateness, time allocation, and feasibility of the lesson plans. According to Srisat (2017), the lesson plans obtained mean appropriateness scores ranging from 4.77 to 4.80, indicating the highest level of appropriateness.

2. English Reading Comprehension Test

The English Reading Comprehension Test was piloted with Class 5/7 Grade 5 students (30 students) who had characteristics similar to those of the sample group in order to examine the Index of Item-Objective Congruence (IOC). The test was evaluated by three experts in the relevant fields, and all test items obtained IOC values of 1.00.

A 30-item multiple-choice English reading comprehension test was developed to assess four levels of reading comprehension: literal, interpretive, critical, and creative comprehension (Miller, 1990). The quality of the instrument was examined prior to implementation. The difficulty indices ranged from .41 to .86, the discrimination indices ranged from .38 to .51, and the reliability coefficient (KR-20) was .87, indicating satisfactory internal consistency.

3. English Summary Writing Ability Test

The English Summary Writing Ability Test was piloted with Class 5/7 Grade 5 students (30 students) who had characteristics similar to those of the sample group in order to examine the Index of Item-Objective Congruence (IOC). The test was evaluated by three experts in the relevant fields, and all test items obtained IOC values of 1.00.

Students completed an English summary writing task requiring a 50–60-word summary based on a reading passage. The scoring rubric was adapted from Weigle (2002) and Mahamontri (2024) and assessed four components: content, organization, language use, and comprehension. Inter-rater reliability was examined using the Intraclass Correlation Coefficient (ICC). The average-measures ICC was .93, indicating excellent agreement between the two raters (Koo & Li, 2016).

Data Collection

Data collection was conducted during the second semester of the 2025 academic year eighteen periods. The procedures consisted of four stages:

1. Administration of the pre-test in English reading comprehension and summary writing.
2. Implementation of six instructional units using Collaborative Strategic Reading (CSR) supplemented with Story Mapping.
3. Administration of the post-test immediately after the intervention.
4. Administration of the follow-up test two weeks after the intervention to examine the retention of learning outcomes.

Ethical Considerations

Ethical Approval: This study received ethical approval from the Human Research Ethics Committee, Graduate School, Udon Thani Rajabhat University, Approval No. 0622.7/568. The ethical approval was valid from 3 November 2025 to 3 November 2026. Approval was obtained before data collection commenced. Written informed consent was obtained from all students' parents or legal guardians, and participation was entirely voluntary. Participants' identities were kept confidential through data coding, and all participants had the right to withdraw from the study at any time without penalty.

Data analysis

Descriptive statistics, inferential statistics:

1. Descriptive statistics: Students' performance was described by mean and standard deviation.
2. For reading comprehension, One-way Repeated Measures ANOVA was conducted to compare performance on pre-test versus post-test and follow-up.
3. For Summary Writing Ability score comparisons among pre-test vs post-test and follow-up were calculated using One-way Repeated Measures ANOVA. Statistical significance was defined as $p \leq .05$ level.

Research Finding

Effects on the English Reading Comprehension

The results of descriptive statistics and retention Test of the effects of the Learning Management Using Collaborative Strategic Reading supplemented with Story Mapping techniques on the English reading comprehension of Grade 5 students by comparing their pretest, posttest, and follow up test Scores as illustrated in Table 1.

Table 1: Descriptive Statistics and Retention Test of English Reading Comprehension Scores at Three Time Points

Test	Pre Test		Post Test		Follow-up 2 weeks		F	Sig.
	$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD		
Reading Comprehension (Literal, Interpretive, Creative, Applied)	16.47	5.55	20.56	5.32	21.00	6.02	28.03*	.000

*Statistical significance was determined at the .05 level

The results of the One Way repeated measures ANOVA indicated a statistically significant difference in reading comprehension Scores across the three time points,

$F = 28.03$, $p < .05$. Based on the results of the One Way repeated measures ANOVA, the English reading comprehension Scores of the students at the three time points Pretest, Posttest, and follow-up test were found to be significantly different ($p < .05$).

This result indicates that the instructional intervention had an overall effect on students' reading comprehension performance across time. However, the analysis did not specify which particular time points differed from one another. Therefore, further pairwise comparisons were conducted to identify the specific differences between the time points, and the results of these and the results of these additional analyses are presented in Table 2

Table 2: The Results to Identify the Specific differences Between the Time Points of the English Reading Comprehension

Reading Comprehension Test	Pre-Test $\bar{X} = 16.47$	Post-Test $\bar{X} = 20.56$	Follow up Test $\bar{X} = 21.00$
Pre-Test $\bar{X} = 16.47$	-	4.09*	4.53*
Post-Test $\bar{X} = 20.56$	-	-	0.44
Follow up Test $\bar{X} = 21.00$	-	-	-

*Significant at the .05 level

The results in Table 2 indicated that students' English reading comprehension Scores in both the Posttest and the follow-up test were significantly higher than those in the Pretest at the .05 level. However, no statistically significant difference was found between the Posttest and the follow-up test Scores, indicating that the improvement in reading comprehension was maintained over time.

Effects on the English Summary Writing Ability

The results of descriptive statistics and retention Test of the effects of the Learning Management Using Collaborative Strategic Reading supplemented with Story Mapping techniques on the English summary writing ability of Grade 5 students by comparing their pretest, posttest, and follow up test Scores as illustrated Table 3.

Table 3: Descriptive Statistics and Retention Test of English Summary Writing Ability Scores at Three Time Points

Test	Pre Test		Post Test		Follow-up 2 weeks		F	Sig.
	$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD		
Summary Writing Ability	4.87	4.63	12.78	5.90	13.56	5.55	43.45*	.000

*Statistical significance was determined at the .05 level

Table 3 presents the results of the One Way repeated measures ANOVA for English summary writing ability across three time points: Pretest, Posttest, and follow-up test. The results revealed a statistically significant effect of time on students' English summary writing ability, $F(2, 62) = 43.45$, $p < .05$. This indicates that students' summary writing ability significantly improved over time following the instructional intervention. Further analysis Using pairwise comparisons was conducted to determine the specific differences between the three time points. The results showed significant differences between the Pre-test, Post-test, and follow-up test Scores ($p < .05$), indicating that students' English summary writing ability improved after the intervention and was retained two weeks later and the results of these additional analyses to identify the differences as illustrated in Table 4.

Table 4: The Results to Identify the Specific differences Between the Time Points of The English Summary Writing Ability

Summary Writing Ability Test	Pre-Test $\bar{X} = 4.87$	Post-Test $\bar{X} = 12.78$	Follow up Test $\bar{X} = 13.56$
Pre-Test $\bar{X} = 4.87$	-	7.91*	8.69*
Post-Test $\bar{X} = 12.78$	-	-	0.78
Follow up Test $\bar{X} = 13.56$	-	-	-

*Statistical significance was determined at the .05 level

The results presented in Table 4 indicate that the students' English summary writing ability Scores in both the Posttest and the follow-up test were significantly higher than the Pretest Scores ($p < .05$). However, no statistically significant difference was found between the Posttest and the follow-up test Scores. This suggests that the improvement in students' English summary writing ability was retained over time.

Observational Findings

Further qualitative data were acquired through classroom observations that provided supporting evidence for students' learning progression throughout the intervention. During the first stage, students depended on teacher support for vocabulary and CSR strategy application. But after the Story Mapping was introduced students begin to identify important features of the text and organize information systematically. Students became confident and began using the reading strategies independently in later instructional sessions, where both increased participation and group discussions were observed. They were more structured, coherent and written in their own words rather than copied directly from the text. These qualitative are in line with values shown from the quantitative, where the combinations of CSR and Story Mapping can help towards improvements in reading comprehension and summary writing ability.

Discussion

Effects on English Reading Comprehension

The quantitative results, classroom observations during the instructional process provided qualitative insights into students' learning behaviors while participating in the Collaborative Strategic Reading supplemented with Story Mapping techniques. During the first lesson implementing the Collaborative Strategic Reading, many students tended to rely on the teacher for assistance, particularly when encountering unfamiliar vocabulary in the reading passages (Click and Clunk step). Students frequently asked the teacher to translate words or explain meanings. In group discussions, some students depended heavily on higher-ability peers when completing the worksheet activities. This pattern was especially noticeable during the initial implementation of the strategy, as the students were still unfamiliar with the Collaborative Strategic Reading procedures and required guidance in identifying key information from the texts. In the second lesson, when the Story Mapping technique was introduced, students gradually demonstrated a clearer understanding of the text structure. The teacher repeatedly reviewed important concepts and definitions such as character, setting, problem, and resolution. The teacher also guided students on how to locate these elements in the reading passage and how to organize them in the Story Mapping worksheet. Through repeated explanations and examples, students began to understand how to extract important information from the text more effectively. In the later units, students appeared more confident in identifying story elements and were able to complete the Story Mapping tasks with less assistance from the teacher.

This study shows that Collaborative Strategic Reading (CSR) combined with Story Mapping technique could be used to promote learning management and significantly improve English reading comprehension among Grade 5 students. A significant difference between post-test and follow-up scores compared to pre-test scores was found. This indicates that the instructional intervention not only improved reading comprehension but also aided retention over time. The results support the first hypothesis of this research and prove that Collaborative Strategic Reading (CSR) complemented with Story Mapping is an effective pedagogical method in a reading comprehension development.

First, CSR encourages active information processing through structured strategies such as Preview, Click and Clunk, Get the Gist, and Wrap Up (Klingner & Vaughn, 2012). These strategies allow students to record indicators of understanding, main ideas, and make meaning from the text. Furthermore, using cooperative learning groups for the activity encourages interaction and knowledge sharing among students serving to support Slavin's (1990) theory of cooperative learning and Vygotsky's (1978) social constructivism, which advocate for learning through social interactions with an added level of scaffolding.

Second, the inclusion of Story Mapping reinforces understanding through visualizing text structure. This strategy also activates schema and reduces cognitive load, making it easier for students to better organize information. Consequently, students are better able to perceive relationships between story elements and build a deeper understanding.

These results are in alignment with previous studies. For instance, CSR led to significant improvements of reading comprehension among Thai primary students (Wongkaew & Sitsungnoen, 2020). Additionally, related research completed by Bermillo and Merto (2022) reported that CSR increased reading comprehension and student motivation. Moreover, Li (2007) found that story mapping aids comprehension by enhancing students' capacity to organize textual information.

Effects on English Summary Writing Ability

To the quantitative results, classroom observations during the instructional process provided qualitative insights into students' learning behaviors while participating in the Collaborative Strategic Reading supplemented with Story Mapping techniques. In the third lesson, the teacher integrated the Collaborative Strategic Reading worksheet from the first session with the Story Mapping worksheet from the second session to guide students in writing summaries. The teacher emphasized that summary writing does not mean copying sentences directly from the original passage. Instead, students were encouraged to identify the main ideas and restate them in their own words. The teacher also selected examples of well-written summaries produced by some student groups and shared them with the entire class to demonstrate effective summarizing techniques. Although students initially showed reluctance toward writing summaries, continuous encouragement and reinforcement from the teacher helped motivate them to participate more actively in the activity. As students became more familiar with the summarizing process, their writing gradually improved. They demonstrated better organization of ideas, more accurate spelling, improved punctuation usage (such as periods and commas), and clearer sentence spacing. These improvements were reflected in the students' performance in both the Posttest and the follow-up test.

Results also indicated a significant increase in students' writing ability in English summary after the intervention, as evidenced by post-test and follow-up scores significantly higher than pre-test scores. The lack of significant difference in post-test and follow-up scores suggests that the improvement was maintained after time. These results also back up the second hypothesis or research idea of this study and prove that CSR combined with Story Mapping does improve the students' summary-writing ability. Such differences between groups in summary writing have been shown to stem from strategic reading instruction and structured cognitive support. In the CSR process, students practiced identifying main ideas in the "Get the Gist" stage, a component that directly supports summarization skills. The use of CSR learning logs also reinforced students' capacities to jointly glean and consolidate essential information.

Secondly, Story Mapping acted like a scaffold between reading comprehension and writing. Students could see their ideas more clearly, which likely helped them craft coherent summaries by visualizing narrative elements before putting pen to paper. This is in accordance with Idol (1987), graphic organizers that help process information and organize ideas.

According to Mahamontri (2024), an effective summary has the key ideas of information organized in a logical manner and expressed as clear and concise ideas articulated in one's own words. The degree to which the instructional design in this study reflected this framework was associated with students' improvement in writing performance.

The results are similar to those from prior studies. According to Tabatabaei and Radi (2020), the use of a story map as an aid had a dramatic impact on students' writing organization and coherence. In line with these findings, both Marzec-Stawiarska (2016) and Asaro-Saddler (2018) found that direct summary writing instruction improved the quality of written summaries as well as reading comprehension.

Suggestion

The findings of this study hold several critical implications for educational practice.

1. It has been proved that the implementation of CSR and Story Mapping technique is one of the effective teaching methods in improving primary school students reading comprehension ability as well as overview writing skills in English language class. Therefore, teachers may consider implementing this dual process as a form of strategic reading to be reflected through deflected efforts and controlled writing consolidation.

2. Sufficient instructional time allows for full internalization of reading strategies by students. For upper primary students who have limited experiences of strategic processes in reading instruction, longer than 18 periods may facilitate the independent and efficient use of strategies by students.

3. The use of Story Mapping as a scaffolded instructional tool can be applied to other content areas beyond English language classrooms. It can also be infused into content-related subjects like science and social studies as a way of assisting students with organizing information, finding important concepts, and writing fluid summaries. This cross-curricular application can promote the growth of vital 21st-century literacy skills.

4. Results are given to show how reading instruction should be governed by higher-order thinking skills. Consistent with Miller's framework, teachers are encouraged to design assessment tasks that move beyond the literal level of comprehension towards interpretive, critical and creative forms of understanding. This would more meaningfully contribute to students' analytical and evaluative thinking skills.

Recommendations for Future Research

The implications drawn out based on the results and limitations from this study can provide a path for further researchers in multiple directions.

1. Future research should be conducted examining the impact of CSR instruction supplemented with Story Mapping spread across a longer instructional time frame, such as an entire semester or academic school year. This would yield more robust evidence of whether the intervention is sustainable, and its effects on students' learning outcomes in the long-term.

2. More studies are needed to investigate the efficacy of this teaching method on learners at various grade levels, specifically secondary and tertiary substitutes. These could be studies of higher-order comprehension, such as the ability to analyze and interpret creatively.

3. Further applications of CSR and Story Mapping to various text types (expository, argumentative) and academic disciplines are warranted. This would assist in determining the generalizability of the approach across a variety of learning contexts.

4. Future Research Implementation of Story Mapping in Developing Students' Writing Ability However, considering there are few recent studies in this area further research is necessary to explore if it remains effective over time as well as examining its influence on students' capacity to generate coherent summaries.

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A Study on The Present Situation and Development Countermeasures of Basketball in Secondary Vocational School in Huainan

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Abstract

This article aimed to examine the current situation of basketball participation in secondary vocational schools in Huainan City, analyze the factors influencing students' participation and the development of basketball activities, and propose strategies for promoting basketball activities in secondary vocational schools in Huainan City. The sample consisted of 302 students from secondary vocational schools in Huainan and 5 physical education teachers. They were selected by purposive sampling. The instruments for collecting data were questionnaires and semi-structured interview forms. The questionnaires were used to collect quantitative data from students regarding their participation in basketball activities, while interviews with physical education teachers were conducted to obtain additional information about teaching conditions and development issues. All research instruments were validated by experts using the Item-Objective Congruence (IOC) method. The questionnaire demonstrated acceptable reliability (Cronbach's alpha = 0.91). Data were analyzed by descriptive statistics and content analysis.

The research results indicated that basketball participation in secondary vocational schools in Huainan was generally positive, with most schools having basic teaching resources and students showing strong interest in participating; however, improvements in sports facilities, equipment, and increased class hours were still needed to enhance both curricular and extracurricular activities. Differences were found between teachers' and students' perceptions regarding teaching quality, feedback, and class size, with teachers tending to rate these aspects more positively, suggesting a perceptual gap and the need to improve communication and feedback. Interview findings revealed that inadequate sports facilities, limited basketball equipment, insufficient funding, and a shortage of specialized basketball instructors were key barriers to the development of basketball activities in secondary vocational schools. Teachers also emphasized the importance of increasing administrative support, improving facility management, and providing more inter-school basketball competitions. For development, a "competition and learning integration model" is recommended, focusing on enhancing general students' physical fitness, providing systematic training for talented players, and promoting inter-school cooperation and joint training to strengthen competitive basketball teams.

Keywords: Basketball Development, Vocational Education Students, Sports Participation

Introduction

In recent years, physical education has been widely recognized as an important component of education that promotes students' holistic development. School sports not only improve physical fitness but also cultivate teamwork, discipline, and social responsibility among students. Previous research has shown that participation in sports activities contributes significantly to students' physical health, motor skills, and social development (Bailey, 2006; Lin, 2024). Team sports such as basketball are particularly effective in promoting cooperation, communication, and strategic thinking among students. In China, basketball has been widely incorporated into school physical education programs and has been shown to improve students' physical fitness, psychological resilience, and teamwork abilities (Lin, 2024).

Despite these benefits, several studies have reported challenges in the implementation of physical education programs in vocational institutions. These challenges include outdated teaching methods, limited sports facilities, and insufficient student engagement. Traditional basketball teaching methods often rely on repetitive drills and teacher-centered instruction, which may reduce students' motivation and limit opportunities for active participation and collaborative learning (Wu & Tasnaina, 2025). Similarly, research on basketball instruction in secondary schools has indicated that conventional teaching approaches often fail to stimulate students' learning interest and restrict the development of teamwork, problem-solving ability, and independent participation (Li, Mahakhan, & Watchayakarn, 2025; Li et al., 2025). These findings suggest that although basketball is popular among students, effective instructional strategies for promoting participation and improving learning outcomes remain insufficient.

Secondary vocational education plays an important role in cultivating skilled talents for regional and national development. However, physical education programs in many vocational schools still face several constraints, including limited sports facilities, insufficient professional teachers, and a lack of innovative teaching approaches. Previous studies have also confirmed that regular participation in structured physical activity can significantly improve students' physical health and well-being (Bull et al., 2020; Wang et al., 2024). In Anhui Province, physical education curricula in many secondary vocational schools mainly focus on traditional sports activities, while basketball classes are often limited to basic skill training. As a result, students' motivation and participation in basketball activities remain relatively low.

Huainan City, a resource-based industrial city undergoing economic transformation, requires skilled workers who possess not only professional competence but also strong physical fitness, teamwork ability, and psychological resilience. However, empirical research focusing on basketball participation and development strategies in secondary vocational schools in Huainan City remains limited. Therefore, the findings of this study are expected to provide practical insights for improving basketball teaching practices and supporting the development of physical education in vocational schools.

Objectives

1. To examine the current situation of basketball participation in secondary vocational schools in Huainan City.
2. To analyze the factors affecting the development of basketball and students' participation in basketball activities.
3. To propose development strategies for promoting basketball activities in secondary vocational schools in Huainan City.

Literature review

Importance of Physical Education and School Sports

Physical education and school sports play an important role in promoting students' holistic development. Through structured physical activities, students can improve their physical fitness, motor skills, and overall health. In addition to physical benefits, participation in school sports also helps develop social skills, teamwork, discipline, and emotional well-being. Therefore, many education systems emphasize integrating sports activities into school curricula to support students' comprehensive development. Previous research has shown that physical education and school sports significantly contribute to students' physical, psychological, and social development. Bailey (2006) reported that physical education in schools positively influences students' physical health, cognitive development, social interaction, and emotional well-being, and encourages lifelong physical activity habits. Similarly, Walker et al. (2023) found that school-based physical activity programs can enhance students' physical health, social interaction, and classroom engagement. These findings highlight the importance of strengthening physical education programs and promoting sports participation among students in schools.

Basketball Development in School Physical Education

Basketball is one of the most popular team sports integrated into school physical education programs. Because of its simple rules and high level of interaction, basketball is widely used to promote students' physical fitness, coordination, and teamwork skills. Studies have shown that participation in basketball activities can significantly improve students' motor skills, physical fitness, and social interaction abilities (Lin, 2024). In addition to physical development, basketball education also contributes to students' psychological and social development. Through cooperation and competition during games, students can develop communication skills, teamwork, and problem-solving abilities in dynamic situations. Recent research has also emphasized the importance of improving basketball teaching methods in school physical education. For example, game-based teaching approaches have been found to significantly improve students' motivation, engagement, and learning outcomes in basketball classes compared with traditional teaching methods (Li et al., 2024). These findings highlight the importance of developing effective basketball teaching strategies to enhance students' participation and maximize the educational value of basketball in school physical education.

Sports Participation among Vocational Education Students

Sports participation is an important factor in promoting students' physical health and overall development in educational institutions, including vocational education. Although vocational education mainly focuses on technical and professional training, participation in sports activities helps improve physical fitness, reduce stress, and enhance students' social and interpersonal skills. Previous studies have emphasized the role of social support in

encouraging sports participation among students. Dong et al. (2025) found that support from family, peers, and teachers significantly influences adolescents' participation in physical activities. Higher levels of encouragement and interaction from these groups are associated with increased levels of sports participation among students. Similarly, Yaakop et al. (2025) reported that integrating physical education and sports activities into vocational education programs can promote students' physical fitness, motivation, and social development. However, the study also identified challenges such as limited facilities and insufficient curriculum time, which may reduce students' participation in sports.

Strategies for Promoting Basketball Activities in Schools

Promoting basketball activities in schools requires effective teaching strategies that encourage students' participation and improve learning outcomes. One important approach is the use of cooperative learning in basketball instruction. Research has shown that cooperative learning strategies can enhance students' motivation, teamwork, and skill development during physical education classes. Afif, Wali, and Sukoco (2022) reported that the application of a cooperative learning model in basketball learning significantly improved junior high school students' learning outcomes and participation compared with traditional teaching methods. In addition, innovative teaching approaches such as game-based learning and modified games have been widely recommended to promote basketball participation in schools. Li, Mahakhan, and Watchayakarn (2025) found that basketball teaching strategies that incorporate small games, skill-specific games, modified rules, and real-game situations can increase students' interest, improve basketball skills, and enhance participation in basketball learning activities. These strategies help create more engaging and effective basketball learning environments in school physical education programs.

Research Methodology

Research Design

This study employed a quantitative survey research design to investigate the current situation of basketball participation in secondary vocational schools in Huainan City, Anhui Province, China. The research also analyzed the factors influencing basketball development and proposed strategies to promote basketball activities in vocational schools.

Research Population and Sample

The population of this study consisted of basketball teachers and students from secondary vocational schools in Huainan City, Anhui Province, China. The sample included two groups:

1. Basketball teachers

A total of 29 basketball teachers from secondary vocational schools were selected using purposive sampling to provide information regarding basketball teaching practices and the development of basketball activities in schools.

2. Students participating in basketball activities

A total of 302 students from ten secondary vocational schools in Huainan City were selected using simple random sampling. The sample size was determined using Yamane's formula (Yamane, 1973).

Research Instrument

The research instrument was a structured questionnaire designed to collect data related to basketball participation and development in vocational schools. The questionnaire consisted of three parts:

1. General information of respondents
2. Factors influencing basketball participation, including
 - 2.1 Resources and facilities
 - 2.2 Student attitudes and interests
 - 2.3 Outcomes of basketball participation, including
 - 2.3 School support
3. Factors influencing basketball participation, including
 - 3.1 Level of participation in basketball activities
 - 3.2 Development of students' sports skills
 - 3.3 Development of basketball activities in schools

All items were measured using a five-point Likert scale.

Instrument Validation and Reliability

The questionnaire was validated by three experts using the Index of Item-Objective Congruence (IOC) method. The IOC values ranged from 0.80 to 1.00, indicating acceptable content validity. The reliability of the questionnaire was assessed using Cronbach's alpha coefficient, and the overall reliability coefficient was 0.91, indicating a high level of internal consistency and suitability for data collection.

Data Collection

Data were collected from ten secondary vocational schools in Huainan City after obtaining permission from school administrators. Questionnaires were distributed to the selected teachers and students, and the completed questionnaires were collected for analysis.

Data Analysis

The collected data were analyzed using descriptive statistics, including frequency, percentage, mean, and standard deviation. These statistical methods were employed to describe the current situation of basketball participation among students and to examine the factors influencing the development of basketball activities in secondary vocational schools in Huainan City, Anhui Province, China.

Conceptual Framework

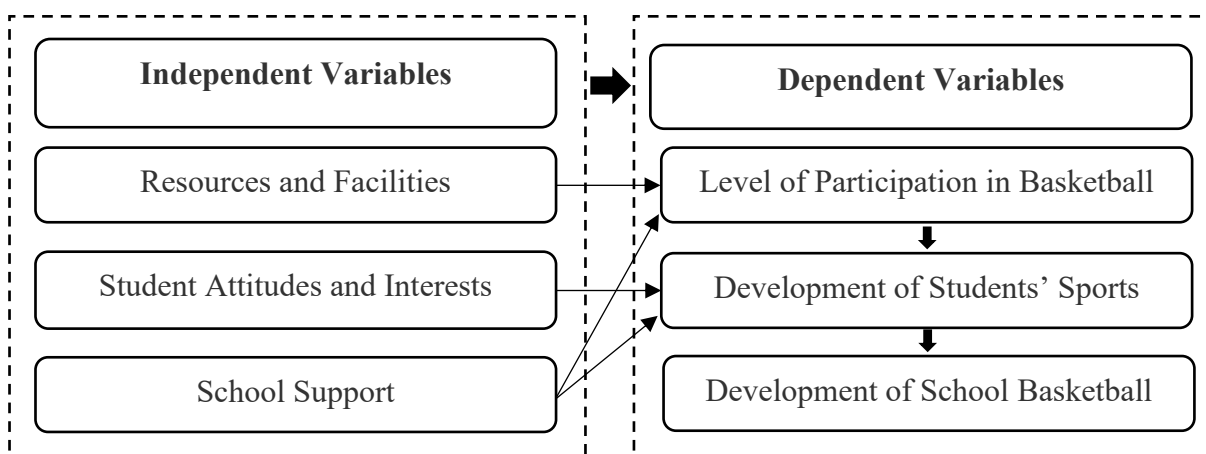


Figure 1: Conceptual Framework

The conceptual framework of this study presents the relationship between the independent variables and dependent variables. The independent variables include resources and facilities, student attitudes and interests, and school support. These factors are expected to influence the level of participation in basketball activities. Increased participation may lead to the development of students' sports skills and further support the development of basketball programs in schools.

Research Finding

1. Current Situation of Basketball Participation among Vocational School Students in Huainan.

To examine the current situation of basketball participation among students in secondary vocational schools in Huainan City, descriptive statistics were used to analyze students' participation levels. The results are presented in Table 1.

Table 1: Basketball Participation Levels among Students in Selected Vocational Schools in Huainan City

Participation Level	Anhui Mechanical Engineering School (%)	Danwai Information Industry School (%)	Shouxian Vocational School (%)
Never participated	32.08	14.67	20.35
Occasional participation	41.25	35.21	45.18
Regular participation	20.14	23.45	21.33
Professional training	6.53	26.67	13.14

Table 1 shows the distribution of basketball participation among students in three secondary vocational schools in Huainan City. The results indicate significant differences in participation levels among the schools. Anhui Mechanical Engineering School had the highest proportion of students who had never participated in basketball activities (32.08%), indicating relatively low engagement in sports activities. In contrast, Danwai Information Industry School demonstrated the highest rate of professional basketball training participation (26.67%), suggesting stronger support for basketball development. Shouxian Vocational School showed a moderate level of participation, with the largest proportion of students participating occasionally in basketball activities. These findings suggest that differences in school facilities, sports programs, and instructional support may influence students' participation in basketball activities.

2. Differences in Basketball Participation among Schools.

To further analyze the differences in basketball participation among the three schools, a chi-square test was conducted. The results are presented in Table 2.

Table 2: Chi-Square Test of Differences in Basketball Participation among Schools

Variable	X ²	DF	P-Value
Basketball participation level	48.350	6	<0.001

Table 2 presents the results of the chi-square analysis examining differences in basketball participation among students from the three vocational schools. The results revealed a statistically significant difference in participation levels among the schools ($X^2 = 48.350$, $p < 0.001$). This indicates that students' opportunities and engagement in basketball activities vary significantly across schools. These differences may be related to

variations in sports facilities, teaching resources, and institutional support for basketball programs. Schools with better sports infrastructure and organized basketball training programs tend to have higher participation levels.

3. Students' Interest, Satisfaction, and Motivation in Basketball Learning

A one-way ANOVA was conducted to examine differences in students' basketball learning interest, course satisfaction, and intrinsic motivation among the three schools. The results are presented in Table 3.

Table 3: Comparison of Basketball Learning Interest, Satisfaction, and Motivation among Schools

School	Learning Interest (Mean $\pm$ SD)	Course Satisfaction (Mean $\pm$ SD)	Intrinsic Motivation (Mean $\pm$ SD)
Danwai Information Industry School	3.27 $\pm$ 0.42	3.58 $\pm$ 0.67	3.41 $\pm$ 0.76
Shouxian Vocational School	3.08 $\pm$ 0.34	3.21 $\pm$ 0.54	3.12 $\pm$ 0.61
Anhui Mechanical Engineering School	2.83 $\pm$ 0.48	2.97 $\pm$ 0.63	2.85 $\pm$ 0.59
ANOVA Results: $F = 21.361-28.271$, $p < 0.001$			

Table 3 presents the comparison of basketball learning interest, course satisfaction, and intrinsic motivation among students from the three vocational schools. The results show that Danwai Information Industry School recorded the highest mean scores across all three dimensions, indicating that students in this school demonstrated greater enthusiasm and engagement in basketball learning. In contrast, Anhui Mechanical Engineering School reported the lowest scores, suggesting lower levels of interest and motivation among students. The ANOVA results revealed statistically significant differences among the three schools ($p < 0.001$). These findings indicate that school resources, teaching quality, and sports infrastructure may significantly influence students' learning experiences in basketball courses.

4. Factors Influencing Basketball Participation

Correlation analysis was conducted to examine the relationship between different engagement dimensions and basketball participation levels. The results are shown in Table 4.

Table 4: Correlation between Engagement Dimensions and Basketball Participation

Engagement Dimension	Correlation (r)	p-value
Activity participation	0.582	<0.001
Cognitive engagement	0.500	<0.001
Autonomous exploration	0.488	<0.001
Negative interest	-0.276	<0.001

Table 4 shows the correlation between different engagement dimensions and basketball participation. The results indicate that activity participation had the strongest positive correlation with basketball engagement ($r = 0.582$, $p < 0.001$), followed by cognitive engagement ($r = 0.500$, $p < 0.001$) and autonomous exploration ($r = 0.488$, $p < 0.001$). In contrast, negative interest showed a significant negative relationship with basketball

participation ($r = -0.276$, $p < 0.001$). These findings suggest that students' behavioral engagement plays a critical role in promoting basketball participation. Encouraging students to actively participate in sports activities may therefore be an effective strategy for increasing interest and engagement in basketball learning.

5. Predictive Factors Influencing Basketball Participation

Multiple regression analysis was conducted to identify key factors influencing basketball participation. The results are presented in Table 5.

Table 5: Multiple Regression Analysis of Factors Influencing Basketball Participation

Predictor Variable	β	t	p
Teaching competence	0.266	4.18	<0.001
Personal development	0.166	2.78	0.006
Intrinsic motivation	0.148	2.37	0.018

Table 5 presents the results of the multiple regression analysis examining factors influencing basketball participation. The model showed significant predictive power ($R^2 = 0.294$, $p < 0.001$), indicating that approximately 29.4% of the variance in basketball participation can be explained by the variables included in the model. Teaching competence emerged as the most influential factor ($\beta = 0.266$, $p < 0.001$), followed by personal development ($\beta = 0.166$, $p = 0.006$) and intrinsic motivation ($\beta = 0.148$, $p = 0.018$). These results suggest that improving teachers' instructional competence and enhancing students' motivation may significantly increase participation in basketball activities among vocational school students.

Conclusion

This study examined the current situation of basketball participation, analyzed the factors affecting basketball development and participation, and proposed strategies for promoting basketball activities in secondary vocational schools in Huainan City.

First, the results revealed that the overall level of basketball participation among students in secondary vocational schools in Huainan City remains relatively low. Although basketball is a popular sport among students, participation is often irregular and mainly occurs during physical education classes rather than through organized extracurricular activities. In addition, basketball teaching in many schools still focuses primarily on basic technical training, which limits students' enthusiasm and active engagement in basketball activities.

Second, several factors influencing the development of basketball and students' participation were identified. These factors include limitations in sports facilities, insufficient professional physical education teachers, and the continued use of traditional teaching methods that emphasize repetitive drills rather than interactive learning. In addition, students' motivation and interest in sports activities were found to be influenced by the quality of teaching methods, the availability of sports facilities, and opportunities for participation in organized basketball activities.

Third, based on the findings of this study, several development strategies were proposed to promote basketball activities in secondary vocational schools in Huainan City. These strategies include improving basketball facilities and sports environments, adopting innovative teaching approaches such as cooperative learning and game-based teaching methods, and increasing opportunities for students to participate in extracurricular basketball

programs and school competitions. Implementing these strategies can help enhance students' motivation, increase participation in basketball activities, and promote students' physical fitness and teamwork abilities.

Overall, this study provides useful insights for improving basketball teaching and promoting sports participation in vocational education settings. The findings may also contribute to the development of more effective physical education programs that support students' physical, social, and psychological development in secondary vocational schools.

Discussion

1. Current Situation of Basketball Participation in Secondary Vocational Schools in Huainan City

The findings revealed that most students in secondary vocational schools in Huainan City participated in basketball activities only occasionally, while relatively few students engaged in regular or systematic basketball training. This indicates that although basketball is popular among students, structured participation in school basketball programs remains limited.

This finding is consistent with Li, Mahakhan, and Watchayakarn (2025), who reported that basketball education in many schools still relies on traditional teaching approaches and lacks systematic training programs, resulting in limited student engagement in basketball learning. Similarly, Yaakop, Yusop, and Othman (2025) noted that physical education in vocational education institutions often faces constraints such as limited facilities, insufficient professional teachers, and inadequate support for sports development. These factors may explain the differences in participation levels observed among the vocational schools in this study.

2. Factors Affecting the Development of Basketball and Students' Participation

The results also indicated that several factors significantly influence students' participation in basketball activities, including teaching competence, intrinsic motivation, and opportunities for personal development. Among these factors, teaching competence appeared to be the most influential predictor of students' engagement in basketball activities.

This finding supports the study of Afif, Wali, and Sukoco (2022), which demonstrated that cooperative learning models in basketball instruction can significantly improve students' learning outcomes and participation in physical education classes. Similarly, Li et al. (2025) found that innovative teaching approaches such as game-based basketball instruction can enhance students' motivation and participation in school sports. In addition, providing meaningful physical activity opportunities in schools has been shown to improve students' physical health, social interaction, and learning engagement (Walker et al., 2023). Therefore, improving teaching quality and adopting more interactive teaching strategies may play a key role in increasing students' participation in basketball activities.

3. Development Strategies for Promoting Basketball Activities in Vocational Schools

Based on the questionnaire and interview findings, three major development strategies are proposed to promote basketball activities in secondary vocational schools in Huainan City.

First, an infrastructure development strategy should be implemented. The findings revealed that although most schools possessed basic basketball facilities, both students and teachers identified limitations in sports equipment, facility quality, and available practice space. Teacher interviews further indicated that inadequate facilities and limited financial support were major barriers to basketball development. Therefore, schools should improve sports infrastructure and provide sufficient basketball equipment to support both curricular and extracurricular activities.

Second, an instructional development strategy should be adopted to enhance students' learning experiences and participation. The results showed differences between teachers' and students' perceptions regarding teaching quality, feedback, and class organization, suggesting a need to improve instructional effectiveness. Physical education teachers should therefore employ innovative teaching approaches, such as cooperative learning and game-based teaching methods, to increase students' motivation and engagement in basketball learning. Previous studies have demonstrated that these approaches can effectively improve learning outcomes and participation in sports activities (Afif et al., 2022).

Third, an extracurricular and competition promotion strategy should be strengthened. The findings indicated that students had a strong interest in basketball participation but required more opportunities to engage in organized activities beyond regular physical education classes. Teacher interviews also emphasized the importance of inter-school cooperation and competitive opportunities. Therefore, schools should establish basketball clubs, organize inter-school tournaments, and develop joint training programs to encourage continuous participation and enhance students' basketball skills. Integrating structured sports programs into vocational education can further improve students' physical fitness, teamwork skills, and overall well-being (Yaakop et al., 2025).

Collectively, these findings support a three-dimensional development model consisting of infrastructure support, instructional innovation, and extracurricular participation enhancement. This model may serve as a practical framework for promoting sustainable basketball development in secondary vocational schools in Huainan City.

Suggestion

To translate the findings into practical improvements, secondary vocational schools should adopt effective strategies to promote basketball participation and enhance the quality of physical education programs.

1. Practical Recommendations

Based on the findings of this study, several recommendations can be proposed for improving basketball activities in secondary vocational schools. Schools should improve basketball facilities and provide adequate sports equipment to support students' participation in basketball activities. Physical education teachers should adopt more innovative teaching methods, such as cooperative learning and game-based instruction, in order to increase students' motivation and engagement in basketball classes. In addition, schools should organize extracurricular basketball activities and competitions to provide students with more opportunities to participate in sports and develop teamwork skills.

2. Suggestions for Future Research

Future studies should expand the research scope by including a larger number of vocational schools in different regions to obtain more comprehensive data. Researchers may also apply experimental or mixed-method research designs to examine the effectiveness of innovative basketball teaching methods on students' participation and learning outcomes. In addition, further research could explore the relationship between basketball participation and students' physical fitness, psychological development, and academic performance.

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The Relationship Between Technological Leadership and Academic Administration of School Administrators

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Abstract

This research aimed to 1) examine the level of technological leadership among school administrators, 2) investigate the level of academic administration, 3) determine the relationship between technological leadership and academic administration, and 4) propose development guidelines for technological leadership in academic administration under the Secondary Educational Service Area Office of Ubon Ratchathani and Amnat Charoen. The quantitative sample comprised 349 participants (20 school administrators and 329 teachers) selected via proportional stratified random sampling. Research instruments included a 5-point rating scale questionnaire and structured interviews with 3 key informants. Data were analyzed using mean, standard deviation, and Pearson's product-moment correlation coefficient

The research findings revealed that: 1) The level of technological leadership of school administrators under the Secondary Educational Service Area Office Ubon Ratchathani Amnat Charoen was at the highest level overall ($\bar{X} = 4.94$) 2) The level of academic management of school administrators under the Secondary Educational Service Area Office Ubon Ratchathani Amnat Charoen was also at the highest level overall ($\bar{X} = 4.87$) 3) The relationship between technological leadership and academic management of school administrators under the Secondary Educational Service Area Office Ubon Ratchathani Amnat Charoen showed a statistically significant positive correlation at the .01 level, with a high correlation coefficient ($r = .871$). 4) Development guidelines should focus on enhancing technological vision and internal quality assurance through systematic supervision and digital networking.

Keywords: Technological Leadership, Academic Administration, School Administrators, Secondary Education

Introduction

Basic education serves as the fundamental mechanism for developing human potential to cope with global context transformations. However, student academic achievement currently faces critical challenges. Recent reports from the Organisation for Economic Co-operation and Development (OECD, 2023) regarding the Programme for International Student Assessment (PISA) indicate that Thai students' average scores in mathematics, reading, and science have dropped to their lowest levels in two decades. This situation

underscores the urgent need to reform institutional management structures, transitioning from traditional models to evidence-based decision-making frameworks.

In this rapidly evolving digital ecosystem, school administrators can no longer operate merely as routine managers; they must proactively transform into strategic "Change Agents." This transformation requires the robust application of "Technological Leadership" to dictate institutional directions, optimize management information systems, and seamlessly integrate pedagogical innovations into academic administration-the core mission of basic education. Academic administration directly dictates the quality of instruction, curriculum relevance, and student learning outcomes. Thus, aligning administrative leadership with technological advancements is paramount to modernizing the school infrastructure.

Although a wealth of prior literature consistently substantiates a significant positive correlation between leadership behavior and organizational effectiveness (Klindet, 2017), deep operational vulnerabilities persist in practice. Substantial disparities remain prominent across local educational regions, particularly regarding digital infrastructure, resource allocation, and individual technological competencies. These inequities often manifest as gaps in policy implementation, where high-level national digital strategies fail to translate into everyday school-level execution. Therefore, this study systematically analyzes the precise levels, directions, and empirical mechanisms connecting technological leadership and academic administration. By focusing specifically on the secondary education sector within the Ubon Ratchathani and Amnat Charoen provinces, this research provides vital empirical evidence to formulate targeted strategic guidelines, enhance administrative competencies, and drive sustainable educational quality in the digital transition era.

Literature Review

Theoretical Foundations of Educational Administration and Leadership

In the contemporary educational landscape, school administration is conceptualized as a highly systemic and adaptive process designed to achieve institutional excellence. Classic administrative functions-namely planning, organizing, leading, and controlling-must be re-engineered to suit the fluid realities of the 21st century (Tayana, 2023). Modern leadership frameworks demand high operational agility and multi-stakeholder engagement to foster inclusive, high-performing learning environments (Chansirisira et al., 2023). Such conditions are critical to securing teacher commitment and psychological safety amidst ongoing digital transformations (Buadok, 2021).

In summary, school administration is a systematic process that relies on the core functions of planning, organizing, leading, and controlling to facilitate seamless collaboration between administrators and personnel in managing academic affairs, budgeting, and institutional resources (Tayana, 2023). Within this framework, administrators play a pivotal role in charting the strategic direction and exercising authority to implement modern educational management principles. This integrative process enables educational institutions to enhance the quality of learners and organizational performance, ultimately achieving holistic success in alignment with curricular objectives in a continuous and sustainable manner.

Concurrently, leadership theory has evolved through four paradigms: trait theories, behavioral theories, contingency/situational models, and transformational leadership. Transformational leadership serves as a cornerstone for modern digital governance, emphasizing idealized influence, inspirational motivation, intellectual stimulation, and individualized consideration to elevate organizational capability (Butsart, 2022). Consequently, contemporary educational leaders must transcend standard bureaucratic roles,

adopting proactive competencies such as collaborative problem-solving and data-driven management to effectively navigate institutional complexities (Paopan, 2016; Tayana, 2023).

Technological Leadership in Education

Technological leadership within educational institutions is defined as a dynamic capability required to direct, support, and sustain digital maturity across all operational sectors. Synthesizing international and domestic conceptualizations (Bamrungphakdee, 2020), technological leadership is structurally categorized into three strategic dimensions:

Strategic Integration Process: The proactive behavioral patterns of administrators in adopting and institutionalizing Information and Communication Technology (ICT) to optimize organizational efficiency and workflow automation (Butsart, 2022; Chankhum, 2024).

Influential Agency and Transformational Change: The capacity of the leader to cultivate a robust digital learning ecosystem that dismantles temporal and spatial barriers, thereby enabling active learning paradigms (Tayana, 2023).

Ethical Governance and Digital Stewardship: The institutionalization of legal, safe, and equitable digital practices that promote digital citizenship and bridge the digital divide among stakeholders (Sitthithaworn, 2023; Chankhum, 2024).

Grounded in these operational definitions, this research evaluates technological leadership across four main dimensions: 1) Technological Visionary and Planning, 2) Technology in Administrative Management, 3) Technology Integration in Teaching and Learning, and 4) Digital Ethics and Responsibility.

Academic Administration of School Foundations

Academic administration represents the core technical core and most vital mission of educational institutions, exerting a direct impact on student achievement and national educational standards (Kueakul, 2017; Wiset, 2017). The execution of high-quality academic administration requires strategic planning cycles and rigorous internal supervision systems (Phavabutr, 2017; Thiappan, 2019). Guided by the Office of the Basic Education Commission (OBEC, 2018) regulations, this study delineates academic administration into six fundamental dimensions: 1) School Curriculum Development, 2) Learning Measurement and Evaluation, 3) Educational Research for Quality Improvement, 4) Instructional Supervision, 5) Educational Media, Innovation, and Technology Development, and 6) School Internal Quality Assurance (IQA).

The Strategic Context of Educational Management: SESAO Ubon Ratchathani Amnat Charoen.

1. General Context and Scope of Responsibility The Secondary Educational Service Area Office (SESAO) Ubon Ratchathani Amnat Charoen serves as a pivotal educational administrative body with an extensive jurisdictional scope, overseeing 81 secondary schools across two provinces. To fortify localized operations and implement Strategic Area-based Management, the office employs a decentralized governance model comprising 13 "United Clusters" (Sahawitthayakheth). Internally, the organizational structure is divided into nine functional groups and one internal audit unit, which collectively facilitate a comprehensive support system for academic affairs, personnel management, and strategic policy planning. In terms of institutional trajectory, the organization operates under a comprehensive Roadmap, with a vision to transform into a modern organization dedicated to mitigating educational disparities and cultivating global-standard human capital anchored in Thai cultural foundations. The strategic framework prioritizes the enhancement of human resource potential, the elevation of competitive advantages, and the adherence to principles of Good Governance. These objectives are encapsulated in the corporate values known as "S M A R T" (Service mind, Moral, Academically leader, Relation, and Technology). This value system reflects the organization's core identity, emphasizing a commitment to academic leadership and the

utilization of digital technology as the primary engine for educational advancement (Secondary Educational Service Area Office Ubon Ratchathani Amnat Charoen, 2021).

2. Educational Status and Strategic Alignment In the academic year under study, the distribution of instructional infrastructure and staffing parameters within the 81 overseen institutions was structurally synchronized with regional resource management frameworks to accommodate changing student-teacher density metrics. This administrative ecosystem directly shapes the operating conditions under which technological integration occurs, establishing an empirical baseline for assessing subsequent leadership and academic variables.

Research Methodology

Research Design

This study employed a descriptive correlational research design utilizing a mixed-methods approach. This design allowed for a comprehensive statistical mapping of the variables while simultaneously providing qualitative depth to formulate practical developmental guidelines within secondary schools under the Secondary Educational Service Area Office (SES AO) Ubon Ratchathani Amnat Charoen.

Population and Sample

Quantitative Phase The target population comprised school administrators and teachers operating across 81 secondary schools under SES AO Ubon Ratchathani Amnat Charoen during the 2025 academic year, totaling 3,619 individuals (213 administrators and 3,406 teachers). Utilizing the sample determination formulation by Krejcie and Morgan (1970), the baseline sample size was calculated at 351. Proportional stratified random sampling was conducted based on school sizes (small, medium, large, and extra-large), followed by simple random sampling within each stratum. Following the data collection and filtering phases, a valid, fully completed dataset was obtained from 349 respondents (20 school administrators and 329 teachers), yielding an exceptional response rate of 99.43%.

Qualitative Phase Structured, in-depth interviews were conducted with 3 key informants selected via purposive sampling. The selection criteria mandated that informants must possess: 1) more than 10 years of school administrative experience, 2) documented exceptional performance or national recognition in educational leadership, and 3) a proven track record of successful institutional digital transformation or innovative instructional supervision.

Research Instruments

The research utilized two primary instruments:

1. The Survey Questionnaire: Divided into three discrete parts: Part 1 captures respondent demographics in a checklist format. Part 2 contains 20 items measuring the 4 dimensions of Technological Leadership using a 5-point Likert scale. Part 3 contains 30 items measuring the 6 dimensions of Academic Administration using a 5-point Likert scale.

2. Structured Interview Form: Designed to capture qualitative strategies, administrative barriers, and operational solutions linked to the four dimensions of technological leadership to enhance academic workflows.

Validity and Reliability

Content validity was rigorously verified by a panel of 5 external educational management experts. The analysis yielded an Index of Item-Objective Congruence (IOC) of 1.00 across all survey items, confirming structural alignment. The instrument was subsequently field-tested (try-out) with 50 non-sample educators under SES AO Sisaket Yasothon to determine internal consistency using Cronbach's Alpha Coefficient (α): Technological Leadership Scale achieved an overall α of 0.91, and the Academic

Administration Scale achieved an overall α of 0.93. The total composite reliability score for the entire questionnaire was $\alpha = 0.92$, demonstrating superior psychometric stability.

Data Analysis

Quantitative data were analyzed via descriptive statistics, including frequencies, percentages, means ($\bar{x}$), and standard deviations (S.D.). The mean scores were interpreted through a standard 5-level continuum (Highest, High, Moderate, Low, Lowest). Hypotheses regarding the relationships between variables were tested using Pearson's Product-Moment Correlation Coefficient (r). Concurrently, qualitative data from the structured interviews were processed using thematic content analysis.

Research Findings

1. Demographic Profile of Respondents

Analysis of the 349 valid respondents indicated that the vast majority were classroom teachers ($n = 329$, 94.27%), while school administrators constituted 5.73% ($n = 20$) of the sample. In terms of professional tenure, the largest segment comprised educators with over 10 years of experience (36.39%), followed closely by those with less than 5 years (33.52%), and those with 5-10 years of experience (30.09%). Regarding school scale distribution, 38.68% of respondents operated within large or extra-large institutions, 33.81% in medium schools, and 27.51% in small schools.

2. Evaluation of Technological Leadership Levels

The empirical level of technological leadership displayed by school administrators, as perceived by the respondents, is presented in Table 1.

Table 1: Means, Standard Deviations, and Interpretations of Technological Leadership Levels

Technological Leadership Dimensions	Mean ($\bar{X}$)	S.D.	Level
Technological Vision	4.93	.21	Highest Level
Digital Administration	4.94	.21	Highest Level
Technology Integration in Teaching and Learning	4.95	.20	Highest Level
Digital Ethics and Responsibility	4.95	.21	Highest Level
Overall	4.94	.19	Highest Level

As detailed in Table 1, the overall technological leadership of school administrators was executed at the highest possible tier ($\bar{X} = 4.94$, S.D. = 0.19). When analyzed across dimensions, every single factor fell in to the highest level. The highest mean scores were recorded in Technology Integration in Teaching and Learning (X3) and Digital Ethics and Responsibility (X4), both achieving $\bar{X} = 4.95$. Conversely, Technological Visionary and Planning (X1) yielded the lowest mean score within the set ($\bar{X} = 4.93$).

3. Evaluation of Academic Administration Effectiveness

The descriptive statistical breakdown for the performance and perceived effectiveness of academic administration across the six core functional dimensions is illustrated in Table 2.

Table 2: Means, Standard Deviations, and Interpretations of Academic Administration Effectiveness

Academic Administration Dimensions	Mean ($\bar{X}$)	S.D.	Level
School Curriculum Development	4.95	.20	Highest Level
Measurement and Evaluation	4.95	.21	Highest Level
Educational Research for Quality Development	4.76	.42	Highest Level
Educational Supervision	4.95	.21	Highest Level
Development of Media, Innovation, and Educational Technology	4.94	.23	Highest Level
Internal Quality Assurance System Development	4.66	.51	Highest Level
Overall	4.87	.22	Highest Level

The data in Table 2 demonstrate that the overall composite execution of academic administration was rated at the highest level ($\bar{X} = 4.87$, S.D. = 0.22). Individually, all six dimensions fell within the highest tier. School Curriculum Development (Y1), Learning Measurement and Evaluation (Y2), and Instructional Supervision (Y4) tied for the highest mean scores ($\bar{X} = 4.95$). In contrast, School Internal Quality Assurance (Y6) registered the lowest mean score within the academic spectrum ($\bar{X} = 4.66$, S.D. = 0.51).

4. Correlation Analysis and Hypothesis Testing

To determine the empirical relationship between the dimensions of technological leadership and academic administration, a Pearson correlation analysis was performed. The resulting correlation matrix is presented in Table 3.

Table 3: Pearson Correlation Matrix Between Technological Leadership (X) and Academic Administration (Y) Dimensions

Variables	Y ₁	Y ₂	Y ₃	Y ₄	Y ₅	Y ₆	Y
X ₁	.783**	.760**	.345**	.760**	.758**	.156**	.661**
X ₂	.802**	.834**	.393**	.783**	.876**	.173**	.721**
X ₃	.857**	.851**	.359**	.787**	.827**	.205**	.726**
X ₄	.815**	.826**	.347**	.807**	.827**	.187**	.706**
X	.869**	.873**	.385**	.837**	.877**	.192**	.871**

**P < .01

As illustrated in Table 3, Pearson correlation coefficients revealed that the overall composite variable of Technological Leadership (X) had a statistically significant, exceptionally strong positive relationship with the overall Academic Administration variable (Y) ($r = 0.871$, $p < .01$). This finding fully confirms the primary research hypothesis. The research findings highlight a significant disparity in correlational levels: while

When examining the correlations between overall Technological Leadership (X) and individual academic sub-dimensions, the strongest association was observed with Educational Media, Innovation, and Technology (Y5) ($r = 0.877$, $p < .01$), followed by Learning Measurement and Evaluation (Y2) ($r = 0.873$, $p < .01$), and School Curriculum Development (Y1) ($r = 0.869$, $p < .01$). In stark contrast, the weakest correlations were detected with School Internal Quality Assurance (Y6) ($r = 0.192$, $p < .01$) and Educational Research for Quality Improvement (Y3) ($r = 0.385$, $p < .01$), indicating remarkably low linear relationships.

Discussion

The Tactical-Strategic Disconnect in Leadership Behavior

A prominent finding is the structural discrepancy regarding the independent variable: while the overall level of technological leadership is rated exceptionally high, the dimension of Technological Visionary and Planning (X1) consistently generated the lowest statistical mean ($\bar{x} = 4.93$). This phenomenon aligns perfectly with the diagnostic frameworks established by the Center for the Advanced Study of Technology Leadership in Education (CASTLE, 2017). School administrators are frequently constrained by immediate operational crises and short-term technical management tasks, such as resolving sudden network infrastructure failures, approving hardware procurements, or enforcing strict security compliance protocols. Consequently, leaders often lack the dedicated cognitive space and long-term planning windows required to formulate proactive digital roadmaps. The very narrow standard deviation (S.D. = 0.19) points to an institutional echo chamber induced by top-down administrative mandates from regional offices. Under these conditions, leaders operate primarily as compliant "Digital Managers" maintaining routine operations, rather than as "Proactive Strategic Leaders" orchestrating long-term pedagogical innovation.

The Decoupling of Technological Competence from Quality Assurance

The most alarming structural vulnerability identified is the stark divergence between the correlation values of Educational Media, Innovation, and Technology (Y5, $r = 0.877$) and School Internal Quality Assurance (Y6, $r = 0.192$). This massive disparity indicates that advanced administrative digital competencies remain decoupled from the institutional internal quality assurance (IQA) systems. While administrators actively advocate for and deploy visible digital assets-such as multimedia learning materials and active learning toolkits-these technologies rarely permeate core evaluation infrastructures. This operational gap exists because both school executives and teaching staff frequently view IQA through a compliance lens, treating it as a burdensome, manual paper-trail designed solely to satisfy external audits (Boonphayom, 2017). As a result, schools miss critical opportunities to deploy modern analytical tools, such as institutional big data analytics and real-time visualization dashboards. The IQA framework remains dependent on retrospective, manual documentation, preventing the establishment of a truly integrated, data-driven school management ecosystem.

Conclusion

Research Conclusion

This study demonstrates that both technological leadership and academic administration within secondary schools under SESAO Ubon Ratchathani Amnat Charoen operate at the highest subjective levels. Crucially, the two composite variables exhibit an exceptionally strong positive correlation ($r = 0.871$, $p < .01$). However, detailed sub-dimension analysis reveals profound structural decoupling. Technological leadership is highly effective in driving media adoption and classroom integration, but its relationship with internal quality assurance systems and institutional educational research remains strikingly weak, exposing critical areas for immediate administrative reform.

Suggestions

Formulation of a 3–5 Year Strategic Digital Roadmap: School

administrators must transition from tactical caretakers into visionary planners. In collaboration with regional school clusters and university partners, institutions should design a long-term "Strategic Digital Roadmap." This framework must define shared institutional goals, map out sustainable human capital development, and align technology adoption directly with long-term student performance indicators.

Institutionalization of Real-Time School Digital Dashboards: To

eliminate the manual compliance burdens associated with traditional quality assurance, secondary institutions must integrate automated data collection systems. Developing and deploying "School-Level Digital Dashboards" will allow for the real-time tracking of academic performance, student attendance, and instructional milestones. This shift enables regional supervisors and internal auditors to make agile, evidence-based decisions, transforming IQA from a reactive reporting burden into a proactive tool for quality improvement.

Cultivation of Digital Professional Learning Communities (PLCs):

School executives should systematically utilize digital platforms to foster cross-institutional collaboration. Establishing "Digital PLCs" across school networks allows educators to seamlessly exchange action research, classroom innovations, and instructional best practices. This collaborative structure will enhance teachers' collective efficacy, bridge local resource gaps, and scale educational excellence across the region.

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Effects of Game-Based Learning Teaching on Senior High School Students' Taekwondo High Roundhouse Kick Performance and Learning Satisfaction

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Abstract

This study examined the effects of Game-Based Learning (GBL) teaching on senior high school students' Taekwondo high roundhouse kick technical performance and learning satisfaction. Technical performance was examined through three indicators: movement standardization, 20-second kicking speed, and kicking power. Method: A quasi-experimental pre-test, mid-test, and post-test control-group design was adopted. Sixty Grade 10 male students were assigned to an experimental group ($n = 30$) receiving GBL Taekwondo teaching and a control group ($n = 30$) receiving traditional instruction. The intervention lasted eight weeks, with two 45-minute lessons per week. The experimental teaching design included structured game tasks, progressive challenges, immediate feedback, peer cooperation, and competition. Data were analyzed using descriptive statistics, independent-samples t-tests, and Cohen's d. Results: At post-test, the experimental group significantly outperformed the control group in movement standardization (8.88 ± 0.97 vs. 8.12 ± 0.97 , $p = .001$) and kicking power (6.85 ± 0.80 vs. 5.60 ± 0.81 , $p < .001$). The experimental group also achieved a higher mean score in 20-second kicking speed, but the difference was not statistically significant (7.48 ± 6.01 vs. 5.90 ± 4.96 , $p = .205$). Learning satisfaction was significantly higher in the experimental group (84.15 ± 3.52 vs. 79.45 ± 2.68 , $p < .001$). Conclusion: GBL teaching produced clear positive effects on movement standardization, kicking power, and learning satisfaction, while its effect on kicking speed was positive but statistically limited. The findings support the use of structured GBL tasks in senior high school Taekwondo skill instruction.

Keywords: Game-Based Learning, Taekwondo Teaching, High Roundhouse Kick, Movement Standardization, Kicking Speed, Kicking Power, Learning Satisfaction, Senior High School Students

Introduction

Physical education in senior high school is expected to support students' motor skill development, physical fitness, social interaction, and long-term engagement in physical activity. However, skill-based physical education classes are often constrained by teacher demonstration, collective imitation, and repetitive drills. Although such teaching can help students understand the external form of a movement, it may not fully address adolescents' needs for autonomy, competence, feedback, and social interaction (Deci & Ryan, 2000; Schmidt & Lee, 2011). In repeated technical training, insufficient feedback and monotonous practice may reduce students' concentration and learning satisfaction.

Game-Based Learning (GBL) offers a possible pedagogical response to these issues. GBL is not simply the use of recreational games; rather, it integrates learning objectives, rules, challenges, immediate feedback, cooperation, competition, and rewards into the teaching process (Deterding et al., 2011; Kapp, 2012; Plass et al., 2015). In physical education, structured game tasks may transform mechanical repetitions into purposeful and participatory practice. This is particularly relevant for motor skill learning, where repeated practice is necessary but may become ineffective when students lack motivation or timely correction. Furthermore, educational and professional development literature consistently demonstrates that structured, outcome-driven training programs enhance instructional effectiveness across diverse contexts, extending from physical skill acquisition to specialized decision-making competencies (Li et al., 2024).

Taekwondo is a technically demanding sport in which learners must coordinate posture, supporting-foot pivot, hip rotation, knee lifting, leg snapping, target contact, and balance recovery. Among Taekwondo techniques, the high roundhouse kick is a basic but important movement for green-belt beginners. It requires not only correct movement structure, but also sufficient execution speed and striking power. Therefore, this technique is suitable for evaluating technical performance through movement standardization, kicking speed, and kicking power (Falco et al., 2009; Estevan et al., 2011; Gavagan & Sayers, 2017).

Previous studies on GBL have mainly focused on general physical education, ball games, or broad learning engagement. Fewer empirical studies have examined whether a structured GBL teaching design can improve a single Taekwondo technique through objective technical indicators. In addition, many intervention studies use only pre-test and post-test comparisons, while a mid-test can help describe the developmental trajectory of motor learning over time. To address these gaps, this study investigated the effects of an eight-week GBL teaching intervention on senior high school students' Taekwondo high roundhouse kick performance and learning satisfaction.

Literature Review

Game-Based Learning in Physical Education

GBL is grounded in the integration of instructional objectives and game mechanics. Prensky (2001) and Gee (2003) emphasized that well-designed game environments support active participation, feedback, repeated practice, and problem solving. Kapp (2012) further argued that effective GBL depends on the alignment between game elements and learning outcomes, rather than the superficial use of points, badges, or entertainment.

In physical education, GBL can be understood as a student-centered teaching strategy that makes repeated physical practice more meaningful. By using clear tasks, progressive challenges, immediate feedback, and peer interaction, GBL may increase practice volume

while maintaining student engagement (Plass et al., 2015; Sailer et al., 2017). These characteristics are consistent with self-determination theory, which argues that autonomy, competence, and relatedness contribute to sustained learning motivation (Deci & Ryan, 2000). This aligns with empirical research on instructional and training program analysis, which confirms that goal-aligned training structures directly foster skill acquisition and performance effectiveness (Li et al., 2024).

For skill-based sports such as Taekwondo, GBL may also provide varied practice conditions. Motor learning theory suggests that skill acquisition depends on repeated practice, correction, and the gradual stabilization of motor patterns (Schmidt & Lee, 2011). When game tasks are directly linked to technical requirements, students can receive repeated practice opportunities while correcting errors through feedback and comparison.

Taekwondo High Roundhouse Kick Performance

The high roundhouse kick is a complex kicking technique involving the coordinated movement of the supporting foot, hip, knee, trunk, and kicking leg. The movement begins with fighting stance preparation and supporting-foot pivot, followed by hip rotation, knee lift, leg snapping, target contact, leg retraction, and balance recovery. From a biomechanical perspective, the effectiveness of the kick depends on the coordination of the kinetic chain and the efficient transfer of force from the lower limbs and hip to the striking leg.

In this study, technical performance was divided into three indicators. Movement standardization refers to the correctness and stability of the movement sequence. Kicking speed refers to the number of valid high roundhouse kicks completed within 20 seconds. Kicking power refers to the force output generated during the kick. These indicators reflect three essential aspects of Taekwondo skill learning: technical accuracy, execution efficiency, and force production.

Learning Satisfaction in Physical Education

Learning satisfaction is an important affective outcome in physical education. It reflects students' subjective evaluation of classroom interest, teaching method, participation experience, learning confidence, and perceived skill progress. In skill-based classes, satisfaction is important because students who enjoy the learning process are more likely to participate actively and continue practice.

GBL may improve learning satisfaction by creating a more interactive classroom atmosphere. Through team tasks, competitive scoring, immediate feedback, and progressive levels, students may experience a stronger sense of achievement and competence. Therefore, the present study examined not only technical performance, but also learning satisfaction as a complementary learning outcome.

Methods

Research Design and Participants

This study adopted a quasi-experimental pre-test, mid-test, and post-test control-group design. The participants were 60 Grade 10 male senior high school students aged 15 to 16 years who participated in a Taekwondo elective course. All participants had basic green-belt Taekwondo experience but had no systematic professional competitive training background. The students were divided into an experimental group ($n = 30$) and a control group ($n = 30$). The experimental group received GBL Taekwondo teaching, while the control group received traditional instruction. Both groups received two 45-minute lessons per week for eight weeks.

Table 1: Demographic Characteristics and Experimental Conditions

Group	n	Grade	Teaching method	Intervention duration
Experimental group	30	Grade 10	GBL Taekwondo teaching	8 weeks; two 45-minute lessons per week
Control group	30	Grade 10	Traditional Taekwondo instruction	8 weeks; two 45-minute lessons per week

Teaching Intervention

The experimental group received a structured GBL intervention for high roundhouse kick training. The intervention integrated four game-based learning tasks: Technique Standardization Quest, Accuracy Scoring Challenge, 20-Second Speed Challenge, and Power Strike Challenge. These tasks were designed to align game rules and scoring criteria with the target technical indicators. The control group received traditional Taekwondo instruction based on teacher explanation, demonstration, student imitation, repetitive drills, and individual correction. The teaching content, teaching time, venue, equipment, and instructor conditions were kept consistent between the two groups.

Measures

Movement standardization was evaluated by trained raters using a structured rubric for the high roundhouse kick. The rubric focused on stance and guard, supporting-foot pivot, hip rotation, knee lift, kicking trajectory, target contact, recovery, and balance control.

Kicking speed was measured using a 20-second test. Students performed as many valid high roundhouse kicks as possible within 20 seconds. Only technically correct kicks were counted as valid results.

Kicking power was measured using an electronic force measurement device and converted according to the scoring standard used in this study. The best valid result was retained according to the testing procedure.

Learning satisfaction was measured after the intervention using a student questionnaire. The questionnaire included learning interest and motivation, classroom participation and atmosphere, recognition of teaching content and method, and perception of skill progress.

Validity, Reliability, and Data Analysis

Before the formal experiment, the teaching plan, skill assessment criteria, and questionnaire were reviewed by experts in physical education and Taekwondo teaching. The review focused on the alignment between instructional objectives, game-based tasks, and outcome indicators. During testing, unified scoring standards, consistent testing procedures, trained raters, and calibrated equipment were used to improve measurement reliability.

Data were analyzed using SPSS 26.0. Descriptive statistics were used to summarize means and standard deviations. Independent-samples t-tests were used to examine baseline equivalence and post-test group differences. Cohen's d was calculated to estimate effect sizes. The significance level was set at $p < .05$.

Research Finding

Baseline Equivalence

Independent-samples t-tests were conducted to determine whether the experimental and control groups were equivalent before the intervention. As shown in Table 2, there were no significant pre-test differences in movement standardization, 20-second kicking speed, or kicking power. This indicates that the two groups had comparable initial technical levels before the intervention.

Table 2: Pre-test Equivalence Between the Experimental and Control Groups

Indicator	Experimental group (M ± SD)	Control group (M ± SD)	t	p	Interpretation
Movement standardization (/10)	5.38 ± 0.97	5.38 ± 0.97	0.00	1.000	Equivalent
20-second kicking speed (/20)	2.75 ± 2.81	2.75 ± 2.81	0.00	1.000	Equivalent
Kicking power (/10)	2.90 ± 0.84	3.00 ± 0.78	- 0.55	.583	Equivalent

Technical Performance Across the Intervention

Descriptive statistics across the three measurement points showed that both groups improved over the eight-week period. However, the experimental group showed greater descriptive gains in movement standardization and kicking power. For kicking speed, the experimental group also showed a higher mean increase, but the large standard deviations suggest considerable individual variation in speed development.

Table 3: Descriptive Changes in Technical Performance Across Three Time Points

Indicator	Group	Pre-test M ± SD	Mid-test M ± SD	Post-test M ± SD	Change pattern
Movement standardization (/10)	Experimental	5.38 ± 0.97	7.38 ± 0.97	8.88 ± 0.97	Steady improvement
Movement standardization (/10)	Control	5.38 ± 0.97	6.19 ± 1.18	8.12 ± 0.97	Moderate growth
20-second kicking speed (/20)	Experimental	2.75 ± 2.81	4.55 ± 4.07	7.48 ± 6.01	Improvement with high variability
20-second kicking speed (/20)	Control	2.75 ± 2.81	3.90 ± 3.68	5.90 ± 4.96	Slow improvement
Kicking power (/10)	Experimental	2.90 ± 0.84	5.58 ± 0.50	6.85 ± 0.80	Strong increase
Kicking power (/10)	Control	3.00 ± 0.78	4.42 ± 0.50	5.60 ± 0.81	Gradual increase

Post-test Group Comparisons

Independent-samples t-tests were conducted on post-test data to compare the final performance of the two groups. The experimental group performed significantly better than the control group in movement standardization and kicking power. The experimental group also obtained a higher mean score in 20-second kicking speed, but the between-group difference was not statistically significant.

Table 4: Post-test Comparison of Technical Performance Between Groups

Indicator	Experimental group (M ± SD)	Control group (M ± SD)	t	p	Cohen's d
Movement standardization (/10)	8.88 ± 0.97	8.12 ± 0.97	3.45	.001	0.89
20-second kicking speed (/20)	7.48 ± 6.01	5.90 ± 4.96	1.28	.205	0.33
Kicking power (/10)	6.85 ± 0.80	5.60 ± 0.81	6.94	< .001	1.79

Learning Satisfaction and Composite Outcome

The experimental group reported significantly higher learning satisfaction than the control group in all dimensions. The total learning satisfaction score of the experimental group was 84.15 ± 3.52 , while the control group obtained 79.45 ± 2.68 . The composite learning outcome, integrating technical performance and satisfaction, also showed a significant advantage for the experimental group.

Table 5: Learning Satisfaction and Composite Learning Outcome

Outcome	Experimental group (M ± SD)	Control group (M ± SD)	t	p	Result
Learning interest and motivation	21.35 ± 1.08	20.05 ± 1.00	5.59	< .001	Experimental higher
Classroom participation and atmosphere	21.15 ± 1.12	19.95 ± 1.05	4.94	< .001	Experimental higher
Recognition of teaching content and method	20.85 ± 1.06	19.75 ± 1.02	4.73	< .001	Experimental higher
Perception of skill progress	20.80 ± 1.15	19.70 ± 1.08	4.41	< .001	Experimental higher
Total learning satisfaction (/100)	84.15 ± 3.52	79.45 ± 2.68	6.72	< .001	Experimental higher
Overall composite score (/100)	69.69 ± 5.27	61.55 ± 4.00	7.78	< .001	Experimental higher

Discussion

Effects on Movement Standardization

The results showed that GBL teaching significantly improved movement standardization in the Taekwondo high roundhouse kick. This finding supports H1a. The experimental group's higher post-test score suggests that structured game tasks, clear criteria, and immediate feedback helped students correct errors in stance, hip rotation, kicking trajectory, and recovery. This is consistent with motor learning theory, which emphasizes the importance of repeated practice with timely correction for developing stable motor patterns (Schmidt & Lee, 2011).

Effects on Kicking Speed

The experimental group showed a higher mean score in 20-second kicking speed, but the post-test group difference was not significant. Therefore, H1b was only partially supported. One possible explanation is that speed development is strongly influenced by individual differences in flexibility, rhythm control, neuromuscular coordination, and physical conditioning. Although GBL created more engaging opportunities for repeated kicking, eight weeks may not have been sufficient to produce a statistically significant speed advantage across all students. This result suggests that future GBL designs should include more targeted speed-specific training and a longer intervention period.

Effects on Kicking Power

Kicking power showed the strongest technical improvement. The experimental group significantly outperformed the control group, with a large effect size. This supports H1c. Power-based game tasks and ranking mechanisms may have encouraged students to produce stronger force output while maintaining correct movement structure. In Taekwondo, effective striking power depends on the coordinated transmission of force through the supporting foot, hip, trunk, and kicking leg. The GBL tasks may have increased students' willingness to exert maximal effort and helped them connect technical correctness with functional striking performance.

Experimental Group Versus Control Group

The overall comparison between groups partially supported H2. The experimental group performed significantly better in movement standardization and kicking power, while kicking speed showed a descriptive but non-significant advantage. This means that GBL teaching was more effective than traditional instruction for improving technical quality and power output, but its effect on continuous kicking speed was limited. Traditional teaching also improved students' performance because repeated practice is still useful for basic skill acquisition. However, the GBL group achieved stronger gains because the practice was structured through meaningful tasks, feedback, competition, and progressive challenges.

Effects on Learning Satisfaction

The results also showed that GBL teaching significantly improved students' learning satisfaction, supporting H3. The experimental group reported higher scores in learning interest, classroom participation, recognition of teaching methods, and perceived skill progress. This finding is consistent with self-determination theory, which suggests that learning environments supporting competence, autonomy, and relatedness can enhance students' motivation and satisfaction (Deci & Ryan, 2000). In the present study, the GBL classroom provided visible goals, peer interaction, ranking feedback, and a sense of achievement, which may have made repetitive Taekwondo training more enjoyable and meaningful.

Theoretical and Practical Implications

Theoretically, this study contributes to the application of GBL in a specific skill-based physical education context. Instead of examining broad physical education outcomes, the study focused on one Taekwondo technique and evaluated both technical and affective outcomes. This provides a clearer model for connecting game-based teaching design with measurable motor skill indicators.

Practically, the findings suggest that physical education teachers can use structured GBL tasks to improve the quality of Taekwondo instruction. Game tasks should not be added randomly; they should be directly aligned with learning objectives, technical criteria, feedback procedures, and assessment indicators. For high roundhouse kick teaching, GBL tasks should separately target movement standardization, speed, power, and learning satisfaction.

Conclusion

This study examined the effects of an eight-week GBL teaching intervention on senior high school students' Taekwondo high roundhouse kick performance and learning satisfaction. The findings indicate that GBL teaching significantly improved movement standardization, kicking power, and learning satisfaction compared with traditional instruction. The experimental group also showed a higher mean score in 20-second kicking speed, but the difference was not statistically significant.

Overall, GBL teaching appears to be an effective pedagogical approach for making repeated Taekwondo kicking practice more purposeful, interactive, and engaging. The strongest effects were found in technical quality, force output, and students' subjective learning experience. However, improving kicking speed may require longer training duration, additional speed-focused drills, and more individualized conditioning support.

Suggestion

Future studies may expand the sample size, include female students, extend the intervention period, compare different belt levels, and test additional Taekwondo techniques. Further research may also combine biomechanical analysis, motion capture, or digital feedback tools to provide a more precise explanation of how GBL influences motor skill development.

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Effects of Metaverse Spatial Virtual Reality Technology with Flipped Classroom on Learning Achievement in Badminton Subject of Grade 8

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Abstract

This study aimed to 1) evaluate the instructional efficiency of a Spatial Metaverse-based Virtual Learning Environment integrated with a flipped classroom approach for badminton instruction; 2) compare students' learning achievement before and after the intervention; 3) compare learning achievement between students receiving the integrated instructional approach and those receiving conventional instruction; and 4) examine students' satisfaction with the instructional approach. A quasi-experimental, non-equivalent control group pretest–posttest design was employed. The participants were 60 Grade 8 students from Matthayom Wat Thatthong School during the second semester of the 2025 academic year. Two intact classrooms were selected through purposive sampling and assigned to either the experimental group (n = 30) or the control group (n = 30) using a simple lottery procedure. The experimental group learned through the Spatial Metaverse-based virtual learning environment integrated with a flipped classroom approach, whereas the control group received conventional badminton instruction. Data were collected using learning achievement tests and a student satisfaction questionnaire and analyzed using the E1/E2 efficiency criterion (80/80), descriptive statistics, paired-samples t-tests, and independent-samples t-tests at the .05 significance level. The findings indicated that the developed instructional media achieved efficiency values of 84.58/81.17 (E1/E2) for cognitive achievement and 84.14/89.50 (E1/E2) for psychomotor performance, exceeding the established 80/80 criterion. The experimental group demonstrated significantly higher post-test achievement ($\bar{X} = 30.83$) than pre-test achievement ($\bar{X} = 22.90$, $p < .05$) and significantly higher post-test scores than the control group ($\bar{X} = 28.93$, $p < .05$). Students also reported a very high level of satisfaction, with the highest ratings for content appropriateness ($\bar{X} = 4.57$), language clarity ($\bar{X} = 4.50$), and alignment with contemporary learning contexts ($\bar{X} = 4.53$). instructional language ($\bar{X} = 4.50$), and the alignment of the learning environment with contemporary educational contexts ($\bar{X} = 4.53$).

Keywords: Flipped classroom, Learning achievement, Badminton Instruction, Spatial Metaverse-based Virtual Learning Environment

Introduction

At present, rapid technological advancement has transformed society into a technology-driven world, giving rise to new lifestyles, new working patterns, emerging occupations, and innovative technologies. Technology has increasingly become a crucial mechanism driving national economic development. The educational sector has likewise been required to adapt to technological disruption. Continuous technological progress has resulted in the convergence of the physical and virtual worlds into a borderless digital universe, enabling individuals in distant locations to interact within the same virtual environment and participate in shared virtual activities. This perspective is consistent with that of Supoj Boonthue (2022), who stated that the metaverse represents the integration of the real and virtual worlds into a unified digital environment. Similarly, Chetkorn Lert-amornwongkos (2018) argued that educational management in the digital era requires the integration of information technology into learning processes in order to accommodate future educational demands, with modern digital technologies increasingly replacing conventional instructional media.

Flipped classroom learning has emerged as a significant instructional strategy for improving educational quality in the twenty-first century, particularly in physical education, where practical skill development is emphasized. The integration of information technology enables students to study lesson content in advance, thereby increasing classroom time and opportunities for practical training activities. Furthermore, this instructional approach fosters meaningful interaction between instructors and learners, ultimately contributing to more effective and sustainable learning outcomes. This viewpoint is consistent with that of Jirawat Charoennon (2022), who stated that the flipped classroom model is highly suitable for contemporary physical education instruction because technological advancement plays an increasingly important role in educational support systems. Students are able to search for information, review lesson content prior to class, communicate with instructors, and ask questions regarding classroom content at any time through internet-based platforms. Consequently, instructors and learners are able to maintain continuous interaction, enhancing flexibility in learning management. In addition, instructors can motivate learners even outside the classroom environment, thereby promoting students' enthusiasm for learning, deeper comprehension of lesson content, and longer-lasting retention of knowledge.

In addition to the flipped classroom approach, technology has increasingly become an essential tool in educational management during the digital era. One of the most prominent innovations is Metaverse technology, which combines virtual reality with internet-based digital environments. The metaverse has demonstrated substantial potential for improving educational management by enriching learning experiences and transforming abstract concepts into more concrete and immersive forms. However, the integration of such technology must be aligned with instructional models and pedagogical approaches in order to maximize learning effectiveness and ensure appropriateness within educational contexts. This perspective is consistent with that of Kittaladus Yasak and Supa Yingkit (2016), who argued that although technology enables learners to study independently with greater convenience, instructors continue to play an essential role as facilitators and learning guides who encourage students throughout the learning process.

From the aforementioned circumstances, it can be observed that learners from different generations possess distinct behavioral characteristics and learning preferences. Consequently, instructors must adapt teaching strategies, instructional models, and pedagogical approaches to align with learners' needs and characteristics. In particular, Generation Z learners, typically aged between 15 and 24 years, demonstrate high levels of technological proficiency and prefer self-directed learning through digital media and online platforms that provide rapid and convenient access to information. Therefore, contemporary instructional management should emphasize

adaptive learning approaches and increased integration of educational technology to better respond to learners' evolving demands.

The development of Metaverse-based instructional media in physical education, a discipline that primarily emphasizes practical skills, offers considerable potential for enhancing learning effectiveness and addressing diverse learner needs. If appropriately developed, Metaverse technology can significantly enrich students' learning experiences and contribute to the improvement of educational quality in the long term. In badminton instruction specifically, students can study and practice skills through Metaverse-based media outside the classroom prior to participating in actual learning activities. Such preparation enables learners to apply prior knowledge more effectively and further develop their own abilities. However, according to the Basic Education Core Curriculum B.E. 2551 (Revised B.E. 2560), the learning area of health and physical education at the lower secondary level is allocated only two instructional units, consisting of one unit in health education and one unit in physical education, excluding additional courses. Furthermore, badminton is allocated only 0.5 credit hours per semester, equivalent to approximately one instructional hour per week. The Ministry of Education (2017) indicated that classroom-based instruction alone may not provide sufficient time for effective learning management, resulting in many students being unable to develop badminton skills effectively in accordance with curriculum expectations.

Wasana Khuna-aphisit (1996) stated that successful physical education instruction and curriculum implementation depend upon multiple factors, including teacher effectiveness, instructional methods, and various supporting elements such as materials, equipment, facilities, and learning resources. Since physical education is fundamentally practice-oriented and requires diverse equipment and facilities that differ from those used in other academic disciplines, the researcher therefore intends to develop Metaverse-based Virtual Reality instructional media integrated with a flipped classroom approach for use as supplementary instructional media. Such innovation is expected to serve as a guideline for the development of educational technology that effectively promotes essential skills, while instructors act as facilitators and learning guides who motivate students. Moreover, this instructional approach is anticipated to enhance students' learning skills more effectively.

Objectives

1. To evaluate the instructional efficiency of metaverse spatial virtual reality technology integrated with a flipped classroom approach for improving learning achievement in badminton among Grade 8 students.
2. To compare the academic achievement of Grade 8 students in badminton before and after learning through metaverse spatial virtual reality technology integrated with a flipped classroom approach.
3. To compare the academic achievement between students learning through metaverse spatial virtual reality technology integrated with a flipped classroom approach and those receiving conventional instruction.
4. To investigate Grade 8 students' satisfaction with metaverse spatial virtual reality technology integrated with a flipped classroom approach.

Literature Review

The synthesis of pedagogical literature indicates that physical education (PE) is a fundamental discipline essential for the holistic development of learners, as mandated by the National Education Act B.E. 2542 (1999). PE has been integrated into the curricula of all educational levels, from primary to secondary education. Although PE shares commonalities with other subjects, it possesses unique characteristics, particularly regarding its instructional objectives, content structures, pedagogical activities, and the diverse range of specialized equipment and facilities required. Fundamentally, PE utilizes physical exercise and sports as a medium to enhance both physical and mental well-being. According to Worasak Phianchob (2018), the core objectives of PE are centered on five developmental dimensions: 1) physical fitness, 2) locomotor and athletic skills, 3) cognitive and conceptual understanding, 4) affective and moral development, and 5) social and emotional growth. This comprehensive approach ensures the development of well-rounded individuals across physical, mental, emotional, social, and intellectual domains.

Worasak Phianchob (2018) further elucidated that the sequential stages of the PE instructional process must address all five dimensions of development. This process typically consists of: 1) Physical Preparation (Warm-up), designed to stimulate various bodily systems for physical exertion; 2) Explanation and Demonstration, providing learners with a conceptual framework and clear understanding of the subject matter; 3) Skill Practice, a critical phase where learners acquire and refine their motor abilities; 4) Skill Application, which allows students to utilize acquired skills in organized activities or competitive scenarios; and 5) Summary and Evaluation, concluding the session by synthesizing practical outcomes and reinforcing correct techniques.

While the five-stage instructional model is traditionally conducted within a physical classroom, current time constraints often impede its effectiveness. Consequently, contemporary educational management has shifted toward pedagogical models that integrate out-of-class learning. Khemanat Mingiritham (2020) stated that the flipped classroom model represents a significant paradigm shift in instructional design. This approach transforms the traditional learning environment by leveraging digital technology or purpose-built instructional media to deliver content outside the classroom, thereby freeing up classroom hours for active learning, peer discussion, and hands-on practice. Key characteristics of the flipped classroom include instructional flexibility, learner-centered pedagogy, clearly defined learning roles, and the instructor's role as a facilitator and mentor who provides guidance and organizes diverse learning activities across both physical and digital platforms.

The flipped classroom model comprises a systematic instructional process, beginning with out-of-class preparatory learning. Students engage with instructional media or digital content specifically developed by the instructor or curated from high-quality external resources. The in-class component typically follows a six-stage pedagogical framework: 1) Preparation, 2) Presentation of Knowledge, 3) Knowledge Exchange, 4) Practical Application, 5) Presentation of Outcomes, and 6) Synthesis and Evaluation (Kulisara Chaiyawanit, 2020). This model significantly departs from traditional teacher-centered approaches by leveraging technology to deliver theoretical content outside of formal hours. Consequently, classroom time is repurposed for active engagement, shifting the instructor's role from a primary lecturer to a facilitator who orchestrates experiential activities. The integration of modern technology not only caters to the preferences of contemporary learners but also provides a flexible and autonomous learning environment.

In addition to pedagogical restructuring, technology remains a pivotal catalyst in modern education. Among the most promising innovations is Metaverse technology.

Kritsanaphong Lertbamrungrachai (2022) defined the Metaverse as a high-fidelity virtual environment that enables immersive interaction and shared digital experiences. As a frontier in digital evolution, the Metaverse creates a persistent, 3D-simulated community accessible via computers, tablets, smartphones, or virtual reality (VR) headsets. Platforms such as Spatial provide user-friendly environments for constructing virtual worlds that are accessible across multiple versions and devices. The application of Metaverse technology in education facilitates a diverse and borderless learning paradigm, offering unprecedented immersive experiences that foster student engagement and curiosity.

The development of Metaverse-based virtual reality media for physical education (PE) in this study utilizes the ADDIE Model as the foundational instructional design framework. This systematic approach consists of five critical phases: 1) Analysis, 2) Design, 3) Development, 4) Implementation, and 5) Evaluation. This rigorous methodology ensures that the instructional media is comprehensive, aligns with pedagogical principles, and remains adaptable to evolving learner needs (Kullanok Chansanti, 2017).

Regarding the specific application in badminton instruction for Grade 8 students, this sport was selected due to its universal popularity and its capacity to foster enjoyment across diverse demographics. The curriculum emphasizes the development of athletic proficiency and effective student participation through optimized learning environments. The instructional content covers five competitive categories: Men's Singles, Women's Singles, Men's Doubles, Women's Doubles, and Mixed Doubles. Instruction is governed by the Rally Point 21x3 scoring system, focusing on 14 primary technical and regulatory aspects, including court dimensions, equipment specifications, service techniques, and common infractions (Chana Mitsamphan, 2010). Furthermore, the program incorporates fundamental skills such as footwork, grip techniques, various strokes (forehand and backhand), and tactical plays (clears, drops, smashes, and drives). Learning outcomes are assessed holistically, encompassing the cognitive, affective, and psychomotor domains in accordance with national curriculum standards (Jirawat Charoennon, 2022).

Research Methodology

This study employed a quasi-experimental research design, specifically utilize a non-equivalent control group pretest-posttest design. The research was conducted to evaluate the efficacy of the proposed instructional intervention.

Population and Sample Selection

The population of this study consisted of secondary school students enrolled in schools within the Nawasirinakaran Educational Consortium during the 2025 academic year. The consortium comprises nine secondary schools: Wachirathamsatit School, Phra Khanong Pittayalai School, Sirirattanathorn School, Pathumkongka School, Rachadamri School, Sriprudha School, Sainamphueng School under the Royal Patronage, Triam Udom Suksa Pattanakarn School, and Mathayom Wat Thatthong School. The total student population across these schools was 20,258 students.

The sample comprised Grade 8 students (Mathayomsuksa 2) enrolled at Mathayom Wat Thatthong School during the 2025 academic year. The target population consisted of 338 students across nine classrooms. The required sample size was determined using G*Power software (Version 3.1.9.7) through an a priori power analysis, which indicated a minimum sample of 51 participants.

A purposive sampling procedure was employed to identify two classrooms with relatively low mean scores on a preliminary knowledge assessment. Subsequently, these two

classrooms were randomly assigned, using a simple lottery method, to either the experimental group or the control group. This procedure was undertaken to ensure comparable baseline characteristics between groups while maintaining the integrity of the quasi-experimental research design.

1. Control Group ($n = 30$): Students received conventional badminton instruction following regular classroom procedures.

2. Experimental Group ($n = 30$): Students received badminton instruction through metaverse spatial virtual reality technology integrated with a flipped classroom approach.

Research Instrumentation

The instruments utilized in this study were classified into two primary categories:

1. Experimental Treatment Instruments:

1.1 Instructional lesson plans incorporating Metaverse-based virtual reality media integrated with a flipped classroom approach.

1.2 Conventional badminton instructional lesson plans.

2. Data Collection Instruments:

2.1 Badminton Cognitive Achievement Test: A comprehensive assessment encompassing:

2.1.1 Fundamental badminton skills.

2.1.2 Laws and regulations of the game.

2.1.3 Competitive strategies.

2.2 Badminton Psychomotor Skills Assessment: An evaluation focusing on practical execution, including:

2.2.1 Forehand and backhand service proficiency.

2.2.2 Clear shots (lobbing) techniques.

2.2.3 Drop shot execution.

2.2.4 Offensive drive shots.

2.3 Affective Domain Evaluation: An assessment of student attitudes toward badminton instruction.

2.4 Satisfaction Scale: A psychometric instrument designed to measure student satisfaction toward the Metaverse-based virtual reality and flipped classroom integrated instructional media.

Data Collection Procedures

1. An official request for research cooperation was submitted to the administration of Matthayom Wat That Thong School to establish the study site and participant pool.

2. Formal authorization was secured from the school principal, participating students, and their respective parents or guardians. This stage involved a comprehensive briefing on the research objectives and ethical considerations related to data collection.

3. Participants underwent an orientation session regarding the integration of metaverse spatial virtual reality technology media within a flipped classroom framework. This session also provided a detailed introduction to the operational procedures and instructional components of the VR media.

4. The sample ($n = 60$) was assigned into two groups as follows:

4.1 The control group ($n = 30$) received conventional pedagogical instruction in badminton.

4.2 The experimental group ($n = 30$) received badminton instruction through the metaverse spatial virtual reality technology integrated with a flipped classroom approach.

5. Prior to the intervention, all participants completed standardized assessments to establish baseline proficiency in both badminton cognitive knowledge and psychomotor skill performance.

6. The instructional program was conducted over an eight-week period, with one instructional session per week.

7. Following the completion of the intervention, post-tests were administered to re-evaluate students' cognitive and psychomotor achievements across both groups.

8. The collected data were subjected to statistical analysis in order to identify significant differences and summarize the research findings.

9. A satisfaction questionnaire was administered to the experimental group to evaluate students' perceptions and satisfaction toward the Metaverse-VR integrated instructional model.

Data Analysis and Statistical Procedures

The collected data were analyzed using the following statistical procedures: Efficiency Evaluation of Instructional Media

The efficiency of the metaverse spatial virtual reality technology instructional media was evaluated using the E1/E2 efficiency formula, with the predefined efficiency criterion established at 80/80. This analysis was conducted to determine the pedagogical effectiveness and instructional quality of the developed digital media.

Descriptive Statistical Analysis Descriptive statistics, including Mean ($\bar{x}$) and Standard Deviation (S.D.), were employed to analyze the data obtained from the cognitive achievement tests, badminton skill assessments, and student satisfaction questionnaires administered to the experimental group.

Intra-group Longitudinal Comparison (Pre-test vs. Post-test)

A Paired-Samples t-test was utilized to compare the mean achievement scores of both the experimental and control groups before and after the instructional intervention.

Inter-group Comparative Analysis (Post-test)

An Independent-Samples t-test was conducted to compare the post-intervention mean achievement scores between the experimental group and the control group.

Statistical Significance Testing

All statistical analyses were conducted to determine significant differences in learning outcomes, with the level of statistical significance established at .05.

Research Finding

Table 1: The Efficiency of Metaverse-Based Virtual Reality Instructional Media on Cognitive Achievement in Badminton Among Grade 8 Students, Benchmarked Against the 80/80 Efficiency Standard.

Sample Group	Full Score	$\bar{X}$	S.D.	Percentage
E1	80	67.67	2.59	84.58
E2	40	32.47	2.00	81.17

Note As illustrated in Table 1, the metaverse spatial virtual reality technology for the badminton course achieved an overall efficiency rating of 84.58/81.17. These empirical results demonstrate that the developed media exceeded the predetermined pedagogical efficiency criterion of 80/80, thereby validating its effectiveness as an instructional tool for secondary education.

Table 2: The Efficiency of the Spatial Metaverse-Based Virtual Learning Environment for Practical Skill Performance in Badminton Among Grade 8 Students Based on the 80/80 Efficiency Standard

Sample Group	Full Score	$\bar{X}$	S.D.	Percentage
E1	70	58.90	4.50	84.14
E2	20	17.90	3.55	89.50

Note As shown in Table 2, the Spatial metaverse-based virtual learning environment achieved an efficiency rating of 84.14/89.50 (E1/ E2). Since both values exceed the established 80/80 efficiency criterion, the developed instructional media met the required standard of instructional efficiency and was considered effective for teaching badminton to Grade 8 students.

Table 3: Mean and Standard Deviation of the Posttest Knowledge Assessment Scores of the Sample Group

Post-Instruction Assessment	$\bar{X}$	S.D.
Cognitive Achievement Test Post-test Achievement Score	31.23	2.35

Note As illustrated in Table 3, The results of the knowledge assessment revealed that the sample group obtained a mean score of 31.23, with a standard deviation of 2.35

Table 4: Mean and Standard Deviation of Students' Attitudes toward Badminton Learning among the Experimental Group Following the Instructional Intervention

Post-Instruction Assessment	$\bar{X}$	S.D.
Attitude Assessment		
1. The instructional approach was modern and appropriate for students.	4.33	.75
2. The classroom atmosphere was friendly, supportive, and conducive to learning.	4.13	.79
3. The instructional content was practical and beneficial for students' personal development.	4.35	.66
4. Students were motivated to further develop their badminton skills.	4.12	.76
5. Students enjoyed learning badminton and were eager to participate in the course.	4.10	.86
6. Students demonstrated commitment to learning and practice activities.	4.22	.76
7. Students were able to share their knowledge and skills with their peers.	4.28	.78
8. Students were willing to participate in every instructional activity.	4.05	.85
9. Students believed that learning badminton helped promote regular exercise habits.	4.28	.74
10. Students believed that the course fostered sportsmanship and self-discipline.	4.30	.83
11. The instructor encouraged and motivated students to express themselves confidently.	4.40	.69
12. The instructor provided opportunities for students to ask questions and seek clarification.	4.47	.75
13. The instructor employed a variety of teaching methods and instructional media.	4.52	.72
14. The instructor was receptive to students' opinions and perspectives.	4.53	.68
15. The instructor paid close attention to all students during instruction.	4.50	.68
16. The instructor demonstrated dedication to teaching by providing guidance, assistance, and support throughout learning activities.	4.30	.79

Post-Instruction Assessment	$\bar{X}$	S.D.
17. The instructor exhibited appropriate professional appearance, demeanor, and communication skills.	4.25	.77
18. Students felt comfortable and confident when learning with the instructor.	4.27	.80
19. The instructor treated all students fairly and equitably.	4.30	.81
20. The instructor employed diverse assessment methods and clearly communicated evaluation criteria.	4.22	.80

Note As presented in Table 4, The findings revealed that students demonstrated highly positive attitudes toward badminton learning. The three highest-rated items were all associated with the instructor's role and instructional management. The highest mean score was obtained for the instructor's receptiveness to students' opinions and perspectives ($\bar{x} = 4.53$), followed by the use of diverse teaching methods and instructional media ($\bar{x} = 4.52$), and the instructor's attentiveness to all students during instruction ($\bar{x} = 4.50$). Furthermore, the standard deviations ranged from .66 to .86, indicating a relatively high degree of consistency among students' responses and reflecting substantial agreement in their perceptions toward the learning experience.

Table 5: Mean and Standard Deviation of Students' Satisfaction with Metaverse Spatial Virtual Reality Technology Integrated with a Flipped Classroom Approach among the Experimental Group Following the Instructional Intervention

Post-Instruction Assessment	$\bar{X}$	S.D.
Satisfaction Questionnaire		
1. Content Dimension		
1.1 The content explanations were clear and understandable.	4.43	.50
1.2 The content was systematically organized and easy to understand.	4.47	.57
1.3 The content was appropriate for learners.	4.57	.50
1.4 The presentation format was interesting and engaging.	4.40	.56
1.5 The assessment activities were consistent with the instructional content.	4.50	.57
2. Visual Design, Language, and Presentation Techniques		
2.1 The visual illustrations were clear and relevant to the instructional content.	4.43	.57
2.2 The instructional media and content presentation were interesting and aligned with the lesson content.	4.47	.57
2.3 The typography was appropriately sized, readable, and clearly presented.	4.27	.64
2.4 The language used was accurate and easy to understand.	4.50	.57
2.5 The presentation techniques were engaging and effective.	4.47	.57
3. Overall Quality of the Metaverse-Based Online Learning Environment		
3.1 The instructional media was appropriate for educational use.	4.50	.57
3.2 The online learning environment was interesting and engaging.	4.23	.73
3.3 Students were able to learn independently through the metaverse-based online learning environment.	4.33	.61
3.4 The instructional media was easily accessible anytime and anywhere.	4.40	.56
3.5 The instructional media was aligned with contemporary learning contexts.	4.53	.51

Note The findings presented in Table 5 indicate that students reported a very high level of overall satisfaction with the metaverse-based virtual learning environment. Within the content dimension, the highest-rated item was the appropriateness of the content for learners

($\bar{x} = 4.57$). Regarding visual design, language, and presentation techniques, the accuracy and comprehensibility of the language used received the highest mean score ($\bar{x} = 4.50$). Concerning the overall quality of the learning environment, students perceived the instructional media as highly aligned with contemporary learning contexts, which achieved the highest mean score in this dimension ($\bar{x} = 4.53$). These findings suggest that the developed instructional media effectively met learners' needs and supported positive learning experiences.

Table 6: Comparison of Pre-test and Post-test Learning Achievement Scores Between the Experimental and Control Groups

Group	$\bar{X}$	S.D.	t	p-value
Experimental Group				
Pre-test	22.90	2.60	-10.55	<0.01
Post-test	30.83	2.94		
Control Group				
Pre-test	22.47	3.04	-7.96	<0.01
Post-test	28.03	3.93		

Note As presented in Table 6, the comparison of pre-test and post-test learning achievement scores revealed that the experimental group achieved a higher mean post-test score ($\bar{x} = 30.83$) than the pre-test score ($\bar{x} = 22.90$), with statistical significance at the .05 level. Similarly, the control group demonstrated a higher mean post-test score ($\bar{x} = 28.03$) compared to the pre-test score ($\bar{x} = 22.47$), which was also statistically significant at the .05 level. These findings indicate that both groups exhibited significant improvement in learning achievement following the instructional intervention.

Table 7: Comparison of Learning Achievement Scores between the Experimental and Control Groups before and after the Instructional Intervention (n=60)

Group	$\bar{X}$	S.D.	t	p-value
Pre-test				
Experimental Group	22.90	2.69	.59	0.56
Control Group	22.47	3.04		
Post-test				
Experimental Group	30.83	2.94	3.13	<0.01*
Control Group	28.03	3.93		

* Statistical significance at the .05 level.

Note As presented in Table 7, the comparison of pre-test learning achievement scores between the experimental and control groups revealed no statistically significant difference at the .05 level, indicating that both groups possessed comparable baseline knowledge prior to the instructional intervention. Following the intervention, the post-test mean score of the experimental group ($\bar{x} = 30.83$) was higher than that of the control group ($\bar{x} = 28.03$), and the difference between the two groups was statistically significant at the .05 level. These findings suggest that the metaverse spatial virtual reality technology integrated with the flipped classroom approach was more effective in enhancing students' learning achievement than conventional instructional methods.

Discussion

Regarding the first research objective, which sought to develop metaverse spatial virtual reality technology instructional media integrated with a flipped classroom framework to enhance learning achievement in badminton, the findings demonstrated that the developed instructional media achieved a high degree of pedagogical efficiency across both cognitive and psychomotor domains. Specifically, the efficiency indices for the cognitive domain were recorded at $E1/E2=84.58/81.17$, while the psychomotor domain attained an efficiency value of $E1/E2=84.14/89.50$. Both indices exceeded the predefined efficiency criteria, thereby confirming the instructional effectiveness of the metaverse spatial virtual reality technology instructional media and supporting the first research objective and its corresponding hypothesis. These findings are consistent with the study conducted by Bua-in (2023), who investigated the development of a Metaverse-based virtual classroom innovation utilizing creative learning management to enhance problem-solving skills among Grade 9 students. The study aimed to develop an innovative virtual learning environment based on creative pedagogical principles and subsequently evaluate its instructional efficiency. The findings revealed that the instructional innovation achieved an efficiency value of $E1/E2=75.13/75.67$, which exceeded the predetermined criterion of 70/70. Furthermore, students' post-intervention problem-solving skills were significantly higher than their pre-intervention performance and also exceeded the established criterion at the .05 level of statistical significance.

Regarding the second research objective, which sought to evaluate students' learning achievement before and after the implementation of metaverse spatial virtual reality technology instructional media integrated with a flipped classroom framework, the findings demonstrated a substantial improvement in students' academic performance. Specifically, students in the experimental group achieved a post-test mean score of 30.83 (S.D.=2.94), which was significantly higher than their pre-test mean score of 22.90 (S.D.=2.60) at the .05 level of statistical significance. These findings support the second research objective and confirm the corresponding research hypothesis. The findings are consistent with the study conducted by Kasetyiam (2022), which investigated the development of metaverse spatial virtual reality technology integrated with a flipped classroom approach integrated with active learning strategies in the Design and Technology subject area among Grade 9 students. The study aimed to: 1) develop and evaluate the efficiency of Metaverse-integrated active learning instructional modules, and 2) compare students' learning achievement before and after the instructional intervention. The research instruments included Metaverse-based instructional modules, activity-oriented learning tasks, and standardized achievement assessments. Data were analyzed using descriptive and inferential statistical procedures. The findings revealed that the developed instructional system achieved a high efficiency level of 87.63/84.97, exceeding the established criterion. Furthermore, students' post-learning achievement scores were significantly higher than their pre-learning scores at the .05 level of statistical significance. These findings are consistent with the present study, indicating that Metaverse-based instructional environments can effectively enhance students' learning achievement and engagement within contemporary educational contexts.

Regarding the third research objective, which sought to compare the effectiveness of metaverse spatial virtual reality technology integrated with a flipped classroom approach and conventional instructional methods, the findings revealed a statistically significant difference in post-intervention achievement scores between the two groups. Students in the experimental group, who learned through the metaverse spatial virtual reality technology integrated with a flipped classroom approach, achieved a significantly higher mean score ($\bar{x}=30.83$, S.D.=2.94)

than those in the control group receiving conventional instruction ($\bar{x} = 28.93$, S.D.=3.93) at the .05 level of statistical significance. These findings support the third research objective and confirm the corresponding research hypothesis. The findings are consistent with the study conducted by Yu (2022), which examined the feasibility and educational potential of metaverse spatial virtual reality technology integrated with a flipped classroom approach. Yu indicated that the Metaverse has evolved beyond traditional internet-based virtual spaces into an advanced technological ecosystem capable of supporting immersive and interactive learning experiences through augmented reality, lifelogging, mirror worlds, and virtual reality technologies. Although previous studies have highlighted the educational potential of Metaverse technology, its application within physical education contexts has remained relatively limited. The present study contributes to addressing this gap by demonstrating that Metaverse-integrated instruction can effectively enhance both academic achievement and practical skill development in physical education. Furthermore, the findings suggest that immersive virtual learning environments, when combined with flipped classroom strategies, can promote greater learner engagement and improve learning outcomes in sports education contexts.

Regarding the fourth research objective, which sought to investigate student satisfaction toward the implementation of metaverse spatial virtual reality technology instructional media integrated with a flipped classroom approach, the empirical findings revealed a very high level of overall student satisfaction. The specific attributes receiving the highest ratings included the appropriateness of content for learners ($\bar{x} = 4.57$, S.D.= 0.50), the linguistic accuracy and comprehensibility of the instructional materials ($\bar{x} = 4.50$, S.D.= 0.57), and the alignment of the instructional modules with contemporary learning contexts ($\bar{x} = 4.53$, S.D.= 0.51). These findings provide substantial evidence in support of the fourth research objective and are consistent with the proposed research hypothesis. The present findings align with the study conducted by Kasetyiam (2022), who investigated metaverse spatial virtual reality technology integrated with a flipped classroom approach integrated with active learning strategies for Grade 9 students. Kasetyiam reported that overall student satisfaction was at a high level ($\bar{x} = 4.46$, S.D.= 0.47), particularly emphasizing the effectiveness of Metaverse-integrated platforms in fostering positive learning experiences. Furthermore, the present results correspond with the research conducted by Bua-in (2023), which focused on the development of Metaverse-based virtual classroom innovations and reported a very high level of student satisfaction (= 4.40). Collectively, these consistent findings substantiate that immersive metaverse spatial virtual reality technology integrated with a flipped classroom approach can effectively enhance learner engagement, motivation, and satisfaction by providing dynamic and contextually relevant pedagogical experiences within contemporary educational settings.

Conclusion

The present study developed and empirically evaluated the pedagogical efficacy of metaverse spatial virtual reality technology instructional media integrated with a flipped classroom framework for badminton instruction among Grade 8 students. The investigation focused on instructional efficiency, comparative learning achievement, and student satisfaction.

The findings demonstrated that the developed instructional innovation achieved efficiency indices exceeding the established benchmarks. Specifically, the cognitive efficiency was recorded at E1/E2=84.58/81.17, while the psychomotor efficiency reached 84.14/89.50, both surpassing the predefined criteria. These results indicate that the metaverse spatial virtual

reality technology instructional media possessed high pedagogical quality and could be effectively implemented within physical education contexts.

Furthermore, the comparison of learning achievement revealed that students who learned through the developed instructional media attained significantly higher post-test scores ($\bar{x}$ =30.83, S.D.=2.94) than their pre-test scores ($\bar{x}$ =22.90, S.D.=2.60) at the .05 level of statistical significance. In comparison with conventional instructional methods, the experimental group also demonstrated significantly higher achievement than the control group ($\bar{x}$ =30.83 and $\bar{x}$ =28.93, respectively), thereby confirming the instructional effectiveness of immersive virtual learning environments in enhancing learning outcomes within sports education.

Regarding student satisfaction, the findings revealed a very high level of overall satisfaction. Students particularly emphasized the appropriateness of the instructional content ($\bar{x}$ =4.57), the linguistic clarity and comprehensibility of the learning materials ($\bar{x}$ =4.50), and the alignment of the instructional environment with contemporary learning contexts ($\bar{x}$ =4.53).

In conclusion, the integration of metaverse spatial virtual reality technology instructional media with a flipped classroom approach represents an effective educational innovation capable of enhancing academic achievement, practical skill development, and learner satisfaction in badminton instruction. The findings further support the integration of advanced digital technologies into contemporary physical education learning environments.

Suggestion

Recommendations

Practical Recommendations

1. Technological Infrastructure Readiness As Metaverse-integrated instructional media require stable computational systems and reliable internet connectivity, instructors should ensure network stability and device compatibility prior to implementation. Adequate technological readiness is essential to minimize technical disruptions and facilitate uninterrupted access to the digital learning environment.

2. Integration of Virtual Simulations with Physical Practice Although Metaverse-based environments can effectively enhance psychomotor learning outcomes, authentic physical practice remains essential in physical education. Instructors are therefore encouraged to utilize the Metaverse platform as a supplementary instructional tool that enables learners to visualize procedural sequences and technical demonstrations prior to real-world practice, thereby improving the efficiency of field-based instruction.

3. Development of Concise and Engaging Instructional Content

Based on students' satisfaction regarding linguistic clarity and content appropriateness, instructional materials within the Metaverse environment should be designed to be concise, comprehensible, and visually engaging. The integration of multimedia elements and interactive visual representations is recommended to align with the learning preferences and cognitive characteristics of contemporary learners.

Recommendations for Future Research

1. Expansion Across Educational Levels and Sports Disciplines

Future studies should extend the application of Metaverse-integrated flipped classroom approaches to different educational levels and sports disciplines. Such investigations may facilitate comparative analyses of learning behaviors and the sustainability of learning outcomes across diverse instructional contexts.

2. Investigation of Additional Learning Variables

Beyond academic achievement and student satisfaction, future research should examine additional variables associated with Metaverse-based learning environments, such as creativity, collaborative skills, and motivation toward physical activity. These investigations may provide broader insights into the educational potential of immersive digital technologies.

3. Enhancement of Collaborative and Interactive Learning Environments

Future research should further investigate the development of interaction mechanisms within Metaverse environments, particularly through collaborative virtual activities such as virtual teamwork and group-based simulations. Such developments may strengthen active learning processes and promote more meaningful learner engagement beyond individual learning experiences.

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Customer Relationship Management and Service Quality Influencing Life Insurance Purchase Decisions Through Trust in Life Insurance Agents in Bangkok Metropolitan Area

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Abstract

The purpose of this study is to determine the factors influencing life insurance purchase decisions through trust in life insurance agents in the Bangkok metropolitan area. Customer relationship management and service quality were hypothesized to have significant relationships with trust, which mediates life insurance purchase decisions. The sample ($n = 600$) was collected from online and offline questionnaires using convenience and snowball sampling methods. The data were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM) with Smart PLS, alongside Confirmatory Factor Analysis (CFA), to assess validity, reliability, and model fit, as well as to test the proposed hypotheses. The results of the structural model analysis revealed that customer relationship management, service quality, and trust have significant direct effects on insurance purchase decisions at the .01 level of statistical significance. In addition, customer relationship management has a significant indirect effect on purchase decisions through trust at the .05 level ($\beta = .036, p = .037$). Similarly, service quality demonstrates a significant indirect effect on purchase decisions through trust at the .01 level, confirming the mediating role of trust in the proposed model.

Keywords: Customer Relationship Management, Service Quality, Trust, Purchase Decision

Introduction

The life insurance industry plays a crucial role in enhancing financial stability and long-term risk management for individuals and households. In urban economies such as the Bangkok Metropolitan Area, increasing income levels, financial literacy, and awareness of risk protection have contributed to the growth of life insurance markets. However, despite this expansion, consumer decisions to purchase life insurance remain complex due to the intangible nature of the product, long-term commitment, and perceived uncertainty. As a result, relational and service-related factors have become increasingly important in influencing customer decision-making.

Customer relationship management (CRM) has evolved into a strategic mechanism that enables organizations to build long-term relationships and create sustainable competitive advantages. Recent studies highlight that CRM enhances customer engagement, satisfaction, and

loyalty by integrating customer data, personalized communication, and continuous service interactions (Reinartz, 2025). In service-intensive industries such as life insurance, effective CRM practices can significantly influence customers' perceptions and strengthen their relationships with service providers.

Service quality is another critical determinant of customer behavior, particularly in high-contact service environments. Contemporary research emphasizes that service quality not only influences customer satisfaction but also plays a significant role in shaping customer loyalty and behavioral intentions (Mugova, 2025). High service quality—characterized by responsiveness, reliability, and assurance—helps reduce customer uncertainty and enhances perceived value, which is particularly important in financial services such as life insurance.

Trust has been identified as a fundamental construct in relationship marketing and service management. In recent empirical studies, trust has been shown to act as a key mediating variable that strengthens the relationship between CRM, service quality, and customer outcomes (Moussa & Massoud, 2025). Trust reduces perceived risk and uncertainty, especially in contexts where customers rely heavily on service providers for information and long-term commitments. In the life insurance sector, trust in agents is essential because customers depend on agents for advice, policy recommendations, and ongoing service support.

Furthermore, integrated research has demonstrated that CRM and service quality jointly influence customer outcomes such as satisfaction, loyalty, and purchase decisions, often through mediating variables such as trust or perceived value (Zarafshan et al., 2024; Aprilia & Ridhaningsih, 2025). These findings suggest that trust plays a central role in translating service experiences into actual purchasing behavior.

Despite the growing body of literature, there remains a research gap in understanding how CRM and service quality influence life insurance purchase decisions through trust, particularly in the context of the Bangkok Metropolitan Area. Many previous studies have focused on general service sectors or have not incorporated a comprehensive structural model that captures both direct and indirect relationships among these constructs.

Therefore, this study aims to examine the direct and indirect effects of customer relationship management and service quality on life insurance purchase decisions, with trust in life insurance agents serving as a mediating variable. By employing Confirmatory Factor Analysis (CFA) and Structural Equation Modeling (SEM), this research seeks to validate the measurement model and test the hypothesized relationships among the constructs.

The findings of this study are expected to contribute to both theoretical and practical domains. Theoretically, the study extends relationship marketing and service quality literature by emphasizing the mediating role of trust in a high-involvement financial service context. Practically, the results provide valuable insights for insurance companies and agents in designing effective CRM strategies and improving service quality to build trust and influence customer purchase decisions.

Literature Review

Customer Relationship Management

Customer relationship management (CRM) has increasingly been treated as a strategic capability rather than only a marketing support function. Recent review evidence shows that CRM has evolved from transaction-oriented practices to engagement-oriented strategies aimed at creating sustainable competitive advantage and strengthening long-term customer relationships (Reinartz, 2025). In service contexts, CRM helps organizations personalize interactions, improve communication continuity, and deepen relationship quality across the customer journey.

These functions are especially important in life insurance, where customers typically depend on ongoing advice, follow-up service, and confidence in the representative over an extended period.

In insurance settings, relationship-building behaviors by agents have been shown to strengthen customer trust and improve downstream outcomes. A recent insurance-sector study found that agent behaviors such as approach, common grounding, and communication signified (Moon et al., 2025). This indicates that relationship management is not only relevant for retention but is also central to how customers evaluate the credibility of insurance representatives and decide whether to continue or deepen their engagement.

Based on this reasoning, CRM in the life insurance context can be expected to influence purchase decision directly by improving customer confidence and indirectly by building trust in the insurance agent.

Service Quality

Service quality remains one of the most important predictors of customer response in service industries. In insurance-related digital service research, perceived service quality has been shown to shape customer experience and indirectly affect satisfaction, indicating that customers evaluate not only the final service outcome but also the quality of interaction throughout the process (Méndez-Aparicio et al., 2020). In life insurance, this is highly relevant because the service is intangible, information-intensive, and often perceived as high risk. Customers therefore rely heavily on responsiveness, reliability, clarity, and assurance when assessing service providers and agents.

Recent life-insurance evidence also supports the importance of service quality for purchase-related outcomes. A 2025 study on life insurance purchasing found that service quality had a statistically significant influence on the decision to purchase life insurance, with specific emphasis on assurance, responsiveness, reliability, and service accessibility as practical drivers of customer confidence (Gao & Thongsiri, 2025). This suggests that better service quality can contribute directly to purchase decisions in the insurance context.

Moreover, service quality can also operate indirectly through trust. A 2024 SEM study reported that service quality significantly affected consumer trust, and consumer trust significantly affected purchase decisions, while the direct path from service quality to purchase decision was not significant in that context. The study therefore concluded that trust is a key mechanism through which service quality translates into purchasing behavior (Misi et al., 2024).

Trust is a central construct in service exchanges characterized by uncertainty, information asymmetry, and long-term commitment. In insurance, trust is especially critical because customers often cannot fully evaluate product quality before purchase and must instead rely on the agent's credibility, sincerity, and competence. Recent insurance research shows that trust positively influences satisfaction and renewal intention, reinforcing the idea that trust helps reduce uncertainty and supports behavioral commitment in insurance relationships (Moon et al., 2025).

Insurance-related customer-experience research also indicates that perceived quality and service experience are important antecedents of positive customer evaluations, which ultimately relate to confidence in the provider and post-purchase outcomes (Méndez-Aparicio et al., 2020). In broader purchase-decision research, trust has likewise been identified as a decisive mediator connecting service-related perceptions to actual buying decisions (Misi et al., 2024). Taken together, the recent literature supports trust as a pivotal mechanism linking CRM and service quality to purchase-related outcomes.

Purchase Decision

Purchase decision in the life insurance context reflects a complex evaluation process shaped by risk perception, service experience, relational confidence, and perceived benefit. Recent health-insurance research shows that insurance purchase intention is influenced by a combination of behavioral control, subjective norms, and perceived product risk, underscoring that insurance

buying is a high-involvement decision rather than an impulsive one (Mishra et al., 2024). In parallel, evidence from life insurance purchasing confirms that service-related factors materially affect customers' final buying decisions (Gao & Thongsiri, 2025).

Because life insurance is both intangible and future-oriented, customers are likely to depend on trust in the agent and the quality of service interactions when making the final purchase decision. This makes purchase decision an appropriate endogenous variable in a model where CRM and service quality influence customer behavior both directly and indirectly through trust.

Hypotheses Development

H1: Trust has a direct effect on life insurance purchase decision.

Recent evidence suggests that trust plays a decisive role in insurance-related behavioral outcomes. In the insurance sector, trust has been shown to positively influence renewal intention, indicating that customers who trust insurance representatives are more likely to commit to an insurance-related decision (Moon et al., 2025). Similarly, Misi et al. (2024) found that consumer trust significantly affected purchase decisions. Accordingly, trust is expected to exert a direct positive effect on life insurance purchase decision.

H2: Customer relationship management has a direct effect on life insurance purchase decision.

CRM improves interaction quality, communication continuity, and personalized engagement, all of which can make customers more confident in choosing a provider. Reinartz (2025) argues that modern CRM is strategically tied to customer engagement and long-term value creation, while insurance-sector evidence shows that relationship-building behaviors by agents influence downstream customer outcomes (Moon et al., 2025). Therefore, CRM is expected to directly influence life insurance purchase decision.

H3: Service quality has a direct effect on life insurance purchase decision.

Service quality shapes how customers evaluate the reliability and value of a service provider. In the life insurance context, Gao and Thongsiri (2025) found that service quality significantly influenced life insurance purchase decision. This suggests that higher service quality can directly strengthen customers' willingness to purchase life insurance.

H4: Customer relationship management has a direct effect on trust.

Relationship-building and customer-oriented communication are fundamental components of CRM. In insurance, recent empirical evidence shows that communication and relationship-building behaviors by agents significantly enhance trust (Moon et al., 2025). Hence, CRM is expected to positively influence trust in life insurance agents.

H5: Service quality has a direct effect on trust.

Customers often form trust judgments based on their service experience, especially in high-risk service contexts. Misi et al. (2024) found that service quality significantly affected consumer trust, and insurance-related customer-experience research similarly highlights the role of perceived quality in shaping customer evaluations (Méndez-Aparicio et al., 2020). Thus, service quality is expected to positively influence trust.

H6: Customer relationship management has an indirect effect on life insurance purchase decision through trust.

CRM may not only influence purchase decision directly, but also indirectly by strengthening trust. Because relationship-building behaviors in insurance improve trust, and trust in turn supports insurance-related decision outcomes, trust is theoretically and empirically plausible as a mediator between CRM and purchase decision (Moon et al., 2025). Therefore, CRM is expected to have an indirect effect on life insurance purchase decision through trust.

H7: Service quality has an indirect effect on life insurance purchase decision through trust.

Recent SEM evidence indicates that service quality can affect purchase decisions through consumer trust, even when the direct effect is weak or context dependent (Misi et al., 2024). Given

that life insurance is a high-involvement service where customers rely on both service quality and agent credibility, trust is expected to mediate the relationship between service quality and life insurance purchase decision.

Research Methodology

The data were collected from the sample group to analyze the influence of Customer Relationship Management and Service Quality on life insurance purchase decisions through trust in life insurance agents in the Bangkok Metropolitan Area. The questionnaire consisted of three parts. Part 1 included the demographic characteristics of the respondents. Part 2 comprised items measuring consumer opinions regarding the factors influencing life insurance purchase decisions. The research instrument was developed based on measurement scales adapted from previous studies with similar scope and context. The measurement of consumer purchase decision variables employed a five-point Likert scale, where 1 represents “Strongly Disagree” and 5 represents “Strongly Agree.”

In this study, an extensive review of relevant literature, including theories, concepts, and previous studies, was undertaken between November 2025 and February 2026. Data collection was conducted in March 2026. Following the data collection process, the completed questionnaires were carefully screened for completeness and accuracy before the data were analyzed in May 2026. Written informed consent was obtained from all participants prior to data collection. Participants were informed of the study objectives, research procedures, their right to withdraw at any time without penalty, and the confidentiality of their responses. All data were anonymized and used exclusively for academic research purposes.

The research model consists of four latent variables: Customer Relationship Management (CRM), Service Quality (SQ), Trust (T), and Purchase Decisions (PD), along with 36 observed variables. The model involves approximately 160–170 parameters to be estimated, indicating a relatively complex structure. Therefore, the minimum sample size was determined to be no less than 300 cases. In this study, data were collected from 600 respondents, which is consistent with the recommendations of Hair et al. (2022) and Kline (2023), ensuring the reliability of the results and the appropriateness of Structural Equation Modeling (SEM) analysis. The data were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM) with SmartPLS, alongside Confirmatory Factor Analysis (CFA), to assess validity, reliability, and model fit, as well as to test the proposed hypotheses.

In this study, data were collected from 600 respondents through online and offline questionnaires using convenience and snowball sampling methods. The respondents were customers who had purchased life insurance in the Bangkok Metropolitan Area, with the sample proportionally allocated based on the population distribution across the study area. All distributed questionnaires were successfully returned and completed, resulting in a response rate of 100%. The completed questionnaires were subsequently screened for completeness and consistency before being included in the data analysis.

Research Findings

The results indicated that the majority of respondents were female ($n = 344$, 57.33%). Most respondents were under 30 years of age ($n = 279$, 46.50%), single ($n = 411$, 68.50%), and held a bachelor's degree ($n = 259$, 43.17%). In terms of occupation, the largest group was self-employed individuals ($n = 173$, 28.84%). Regarding monthly income, most respondents earned between 15,000 and 30,000 Baht ($n = 273$, 45.50%).

Results of Construct Reliability and Convergent Validity Assessment.

This section presents the results of basic statistical analyses used to examine construct reliability (CR) and convergent validity. Construct reliability (CR) is used to assess the internal consistency of the measurement model. According to the criteria, a CR value greater than .70 indicates high reliability, while values between .60 and .70 are considered acceptable (Hair et al., 2010). Convergent validity refers to the extent to which items or indicators that measure the same construct share a high proportion of variance. It can be evaluated based on factor loadings, where values greater than .50 indicate acceptable levels of convergence among indicators measuring the same latent construct. The squared factor loadings (Variance Extracted) represent the amount of variance in observed variables explained by the latent construct. By averaging the variance extracted of all indicators under the same latent variable, the Average Variance Extracted (AVE) is obtained. The criterion for AVE is that values greater than .50 indicate that the measurement model demonstrates adequate convergent validity (Fornell & Larcker, 1981; Diamantopoulos & Siguaw, 2000).

Table 1: Assessment of construct reliability and convergent validity

Latent Variable	Observed Variable	Factor Loading	KMO/ Bartlett's/P	Eigenvalue /Cumulative	CR (>.70)	AVE (>.50)
Customer Relationship Management	A1	.760	.852/1992.811/.000	4.215/52.693	.875	.527
	A2	.769				
	A3	.720				
	A4	.660				
	A5	.690				
	A6	.733				
	A7	.723				
	A8	.743				
Service Quality	B1	.677	.898/2261.353/.000	4.531/56.640	.892	.566
	B2	.731				
	B3	.736				
	B4	.785				
	B5	.765				
	B6	.736				
	B7	.798				
	B8	.784				
Trust	C1	.637	.794/1272.244/.000	3.228/53.800	.837	.538
	C2	.665				
	C3	.757				
	C4	.787				
	C5	.749				
	C6	.789				
Purchase Decisions	D1	.691	.877/5358.363/.000	7.327/52.339	.931	.523
	D2	.744				
	D3	.749				
	D4	.699				
	D5	.736				
	D6	.651				
	D7	.762				

Latent Variable	Observed Variable	Factor Loading	KMO/ Bartlett's/P	Eigenvalue /Cumulative	CR (>.70)	AVE (>.50)
	D8	.732				
	D9	.674				
	D10	.695				
	D11	.710				
	D12	.676				
	D13	.801				
	D14	.786				

Based on Table 1, the assessment of construct reliability and convergent validity of the data was conducted through several steps. First, the factor loadings ranged from .637 to .801, with all indicators exceeding the threshold of .50 (Hair et al., 2010). Second, the Kaiser-Meyer-Olkin (KMO) values ranged from .794 to .898, and Bartlett's Test of Sphericity was statistically significant at $p < .05$, indicating that the data were suitable for factor analysis. Third, the construct reliability (CR) values ranged from .837 (C) to .931 (D), with all constructs exceeding the recommended threshold of .70 (Fornell & Larcker, 1981; Diamantopoulos & Siguaw, 2000). Finally, the results of convergent validity, assessed using the Average Variance Extracted (AVE), showed values ranging from .523 (D) to .566 (B), with all constructs exceeding the acceptable threshold of .50 (Fornell & Larcker, 1981; Diamantopoulos & Siguaw, 2000).

Results of Discriminant Validity Assessment

This section presents the results of the assessment of discriminant validity, which examines whether different constructs or latent variables measure distinct concepts. In other words, constructs that are theoretically different should demonstrate low correlations with one another.

In confirmatory factor analysis (CFA), discriminant validity can be evaluated by examining the correlations among constructs. A measurement model with good discriminant validity is indicated when the correlations between constructs are relatively low.

In addition, the relationships among variables in the proposed model were analyzed to prevent multicollinearity, which occurs when two or more independent variables are highly correlated. High correlations among independent variables may lead to biased estimates and reduce the accuracy of the predictive model. Therefore, it is necessary to examine the relationships among independent variables to ensure that they can be appropriately retained in the model.

The results of the correlation analysis among the constructs are presented in Table 2.

Table 2: Correlation coefficients for assessing discriminant validity

Variable	Customer Relationship Management	Service Quality	Trust
VIF	3.060	4.011	2.316
Tolerance	.327	.249	.432

Based on Table 2, the assessment of discriminant validity indicated that the minimum tolerance value exceeded the acceptable threshold (Tolerance > .10) (Foxall & Yani-de-Soriano, 2005). The maximum Variance Inflation Factor (VIF) was 4.011, which is below the recommended threshold of 10 (Belsley, 1991).

These results suggest that the variables are not redundant and do not exhibit substantial overlap. Therefore, no serious multicollinearity problem is present. This indicates that each variable measures a distinct construct without redundancy.

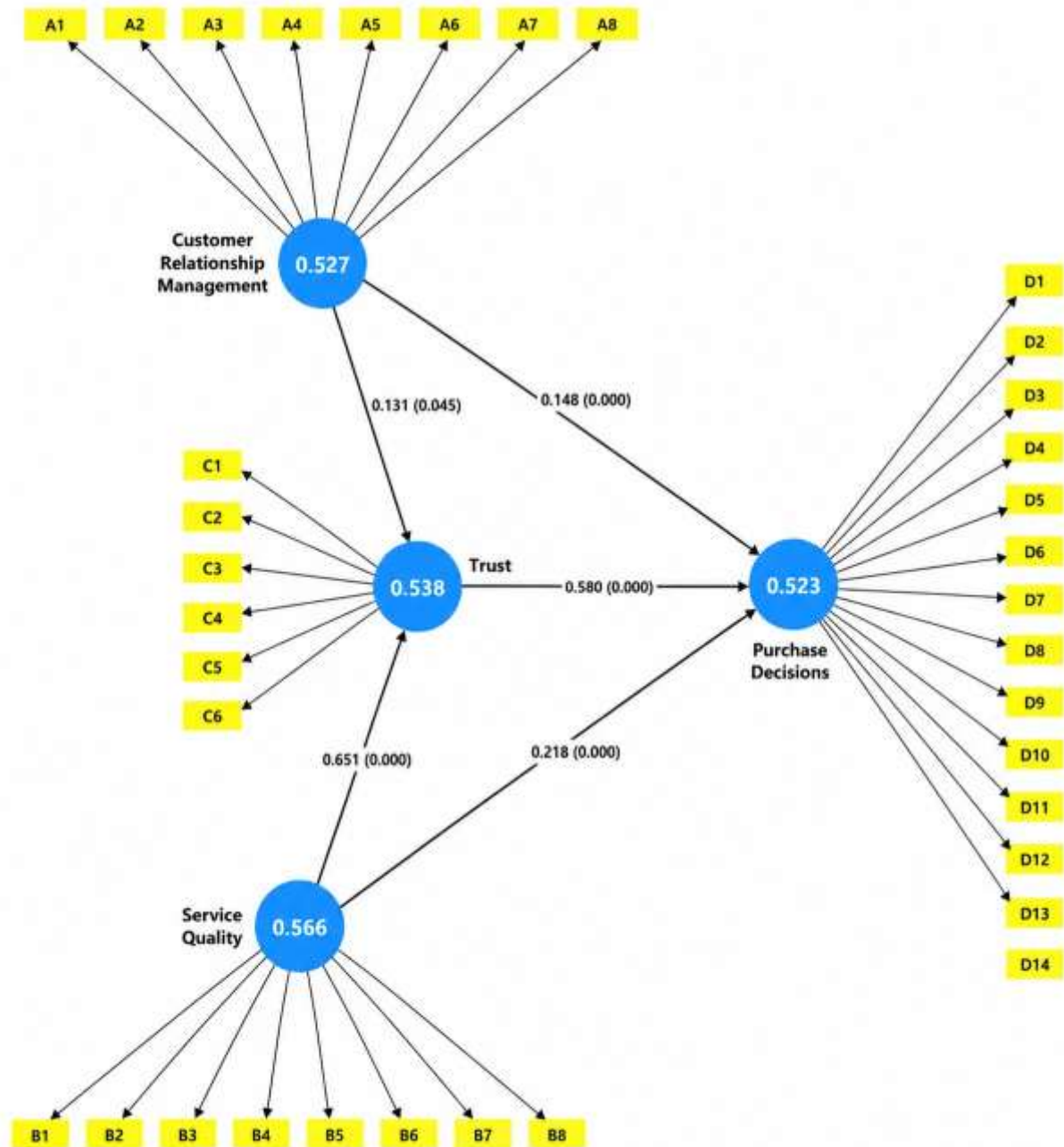


Figure 1: Structural Model Results of Customer Relationship Management and Service Quality Influencing Life Insurance Purchase Decisions Through Trust

The PLS-SEM results indicate that customer relationship management and service quality exert significant positive direct effects on life insurance purchase decisions ($\beta = 0.148$ and $\beta = 0.218$, respectively). Both constructs also have significant positive indirect effects on purchase decisions through trust ($\beta = 0.076$ and $\beta = 0.378$, respectively), thereby supporting H₆ and H₇. These findings demonstrate that trust serves as a complementary partial mediator because both the direct and indirect effects are statistically significant and operate in the same direction. Notably, the indirect effect of service quality is stronger than that of customer relationship management. Furthermore, the AVE values of all constructs exceed the recommended threshold of 0.50, confirming adequate convergent validity.

Hypothesis Testing Results

This study proposed a total of five direct hypotheses and two indirect hypotheses. Advanced statistical techniques were employed to examine the relationships and effects among the variables. The results of the analysis are presented as follows:

Table 3: Customer Relationship Management and Service Quality Influencing Life Insurance Purchase Decisions through Trust in Life Insurance Agents in the Bangkok Metropolitan Area.

Effect	Path	EST	(β)	SE	Z	P	R ² adj
Direct	Customer Relationship Management $\Rightarrow$ Purchase Decisions	.149	.148	.040	3.710**	.000	.762
	Service Quality $\Rightarrow$ Purchase Decisions	.217	.218	.044	4.972**	.000	
	Trust $\Rightarrow$ Purchase Decisions	.580	.580	.042	13.930**	.000	
	Customer Relationship Management $\Rightarrow$ Trust	.134	.131	.065	2.006*	.045	.579
	Service Quality $\Rightarrow$ Trust	.649	.651	.058	11.127**	.000	
Indirect	Customer Relationship Management $\Rightarrow$ Trust $\Rightarrow$ Purchase Decisions	.077	.076	.036	2.086*	.037	
	Service Quality $\Rightarrow$ Trust $\Rightarrow$ Purchase Decisions	.377	.377	.050	7.557**	.000	
Total	Customer Relationship Management $\Rightarrow$ Purchase Decisions	.226	.224	.064	3.506	.000	
	Service Quality $\Rightarrow$ Purchase Decisions	.594	.595	.058	10.323	.000	

Table 4: Indirect effect coefficient

Path	Direct effect	Path coefficient	Indirect effect	Total effect
Customer Relationship Management $\Rightarrow$ Trust $\Rightarrow$ Purchase Decisions	.148	.131 $\times$.580	.076	.224
Service Quality $\Rightarrow$ Trust $\Rightarrow$ Purchase Decisions	.218	.651 $\times$.580	.377	.595

The research hypothesis testing consisted of seven hypotheses. The summary of the hypothesis testing results is presented in Table 5.

Table 5: Hypothesis Testing Results on the Influence of Customer Relationship Management and Service Quality on Life Insurance Purchase Decisions through Trust in Life Insurance Agents in the Bangkok Metropolitan Area.

Hypothesis	Hypothesis Testing Results
H1: Customer Relationship Management has a direct influence on the purchase decision of life insurance.	Accepted
H2: Service quality has a direct influence on the purchase decision of life insurance.	Accepted
H3: Trust has a direct influence on the purchase decision of life insurance.	Accepted
H4: Customer Relationship Management has a direct influence on the trust of life insurance.	Accepted
H5: Service Quality has a direct influence on the trust of life insurance.	Accepted
H6: Customer relationship management has an indirect influence on the life insurance purchase decision through trust.	Accepted
H7: Service quality has an indirect influence on the life insurance purchase decision through trust.	Accepted

Based on Table 5, the results of the hypothesis testing indicate that all seven hypotheses (H1, H2, H3, H4, H5, H6 and H7) were accepted. The findings reveal that trust plays a significant mediating role between customer relationship management and service quality in influencing the insurance purchase decision. It is evident that both customer relationship management and service quality have statistically significant direct and indirect effects. This reflects that trust is a crucial factor driving the decision to purchase insurance.

Discussion

The findings indicate that customer relationship management (CRM), service quality, and trust all have significant direct effects on life insurance purchase decisions, with trust emerging as the most influential factor. This result reinforces the theoretical perspective that trust is a critical determinant in consumer decision-making, particularly in high-risk and intangible service contexts such as life insurance.

The strong influence of trust is consistent with the relationship marketing theory proposed by Chaudhuri and Holbrook (2001), which highlights that trust leads to stronger customer commitment and behavioral outcomes. In the context of modern service environments, trust reduces uncertainty and perceived risk, thereby facilitating decision-making processes. Furthermore, recent empirical evidence by Rather (2023) confirms that trust significantly influences customer behavioral intentions, particularly in service industries where customer experience plays a central role.

In addition, the significant effect of CRM on purchase decisions supports the strategic role of customer-centric approaches in marketing. According to Huang and Rust (2021), CRM-enhanced by data and digital technologies-enables firms to better understand customer needs and personalize interactions, which directly influences customer decisions. Similarly, service quality has been found to significantly affect purchase decisions, as customers evaluate the reliability and value of service providers before making high-involvement decisions.

Therefore, this study confirms that CRM and service quality function as key drivers of purchase decisions, while trust acts as the most powerful determinant in influencing customer behavior in the life insurance sector.

The results demonstrate that both CRM and service quality significantly influence trust in life insurance agents, with service quality showing a stronger effect. This suggests that customers tend to form trust judgments primarily based on their service experiences rather than solely on relationship-building efforts.

This finding aligns with customer experience theory, which emphasizes that trust is developed through consistent and positive service interactions. Rather (2023) highlighted that customer experience significantly enhances trust and engagement, which subsequently influences behavioral intentions. In addition, the role of CRM in building trust is supported by Huang and Rust (2021), who argued that personalized and data-driven interactions strengthen relational bonds between firms and customers.

Moreover, the stronger impact of service quality on trust reflects the nature of life insurance as a credence-based service, where customers rely heavily on perceived service reliability, assurance, and responsiveness. This is consistent with prior research indicating that service quality is a primary antecedent of trust in high-risk service environments.

Thus, the findings suggest that while CRM contributes to trust-building, service quality plays a more dominant role in shaping customer trust in life insurance agents.

The study confirms that trust serves as a significant mediating variable between CRM, service quality, and life insurance purchase decisions. Both CRM and service quality influence purchase decisions indirectly through trust, indicating that trust functions as a key mechanism that translates organizational strategies into customer behavior.

This result is consistent with the trust-based relational framework proposed by Chaudhuri and Holbrook (2001), which suggests that trust acts as an intermediary linking marketing activities to customer outcomes. Additionally, Rather (2023) emphasized that trust mediates the relationship between customer experience and behavioral intentions, highlighting its central role in service marketing models.

From a strategic perspective, Palmatier and Sridhar (2023) argued that relational strategies such as CRM create value only when they lead to psychological outcomes such as trust, which then drive customer behavior. This implies that CRM and service quality alone are insufficient to directly influence purchase decisions unless trust is established.

Therefore, this study extends the literature by confirming that trust is not only a direct predictor but also a crucial mediating mechanism that enhances the effectiveness of CRM and service quality in influencing life insurance purchase decisions.

The coefficient of determination (Adjusted R^2) for Purchase Decision was 0.762, indicating that Customer Relationship Management, Service Quality, and Trust jointly explained 76.2% of the variance in life insurance purchase decisions. According to Hair et al. (2022), an R^2 value exceeding 0.75 indicates substantial explanatory power in behavioral and social science research. Therefore, the proposed structural model demonstrates a strong ability to explain customers' purchase decisions.

Because all variables were collected using a self-administered questionnaire from the same respondents, the possibility of Common Method Bias (CMB) was also considered. To assess this issue, the study evaluated full collinearity Variance Inflation Factors (VIFs). The results showed that all VIF values were below the recommended threshold of 5.00, indicating that common method bias was unlikely to threaten the validity of the findings (Kock, 2015). Although the Service Quality construct exhibited the highest VIF value (4.011), it remained below the acceptable threshold and reflected the theoretically expected strong

relationship between Service Quality and Trust ($\beta = 0.651$, $p < .001$), rather than problematic multicollinearity.

In conclusion, this study demonstrates that customer relationship management and service quality significantly influence life insurance purchase decisions both directly and indirectly through trust. Trust emerges as the most influential factor and serves as a central mechanism linking organizational strategies to customer behavior.

These findings highlight that in high-involvement and risk-sensitive services such as life insurance, trust-building is essential for converting service quality and relationship management efforts into actual purchase decisions. Consequently, organizations should prioritize strategies that enhance trust, including improving service quality, leveraging CRM technologies, and delivering consistent customer experiences.

Suggestion

Practical Implications

1. Prioritize trust-building as a core strategic objective, life insurance companies should prioritize building customer trust, as the findings indicate that trust is the most influential factor in purchase decisions. Organizations should emphasize transparency, honesty, and the provision of accurate and complete information to customers.

2. Continuously improve service quality, firms should enhance service quality across key dimensions, including responsiveness, reliability, and assurance, in order to create positive customer experiences that foster trust and influence purchasing behavior.

3. Strengthen Customer Relationship Management (CRM) systems, organizations are encouraged to implement and optimize CRM systems to collect and analyze customer data. This enables personalized communication, improves customer engagement, and supports long-term relationship development.

4. Enhance the capabilities of insurance agents, insurance agents should receive continuous training in communication skills, advisory competencies, and professional ethics. This will help strengthen credibility and build customer confidence in the decision-making process.

5. Leverage digital technologies to support service delivery, companies should adopt digital technologies such as artificial intelligence (AI) and data analytics to improve service efficiency, provide accurate recommendations, and respond to customer needs in a timely manner.

6. Design a holistic customer experience (Customer Journey Management), organizations should manage the entire customer journey-from pre-purchase to post-purchase stages-to ensure a consistent and positive experience that enhances trust and long-term loyalty.

Recommendations for Future Research

1. Future research should include samples from other regions or conduct nationwide studies to compare differences in consumer behavior across contexts.

2. Future studies should consider including variables such as customer satisfaction, perceived risk, and customer loyalty to provide a more comprehensive understanding of the decision-making process.

3. Combining quantitative and qualitative methods, such as in-depth interviews, would provide richer insights into customer perceptions and behaviors.

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Preserving and Promoting the Marine Cultural Landscape of Hoi An

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Abstract

Hoi An's coastal environment has long shaped distinctive patterns of settlement, livelihoods, heritage, and cultural practices, forming a dynamic maritime cultural landscape. However, increasing environmental and socioeconomic changes are transforming both its physical characteristics and the cultural practices associated with the sea. This study examines Hoi An's maritime cultural landscape as an interconnected system shaped by the interaction between coastal environments, communities, livelihoods, heritage, and maritime cultural practices. Specifically, it identifies the principal components and values of the landscape, examines the major changes and challenges affecting its preservation, and develops management directions for sustaining and promoting its values. A qualitative research design was adopted, combining field surveys, direct observation, documentary analysis, and semi-structured exchanges with local residents involved in fishing, seafood-related activities, and other marine-dependent livelihoods. The data were thematically classified and interpreted through cross-referencing field evidence with documentary sources. The findings reveal that Hoi An's maritime cultural landscape comprises interconnected natural, residential, livelihood, community, tangible heritage, and intangible cultural components, reflecting the city's long-standing maritime history. Nevertheless, coastal erosion, environmental change, transformations in settlement and livelihood patterns, tourism-oriented coastal development, and declining community engagement in some maritime cultural practices are increasingly disrupting these relationships. The study therefore argues that conservation should move beyond the protection of individual heritage assets toward an integrated landscape approach that connects environmental management, heritage conservation, livelihood continuity, cultural revitalization, and community participation. Such an approach can strengthen the resilience and cultural continuity of Hoi An's maritime landscape while creating opportunities for heritage-based tourism and sustainable local development.

Keywords: Marine Cultural Landscape, Maritime Cultural Heritage, Coastal Heritage, Hoi An, Cultural Tourism, Sustainable Development

Introduction

Cultural landscapes are human-created formations that evolve over time and embody the relationship between people and either terrestrial or marine environments. They include both cultural and natural resources associated with historical events, human activities, or specific cultural and aesthetic values (Tian & Yang, 2020). Within this broader framework, the marine cultural landscape constitutes a distinctive category shaped through interactions between humans and marine space, coastlines, and the terrestrial interface. Part of the marine cultural landscape

comprises coastal historical sites and underwater cultural remains which, together with their surrounding environments, represent tangible evidence of human activities in marine settings (Vladimirova, 2016, p.45).

Hoi An is a region characterized by deep layers of historical sedimentation. Over thousands of years, from the emergence of the Sa Huynh culture to the present, successive communities have inhabited this land, creating multiple cultural strata that reflect the ecological and human characteristics of an estuarine and coastal environment. Across these cultural layers, the element of “sea and islands” has remained constant. It is deeply embedded in local cognition, worldview, customs, lifestyle, religious practices, social organization, and traditional forms of material and non-material culture. It is also closely connected to economic activities, occupational practices, festivals, folk culture, architecture, sculpture, and the surrounding natural seascape. These cultural values have been accumulated, preserved, and transmitted across generations, forming a rich and distinctive body of maritime cultural heritage.

Although the historical, cultural, ecological, and livelihood values associated with the sea have been widely documented in studies of Hoi An, these dimensions have largely been examined separately or within specific spatial and thematic contexts. Such fragmented perspectives provide valuable insights but offer limited understanding of how coastal environments, settlement spaces, tangible and intangible heritage, local communities, livelihoods, and maritime cultural practices interact to constitute an integrated cultural landscape. The maritime cultural landscape perspective, in contrast, emphasizes these interrelationships and views the landscape as a dynamic system continuously shaped by interactions between people, places, heritage, and the marine environment.

This integrated perspective is particularly relevant to Hoi An, where the maritime cultural landscape is undergoing substantial transformation. Coastal erosion, environmental change, tourism-oriented development, changing livelihood patterns, and transformations in community cultural practices are reshaping both the physical landscape and its associated cultural values. These processes may weaken the continuity of traditional relationships between coastal communities and the sea, while also creating new pressures and opportunities for heritage conservation and sustainable development. Despite growing international scholarship on maritime cultural landscapes, research in Vietnam remains limited, particularly in relation to the integrated analysis of environmental, socio-economic, and cultural dimensions. Existing studies of Hoi An have predominantly focused on the Ancient Town, historical trade, architectural heritage, and tourism, with comparatively less attention to the wider maritime landscape encompassing coastal communities, marine-related livelihoods, cultural practices, ecological settings, and maritime heritage. This gap highlights the need to examine Hoi An’s maritime cultural landscape as an interconnected and evolving system rather than as a collection of isolated heritage resources.

Accordingly, this study has two objectives: 1) to identify and analyze the principal components and values of Hoi An’s maritime cultural landscape, encompassing its natural, historical, cultural, livelihood, and community dimensions; and 2) to examine the major transformations and challenges affecting the landscape and, on this basis, develop appropriate directions for its conservation and sustainable promotion.

By adopting an integrated maritime cultural landscape perspective, this study extends the understanding of Hoi An beyond its internationally recognized urban heritage to include the broader cultural and environmental relationships connecting coastal communities, livelihoods, heritage, and the sea. The study also provides a basis for integrated approaches to maritime heritage conservation, community participation, coastal management, and sustainable tourism development in Hoi An and other coastal heritage destinations facing similar environmental and socioeconomic pressures.

Literature Review

The concept of the “marine cultural landscape” began to emerge as a specialized research topic in the early 1990s with the works of Westerdahl (2011), Flatman (2012), and others. By the early years of the twenty-first century, researchers expanded their examination of the marine cultural landscape to include spatial dimensions that also emphasize submerged elements beneath the sea surface. Accordingly, “the study of maritime culture and its landscape means exploring all types of relationships between humans and the sea, or potentially any large body of water” (Westerdahl, 2011, p. 754). This perspective has been supported by various authors who assert that part of the marine cultural landscape includes human uses of marine space through activities such as fishing, transportation, shipbuilding, maritime commerce, lighthouses, and marine markers (navigational signals) (Flatman, 2012, p. 337). Cultural resources related to these maritime activities include settlements, vessels and various types of boats, shipwrecks, shipyards, ports and harbors, wharves and warehouses, culverts and canals, lighthouses, rescue stations and other maritime support facilities, coastal historical sites, naval bases, and contemporary communities living within marine environments (Vrana & Vander Stoep, 2003, p. 19). The results of these creative processes are a substantial number of cultural remains distributed along coastlines and underwater.

However, the marine cultural landscape is not a static entity. It is subject to strong influences from ecological and biological changes, as well as cultural, climatic, and geological disturbances. Due to these transformations, together with processes of marine erosion and regression that have occurred along coastlines for millennia, a significant number of unique cultural objects now lie underwater. Nevertheless, they remain integral to the marine cultural landscape because they provide evidence of the historical integrity of human interaction within coastal and marine environments.

Based on the theoretical framework of the marine cultural landscape established in the works of Westerdahl, Flatman, and others, we consider the marine cultural landscape as the interaction between sea and land, between the marine environment and humans, and between cultural heritage and nature. The marine cultural landscape encompasses human-made features shaped by marine influences within the broader context of the marine environment. It represents a symbiotic relationship between the marine environment and human creativity, revealed through all tangible and intangible remnants, because “a sea without humans would simply be a marine space, not a marine cultural landscape”. Furthermore, the marine cultural landscape “is shaped not only by nature but also by human intervention” (Pungetti, 2022, p. 11).

Research Methodology

Research Design

This study employed a qualitative research design informed by the maritime cultural landscape perspective. The approach was adopted to examine Hoi An’s coastal landscape as an interconnected system in which environmental conditions, settlement patterns, livelihoods, heritage, community relations, and maritime cultural practices continuously interact and evolve. Rather than treating these dimensions as isolated elements, the study sought to understand how their interrelationships shape the formation and transformation of the local maritime cultural landscape.

Data were collected through field surveys, direct observation, informal semi-structured exchanges with local residents, and documentary analysis. Field-based evidence was subsequently compared with relevant secondary sources to identify recurring patterns,

contextualize local observations, and strengthen the interpretation of changes affecting the landscape.

Field Observation and Local Engagement

Fieldwork was conducted between January and June 2025 through four one-day field visits. Direct observations focused primarily on the coastal areas of Cua Dai and An Bang, where particular attention was given to visible changes in the shoreline, beach space, coastal settlements, and areas associated with community activities. Additional observations were undertaken in Phuoc Hai, Phuoc Trach, and Phuoc Tan in Cua Dai Ward, as well as Tan Thanh in Hoi An Tay, selected because of their historical and contemporary connections with the coastal environment.

The observations focused on three interrelated dimensions: physical and environmental changes, community livelihoods and settlement patterns, and the continuity or transformation of maritime cultural practices. Particular attention was given to observable changes in the coastline, beach environment, residential spaces, livelihood activities, and places associated with community and cultural life. Field observations were documented through written notes and photographic records and were subsequently interpreted alongside documentary evidence.

To complement direct observation, the study engaged with 10 local residents aged between 40 and 80 years (see more details in Table 1). Participants were purposively selected according to their long-term connection with the sea and their knowledge of local livelihoods, community life, and maritime cultural practices. The participants represented diverse forms of engagement with the coastal landscape, including fishing, community rituals, coastal commerce, and tourism-related activities. This purposive selection enabled the study to incorporate perspectives from different groups whose experiences reflect distinct relationships with the maritime environment.

Before each exchange, the researcher introduced himself as a lecturer at Quang Nam University and explained the purpose and academic nature of the study. All participants voluntarily agreed to participate and consented to the use of the information they provided for research purposes. Exchanges were conducted in locations familiar to participants, including their villages, workplaces, residential areas, and coastal sites. Given the exploratory and field-based nature of the research, short guiding questions were used rather than a standardized questionnaire or rigid interview schedule. This approach allowed participants to describe their experiences and observations while maintaining a consistent focus on the research objectives. Information was recorded through contemporaneous field notes rather than audio recording.

The discussions centered on three areas: 1) changes in coastal space and environmental conditions; 2) implications of these changes for local livelihoods and community life; and 3) the continuity and transformation of maritime festivals, rituals, and other cultural practices. The conversations were not intended to generate statistically generalizable evidence but to provide contextualized accounts of how changes in the coastal landscape are perceived and experienced by people with direct and sustained connections to it.

Table 1: Profile of Anonymized Local Participants

Participant Code	Anonymous Identifier	Age	Gender	Primary Occupation/ Role	Relationship to the Sea	Study Location/ Context	Main Topics Discussed
P01	Participant 01	~60	Not reported	Fisher	Direct and long-term occupational dependence on the sea	Cua Dai Ward	Coastal erosion, storms, shoreline change, fishing livelihood
P02	Participant 02	40-80	Not reported	Fisher	Direct involvement in fishing and marine-based livelihood	Coastal community	Changes in coastal space, fishing livelihood, environmental change
P03	Participant 03	40-80	Not reported	Fisher	Direct involvement in fishing and maritime activities	Coastal community	Livelihood transformation, relationship with the sea
P04	Participant 04	40-80	Not reported	Fisher	Direct involvement in fishing and marine-based livelihood	Coastal community	Coastal change, livelihood practices, maritime occupations
P05	Participant 05	40-80	Not reported	Community elder / ritual practitioner	Long-term involvement in community life and maritime cultural practices	Coastal village	Maritime rituals, festivals, cultural memory
P06	Participant 06	40-80	Not reported	Community elder / ritual practitioner	Long-term involvement in village rituals and maritime cultural traditions	Coastal village	Cầu Ngư rituals, cultural continuity, intergenerational transmission
P07	Participant 07	40-80	Not reported	Coastal business operator	Indirect dependence on the coastal environment through local commerce and tourism	Coastal area	Tourism development, livelihood change, coastal space
P08	Participant 08	40-80	Not reported	Coastal business operator / homestay provider	Dependence on coastal tourism and local community environment	Coastal area	Tourism, livelihood diversification, changes in coastal space
P09	Participant 09	40-80	Not reported	Fisher	Direct connection with the sea through fishing and local maritime activities	Cua Dai coastal area	Fishing livelihood, environmental change, community-sea relationship
P10	Participant 10	40-80	Not reported	Small-scale coastal business operator	Economic connection with the coastal environment	Cua Dai coastal area	Tourism-related livelihood, settlement change, coastal development

Data Processing and Analysis

Data analysis followed a thematic and interpretive procedure aligned with the two objectives of the study. First, field notes and documentary materials were organized and classified according to the principal dimensions of the maritime cultural landscape. These included the natural environment, settlement space, socioeconomic activities and livelihoods, tangible and intangible heritage, and maritime cultural practices.

Second, the data were examined for recurring themes concerning landscape transformation. Particular attention was given to changes in the physical and environmental characteristics of the coast, shifts in livelihoods and community–sea relationships, and changes in maritime festivals, rituals, and other cultural practices. Information that repeatedly emerged across field observations and participant accounts was treated as evidence of locally observed patterns rather than as quantitative measures of their prevalence.

Third, the field-based findings were interpreted in relation to historical, cultural, environmental, and policy-related documentary sources. This process enabled the study to situate contemporary observations within the broader historical development of Hoi An's coastal landscape and to examine how environmental and socioeconomic changes have affected the relationships among people, place, and maritime heritage.

The analysis therefore adopted an interpretive systems perspective in which individual landscape components were examined both independently and in relation to one another. This enabled the study to move beyond an inventory of heritage resources and identify the functional and cultural relationships through which Hoi An's maritime cultural landscape is maintained and transformed.

Triangulation and Research Credibility

Triangulation was employed to enhance the credibility of the findings. Information obtained from local residents was cross-checked against direct observations and relevant documentary sources, including historical, cultural, environmental, and other secondary materials. The comparison focused on whether field-based accounts were consistent with documented changes in coastal environments, settlement patterns, livelihoods, and maritime cultural practices. Where different sources provided complementary rather than identical information, the evidence was interpreted within its respective historical and social context rather than treated as contradictory.

This multi-source approach reduced the risk of interpreting individual perceptions as representative of the entire coastal population. Instead, participants' accounts were used as situated qualitative evidence that could illuminate particular processes of landscape transformation. Direct quotations or identifiable information were used only where explicit permission had been obtained. Otherwise, participants were referred to by their occupation or a general description to protect confidentiality and ensure that the presentation of qualitative evidence remained consistent with the consent provided.

Research Finding

The findings presented below combine evidence obtained from documentary sources, previous scholarship, field observations, and interviews conducted in Hoi An between January and June 2025. To improve analytical transparency, findings derived primarily from historical and documentary sources are distinguished from evidence obtained through field surveys and interviews.

Identifying and Analyzing the Components of Hoi An's Marine Cultural Landscape

Drawing primarily on historical records, archaeological studies, previous scholarly research, and field verification, this section identifies the principal components that constitute Hoi An's marine cultural landscape.

Natural Setting and Maritime Space: Hoi An is a region containing deep layers of historical and cultural sedimentation, and despite undergoing various historical periods with differing temporal scopes, it continues to bear a pronounced imprint of maritime culture. As the late Professor Trần Quốc Vượng noted, “Hoi An is not only a product of the Thu Bon River system but also a product of the sea” (Trần, 1991, p. 56) and “In the case of Hoi An, what constitutes its distinctive uniqueness is that it is a river-sea port town, especially exceptional in its predominant or relatively pure mercantile character, that is, a ‘market’ whose primary function is foreign trade” (Trần, 1998, p. 7). According to research and field survey results, “in the early Common Era, when sea levels reached their maximum transgression, the Thu Bon estuary formed a funnel-shaped marine inlet” (Phan, 1991, p. 18). Consequently, most of Hoi An’s present-day territory and its surrounding areas were formed through marine deposition, creating three main surface types: a high depositional surface of 5 to 7 meters (represented by the ancient town area), a depositional surface of 2 to 4 meters (primarily east of the ancient town), and a narrow band of 1 to 2 meters adjacent to the current shoreline. In terms of geomorphology, a north to south cross-section reveals a system of coastal sand dunes stretching from Cẩm An (east of the Cổ Cò River) through Sơn Phô, Hội An, Cẩm Phô, and Thanh Hà, marking ancient shorelines. Complementing these are lagoonal and wetland systems (such as Trà Nhiêu and Trà Quế lagoons and the Bàu Ốc, Bàu Súng, and Bàu Sen depressions), which represent remnants of previous coastal lines. Therefore, it may be stated that “Hoi An is a complex of river systems intertwined within an estuarine zone” and simultaneously “a complex of coastal dune-lagoon systems” (Trần, 1991, pp. 57-58). The maritime cultural landscape of Hoi An has developed within an estuarine-coastal setting characterized by close interactions among the Thu Bon River, its estuarine zone, and the coastal geomorphological system. Fluvial-marine, marine-lagoonal, and aeolian landforms, together with coastal dunes, wetlands, and traces of shoreline transformation, constitute the distinctive natural foundation of the Hoi An area. These environmental conditions have not only shaped patterns of settlement and community activities but have also provided the physical basis for marine resource use, trade, and long-term human-sea interactions. Accordingly, the natural setting and maritime space constitute a fundamental component of Hoi An’s maritime cultural landscape, providing the environmental foundation upon which its historical, livelihood, and cultural values associated with the sea have developed and been sustained.

Community, Maritime Villages, Occupations, and Indigenous Knowledge: many villages in Hoi An today still maintain lifestyles, customary practices, and place names associated with the sea. According to the study of Trần Văn An, the Hoi An community continues to sustain nearly forty-six occupations related to marine exploitation, fishing, and the collection of forest and marine resources on the islands and along the coastline. Among these are maritime occupations whose systems of indigenous knowledge and associated fishing tools express the distinctive cultural identity of Hoi An and contribute to shaping the marine cultural landscape of the region. These include bird’s nest harvesting (in Thanh Châu village) with associated place names such as Khô Cave (Hòn Khô, Cù Lao Chàm) and Chò Vò Cave (Hòn Lao, Cù Lao Chàm); weaving hammocks from the ngô đồng tree in Cù Lao Chàm; crafting woven basket boats (thúng chai); and trading on ghe bầu sailing vessels associated with maritime trading guilds such as the Thanh Châu, Cẩm Phô, Thanh Hà, Sơn Phô, Hội An, Cẩm An, and Trường Lệ guilds (Trần, 2016, p. 17). These occupations are closely associated with systems of indigenous knowledge, occupational skills, and fishing tools, thereby producing distinctive expressions of Hoi An’s maritime culture. Maritime occupations have also contributed to the formation of distinctive residential communities and occupational organizations. Most residents engaged in these occupations “live in concentrated communities along the transverse and longitudinal coastal dunes of Hoi An and several beaches on Cù Lao Chàm, forming distinct maritime guilds (vạn nghề biển), whose names are derived from the types of fishing techniques and equipment used, such as vạn giã, vạn câu, vạn lưới chuồn, vạn mảnh

com, and vịnh mảnh chà” (Trần Văn An, 2016, p. 7). These guilds developed into coastal villages or vịnh biển, often named directly after the guilds themselves (such as vịnh giã, vịnh mảnh), thereby creating culturally rich and occupationally specialized maritime communities. The field survey conducted for this study also demonstrates that the relationship between local communities and the sea continues to be reflected in groups of residents who maintain different forms of engagement with maritime spaces. During four field visits conducted between January and June 2025, the study engaged with 10 local residents aged between 40 and 80, including fishermen, older residents involved in village ritual activities, and several small-scale coastal business operators. These exchanges indicate that the sea remains an important space for the livelihoods and everyday lives of a segment of the local population, while occupations, residential spaces, and community practices continue to sustain connections between people and the maritime landscape. Accordingly, local communities, maritime occupations, indigenous knowledge, and sea-related residential and activity spaces should not be understood as isolated elements; rather, they are interconnected and collectively constitute an important socio-cultural dimension of Hoi An’s maritime cultural landscape.

Port-City Space and Maritime Trade Networks: throughout various historical periods, Hoi An has consistently demonstrated the strategic advantages of a territory possessing an exceptionally important geo-economic and geopolitical position within regional maritime trade networks. Owing to its geological structure, the central coast of Vietnam contains numerous deep, sheltered bays that are highly favorable for the establishment of military ports and commercial harbors. For this reason, since ancient times, “Central Vietnam has served as a gateway for regional waterway transportation, where most merchants, pilgrims, and diplomatic missions first set foot” (Nguyễn, 2019, p. 331). Consequently, as early as the Sa Huỳnh period, the Sa Huỳnh people, benefitting from their advantageous geographical location, “had a maritime worldview and maintained extensive and close interactions with the highlands of Upper Laos–Korat, the Pacific island regions, and exchanged with the Đông Sơn and Đồng Nai cultures by both land and coastal routes” (Trần, 2008, p. 48).

During the Champa period, taking advantage of its strategic position along the maritime trading route, Đại Chiêm Hải khẩu gradually flourished. According to historical accounts, “on the sea route from Guangzhou (China) to Bagad (Arabia), international vessels consistently stopped at Chiêm Bất Lao (Cửa Đại), Tăng Sơn, Môn Độc (Quy Nhơn), Cồ Đạt country (Kauthara, Nha Trang), and Bôn Đà Nẵng Châu (Panduranga, Phan Rang)” (Trần, 2008, p. 51). Notably, “the principal port of Champa (Chiêm Cảng) and the port of Kungchang, located ten days from the Champa capital (which G. Ferand identified as Kauthara, Nha Trang), contained numerous wells, prompting merchant ships to dock for fresh water” (Trần, 2008, p. 52).

After the great geographical discoveries of the fifteenth and sixteenth centuries, global maritime activity expanded, and “Central Vietnam continued to play a central role in regional maritime transportation and trade, particularly in the southern coastal waters of China during the era of seafaring commerce” (Nguyễn, 2020, p. 66). When Italian Jesuit missionary Christophoro Borri visited Đàng Trong in the early seventeenth century, he affirmed that “the finest harbor, where all foreigners arrive and where the renowned trade fair takes place, is the harbor of Quảng Nam province. People reach it through two sea gates: one called Turon (Đà Nẵng) and the other Pulluciambello (Hội An)” (Borri, 1999, p. 91). Thus, during the trading season, the entire area from Thanh Hà, Cẩm Phô, Hội An, and Hoài Phô (corresponding today to Cẩm Hà commune, Cẩm Phô ward, Minh An ward, Sơn Phong ward, and Cẩm Châu commune, as well as the Trà Nhiêu area of Duy Xuyên district) was crowded with boats that lined the river ports (Đỗ, 2008, p. 73). During its historical development, Hoi An emerged as an important transshipment center within maritime trade networks connecting the Indian Ocean, Southeast Asia, and East Asia. Commercial activities fostered strong linkages among maritime spaces, the estuary, the port city, local

communities, and routes for the transportation of goods. At the same time, the presence of merchants and communities from diverse regions contributed to the development of a culturally diverse space of exchange and interaction in Hoi An.

Over time, with many changes, it has become difficult to imagine Hoi An's coastal and maritime landscape during that period of prosperity. Yet researchers contend that "in earlier times, and even long before that, Hoi An lay at the river mouth, with the sea reaching directly into the area now known as Hoi An" (Bùi, 2008, p. 74). Therefore, when examining Hoi An's geomorphology, it becomes evident that landforms of marine origin comprise the majority of its terrain. The ancient town was constructed on a high depositional surface ranging from 5 to 7 meters, while communes such as Cẩm Châu, Cẩm An, and Cửa Đại formed on depositional 3 The trading season (or trade fair season) in Hoi An was organized according to the characteristic weather conditions of the central coastal region, which is divided into two distinct periods: the flood and rainy season (from September to January) and the dry season (from February to August). The dry season was the most favorable period for conducting outdoor commercial activities, and it was also the time when the sea was calm, allowing vessels to travel and enter the port safely. Therefore, Western merchant ships often arrived in Hoi An in early spring, with the busiest months being March, April, and May. By the end of the trading season, around July and August, when the southeast monsoon still blew and signaled the approaching stormy and rainy season, merchant fleets began to leave Hoi An and return to their home countries. surfaces between 2 and 4 meters (Nguyễn, 2005, pp. 20-21). In addition, landforms derived from river-marine interactions, marine-lagoon systems, and marine-aeolian processes occupy significant portions of the region. Thus, from its geological foundations upward, the imprint of the sea has played a decisive role in shaping the landscape and marine cultural space of Hoi An from deep historical time to the present. Thus, the port-city space and maritime trade networks not only reflect the economic significance of the sea in Hoi An's history but also demonstrate how maritime space connected the natural environment, human activities, communities, and processes of cultural exchange. This constitutes an important component of the historical and cultural values underpinning Hoi An's maritime cultural landscape.

Tangible Heritage and Sea-Related Cultural Spaces: In addition to the natural foundation, communities, and maritime trade spaces, tangible heritage and cultural spaces associated with the sea constitute an important component of Hoi An's maritime cultural landscape. These heritage elements are distributed across different areas and reflect the diverse ways in which historical communities interacted with the sea.

Heritage associated with religious life provides particularly clear evidence of the cultural relationship between people and the sea: Throughout its long history, Hoi An has preserved numerous ancient sites associated with the sea and maritime cultural practices, including remnants of the ancient Cửa Đại seaport; renowned underwater archaeological sites such as the Cù Lao Chàm shipwreck; Sa Huỳnh cultural sites (Bãi Ông and Bãi Làng on Cù Lao Chàm; An Bang in Thanh Hà; Hậu Xá I and II in Thanh Hà); shrines related to bird's nest harvesting such as the Tổ nghề yến Shrine (Bãi Hương village, Tân Hiệp commune) and the Ông Tiến Shrine (Thanh Đông village, Cẩm Thanh commune); whale-worship temples such as the Ông Ngư Temple (Bãi Làng, Tân Hiệp), the Ông Temple (Hà Trung quarter, Cẩm Nam ward), and the Ông Temple (An Bàng quarter, Cẩm Nam ward); the ancient Xóm Cẩm well (Cẩm village, Tân Hiệp commune) which was linked to international maritime trade routes between the Western and Eastern seas; fishing villages such as Vông Nhi, Đế Vông, Phước Trạch, Đại An, and Tân Hiệp that specialized in fishing and seafood processing for domestic consumption and export (People's Committee of Hoi An City, 2015). Most notably, the Ancient Town itself stands as a uniquely intact example of a traditional Southeast Asian trading port (Nguyễn, 2005, p. 55). These spaces demonstrate that the sea functioned not only as a source of livelihood but also as an integral part of the religious life and cultural practices of coastal communities.

Beyond religious spaces, numerous archaeological sites and residential areas also preserve traces of the historical interactions between people and the sea. According to Nguyễn Chí Trung, in a broad sense, the geographical space of Hoi An includes: “Seaports such as Cửa Đại and Cửa Hàn; foreports where large vessels anchored and awaited customs procedures such as Touron, Trà Nhiêu, and Trung Phường; river ports and marketplaces such as Đà Nẵng, Trà Nhiêu, Thăng Bình, Thanh Hà, and Trà My. All became direct satellites of the central market-town of Faifo (Hoi An), where goods were gathered, and annual trade fairs often lasted nearly four months. In a wider scope, it extended to Dinh Trần Quảng Nam, the second capital of the Nguyễn Lords, and the entire Quảng region of Đàng Trong, forming the internationally renowned ‘Seaport of Kẻ Chiêm / Cacciam’ in the seventeenth and eighteenth centuries” (Nguyễn, 2005, p. 105).

Old maps from the seventeenth and eighteenth centuries show an ancient waterway connecting the Thu Bon River, which flows through Hoi An (Faifo), to the sea via the Đại Chiêm estuary, with the Cỏ Cò River (Đế Võng) linking Hoi An to the Hàn estuary. Along this ancient waterway, researchers have discovered ship timbers and buried anchors (Phan, 1991, p. 19). In a narrower sense, Hoi An may be understood as “Hoài phố or Hội phố in local vernacular, or Faifo / ‘Ville de Faifo’ during the French colonial period, or the Ancient Town, the Historic Urban Area, or the Old Quarter of Hoi An in contemporary academic, architectural, and heritage terminology. In this view, its geographical scope represents only a small part of the larger Faifo-Hoi An region, referring specifically to the mercantile and international port center, namely, the marketplace and commercial quarters corresponding to the current ancient town” (Nguyễn, 2005, p. 106). Collectively, these heritage sites, religious spaces, maritime villages, and historic urban areas constitute an interconnected cultural-spatial system shaped by Hoi An’s long-standing relationship with the sea, rather than a set of discrete and isolated locations. Their interconnections preserve tangible evidence of maritime livelihoods, religious practices, settlement patterns, and trading activities, while also revealing the historical processes through which coastal communities interacted with and transformed their marine environment. This integrated configuration therefore constitutes a critical dimension of Hoi An’s maritime cultural landscape, contributing not only to its historical depth but also to its cultural significance and continuity.

Archaeological Heritage and Maritime Technological Remains: In addition to the heritage sites and cultural spaces on land, archaeological heritage and maritime technological remains located offshore and in the surrounding areas of Hoi An provide important material evidence of the historical interactions between Hoi An and the sea. Among these, the Cù Lao Chàm shipwreck and the remains associated with the construction of ships and ghe bầu vessels that once supported maritime activities in Hoi An and its surrounding areas are particularly significant.

Discovered accidentally in the early 1990s, the shipwreck was located offshore, approximately 20 kilometers east of Cù Lao Chàm Island (Hoi An, Quảng Nam), at coordinates 16°06’30" North latitude and 108°27' East longitude. Two excavation campaigns conducted between 1997 and 2007 revealed that “the ship’s remains appeared oriented east to west, slanting from the north downward to the south. The vessel, built of teak, measured 29.40 meters in length and 7.2 meters at its widest point. Its interior was divided into nineteen compartments, separated by tightly joined wooden beams that prevented water from flowing from one compartment to another” (Đoàn, 2016, p. 328). More than 260,000 intact artifacts were recovered, including glazed ceramics, stoneware, metal objects, wooden items, stone pieces, and human remains, with Chu Đậu ceramics representing the largest proportion.

In addition to the shipwreck, surveys conducted by Associate Professor Dr. Nguyễn Văn Đăng in the Gò Nổi region identified numerous traces of the former Hà Mật village (Điện Phong commune, Điện Bàn district), situated on the right bank of the Thu Bồn River, which once served as a shipbuilding workshop during the Nguyễn Lords period. In front of the Hà Mật temple today lies the old Thu Bồn River channel, locally known as the Hà Mật River. Although this river section

has been silted up due to changes in the Thu Bồn River's course, boats used by local fishermen still anchor there after long offshore journeys (Nguyễn, 2016, p. 47).

Alongside these shipyards, maritime guilds (vạn ghe bầu) were distributed around Hoi An's periphery until the early twentieth century, including the Thanh Châu and Cẩm Phô guilds within Hoi An, and the Bàn Thạch, Duy Vinh, and An Hòa guilds in Duy Xuyên district (Nguyễn, 2016, p. 51). The shipwreck and its associated artifacts, together with the shipbuilding workshops and ghe bầu construction sites, not only represent some of the most distinctive and concrete evidence of Hoi An's role in international maritime trade during the age of seafaring commerce, but also constitute an important and comprehensive body of materials that contributes to affirming Vietnam's sacred maritime sovereignty in the East Sea.

The findings demonstrate that Hoi An's maritime cultural landscape is not merely a collection of separate natural features, heritage sites, or economic activities, but rather an integrated spatial and cultural system shaped and transformed through long-term interactions between local communities and the sea. This system encompasses the natural foundation and coastal spaces; local communities, maritime villages, occupations, and indigenous knowledge; port-city spaces and maritime trade networks; tangible heritage and religious spaces associated with the sea; and archaeological heritage and maritime technological remains. These components are mutually interconnected and reinforce one another. Natural conditions provide the foundation for settlement and livelihoods; communities develop occupations, knowledge systems, and cultural practices associated with the sea; maritime activities and trade expand Hoi An's connections with other places; while heritage sites, cultural spaces, archaeological remains, and maritime technologies preserve the material traces of these historical interactions. Accordingly, the significance of Hoi An's maritime cultural landscape lies not only in the presence of individual components but also in the historical, cultural, social, and spatial relationships connecting them. These relationships reflect the long-term processes through which local communities have constructed, used, adapted, and maintained a landscape deeply connected to the sea.

These findings address the first research objective by demonstrating that Hoi An's marine cultural landscape comprises a complex interaction of cultural, historical, economic, and ecological elements that have evolved through long-term human engagement with the marine environment.

Assessing Challenges and Developing Strategies for the Preservation and Promotion of Hoi An's Marine Cultural Landscape

The Sustainable Development Goals (SDGs) are a United Nations initiative aimed at addressing current global challenges such as poverty, inequality, climate change, environmental degradation, peace, and justice. The SDGs emphasize the need to link maritime cultural heritage with existing environmental issues. Therefore, it can be said that the preservation and promotion of the marine cultural landscape of Hoi An is an urgent and timely matter. Based on available literature and field survey findings, we argue that the marine cultural landscape of Hoi An is currently confronted with several major challenges.

Environmental and Physical-Spatial Changes in the Maritime Landscape: One of the most evident transformations affecting Hoi An's maritime cultural landscape is the changing coastal environment and physical space, with coastal erosion representing a particularly prominent manifestation. Documentary evidence indicates that processes of coastal erosion and accretion have occurred over many years, with varying degrees of intensity across different coastal areas of Hoi An. During the northeast monsoon season, most sections of this coastline experience direct wave impacts, resulting in both erosion and accretion. Between 2020 and 2022, the rate of shoreline retreat from An Bàng to northern Cửa Đại reached 3.9 meters per year, while accretion measured only 2.2 meters per year. Erosion was particularly severe from southern Cửa Đại to Duy Hải, reaching 7.9 meters per year, compared to accretion at 3.67 meters per year (Nguyễn, 2024, p. 176). The most eroded area was Hà My beach, where the shoreline retreated 119 meters within five years,

with total land loss reaching 65 hectares from 2016 to 2021 and 112 hectares across the broader area (Cao et al., 2022, p. 50). According to direct observations, by June 2025, the Cửa Đại beach section running through Tân Thành (Hội An Tây ward) had retreated 5 to 7 meters. The rate of erosion was rapid and clearly visible near An Bang beach. Despite considerable efforts by local authorities to invest in restoration measures over the years, more than 7.5 kilometers of coastline continue to suffer from erosion without any signs of sustainable recovery (Lê, 2024, p. 64). Field observations conducted between January and June 2025 indicate that coastal erosion remains evident in several coastal areas. In Cửa Đại, particularly in the Tân Thành area, shoreline retreat can be observed through changes in beach morphology and the spatial conditions of areas adjacent to residential communities. Erosion was also clearly observed at An Bang during the field surveys. These observations are broadly consistent with accounts provided by local residents during the fieldwork, particularly those with long-standing residential and occupational ties to the sea. These observations were broadly consistent with the experiences reported by local residents during the fieldwork, particularly those who have lived and worked in close association with the sea for many years. A fisherman in his approximately 60s from Cửa Đại Ward observed: “Each year, particularly following heavy rains and storms, the beach is eroded by several tens of metres. Without protective embankments, the erosion will continue to advance further inland.” This account reinforces the field observations regarding the continuing retreat of the shoreline and the perceived intensification of coastal erosion following major storm events.

Beyond coastal erosion, changes in the coastal environment are also reflected in transformations of ecosystems and natural spaces. Alongside the severe erosion of the Cửa Đại coastline, marine ecosystems (particularly around Cù Lao Chàm) have shown signs of decline, and large areas of coastal casuarina and mangrove forests have been lost. Construction projects along riversides, sand dunes, and beaches have altered the natural morphology, disrupted hydrological flows, affected habitats and ecosystems, destroyed breeding grounds, and changed the life cycles of various aquatic species and migratory birds.

These disturbances not only impact tourism activities, but more importantly, they have led to significant changes in Hoi An’s marine cultural landscape and the traditional ways of life of local communities. The development of coastal resorts and hotels has altered not only the physical appearance of the coastline but also the cultural spaces of traditional fishing villages. Cultural spaces containing shrines, fish landing sites, and communal houses have gradually disappeared. Traditional fishing villages such as Cửa Đại and Tân Thành have experienced significant reduction in size. A profound shift in lifestyle and human–sea relations has occurred, as many local residents have become increasingly detached from the sea and traditional maritime crafts practiced for generations.

From a maritime cultural landscape perspective, environmental change should therefore be understood not merely as a geomorphological or ecological issue, but also as a transformation of the physical-spatial foundation within which coastal communities have lived and interacted over generations. As shorelines, beaches, dunes, and other coastal spaces change, areas associated with local livelihoods, settlement, and cultural activities may likewise become constrained or transformed. Coastal erosion and broader environmental changes have consequently emerged as important factors reshaping the structure and continuity of Hoi An’s maritime cultural landscape.

Transformations in Cultural Spaces, Maritime Villages, and Livelihoods: These disturbances not only impact tourism activities, but more importantly, they have led to significant changes in Hoi An’s marine cultural landscape and the traditional ways of life of local communities. The development of coastal resorts and hotels has altered not only the physical appearance of the coastline but also the cultural spaces of traditional fishing villages. Cultural spaces containing shrines, fish landing sites, and communal houses have gradually disappeared. Traditional fishing villages such as Cửa Đại and Tân Thành have experienced significant reduction

in size. A profound shift in lifestyle and human–sea relations has occurred, as many local residents have become increasingly detached from the sea and traditional maritime crafts practiced for generations. Fieldwork conducted for this study indicates that changes in coastal space have been accompanied by shifts in the livelihoods of local residents. During the field visits, the researcher engaged with fishermen, older residents involved in community rituals, and small-scale coastal business operators. These exchanges indicate that maritime occupations remain an important component of local livelihoods, while some households have shifted toward or combined fishing-related activities with tourism services. Some small-scale coastal businesses have also diversified into accommodation and other services catering to tourists. This indicates a gradual transition from livelihoods directly dependent on marine resource exploitation toward increasingly diversified combinations of maritime occupations and tourism-related services.

This transition is particularly evident in the changing relationship between younger and older generations and the maritime environment. Discussions with local residents, particularly those with long-term experience of living and working in coastal villages, indicate that some younger residents increasingly pursue employment in tourism and related service sectors in Hoi An and are therefore less directly engaged in maritime occupations than previous generations. In contrast, older residents and fishermen continue to maintain direct relationships with the sea through their occupations, residential environments, and community practices. These intergenerational differences suggest that the traditional relationship between coastal communities and the sea is undergoing significant transformation.

Thus, changes in coastal space are reflected not only in physical transformations but also in how communities use coastal environments and organize their livelihoods. Tourism development has created new livelihood opportunities for local residents, but it has simultaneously reduced the direct dependence of some community members on the sea and altered the social structure of coastal communities. This transition represents an important factor reshaping traditional human-sea relationships and has implications for the continuity of cultural values associated with maritime life.

Decline in Maritime Intangible Cultural Practices and Values: In parallel with visible changes in cultural space, intangible cultural values and the identity of the maritime community have also faded. In many fishing villages we visited, traditional maritime festivals such as the *cầu ngư* ceremony and boat racing have not been held for several years or are now conducted only in symbolic form. Fieldwork findings indicate that this transformation is particularly evident in the level of participation and intergenerational transmission. Older residents continue to play an important role in maintaining village rituals and cultural memories, whereas the participation of younger generations tends to be more limited. The key concern, therefore, is not that maritime cultural values have disappeared entirely, but rather that the spaces for cultural practice, levels of participation, and capacity to transmit these values across generations are becoming increasingly constrained. This transformation indicates that Hoi An's maritime cultural landscape is changing not only in terms of its physical spaces and livelihoods but also through the practices, memories, and cultural continuity of local communities. Maritime cultural values continue to exist, but their continuity increasingly depends on groups of residents who maintain direct connections with the sea and on older generations within the community.

The findings demonstrate that Hoi An's maritime cultural landscape is undergoing simultaneous transformations across environmental, spatial, livelihood, and cultural dimensions. Changes in the coastal environment, particularly erosion and fluctuations in natural coastal spaces, are altering the physical foundation of the landscape. At the same time, tourism development and livelihood transitions are reshaping maritime village spaces and weakening the direct relationship between some residents and the sea. These transformations are further reflected in intangible cultural practices, as certain traditional festivals and rituals are no longer maintained regularly and

intergenerational participation has become increasingly differentiated. Nevertheless, maritime cultural values have not disappeared entirely but continue to be sustained within communities and groups that retain strong connections with the sea. The challenge facing Hoi An's maritime cultural landscape therefore lies not simply in the transformation of individual components, but in the gradual weakening of the relationships linking the marine environment, community spaces, livelihoods, and intergenerational cultural continuity.

Interviews with fishermen, community elders, and residents of coastal villages revealed widespread concerns regarding the shrinking of traditional fishing spaces and the declining participation of younger generations in maritime occupations. Many participants noted that tourism-related economic activities increasingly replace traditional livelihoods, leading to a gradual weakening of cultural practices closely associated with the sea. Field observations conducted at Cua Dai and An Bang beaches further documented continuing shoreline erosion and changes in the physical appearance of coastal settlements.

The evidence and analysis presented above fulfill the second objective by identifying the principal environmental and socio-cultural challenges affecting the preservation of Hoi An's marine cultural landscape, while also proposing practical strategies to preserve and promote its value in support of sustainable coastal development.

The findings generally support the conceptualization of maritime cultural landscapes proposed by Westerdahl (2011), who argues that maritime cultural landscapes encompass all forms of interaction between humans and the sea. Similar to observations reported in other coastal regions, Hoi An's marine cultural landscape extends beyond physical heritage sites to include maritime occupations, traditional ecological knowledge, cultural practices, trade networks, and symbolic relationships with the marine environment. These findings also align with Flatman's (2012) interpretation that maritime cultural landscapes should be understood as integrated cultural systems rather than collections of isolated heritage resources. Conversely, the findings demonstrate that environmental degradation and tourism-induced transformations exert increasingly significant pressures on cultural continuity, thereby extending previous discussions regarding the vulnerability of maritime cultural landscapes under contemporary development conditions.

Discussion

Hoi An's Maritime Cultural Landscape as an Integrated System

First, the findings demonstrate that Hoi An's maritime cultural landscape should be understood as an interconnected system rather than as a collection of individual heritage sites or coastal spaces. Its formation reflects long-term interactions among the natural environment, coastal communities, livelihoods, maritime trade, tangible heritage, archaeological remains, and intangible cultural practices associated with the sea. This finding is consistent with the conceptual framework adopted in this study, which approaches the maritime cultural landscape through the dynamic relationship between people and the sea and recognizes both tangible and intangible values generated through this interaction.

The interconnected nature of the landscape is particularly evident in Hoi An, where the marine and coastal environment historically provided the spatial and ecological foundation for settlement, maritime occupations, navigation, trade, and community cultural practices. At the same time, human activities have continuously reshaped coastal spaces and contributed to the formation of their cultural meanings and values. Maritime villages, port-city spaces, trading networks, cultural sites, archaeological remains, and traditional practices should therefore not be interpreted as independent elements. Rather, they represent different dimensions of the long-standing relationship between local communities and the sea.

This perspective has important implications for heritage conservation. Protecting individual monuments, archaeological sites, or physical spaces alone may not be sufficient to maintain the integrity of the maritime cultural landscape. Greater attention should instead be given to the relationships connecting the environment, cultural spaces, communities, livelihoods, and cultural practices that collectively generate the landscape's significance. Hoi An's maritime cultural landscape can consequently be understood as a historically layered and relational system in which natural and cultural values have been produced, maintained, and transformed through continuous interaction.

A Dynamic Landscape under Environmental and Socioeconomic Transformation

Second, the findings indicate that Hoi An's maritime cultural landscape is not a static heritage entity but a continuously changing system shaped by simultaneous environmental and socioeconomic processes. Because the maritime cultural landscape encompasses both visible tangible elements and less visible cultural, archaeological, and underwater heritage, its preservation requires attention to the relationships between physical environments and community practices. This is particularly important under changing climatic and environmental conditions. Located in Vietnam's central coastal region, Hoi An is exposed to recurrent coastal hazards and weather-related processes that can accelerate the deterioration of heritage resources and alter the physical settings in which maritime cultural practices take place.

At the same time, tourism development and livelihood diversification have contributed to changes in maritime village spaces and in the direct relationships that some residents maintain with the sea. The findings further suggest that these environmental and socioeconomic transformations are reflected in intangible cultural practices. In several surveyed communities, traditional activities such as the Cầu Ngự ceremony and boat racing are no longer conducted regularly or have become more symbolic. This does not necessarily indicate the complete disappearance of maritime cultural values; rather, it suggests a contraction of the spaces, participation, and intergenerational transmission through which these values are reproduced.

The dynamic character of Hoi An's maritime cultural landscape is therefore expressed through interconnected changes in the environment, spatial organization, livelihoods, and cultural practices. Environmental transformation can affect livelihood opportunities and community spaces; livelihood diversification can alter patterns of interaction with the sea; and these changes may subsequently influence the continuity of cultural practices and intergenerational transmission. The transformation of the landscape should consequently be understood as a broader change in the relationship between communities and the sea rather than as a series of isolated changes affecting individual components.

Implications for Integrated Conservation and Sustainable Development

Third, the findings highlight Hoi An as a distinctive maritime cultural landscape with a strong sense of cultural identity derived from the interaction among environmental, historical, social, and cultural dimensions. Its conservation therefore requires an integrated approach to coastal and maritime spatial management. Spatial planning should simultaneously consider ecosystem protection, culturally significant spaces, heritage resources, and the livelihoods of coastal communities. Identifying and prioritizing areas of high landscape, cultural, and ecological value could help reduce fragmentation among individual landscape components and maintain the spatial relationships through which their collective significance is produced.

Community participation should constitute a central element of this approach. Raising awareness among Hoi An residents about the importance of the marine cultural landscape, its invaluable cultural heritage, and the unique relationship between culture and the marine environment is crucial, because only when people are sufficiently educated about its value can they act to protect and maintain its sustainability for future generations (Vladimirova, 2016, p. 45). Local communities should also be meaningfully involved in programs for coastal protection, ecosystem

conservation, and heritage management, particularly in coastal fishing communities such as Cua Dai and Tan Thanh. Such participation should extend beyond consultation and provide opportunities for residents to contribute local knowledge and practical experience to conservation planning and implementation.

For intangible cultural heritage, conservation efforts should prioritize the continuity and revitalization of maritime festivals, rituals, traditional occupations, and associated knowledge systems while strengthening opportunities for intergenerational transmission. Conservation should focus not only on documenting or symbolically preserving cultural practices but also on maintaining their capacity to remain meaningful and practicable within contemporary community life. Appropriate forms of interpretation and heritage promotion can further connect maritime cultural values with tourism, education, and public communication, thereby improving public access to and understanding of Hoi An's maritime heritage without reducing it to a tourism commodity.

Overall, conservation and promotion strategies should seek to maintain **space, environment, community, and cultural values as interconnected dimensions of a single landscape system**. Such an approach would enable Hoi An's maritime cultural landscape to be protected not merely as an assemblage of heritage resources but as a living cultural system that continues to evolve within contemporary social and economic contexts.

Synthesis of Findings and Conservation Priorities

Table 2 synthesizes the relationships among the principal components of Hoi An's maritime cultural landscape, the transformations and challenges identified in this study, the corresponding sources of evidence, and potential directions for conservation and value promotion.

Table 2: Summary of the Components, Transformations, Evidence, and Conservation Directions for Hoi An's Maritime Cultural Landscape

Component	Transformation/Challenge	Evidence	Conservation Direction
Coastal Environment and Spaces	Coastal erosion and changes in shoreline configuration are altering the natural conditions and spaces associated with the lives of coastal communities.	Field observations in Cua Dai, An Bang, and other coastal areas; accounts from local residents; cross-checking with documentary sources.	Promote integrated marine-coastal spatial management; protect ecosystems and areas of landscape value; combine heritage conservation with environmental restoration.
Settlement Spaces, Communities, and Livelihoods	Maritime village spaces and residents' relationships with the sea are changing alongside livelihood transitions and coastal tourism development.	Surveys of Phuoc Hai, Phuoc Trach, Phuoc Tan, and Tan Thanh; exchanges with fishermen, ritual practitioners, and coastal business households; documentary sources.	Conserve community spaces associated with maritime livelihoods; strengthen residents' participation, particularly that of maritime occupational communities, in landscape management and conservation.
Maritime Heritage and Memory	Heritage associated with port-city development, maritime trade, and seafaring activities needs to be understood in relation to	Historical and archaeological sources and studies on port-city development, maritime trade, <i>ghe</i>	Conserve, restore, and interpret maritime heritage values; strengthen connections among heritage sites

Component	Transformation/Challenge	Evidence	Conservation Direction
	the marine environment and Hoi An's historical development rather than as isolated heritage elements.	<i>bâu</i> vessels, shipbuilding, and the Cù Lao Chàm shipwreck.	and material remains through a coherent narrative of Hoi An's maritime landscape.
Maritime Cultural Practices	Some maritime festivals, rituals, and cultural practices show declining community participation, particularly amid changing livelihoods and contemporary lifestyles.	Exchanges with local residents, including older residents involved in village rituals; field observations; cross-checking with documentary sources.	Revitalize maritime festivals, rituals, and traditional practices; strengthen intergenerational transmission and community participation; integrate appropriate cultural interpretation into education and sustainable tourism.

Source: Author's own synthesis and analysis.

Limitations and Future Research

Several limitations should be considered when interpreting the findings. First, fieldwork was conducted through four one-day visits between January and June 2025. The observations therefore capture landscape conditions and processes visible during the study period but do not provide continuous evidence of seasonal variation or longer-term environmental change. Future research could adopt longitudinal or repeated seasonal observations to examine how coastal conditions, livelihoods, and cultural practices evolve over time.

Second, the study engaged with 10 local residents aged between 40 and 80 who were purposively selected based on their knowledge of and engagement with maritime life and culture. The resulting accounts are therefore valuable for identifying and interpreting locally experienced transformations but are not statistically representative of the wider population of Hoi An. Future studies could incorporate a larger and more diverse participant pool, including younger residents, tourism workers, cultural practitioners, local authorities, and other stakeholder groups, to capture a broader range of perspectives.

Third, the exchanges were relatively brief and relied on guiding questions and contemporaneous field notes rather than audio-recorded interviews or structured questionnaires. This approach was appropriate for the exploratory field context and enabled attention to remain focused on issues directly relevant to the research objectives. However, it limited the extent to which participants' experiences and narratives could be explored and systematically analyzed. Future research could employ more extensive semi-structured interviews, focus groups, participatory mapping, and other participatory methods to investigate community perceptions and intergenerational changes in greater depth.

These limitations suggest several opportunities for further research. Future studies could combine qualitative evidence with spatial and temporal data to examine the relationship between coastal environmental change and cultural landscape transformation more systematically. Participatory GIS and historical landscape reconstruction could also be used to map changes in maritime villages, heritage sites, livelihood spaces, and shoreline configurations. Such approaches would provide a stronger empirical basis for developing integrated conservation and sustainable management strategies for Hoi An's maritime cultural landscape.

Several limitations should be considered when interpreting the findings. First, fieldwork was conducted during four visits between January and June 2025, with each visit lasting one day.

The observations therefore reflect the conditions and landscape features documented during the study period and do not capture seasonal variations or longer-term changes continuously. Second, the study engaged with 10 local residents aged between 40 and 80, who were purposively selected based on their knowledge of and long-term engagement with maritime life and culture. The information obtained is therefore primarily useful for identifying and interpreting locally observed transformations in the surveyed areas rather than for statistical generalization to the wider population of Hoi An. Third, the exchanges were relatively brief and relied on guiding questions and field notes rather than audio-recorded interviews or structured quantitative questionnaires. While this approach allowed the study to focus on information directly relevant to its research objectives, it limited the depth and systematic documentation of participants' experiences and perspectives. Accordingly, the findings should be interpreted within the scope of a qualitative study based on field observations and documentary triangulation rather than as representative evidence of the entire coastal community of Hoi An.

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Nong Mon Qilin: Souvenir Design Based on Local Identity of Saensuk Subdistrict, Chonburi Province, Thailand

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Abstract

The Qilin, a Chinese mythological creature representing virtue and prosperity, has become emblematic of the local Teochew-Chinese identity. This research employs Qilin symbolism to develop a culturally appropriate souvenir design for the Nong Mon community in Chonburi Province, guided by three objectives: 1) to extract Qilin-related identity keywords reflective of Teochew-Chinese heritage; 2) to establish evidence-based design standards for Nong Mon souvenirs; and 3) to validate the proposed designs with community stakeholders. A qualitative research methodology was adopted, across three phases, involving 35 key informants in total (n = 35): 25 participants contributed focus group discussions and in-depth interviews in Phase 1, and 10 design and community validation specialists participated in Phase 3. An evaluation of 156 existing Nong Mon souvenirs was also conducted to identify market gaps. Data were analyzed through thematic and content analysis. In response to Objective 1, analysis identified seven Qilin identity keywords: virtue, longevity, prosperity, protection, auspiciousness, cultural continuity, and local belonging-which formed the design brief. In response to Objective 2, these keywords informed a five-element colour palette (blue, red, yellow, white, black, with gold and jade-green accents) and morphological design standards (e.g., dragon-scaled skin, deer-hoofed feet, single horn), applied to a 3D-printed collectible figurine prototype. In response to Objective 3, evaluation by ten key informants (design experts, cultural heritage specialists, and tourism scholars) produced four validated themes: cultural authenticity of the Qilin's iconographic translation, material quality and refinement needs, narrative engagement potential, and community acceptance and heritage alignment. These findings contribute to the advancement of sustainable tourism while safeguarding Teochew-Chinese cultural heritage in the Saensuk subdistrict.

Keywords: Cultural Souvenir Design, Teochew-Chinese Heritage, Qilin Symbolism, Sustainable Tourism, Community-Based Cultural Heritage, Saensuk Subdistrict

Introduction

Bang Saen Beach, Khao Sam Mook, and the Nong Mon local market, noted for its processed seafood and traditional sweets, are prominent tourist attractions in Saensuk, a Chonburi Province subdistrict (Nakpathom et al., 2024). The generations of Teochew-Chinese immigration in Saensuk have shaped its cuisine and culture (Luangpipat, 2025). The Qilin (Khee-Ling in Teochew) symbolizes morality, longevity, and wealth for Saensuk residents (Lukman et al., 2018). “Nong Mon Qilin” builds on this cultural bedrock and uses the Teochew-Chinese traditions of Saensuk to strengthen locals’ and visitors’ spiritual and cultural ties (Lang & Numtong, 2025), creating a sense of belonging in a tourism sector that often prioritizes profit. Research has shown that turning mythical animals into modern Thai souvenirs to boost local tourism is successful (Ponimin, 2021). Saensuk has many cultural treasures, yet its souvenirs are lacking. Many of these souvenirs do not accurately depict the subdistrict’s culture and use obsolete design (Husa, 2020; Qiu et al., 2024). This mismatch hurts

Saensuk, whose economy relies on tourism. This area’s souvenirs do not represent Nong Mon’s Teochew–Chinese identity beyond food. Lack of cultural transference to modern creative outputs causes two main issues: younger generations’ erosion of Teochew–Chinese heritage due to disconnection from traditional symbolism (Huang & Fang, 2021) and consumer preferences for generic mass-produced or imported goods over locally made products that reflect community identity. Heritage preservation and local economic survival are threatened by this pattern. Addressing this twofold dilemma demands culturally authentic design. To ensure authenticity, this study uses a qualitative research method with community members and 3D scans of archaeological designs from the Sawang Phon Foundation and Chao Mae Sam Muk Shrines. The proposed design integrates Thailand’s Bio-Circular-Green (BCG) economic model, which emphasises material innovation and sustainability (Edyvean et al., 2023). To practice “circular localism,” modern Qilin souvenirs incorporate bamboo tubes from Khao Lam and oyster shells from fishermen in the area (Dumée, 2021; Jitpakdee et al., 2025). This redesign approach simplifies complex historical forms into modern graphic designs and resin copies, making it useful for cultural souvenirs.

This study reimagines the Nong Mon Qilin as a modern collectible to promote cultural preservation and local economic growth. This study also investigates how culturally significant souvenir design, such as the Qilin, might meet heritage conservation and economic development goals. This study creates a culturally authentic memento that promotes sustainable tourism and makes Saensuk stand out (National Economic and Social Development Council, 2025). BCG principles and Sustainable Development Goals (SDGs) (UNESCO, 2017) are used to create concrete cultural anchors that protect the Saensuk’s Teochew–Chinese heritage, benefit local artisans and entrepreneurs, and resolve the conflict between heritage preservation and commercial tourism.

Objectives

This study aims to:

1. extract and analyze Nong Mon Qilin identity keywords from Teochew symbolic imagery and cultural narratives within the Saensuk–Nong Mon community;
2. develop design standards for culturally authentic souvenirs, including prototypes, color palettes, and pattern specifications, based on the extracted identity keywords and existing art and design principles; and
3. validate the design outcomes using qualitative feedback gathered from community stakeholders and design experts.

Literature review

National policy framework and Bio-Circular-Green economy

Thailand's development policies support culturally-based product innovation. The 20-year National Strategy (2018–2037) aims to “link cultural identity and local wisdom to create social value and economic added value,” using local cultural capital to deliver valuable products and services through cultural and creative tourism (Netwong et al., 2024). Thailand relies on tourism for 12% of its GDP (Piboonrungraj et al., 2023). Thus, Thailand's tourism industry must use sustainable methods to balance economic growth with cultural preservation. This framework is expanded by the National Economic and Social Development Plan No. 13 (2023–2027), which emphasizes quality and sustainability (National Economic and Social Development Council, 2025), spatial identity, diverse community tourism options, ecological conservation, and cultural heritage. Thailand's BCG economy model uses biodiversity and cultural assets to innovate in four key sectors: agriculture and food, health and medicine, bioenergy and biomaterials, and tourism and the creative economy (Edyvean, 2023). This strategy integrates UN SDGs 11.4, 8, and 12 on trash reduction and recycling. Cultural tourism, which accounts for 40% of worldwide tourism earnings, helps communities grow economically while preserving their legacy (UNESCO, 2017). Souvenirs anchor travelers' memories of a destination (Masset & Decrop, 2020). The convergence of BCG principles and cultural tourism offers opportunities to create souvenirs that promote environmental sustainability and cultural preservation.

Cultural product transformation framework

Global market homogenization has increased customer demand in culturally rooted items (Zhang & Dong, 2023). Culturally authentic gifts can differentiate destinations, boost tourist satisfaction, and boost local economies (Chang et al., 2021). Designers must incorporate indigenous workmanship and local myths into modern product designs to appeal to modern consumers (Zhang, 2021). Systematic cross-cultural design techniques bridge heritage and commercial innovative identities. Semiotic frameworks like form–semantics–pragmatics balance visual form, cultural meaning, and social application to prevent auspicious or mythological themes from semantic drifting (Lou, 2025). Cultural products are sociolinguistic and spiritual. Cultural symbols including regional themes, historical narratives, and legendary entities are deconstructed and reinterpreted by designers before being used in current product designs (Lin, 2007). This translation procedure is three-tiered. The outermost level includes colors, textures, patterns, and morphological features that are only superficially represented. Usability, ergonomics, and consuming rituals in a cultural setting connect physical items, social contact, and lifestyle integration at the intermediate level. The core reflects philosophical principles, historical narratives, and symbolic significance (fortune, protection, and mercy) that evoke emotion (Lin, 2007). The methodical extraction and translation of cultural product designs across all three levels ensures that the products reflect cultural identity while meeting commercial demands.

Strategic design framework application

The cross-cultural design framework encompasses inquiry (finding culture elements), interaction (analyzing cultural scenarios), development (translating features into design elements), and implementation (Dhadphale, 2024). This framework organizes community-oriented product and sustainable cultural artifact design. Designers build authentic cultural objects by integrating local identity with exterior material developments (Zhang & Wen, 2020), creating bio-circular materials that respect traditional forms and incorporate modern sustainability. This methodology now incorporates BCG and participatory community validation through focus groups with local craftspeople (D'Amato & Korhonen, 2021). Recent research has used sustainable material

procurement and qualitative user experience evaluation to boost cultural authenticity and business feasibility (Santoso & Schrepp, 2019).

Cultural integration in souvenir design

Incorporating local culture in souvenir design offers tourists authentic experiences and fosters place memory and regional identity (Qiu et al., 2024). Design methods include conservative methods that conserve tradition and modern adaptations that simplify features for accessibility while retaining cultural essence (Olalere, 2020). Culturally influenced souvenirs might be conservative (traditional), flexible (combining heritage with accessibility), or modern (using minimalist aesthetics or lively colors to attract more demographics) (Imsonran et al., 2021). According to Zhu et al. (2023), keychains, tote bags, and t-shirts can convey regional identity by including local identifiers like religious symbols, indigenous textile patterns, and educational background. Cross-disciplinary design can transform folk culture aspects into unique souvenirs that promote cultural tourism (Qiuxia et al., 2022). Ceramic and locally produced fabrics are used in souvenir design and public art programmes for mature markets (Qiu et al., 2024). Financial assistance and traditional knowledge systems are needed to improve souvenir diversity and quality (Zhu et al., 2023).

Circular economy principles in design

Thailand's design and manufacturing industries are slowly adopting circular economy principles for resource sustainability. This paradigm promotes product reuse, value preservation, and waste management while optimizing manufacturing resources. Entrepreneurs working toward sustainable development are supported by the government (Amornkitvikai et al., 2024). Previous experiments have shown waste-to-souvenir conversion. Beachgoers can buy souvenir bags made from vinyl from damaged beach bed fabric, inner tubes, and beach umbrellas. Three prototype shoulder bags, chest bags, and backpacks have been sold to visitors with good satisfaction (Pattanasopon, 2023). These projects demonstrate that waste materials and local identification can create commercially viable goods that meet consumer needs. Besides synthetic materials, agricultural waste can be developed. Rice straw from the indigenous "Jek Choey Sao Hai," a byproduct of traditional rice production, is used to make artisanal paper for women's handbags and sustainable packaging. These goods receive positive reviews, with customers praising the benefits of using agricultural waste (Pramotemaung, 2024). This technique reduces agricultural burning and environmental damage while increasing waste product value and encouraging local storytelling mementos.

Qilin symbolism in Thai-Chinese culture

According to Breedlove and Fung (2020), the Qilin (麒麟) is a sacred entity with five animal features, including dragon scales, deer hooves, and a five-hued body (blue, red, yellow, white, and black, each hue signifying one of the five elements). Qilin statues and five-element symbols are often put at Chinese temple gates to ward against evil and attract good. The ancient Chinese five-element principle states that oneness creates protection and prosperity (Watt, 2008). Thai-Chinese societies revere auspicious things and animals. Anthropological research demonstrates that Thai-Chinese households and enterprises employ auspicious artifacts for luck, wealth, and entrepreneurial confidence (Pinnukul, 2021). Commercial enterprises strategically install Chinese auspicious objects outside and inside their premises to increase earnings, wealth, and owner trust. Choosing lucky symbols needs thought about their meanings. Dragons, phoenixes, and bats have unique connotations, as does the Qilin, which symbolizes compassion and good fortune (Watt, 2008). Qilin and other Chinese auspicious symbols emerge in religious and contemporary cultural products (Zhang & Dong, 2023), transmitting identity and cultural narratives to users and visitors. Research has shown that shrine art motifs like dragons, phoenixes, turtles, Qilin, lions, and bats can be used to produce contemporary wearable jewelry with subtly fortunate meanings. These jewelry items use fortunate animal forms and patterns as "symbolic codes" to

make adornment culturally significant (Breedlove & Fung, 2020). Qilin or dragon motifs convey auspiciousness and distinguish products in the market. This incorporation of traditional aspects into practical objects supports Thai-Chinese ideals and allows new generations to experience Chinese culture through concrete products.

Teochew-Chinese cultural capital in Saensuk-Nong Mon

Saensuk subdistrict in Chonburi Province, Eastern Thailand, is crucial for learning Chinese immigration culture. Tourism is important to Bang Saen, which includes Muang Saensuk on the shore. Coastal Chonburi has had large Teochew (Chaozhou) Chinese inhabitants since late Ayutthaya. This municipality's rich culture makes symbols, especially auspicious animals, important to local identity. Saensuk aims to build a "livable city" that preserves natural resources, promotes economic growth, and promotes sustainability (Nukkipid, 2022). Development initiatives in this region focus on local cultural assets and blending indigenous handicrafts and traditional practices into tourist activities and offers to increase creative tourism (Qiu et al., 2024). Souvenirs that incorporate cultural and artistic identities into modern designs through locality-based development and sustainable practices must be authentic, useful, and attractive (Zhu et al., 2023). After generations of settlement, Saensuk–Nong Mon's residents' deity worship, Chinese New Year celebrations, intricate artwork, and auspicious Chinese symbols reflect their Teochew-Chinese cultural heritage. Qilin, which represents virtue, longevity, and wealth, is essential to Teochew-Chinese beliefs. Qilin iconography is widespread in Chinese community art and architecture and are extensively shown in Nong Mon Chinese temple sculptures and paintings, representing Thai-Chinese ancestry and identity.

Research methodology

This research utilizes a qualitative exploratory approach that incorporates iterative design development and validation processes. The research philosophy is rooted in interpretivism, which emphasizes the importance of community voices and cultural narratives in guiding design innovation. This study is conducted in three phases.

Phase 1: Nong Mon Qilin identity keywords are identified via interviews, focus groups, and visual documentation.

Phase 2: A product design grounded in art and design principles is developed using the identity keywords extracted from Phase 1.

Phase 3: Qualitative validation is conducted by gathering community and expert feedback on the design prototype.

This study was conducted in Saensuk and covered five communities, namely, Hat Wonnapha (coastal heritage zone), Ruamjai Pattana (cultural preservation area), Khao Sam Muk (religious tourism hub), Bang Saen Lang (commercial tourism district), and Nong Mon (food heritage center). These communities were selected as they embody a rich tapestry of cultural heritage while sharing a common Teochew–Chinese ancestry. The focus group and interview sessions were conducted in Thai and followed the ethical protocols approved by the Burapha University Research Ethics Committee, Thailand (Approval No. IRB2-142/2568).

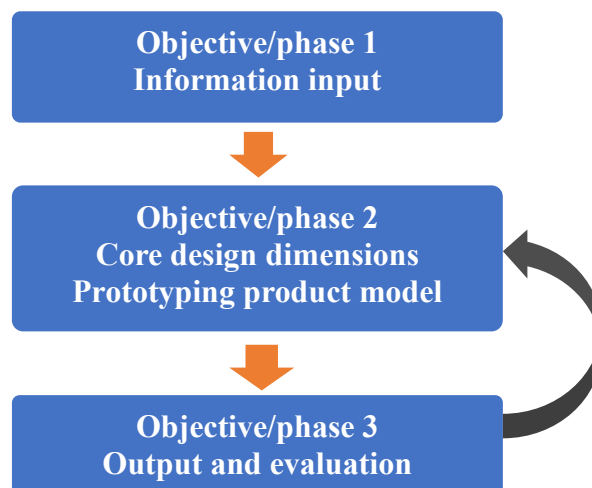


Figure 1: Research framework. The framework illustrates the study's three-phase progression-identity extraction, design development, and validation-and how findings from each phase feed into the next.

Source: Authors' own work

Sampling and participants

To gain cultural information and varied views, purposive and criteria sampling was used (Palinkas et al., 2015). Creswell & Poth (2016) used maximum variation sampling to represent stakeholder groups. A total of 35 key informants participated across the study: 25 contributed to Phase 1 data collection (interviews and focus groups; profiles in Table 1), of whom 18 also participated in individual in-depth interviews. A separate, independently recruited sample of 10 key informants (K1-K10)-design and material experts, cultural heritage specialists, and tourism scholars-participated in Phase 3 design validation. The two samples were non-overlapping, bringing the total number of unique participants across the study to 35.

Table 1: Participant profiles and selection criteria

Sample group	Number (people)	Description	Role in project	Inclusion criteria
Community leaders	3	Respected community leaders play a pivotal role in promoting cultural heritage	Integrating the project into the community while capturing local insights	Candidates must have a minimum of five years of experience
Local designers	5	Regional artists and designers engaging with local heritage and identity	Communicating creative ideas and local heritage	Relevant artistic works
Product manufacturers	5	OTOP business operators or local craftsmen in the Nong Mon community	Provide information on the production process, materials, and marketing	Distribution of local products
Tourists	8	Visited Nong Mon and bought souvenirs	Provide information on satisfaction, preferences, and needs	Has visited Nong Mon at least once
Local authorities	2	Officials from the Subdistrict Administrative Organization/municipality/provincial cultural office	Policy support and approaches for broader implementation	A local official who has duties/responsibilities in the area

Sample group	Number (people)	Description	Role in project	Inclusion criteria
Local expert	2	Local experts who have knowledge of Qilin, Nong Mon, temples, and Chinese shrines	Explain the legends, beliefs, and local identity	Recognized by the community

Source: Authors' own work

Note: All 25 participants listed above contributed to Phase 1 data collection. Local designers additionally contributed creative input during Phase 2 design development. Phase 3 validation was conducted with a separate, independently recruited sample of 10 key informants (K1-K10)-design and material experts, cultural heritage specialists, and tourism scholars-not included in this table. Total unique participants across the study: 35 (25 in Phase 1+10 in Phase 3).

Focus groups and interviews

Five to eight people participated in four community-based focus group sessions. For lively conversations and varied opinions, this number of individuals is ideal (Gundumogula, 2020). The collective cultural narratives were analyzed in semi-structured focus group talks. Trained moderators used narrative inquiry in 30–60-minute sessions (Adhikari, 2021). Discussion themes included community history, Teochew–Chinese cultural practices, Qilin and auspicious animal symbols, traditional festivals, culinary legacy, and tourism expectations.

Personal experiences and specific expertise were examined in 18 30–45-minute individual in-depth interviews. We sampled until theme saturation (Hennink & Kaiser, 2022). To study cultural identity development, transmission memories, tourism impacts, and preservation ambitions, each interview used phenomenological methods (Alhazmi & Kaufmann, 2022). A sample interview prompt was: “Could you explain a time when you felt linked to your Teochew heritage?” Our semi-structured interviews allowed for emergent themes while ensuring participant consistency.

Data recording and analysis

Each interview was recorded and transcribed verbatim in Thai following informed consent. Back-translation was used to check the accuracy of selected sections translated into English for this manuscript (Brislin, 1986). Field notes recorded the researcher's reflexivity, environmental context, and nonverbal communication (Phillippi & Lauderdale, 2018). Data was triangulated by at least two researchers to increase reliability and confirmability (Korstjens & Moser, 2017); researchers discussed discrepancies until they agreed.

High-resolution photographs were used to chronicle shrine sculptures, paintings, architectural elements, cultural items, handicrafts, festival events, ritual performances, and souvenir products in the five selected communities, following systematic visual ethnography analysis (Brown & Collins, 2021). Standards documentation forms were used to catalogue the photographs' locations, dates, settings, and tentative descriptions.

Material culture was examined by assessing 156 Nong Mon Market souvenirs for cultural authenticity, design excellence, affordability, durability, and local narrative. A systematic evaluation matrix with criteria for each dimension was used to identify design improvements and market gaps (Yuan et al., 2022), with data triangulation following Noble and Heale (2019) to improve assessment validity. Community narratives from interviews and visual documentation of traditional Qilin representations were used to verify material culture findings.

Data analysis and theme development

Focus group data were analyzed using narrative inquiry (Adhikari, 2021) to surface collective cultural narratives, while individual interview data were analyzed using phenomenological methods (Alhazmi & Kaufmann, 2022) to examine personal experiences of cultural identity. Transcripts from

both sources were then coded inductively using content and thematic analysis (Humble & Mozelius, 2022): codes were generated from recurring terms and descriptions of Qilin symbolism and Teochew-Chinese heritage, grouped into candidate categories, and refined through researcher triangulation until seven stable identity keywords emerged (Table 2). These keywords were cross-validated against the visual ethnographic documentation and the 156-souvenir material culture evaluation before being translated into design criteria (colour palette and morphological standards, Section 3.2). The same content and thematic analysis approach was applied to the Phase 3 expert interviews to derive the four validation themes (Section 3.3).

Conceptual framework for design development

Three theoretical lenses informed the design process. Peirce (1931-1958) translated cultural symbols into design features via sign connections: 1) iconic signs, graphic depictions of cultural symbols (e.g., Qilin paintings imitating shrine sculptures); 2) indexical signs, design elements expressing cultural existence through causal relationships; and 3) colour symbolism drawn from five-element Chinese philosophy. This strategy creates “cultural encoding mechanisms” that help tourists decipher local identity (Yang et al., 2022). Second, the Kapferer six-faceted prism guided community brand identity development through elements including physique (local cultural landscape expressed through colours, forms, and materials), brand persona, culture, relationship, and self-image projection. Third, three stages of cultural product design (Lin, 2007) were used to move beyond intuitive design: 1) physical level (outer), correct visual and material extraction-the Qilin’s hoofed feet (resembling deer) must not be misrepresented as claws; 2) social level (intermediate), how souvenirs anchor tourists’ journeys; and 3) spiritual level (inner), the Qilin’s associations as fortune teller and merciful beast.

Prototype development workflow

A concept sketch was produced, drawing inspiration from traditional Chinese paintings, real places, toys, art, and web media, using Krita Paint 5.3. 3D colours and shadows were added using Easy Diffusion. Hunyuan 3.0, an AI image-to-3D modelling tool, generated 3D models from the primary photographs; these were imported into Blender 3.6 for post-processing and optimization, with surface integrity and detail accuracy confirmed before 3D printing.

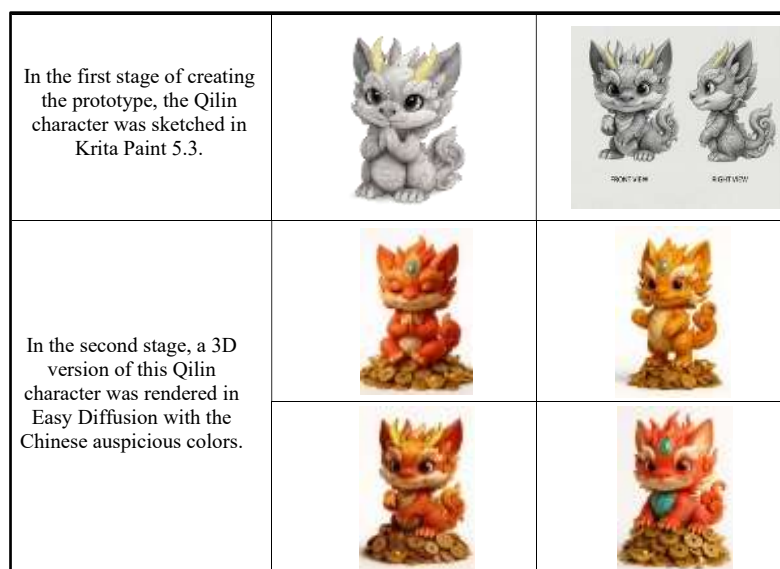


Figure 2: Character design using Krita Paint and Easy Diffusion. The concept sketch (top) establishes the Qilin’s proportions and pose, while the rendered version (bottom) applies the five-element colour system to preview the character’s surface treatment.

Source: Authors’ own work



Figure 3: 2D image imported to the Hunyuan AI 3D modelling app to create a 3D model. This step converts the flat character design into an initial 3D mesh, preserving key morphological features such as the dragon-scaled body and single horn for further refinement.

Source: Authors' own work

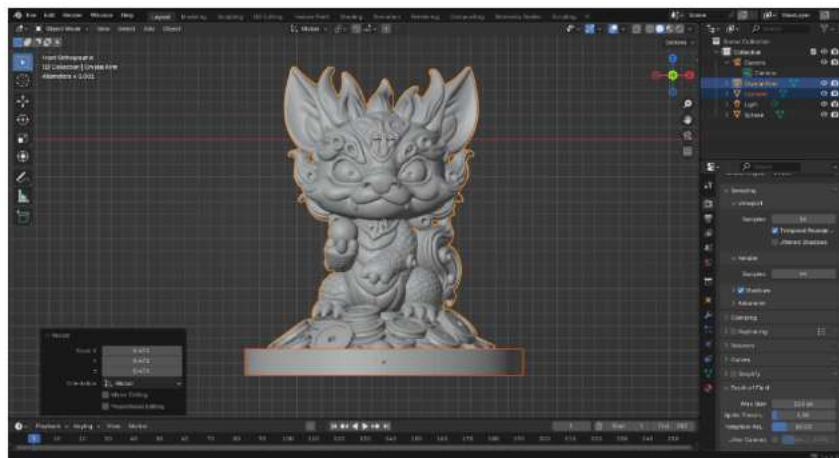


Figure 4: Character modification in Blender 3D software. The AI-generated mesh is adjusted here to correct proportional distortions and refine surface topology ahead of detail sculpting.

Source: Authors' own work

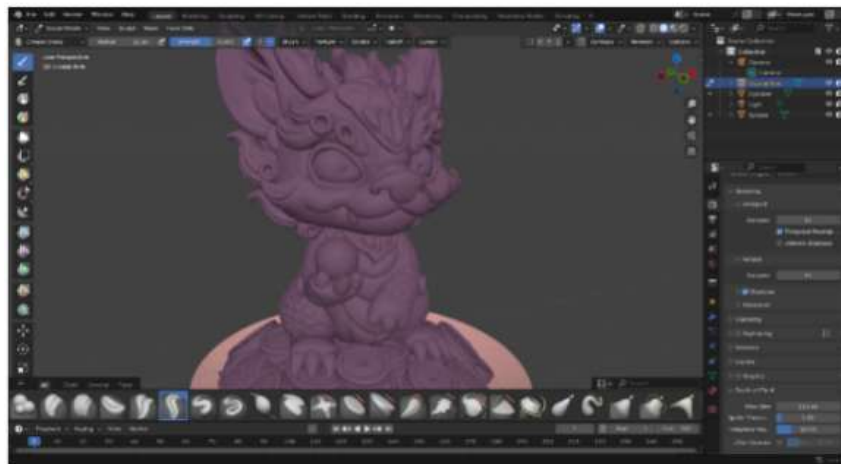


Figure 5: Character re-sculpting in Blender 3D software. Fine surface details—including scale texture and the deer-hoofed feet—are sculpted at this stage to meet the morphological design standards outlined in Section 3.2.

Source: Authors' own work



Figure 6: 3D printed characters in PLA+ filament. The physical prototype produced from the finalized 3D model, used as the basis for the Phase 3 expert evaluation reported in Section 3.3.

Source: Authors' own work

Expert evaluation procedure

After the prototype was produced, the design process followed human-centered design principles (IDEO.org, 2015): 1) empathize, synthesizing community cultural narratives; 2) define, articulating design challenges as “how might we...” statements; 3) ideate, sketching design alternatives; 4) prototype, creating low- then high-fidelity mockups; 5) test, iteratively incorporating user feedback; and 6) summarize. Ten key informants (K1-K10) were interviewed about the prototype: K1–K3 (design and material experts, industrial designers, product design academics) evaluated the prototype’s physical level and material innovation; K4-K7 (cultural heritage specialists, local historians, Saensuk Thai-Chinese

community leaders) assessed spirituality and Qilin identity; K8-K10 (tourism scholars, souvenir retail managers) assessed social and market potential. Content and thematic analysis was used to evaluate cultural translation, material sustainability, and market suitability (Humble & Mozelius, 2022).

Results

Results are presented by phase, corresponding directly to the study's three research objectives.

Phase 1 findings: Identity keywords and market gap

Material culture analysis of 156 Nong Mon Market souvenirs, triangulated with community narratives and visual documentation, produced seven core identity keywords (Table 2).

Table 2: Extracted Nong Mon Qilin Identity Keywords

No.	Identity Keyword	Cultural Meaning	Source of Evidence
1	Virtue	The Qilin appears only in the presence of a wise and benevolent ruler; it embodies moral righteousness	Focus groups; temple iconography
2	Longevity	Associated with long life and enduring community legacy across generations	Individual interviews; shrine carvings
3	Prosperity	Linked to commercial success and household abundance within Teochew–Chinese business culture	Focus groups; community leaders
4	Protection	Qilin statues placed at temple gates to guard against malevolent forces	Visual documentation; local experts
5	Auspiciousness	The five-hued body representing the five elements signals cosmic harmony and good fortune	Individual interviews; visual documentation
6	Cultural continuity	Participants described the Qilin as a living link between ancestral Teochew identity and present-day community life	Individual interviews; community leaders
7	Local belonging	The Nong Mon Qilin is perceived as distinctively local-differentiated from generic Chinese Qilin imagery by its specific shrine context and community history	Focus groups; local designers

These seven keywords formed the foundational design brief for Phase 2 and served as evaluative criteria for the Phase 3 validation process.

Souvenir market evaluation (156 items)

Each of the 156 souvenirs was assessed for cultural representativeness of Teochew-Chinese identity, visual excellence and craftsmanship, material suitability, tourism appeal, and conformity with local identity narratives. Most existing items scored poorly on cultural representativeness and local identity. Most featured generic Thai or generically Chinese motifs, such as mass-produced elephant figurines, printed cotton bags, and imported ceramic trinkets, without reference to Teochew-Chinese origin, the Nong Mon Qilin, or the community's settlement history. Synthetic and imported materials dominated all product categories with little local influence. Functional value for travellers was the strongest dimension, since prior items were portable and affordable,

but they offered little narrative or experiential value beyond basic utility. Artisanal objects were better-looking than mass-produced ones, but neither had a cultural basis.

These findings confirm the identity gap identified in the Introduction—the persistent mismatch between Saensuk’s rich Teochew–Chinese cultural heritage and its generic souvenir market—and support the need for a purpose-designed souvenir series based on the seven identity keywords above.

Phase 2 findings: Design standards and prototype

Applying the identity keywords and conceptual framework described in the Methodology, a five-element colour palette and set of morphological design standards were developed for the Nong Mon Qilin souvenir series. To make this translation explicit, Table 3 maps each identity keyword from Phase 1 to its corresponding design decision.

Table 3: Identity Keyword to Design Decision Mapping

Identity Keyword	Design Decision
Auspiciousness	Five-element colour palette (blue, red, yellow, white, black)
Prosperity, Virtue	Gold and jade-green accent colours
Protection	Deer-hoofed feet, single horn, dragon-scaled skin (morphological accuracy standards)
Cultural continuity, Local belonging	Composite pattern backgrounds (bat, cloud, lotus motifs from Nong Mon shrine art)
Longevity	Tiered pattern density across product categories, supporting sustained accessibility across price points

Source: Authors’ own work

Design requirements: colour palette

The five-element Chinese cosmology system inspired the colour palette. Blue (water element), red (fire element), yellow (earth element), white (metal element), and black (wood element) form the basic palette, each with cosmological significance and clear visual precedence in Nong Mon shrine imagery. Gold and jade green were chosen as accent colours because community informants believe they symbolise affluence and auspiciousness in Teochew–Chinese visual culture. Full Pantone and RGB colour specifications are in Table 4.

Table 4: Nong Mon Qilin Souvenir Colour Palette Specifications

Color Name	Cultural Element	Symbolic Meaning	Pantone Reference	RGB Value
Blue	Water	Wisdom, depth	#1A4F6E	26, 79, 110
Red	Fire	Vitality, fortune	#C03C2C	192, 60, 44
Yellow	Earth	Stability, abundance	#E8A820	232, 168, 32
White	Metal	Purity, longevity	#E8F0F2	232, 240, 242
Black	Wood	Strength, protection	#1C1C1E	28, 28, 30
Auspicious Gold	-	Prosperity, prestige	#EACD76	234, 205, 118
Jade Green	-	Virtue, harmony	#2A7A5A	42, 122, 90

Pattern and morphological design standards

Pattern specifications were created from thorough analysis of 156 souvenirs and visual ethnographic documentation of Qilin iconography at the five study sites. Morphological parameters were set to assure cultural authenticity in all souvenir applications:

The Qilin body must have dragon-scaled skin and deer-hoofed feet, not claws.

The Qilin's five-element colour distribution should match the shrine sculptures at Chao Mae Sam Mook and Sawang Phon Foundation.

All figurative depictions must show the Qilin's single horn.

Composite pattern backgrounds can include bat, cloud, and lotus designs, all fortunate symbols in Nong Mon shrine art, to enhance cultural layering without overpowering the Qilin form.

Pattern density was calibrated across three product tiers, following the conservative-flexible-contemporary spectrum in the literature: high for collector figurines, medium for ornamental goods, and simplified line-form for everyday accessories. Complete prototype specifications are presented in Table 5.

Table 5: Phase 2 Prototype01 Specifications

Specification	Detail
Product type	Collectible figurine; decorative Art toy;
Dimensions	92 mm x 75 mm × 72 mm
Primary material	PLA+
Proposed future material	Bamboo composite; oyster shell powder (proposed; not yet tested)
Color system	Five-element palette + gold and jade green accents
Production method	3D printed model to create Silicone rubber mould

Phase 3 findings: Expert and community validation

Analysis of the ten expert evaluation interviews produced four validated themes, each supported by convergent feedback across multiple informants.

Theme 1: Cultural authenticity of Qilin iconographic translation

Across all four cultural heritage informants (K4-K7), the prototype's iconographic representation of the Qilin was consistently judged culturally accurate and community-recognizable, with convergence on the morphological fidelity of the deer-hoofed feet and the five-element colour distribution as consistent with Nong Mon shrine iconography. Informants further noted that this accuracy supported intergenerational transmission, with younger community members responding positively to the design's contemporary rendering while still recognizing its traditional referents.

Community leader K5 stated: "This is the Qilin we know from the temple. The colours and the feet are right. People here will recognize it immediately."

K4 further noted that the five-element palette reinforced the Qilin's cosmological meaning in a way that distinguished it from generic commercially produced Chinese souvenirs:

"Most Qilin products you find in the market use only red and gold. This design uses the five colours properly. That is important-it tells the whole story, not just the surface."

K6 and K7 both emphasized that the prototype's iconographic accuracy supported intergenerational cultural transmission, noting that younger community members shown the prototype responded positively to its visual clarity and contemporary rendering while still recognizing its traditional referents.

Theme 2: Material quality and prototype refinement needs

Informants K1-K3 (design and material experts) affirmed the prototype's structural integrity and the effectiveness of the 3D-printing workflow in capturing surface detail, while converging on three refinement priorities for production: surface finish, material substitution for tactile quality, and cost

management through simplified colour zoning at lower price points. No claims regarding market appeal or purchase intention were made by this group, as these fell outside the scope of material and design evaluation.

K2 observed: “The form is strong and the detail of the scales is well captured. For a production version, the surface finish will need more work-the layer lines are visible and will affect perceived quality.”

K1 commented on material considerations: “The current material (PLA+) works for a testing model, but for a souvenir that people will handle frequently, weight and feel matter. An Oyster shell mixed with resin or composite version should be tested.”

K3 raised the question of production scalability and cost: “The design is achievable, but the complexity of the five-colour application will increase unit cost significantly. Simplified colour zoning on lower price-point versions should be considered.”

No informant in the K1-K3 group made claims about market appeal or purchase intention, as these were beyond the scope of material and design evaluation. Such claims are therefore not made in this report.

Theme 3: Narrative engagement and cultural storytelling potential

Informants K8-K10 converged on the finding that the prototype’s cultural depth would not be readily accessible to tourists without an accompanying narrative framework-that the object’s visual distinctiveness alone was insufficient to communicate its cultural meaning at the point of sale.

K8 stated: “When I saw the keepsake, I wanted to understand why this community exists here and what its history is. The object itself is attractive, but tourists need a way in-through activities, ceremonies, or a story that explains its origin.”

K9 reinforced this view, identifying strategic cultural storytelling as a prerequisite for converting tourist interest into cultural engagement: “The design is distinctive enough to attract attention. What it needs is a story that tourists can take away with the object-something that makes them feel they have received not just a product but an understanding.”

K10 noted the retail context: “In a souvenir shop, this would stand out visually. But it needs a product card or QR-linked narrative so that the buyer knows what they are holding and why it matters.”

Theme 4: Community acceptance and heritage alignment

Across all ten informants without exception, the prototype was perceived as a meaningful and appropriate representation of Nong Mon’s Teochew-Chinese identity, with no concerns raised regarding cultural misrepresentation or inappropriate use of sacred symbolism. Informants additionally identified the prototype’s potential value as a tool for heritage preservation and intergenerational cultural education.

Community leader K5 summarized the collective reception: “This is something we would be proud to have represent our community. It is honest to who we are.”

K1 offered a complementary perspective from the design domain: “Its design is distinctive and its appearance is unusual in a good way. It functions as a reminder-of design, of belief, of a community’s story. It is the kind of object that people who see it need to understand.”

K7 added a heritage preservation dimension: “For younger people especially, having something they can hold and show others-that carries the Qilin’s real meaning-is important. This could be a genuine tool for cultural education.”

Prototype narrative feature

Drawing on strategic storytelling techniques, a cultural narrative was created to engage tourists with the items. According to this narrative, symbolic aspects were turned into prototype design features. Tale of Nong Mon Qilin and his friends: Over a century ago, wooden merchant ships braved the ocean winds to transport Chinese immigrants to Thailand’s eastern coast. To secure safe transit, good health, and a successful future in this unfamiliar place, immigrants brought their families, skills, and bodyguards. Five mythological guardians-carved into their ships’ bows and painted on their chests-left

their ships and settled in the new seaside communities. Saensuk shrines' beautiful woodwork and murals depict these protectors. Locals have known for decades that these five ghosts possess beneficial energy. Phase 3 included these auspicious animals in the prototype design and gave them Gen Z-friendly meanings (Lin, 2007). The Qilin symbolized luck and was painted in bright colors to send positive energy, while the dragon represented wisdom and knowledge. Figure 7 shows the characters and their meanings.

Summary of findings

Taken together, the three phases directly address the study's objectives. In response to Objective 1, Phase 1 fieldwork and the 156-item souvenir evaluation identified seven Qilin identity keywords and confirmed a clear identity gap in the existing souvenir market. In response to Objective 2, these keywords were translated into evidence-based design standards—a five-element colour palette and morphological specifications—realized in the Prototype01 collectible figurine. In response to Objective 3, validation with ten expert and community informants confirmed the prototype's cultural authenticity and community acceptance, while identifying specific refinement needs in material finish and narrative framing for tourist engagement. These findings collectively demonstrate a replicable, community-grounded process for developing culturally authentic souvenir design in the Saensuk subdistrict.

Saensuk Auspicious Animals



 康勇 (Kāng Yǒng) The Green Lion Meaning: 康 (Kāng) translates to health, vitality, and well-being, while 勇 (Yǒng) translates to bravery and courage. Character Identity: The Peaches of Immortality in his hands tie perfectly to “Kāng,” while his bold lion features represent “Yǒng.” He acts as the steadfast protector of physical well-being.	 坚寿 (Jiān Shòu) The Dragon-Headed Turtle Meaning: 坚 (Jiān) translates to steadfast, firm, or patient endurance, while 寿 (Shòu) means longevity and long life. Character Identity: The turtle shell (featuring the character for longevity) represents a long life, while the calm, meditative posture reflects the quiet, enduring patience needed to achieve such long life.
 雅宁 (Yǎ Níng) The Baby Phoenix Meaning: 雅 (Yǎ) translates to elegance, grace, and refinement, while 宁 (Níng) means peace, tranquility, and serenity. Character Identity: Standing gracefully on her treasure box with a lotus flower, which is a classic symbol of purity, “Yǎ Níng” represents a life that is both beautifully elegant and completely at peace.	

Figure 7: Meaning and identity of Saensuk auspicious animals. Each of the five guardian figures is paired with its Chinese name, symbolic meaning, and character role within the prototype’s narrative framework.

Source: Authors’ own work

To summarise the five guardian figures introduced above, Table 6 presents a comparative overview of their names, meanings, and symbolic attributes.

Table 6: Summary of Saensuk Auspicious Animal Attributes

Character	Chinese Name	Core Meaning	Symbolic Attribute
The Red Qilin	福瑞 (Fú Rui)	Blessing, fortune, auspicious omen	Holds a glowing orb; wards off negativity
The Meditating Dragon	智吉 (Zhì Jí)	Wisdom, intellect, good luck	Holds a scroll; embodies focused pursuit of wisdom
The Green Lion	康勇 (Kāng Yǒng)	Health, vitality, bravery	Holds Peaches of Immortality; steadfast protector
The Dragon-Headed Turtle	坚寿 (Jiān Shòu)	Steadfast endurance, longevity	Turtle shell; calm, meditative posture
The Baby Phoenix	雅宁 (Yǎ Níng)	Elegance, peace, tranquility	Lotus flower and treasure box; purity

Source: Authors' own work

Discussion

To bridge the “identity gap” (mismatches between identities and images; Nogueira & Carvalho, 2022) in local tourism, this work translated the Teochew–Chinese tradition of Saensuk into modern souvenir designs. Results show that Nong Mon Qilin uses cultural capital (Huang, 2019) to offer “spiritual anchors” for residents and visitors. This research goes beyond replicating traditional objects by seeing the design process as a cultural alchemy or a symbolic translation (Tang & Leong, 2025); rather, this work deconstructs and re-encodes the mythological Qilin into a modern setting, thus offering theoretical and practical implications for cultural product design.

Symbolic translation and authenticity: This research achieved a symbolic translation of the Qilin by following a rigorous creative design process. Physically, complex historical morphologies were streamlined into sleek, minimalist aesthetics to appeal to the tastes of Gen Z and foreign tourists. The main theoretical contribution of this work lies in its preservation of the inner level of artifacts (Lin, 2007). Expert and community validation (Theme 1, Section 3.3) confirmed that the design communicates historical narratives, thus maintaining the Teochew–Chinese identity among younger generations. This structured translation process preserves the semiotic indicators of the Qilin, such as its “beast of mercy” status. The souvenir prototype was validated by informants as a culturally authentic artifact that conveys local meaning.

Toward “circular localism”: a proposed Bio-Circular-Green direction: This work proposes integrating the BCG economic model with cultural product design. By upcycling oyster shells from neighbouring fisheries and bamboo tubes from Khao Lam, this work incorporated the indigenous Saensuk identity into its product design as a future development direction. The current prototype was produced in PLA+ (Table 5); oyster shell powder and bamboo composite were identified during Phase 3 expert evaluation as promising alternative materials (Theme 2) but were not experimentally incorporated or tested in this study. Should these materials be developed and validated in future work, such material innovation could satisfy SDG 12, which concerns waste reduction and resource optimization (UNESCO, 2017), and would build on Pattanasopon (2023), who reported high visitor satisfaction with Bang Saen seaside souvenirs manufactured from repurposed vinyl waste-though the present study did not

collect comparable visitor satisfaction data and this comparison remains suggestive rather than confirmatory. Testing oyster shell and bamboo composite integration is recommended as a priority direction for future research, given informant interest in material alternatives that carry stronger local resource significance than PLA+.

Practicalities for community-based enterprises: The strategic framework generated from community data synthesis appears scalable, based on informant feedback regarding narrative engagement and community acceptance (Themes 3 and 4, Section 3.3). Communities may boost perceived value by shifting from generic commodities toward culturally grounded creations. Informants (K8–K10) suggested that story cards narrating the Qilin’s cultural significance could help tourists engage with the object’s meaning (Theme 3); however, this study did not assess actual purchase behaviour, willingness to buy, or tourism expenditure, and such outcomes should be treated as directions for future research rather than established findings. This proposed approach aligns with the 13th National Economic and Social Development Plan’s community income targets (National Economic and Social Development Council, 2025).

Design framework for practical implications

This study presents a systematic design framework for culturally genuine and sustainable memento products based on these findings. The framework applies to community-based tourism:

Empathizing with the community: Communities should recognize that many tourism products sold in the market are consumer goods like packaged snacks, processed seafood, and trinkets, which are neither modern nor appealing to visitors. Local entrepreneurs’ poor design skills contribute to this issue. Since the neighbourhood generates a lot of waste, such as oyster shells, this work built its prototype to suit tourist demand and combat pollution.

Identifying the problem: Focus group talks and in-depth interviews help communities appreciate the significance of their souvenirs. To impress travellers, these souvenirs should reflect the Teochew–Chinese community and their landscape as well as the Chinese community in Nong Mon and Saensuk. The community should also create a modern, versatile product model. They should use local garbage to save production costs without sacrificing quality. Manufacturing these things can employ locals. Prices should reflect the quality of these keepsakes.

Official souvenir product design: Researchers, designers, and local producers should collaborate on prototypes. The design method utilized Nong Mon culture. These prototypes showed community-based manufacture and inspired souvenir development.

Limitations and future research

Despite its use of rigorous qualitative techniques such as in-depth narrative inquiries and phenomenological methodologies, this study faces several limitations. First, the proposed material innovation-oyster shell and bamboo composites-was identified through Phase 3 expert feedback but was not experimentally incorporated or tested within the scope of this study; the prototype was produced in PLA+. To operationalize circular localism, future research should test these materials directly and explore additional indigenous, biodegradable alternatives. Second, although this study provided deep, qualitative insights into cultural narratives, future research could further explore the evolving meanings and cultural significance of “China-Chic” souvenirs within the Saensuk community.

Conclusion

This study set out to develop a culturally authentic souvenir design for the Nong Mon community grounded in Teochew-Chinese Qilin symbolism, guided by three objectives. In response to Objective 1, qualitative fieldwork across 25 Phase 1 participants and a 156-item souvenir market evaluation identified seven core identity keywords-virtue, longevity, prosperity, protection, auspiciousness, cultural continuity, and local belonging-that captured the community's understanding of Qilin symbolism and confirmed a clear gap between existing souvenirs and local identity. In response to Objective 2, these keywords were translated into evidence-based design standards, including a five-element colour palette and morphological specifications, and applied to a 3D-printed collectible figurine prototype. In response to Objective 3, validation with ten independent key informants confirmed the prototype's cultural authenticity and community acceptance, while identifying specific, actionable refinement needs in material finish and narrative framing for tourist engagement.

Taken together, these findings demonstrate that a structured, community-grounded design process can produce a souvenir that is both culturally authentic and open to further development. The study's contribution lies in this replicable process-extracting identity keywords, translating them into design criteria, and validating outcomes with both community and expert stakeholders-rather than in a finished, market-ready product. Future work should test the proposed alternative materials, expand validation to a larger and more diverse informant sample, and evaluate the prototype's actual market performance, none of which fall within the scope of the present study.

AI Tool Disclosure

This study used AI-assisted tools (Easy Diffusion for rendering, Hunyuan 3.0 for 2D-to-3D model generation) during the prototype design process, as described in the Methodology (Prototype development workflow). These tools were used solely for visual and design prototyping and did not generate any text, data analysis, or research findings reported in this manuscript. All AI-assisted outputs were reviewed, modified, and finalized by the research team using Blender 3.6 prior to 3D printing.

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Developing A Context-Based Active English Learning Management Model to Enhance 21st-Century English Proficiency Among Primary School Students in Roi Et Province, Thailand

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Abstract

Primary school English instruction is unproductive because of instructional strategies mostly put emphasis on grammar and memorization rather than communication, resulting in students lacking confidence and not being able to use the language fluently. This study aims at developing active English language learning management model that aligns with the context of upper primary school students in Roi Et province and the 21st-century English language competency framework. Mixed-method research was applied in this study. The study was divided into two phases. In the first phase, the current conditions, forms and obstacles in English language learning was investigated, then model protocol was designing, next the "ROI-Active English Learning Model" was developed. In the second phase, implementing and evaluating the model were processed.

There were 20 primary English teachers and 30 upper primary school students in Roi Et Province involved in this study, selected using the volunteer sampling method. There were 2 research instruments: questionnaires and semi-structured interviews, used to collect data. Content analysis technique was used to analyze qualitative data; on the other hand, quantitative data were analyzed through descriptive statistics.

The research findings revealed that:

1. Primary schools in Roi Et Province generally had adequate instructional facilities and technology; however, shortages of English learning resources and language laboratories remained problematic. Students commonly lacked confidence in using English and had limited critical thinking and communication skills. English instruction across four main skills emphasized active learning through multimedia, games, role-play, storytelling, and communicative activities, with performance-based assessments widely applied. Quantitative findings further indicated that teachers experienced instructional obstacles at a moderate level (Mean = 3.30, SD = 0.17), particularly excessive non-teaching workloads (Mean = 3.60, SD = 0.19), unsuitable instructional content (Mean = 3.35, SD = 0.11), and insufficient technological support (Mean = 3.33, SD = 0.10).

2. The ROI-Active English Learning Model, designed and developed in six steps, including 1) Analyze Instructional Context to understand the factors affecting learning, 2) Identify Learning Goals clearly and measurably, 3) Determine instructional strategies that emphasize active learning, focusing on student participation, and 4) Create learning activities that facilitate hands-on learning

through group work, games, and the use of digital media. 5) Assess learning outcomes using both formative and summative assessment methods, and 6) Provide feedback and reflection to improve learning for maximum efficiency. The expert evaluation of the model showed a high level of appropriateness (overall Mean = 4.38, SD = 0.39), indicating that the components, procedural steps, contextual fit, and active-learning orientation of the model were suitable for implementation.

3. The students' attitudes and opinions toward English language learning designed based on the ROI-Active English Learning Model showed that they had a more positive attitude towards learning English, including increased enthusiasm for learning, and were able to improve their listening, speaking, reading, and writing skills. In addition, students mentioned that this format made the instructions of English more effective and enjoyable because it was relevant to the context of primary school learners and could appropriately respond to their needs.

Keywords: Model Development, Active English Learning Management Model, Primary School Students, 21st Century English Proficiency

Introduction

It is known that the role of the English language in national development has become much more crucial than it was in the past. According to Pradheepa et al. (2025), it is stated that English plays an important role for people in numerous ways, for example, in business communication, cultural exchange, traveling abroad, further education, and diverse business sectors. Using English as a medium of communication competently is necessary because knowing just one language, English, will allow us to communicate with more than a billion people in the world (Pradheepa et al., 2025). This is consistent with the findings of John & Nursulu (2025), who demonstrated that English proficiency levels have positive effects on economic growth. Hence, countries with stronger English language skills compared to other countries tend to experience accelerated economic growth on average. In addition, higher levels of English proficiency also have a positive effect on the Human Development Index. Accordingly, the level of English language use is considered an important factor affecting the level of human capital development (John & Nursulu, 2025).

In addition, we realized that learning the English language has become extremely important and necessary in daily life because it is a crucial tool for communication, education, knowledge acquisition, professional development, and fostering understanding of cross-cultural communication within the global community. The importance and necessity of English is becoming more highlighted in the 21st-century global society as technology plays an increasingly important role in learning. English, as a universal language, provides access to unlimited knowledge resources, allowing learners to obtain information instantly and effectively. Those with a good command of English and Information and communication technology abilities can provide more effective and efficient communication, consequently expanding their personal and professional development.

The Thai government has continuously established strategic plans and policies to enhance English language proficiency among all groups of people. Among these policies is the National Strategy for Human Resource Development, which puts a strong emphasis on communication skills in English and third languages. Additionally, the Ministry of Education announced the English Language Teaching Reform Policy (2014) help educational institutions enhance English language teaching at the basic education level. The Common European Framework of Reference for Languages (CEFR), which promotes the integration of various teaching modes and a communicative language teaching (CLT) approach, is the main standard

incorporated into the reform. To improve language acquisition through technology and conform to the CEFR, the government has also supported teacher development programs, enrichment courses, and specialist English programs.

Despite these efforts, it is demonstrated that the English proficiency level of Thai people is still low and has been on the decline in recent years. By the EF English Proficiency Index results, with a score of 48.54 in 2018, Thailand was ranked 64th out of 88 countries. It dropped to 74th place in 2019 with a score of 47.61, and in 2020, it was ranked 89th out of 100 countries participating in the test. These showed that Thailand moved down from the low English proficiency group to the very low English proficiency group. The primary challenges contributing to this decline involve the lack of qualified English teachers, particularly at the primary level. It was found that most instructors especially at the elementary levels do not hold degrees in English (Imam & Al-Mahmud, 2024). It is consistent with the study results of Masang (1989) cited in Chalarak (2016) that a large number of primary school instructors lack the skills and self-assurance needed to teach English successfully, which results in uninspired instruction that fails to motivate students.

A study by Andrew Glass, Director of the British Council Thailand, points out that there are four major problems that impact English instruction in Thailand. He defined that 1) more than 75% of English teachers in primary and secondary schools have an A2-level or lower English proficiency; 2) overall, the problem of English language skills in Thailand reflected in the problem of inequality in the country; 3) traditional grammar-translation and rote memorization methods dominated English instruction in Thailand and limiting real-world communication skills; and 4) language assessment continues to deeply emphasis on grammar and reading rather than practical communication (British Council, 2021). These challenges highlight the need for a paradigm shift in English language instruction that places an emphasis on proactive learning management, with a focus on communicative competence and meaningful engagement.

To address these issues, the Thai government has announced the "Less Teaching, More Learning" policy, advocating for active learning strategies that emphasize hands-on experiences over theoretical instruction. This approach inspires teachers to create learning environments where students are entirely engaged in their education, fostering motivation and engagement through interactive and experiential activities. Accordingly, it is important and required to develop English language teaching and learning model that aligns an English language instruction at the basic education level with the learning reform guidelines of the Ministry of Education and the Office of the Basic Education Commission of B.E. 2557 (2014). These guidelines have a clear objective for instructors to design learning management that reduces direct academic or theoretical instruction for students. Besides, teachers are encouraged to modify their teaching methodologies and learning activities by increasing the time allocated for students to learn through practical application.

Subsequently, the researcher is interested in developing an active English language learning management model that is connected to reality, contemporary, diverse, flexible, and contextually appropriate for upper primary school students in Roi Et province and aligns with the 21st-century English language competency framework. To design this model, the researcher has inspected the conditions, existing models, and obstacles in English language teaching among upper primary school teachers in Roi Et province. This was achieved through interviews with direct stakeholders, namely upper primary school English teachers in primary schools within Roi Et province. The purpose of these interviews was to design and develop an active English language learning management model that corresponds to the learners' context.

The researcher anticipates that this research will contribute to the development and enrichment of knowledge regarding Active English Language Learning Management for English language teachers and instructors. This will enable them to implement English

language teaching and learning that is compatible with students' abilities and needs, while also effectively responding to the demands of English language use in the 21st century.

Literature Review

To developing an Active English Language Learning Model that is aligned with the context of upper primary school students in Roi Et province and the 21st Century English Language Proficiency Framework, the following relevant documents and research studies were studied.

Meaning of Learning Management

Learning management refers to a systematic process in which educators design and organize instructional activities to support meaningful learning outcomes and learner well-being. Hough and Duncan theorized learning management as creative activities through which individuals apply knowledge to facilitate others' learning, encompassing curriculum design, instruction, measurement, and evaluation (Hough & Duncan, 1970). Consistent with Abidin (2025) who defined learning management as an instructional design process that integrates learning theories, teaching methods, activities, techniques, and educational technologies to achieve expected learning outcomes. After Synthesizing these views, learning management can be understood as a structured and intentional process aimed at promoting effective and sustainable learning achievement.

Principles and Concepts of Learning Management

Effective learning management is grounded in clear curricular understanding, systematic planning, and alignment between objectives, activities, and assessment. Huang (2025) emphasized that learning management models must be developed based on theoretical foundations, practical evidence, and contextual needs of learners. It should be flexible and adaptable, allowing educators to select or design instructional models that best suit learning objectives and learner characteristics (Huang et al., 2025). Learning management models typically consist of four key components as follow 1) underlying philosophy, theory, or belief system, 2) description of instructional characteristics aligned with those principles, 3) systematic organization of instructional elements, and 4) teaching methods and techniques that enhance instructional effectiveness (Khammanee, 2010).

These components collectively ensure that instruction is coherent, goal-oriented, and pedagogically sound.

Development of Learning Management Models

The development of learning management models involves a systematic process beginning with needs analysis and theoretical review. Khammanee (2004) proposed that model development should be supported by research evidence and refined through expert validation before classroom implementation. The ultimate purpose of model development is to maximize instructional effectiveness when applied appropriately in real educational contexts.

Learning management model improvement occurs in two major stages: 1) pre-implementation revision based on theoretical feasibility, and 2) post-implementation refinement based on empirical classroom findings (Khammanee, 2010). Further, MacLellan, (2025) suggested that model development should include pilot testing, expert review, and iterative revision to ensure practical applicability and effectiveness.

Active Learning

Active learning is widely known as a key instructional approach in 21st-century education due to its responsiveness to fast social change. It emphasizes meaningful learning through learners' engagement, collaboration, and hands-on experiences. This approach is grounded in two assumptions which is learning is a natural human process, and knowledge is constructed through active participation and social interaction. The Faculty of Medicine, Prince of Songkla University (2016) identified active learning as being rooted in constructivist theory, positioning learners as central agents in knowledge construction.

This approach can be implemented through a variety of instructional strategies such as student-led review sessions, educational games, video analysis and reflection, and student debates. These activities promote critical thinking, communication, and learner engagement while allowing teachers to act as facilitators rather than sole knowledge transmitters.

In English language classrooms, active learning supports language use in authentic and meaningful contexts. Learners are encouraged to practice speaking, listening, reading, and writing through interactive tasks that foster confidence and communicative competence. It aligns well with communicative and learner-centered pedagogies, particularly in primary education.

In active learning environment, teachers are function as facilitators, guides, and motivators. The effective teachers demonstrate subject expertise, instructive skills, and psychological understanding of learners. They produce supportive learning atmospheres that encourage learner participation and reduce anxiety, particularly in foreign language learning contexts. While learners are active participants who construct knowledge through interaction, reflection, and collaboration. By this learning environment, learners are encouraged to express ideas, ask questions, and engage in problem-solving activities. This learner-centered approach promotes autonomy, motivation, and deeper learning outcomes.

Challenges in English Language Learning Management

Several studies have identified challenges in English language teaching at the primary level, including insufficient teacher qualifications, limited instructional resources, and learner anxiety. In some contexts, teachers lack formal training in English language pedagogy, highlighting the need for professional development and capacity building. Creating positive learning environments and improving teacher competencies are essential strategies for addressing these challenges. Sriwichain (2023) investigated the effects of active learning on Grade 3 students' s English speaking skills and found significant improvement after instruction, with high learner satisfaction. The results indicated that active learning enhances communicative ability and learner engagement when appropriately designed and implemented.

Theoretical and Conceptual Synthesis

Taken together, the reviewed concepts suggest that the proposed model should integrate four complementary theoretical orientations: active learning, which emphasizes learner participation and hands-on engagement; communicative language teaching, which promotes meaningful language use; social constructivism, which explains learning through interaction and scaffolding; and CEFR-oriented proficiency development, which provides an international reference for language-use outcomes. Therefore, the model was designed to connect learner context, clear learning goals, active instructional strategies, communicative tasks, formative and summative assessment, and feedback/reflection into a coherent instructional cycle

Related Research

Cholchalita Kamutthaphichai (2020) examined the development of English teaching management for pre-service English teachers and found that communicative-based instructional designs improved learner satisfaction and engagement.

Nawaporn Chalarak (2016) studied the English teaching conditions of 42 Grade 6 Thai teachers in Lamphun Primary Educational Service Area Office 1. The findings showed that teachers practiced English teaching at a high level, mainly using Project-Based Learning (PBL) and authentic materials. Problems included differences in students' abilities and some teachers' lack of English teaching qualifications, highlighting the need for teacher training and supportive learning environments.

Nadanong Sriwichain (2023) investigated the effects of active learning management on the English - speaking skills of 19 Grade 3 students at Wat Phai Khad School, Suphan Buri Province. The study aimed to compare students' speaking skills before and after the intervention and examine their satisfaction. The findings showed that students' English- speaking skills significantly improved after the intervention.

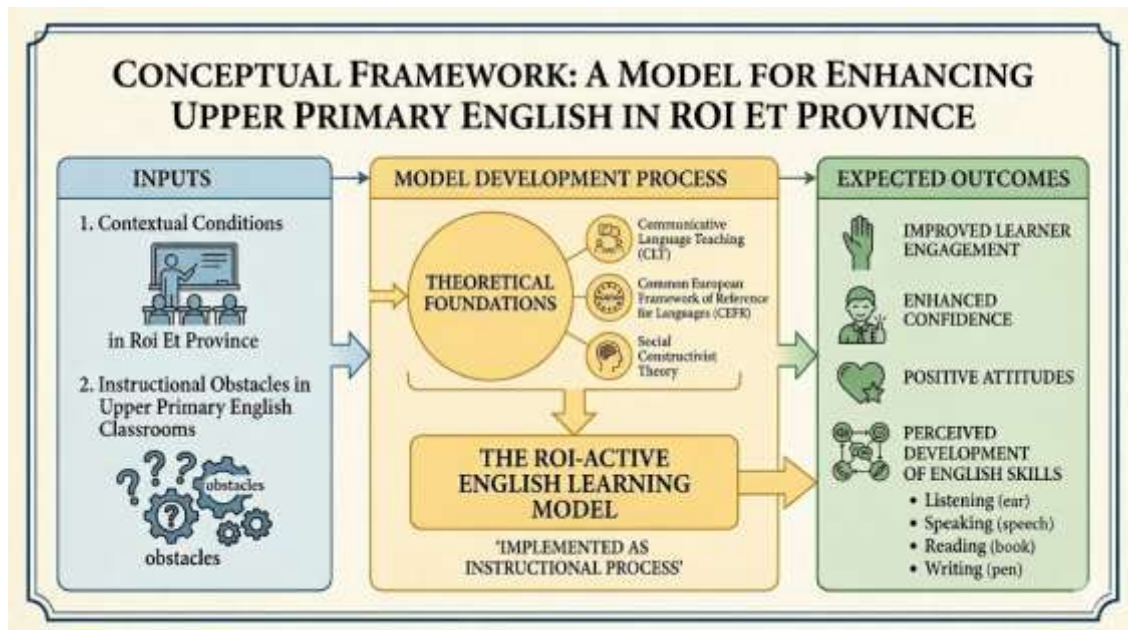


Figure 1: Conceptual Framework of the Study

The conceptual framework of this study can be summarized as follows: first, contextual conditions and instructional obstacles of upper primary English classrooms in Roi Et Province served as input for model development. Then active learning, CLT, CEFR, and social constructivist principles served as theoretical foundations. After that the ROI-Active English Learning Model functioned as the instructional process leading to expected outcomes, namely improved learner engagement, confidence, positive attitudes, and perceived development of listening, speaking, reading, and writing skills.

Research Methodology

Research Design

This study adopts a Mixed Methods Research method, integrating qualitative and quantitative research methods to ensure a comprehensive understanding of the learning environment, challenges, and effectiveness of the developed model.

Population and Samples

The population and samples who participated in this study were English teachers and students at the upper elementary level in Roi Et province. The samples consisted of 20 English teachers and 30 upper elementary students. To select the samples, a volunteer sampling method was applied in this study.

The use of volunteer sampling was proper for the implementation phase because participation required teachers and students who were willing to engage in classroom-based activities and provide reflective feedback. However, this sampling procedure and the relatively small sample size limit the generalizability of the findings, therefore the results should be interpreted as context-specific evidence for model development rather than broad population-level claims.

Research Procedures

This research begins with reviewing concepts, theories, and learning management design guidelines related to research from documents, textbooks, or other research reports, including the Thai Basic Education Core Curriculum (2008). Afterwards, the researcher investigated current conditions, patterns, and challenges of English language instruction practices of English teachers through an open-ended questionnaire. The following is conducting two brainstorming sessions with 20 teachers, researchers, and experts to collaboratively design the active learning model. In the end, synthesize findings from the documentary and field research to finalize the model. The developed model is evaluated by three experts in curriculum design, assessment, and active learning pedagogy using the Model Evaluation Form (5 Likert Scale). Next, the refined model was implemented in target classrooms for eight weeks. Later, student interviews are conducted to assess their attitudes and opinions toward English language learning, designed based on the developed active learning model, leading to further refinement of the model.

Research Instruments

The three research instruments are employed in this research. There are 1) Open-ended questionnaires and Likert-scale surveys for English teachers, 2) Expert Evaluation Forms assess the validity and coherence of the model and 3) Semi-Structured Interviews to gather student feedback on their experiences with the new learning approach.

To ensure the quality of model, the draft model and research instruments were reviewed by three experts in curriculum and instruction, measurement and evaluation, and active learning management. The expert evaluation of the model showed a high level of appropriateness (overall Mean = 4.38, SD = 0.39), indicating that the components, procedural steps, contextual fit, and active-learning orientation of the model were suitable for implementation. The instruments were revised according to expert suggestions before data collection.

Data Collection Methods

This research used the following steps to collect data. First, reviewed the related documents, then analyzed and synthesized the documents to be used as guidelines for designing and developing proactive English language learning management models. Next, collect the data through open-ended questionnaires and brainstorming sessions with and primary school English teachers. Finally, students' attitudes and opinions toward English language learning designed based on the developed active learning model were elicited through semi-structured interview.

Data Analysis

The quantitative analysis in terms of means and standard deviations were used to summarize teacher' perceived obstacles and expert evaluation results. While the qualitative analysis, interview data were coded and grouped into themes related to learning conditions, instructional practices, learner confidence, preferred activities, and perceived improvement in English language skills. These two data sources were integrated to support the design and interpretation of the ROI-Active English Learning Model.

Research Finding

Demonstrated as follow:

In the first phase, the investigation of current conditions, patterns, and challenges of English language teaching among upper primary school in Roi Et province, and teacher' perceived obstacles showed that that most schools are equipped with basic learning resources, such as smart TVs, computers, and textbooks. Nevertheless, some schools still lack supplementary equipment, including microphones and language laboratories. While students actively participate in the learning process, they show a lack of confidence and critical thinking skills. The primary challenges identified include teachers' workload, which affects the quality of instruction, an excessive amount of content, and insufficient learning materials. The teaching method for English language learning can be classified in four main skills: reading, writing, speaking, and listening. In the classroom,

teachers employ a variety of media and techniques, such as picture books, videos, games, and exercises. Teachers also create different kinds of activities such as reading aloud, writing sentences, participating in pair conversations, and completing listening enhancement tasks. However, teachers continue to face difficulties in encouraging students to use English confidently.

Table 1: Teacher' perceived obstacles in English language learning management

Aspect of instructional obstacle	Mean	SD	Interpretation
Teacher professional development / non-teaching workload	3.60	0.19	Highest obstacle
Lessons, textbooks, and content	3.35	0.11	Moderate obstacle
Media, audiovisual equipment, and learning support	3.33	0.10	Moderate obstacle
Curriculum-related factors	3.29	0.17	Moderate obstacle
Learner-related factors	3.04	0.10	Moderate obstacle
Teachers' knowledge, techniques, and assessment skills	2.96	0.19	Lower obstacle
Overall	3.30	0.17	Moderate obstacle

Table 1 showed the overall obstacles in organizing English teaching were at a moderate level ($M = 3.30$, $SD = 0.17$). The most significant obstacle is the development of teachers' professionalism ($Mean = 3.60$, $SD = 0.19$). The following are lessons/textbooks/content, media, audiovisual equipment, and learning support ($Mean = 3.33$, $SD = 0.10$). However, the obstacles related to learners themselves ($Mean = 3.04$, $SD = 0.10$) and the knowledge, teaching techniques, and evaluations of teachers ($Mean = 2.96$, $SD = 0.19$) were quite lower than the other obstacles.

In the second phase, the result of Model development was the ROI-Active English Learning Model. The developed model is emphasizing active learning through six steps: 1) analyzing the instructional context, 2) setting learning goals, 3) selecting teaching strategies, 4) designing learning activities, 5) assessing student performance, and 6) providing feedback. This model fosters students' analytical thinking and collaborative skills. These steps were designed to help teachers move from understanding learners' real contexts to planning, implementing, assessing, and improving active English learning activities.

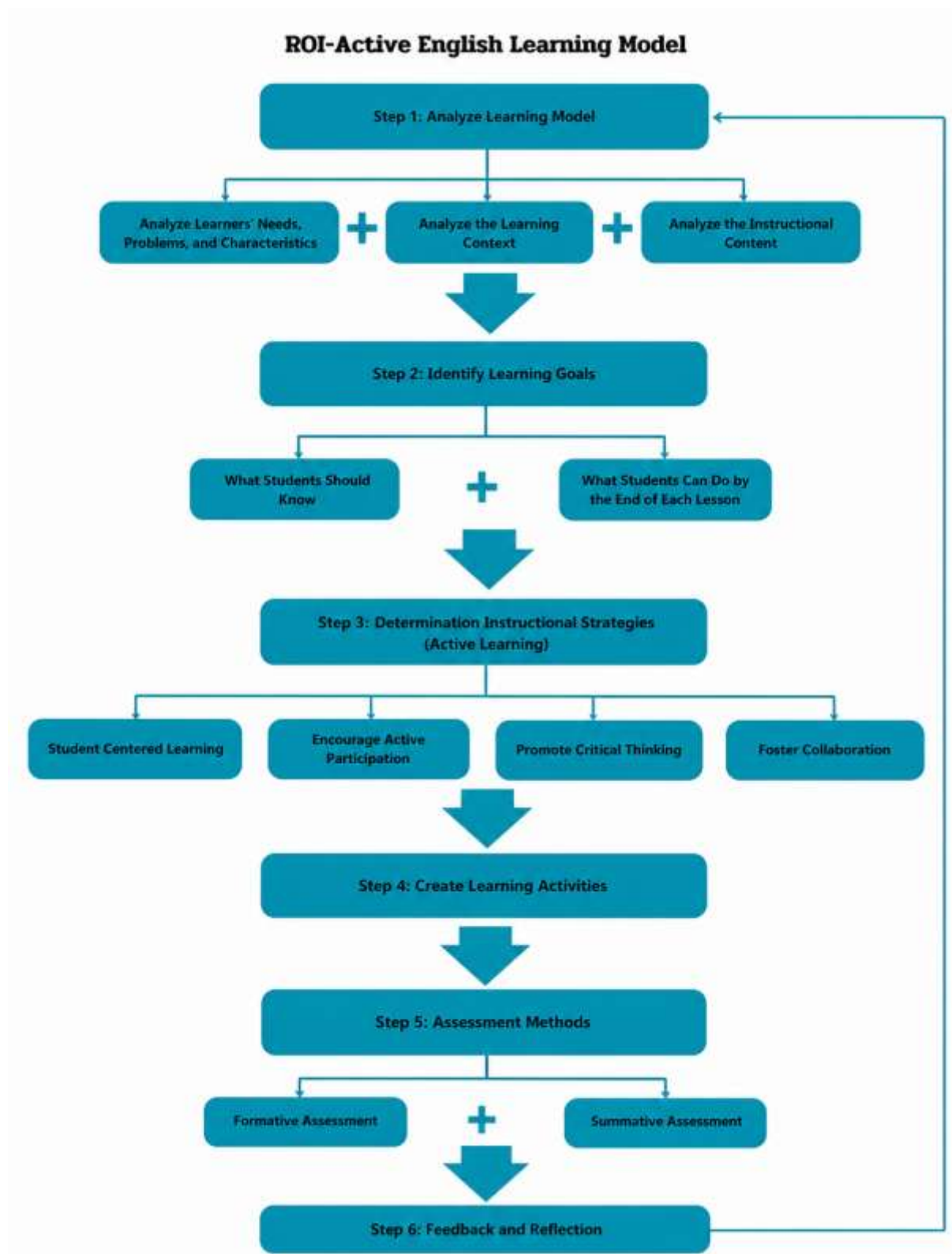


Figure 2: ROI-Active English Learning Model

The result of quality evaluation of the Model further demonstrated in Table 2.

Table 2: Evaluation of the ROI-Active English Learning Model

Validation item	Mean	SD
Appropriateness of model components	4.67	0.58
Clarity and usability of procedural steps	4.33	0.58
Connection among model components	4.67	0.58
Suitability as a guideline for upper primary English learning design	4.00	1.00
Capacity to guide learning design based on learner characteristics, needs, and problems	5.00	0.00
Suitability for active-learning-based instructional strategy design	4.00	0.00
Suitability for current upper primary school contexts in Roi Et Province	4.00	0.00
Overall	4.38	0.39

Table 2 presents the results of the expert evaluation of the ROI-Active English Learning Model. Overall, the model was evaluated at a high level of appropriateness (Mean = 4.38, SD = 0.39), indicating that the experts perceived the model as suitable and practical for designing active English learning management for upper primary school students.

After the implementation of this model, student interview data supported the model's positive classroom effects. Students reported that learning was more enjoyable because the lessons included more group/pair work and varied activities. Representative responses included: "This term has more activities and learning is more fun" (S1); "I feel more confident because I do activities more often" (S4); "I like games the most because they are fun and competitive" (S25); and "I want more conversation activities because they will help me speak more confidently" (S13). These responses indicate both strengths of the model and areas for future improvement, especially the need to expand interactive speaking practice.

Discussion

This study examined the conditions, teaching methods, and challenges in English language learning at the primary level. The findings demonstrate that most schools had fundamental resources for learning such as textbooks, smart TVs, and internet access. On the other hand, there was a lack of supplementary materials and inadequate physical space for collaborative activities that remains a significant constraint for learning activities. This aligns with theories of educational psychology, which underline the importance of a supportive learning environment for effective pedagogy (Sari et al., 2025). Additionally, students' lack of confidence in using English was identified as a key obstacle, reinforcing the principles of Communicative Language Teaching (CLT), which advocates for a classroom culture that prioritizes meaningful interactive language use over rote memorization (Nallamuthu. & S.N.S, 2025).

Regarding teaching practices, teachers demonstrated an integration of the four language skills: reading, writing, listening, and speaking in their teaching methods. They apply diverse materials like storybooks, videos, online games, and group activities to boost student engagement. This aligns with Active Learning theories, which postulate that in English language teaching (ELT), learners' active participation directly influences communicative competence, motivation, and long-term retention of knowledge (Qaxramonovna, 2026). Nevertheless, the effectiveness of these practices was hindered by some challenges such as excessive teacher workload, limited professional development opportunities, and insufficient teaching resources. Furthermore, the study also found that some textbooks and lesson content were either inappropriate for young learners or excessively comprehensive, affecting lesson efficiency.

To deal with these challenges, the study developed the ROI-Active English Learning Model, which focusing on student-centered learning, analytical thinking, collaborative learning, and technology integration. The model is theoretically influenced by the Partnership for 21st Century Skills (P21) framework, which emphasizes the development of critical thinking, communication, collaboration, and creativity. In addition, the model incorporates principles from the Common European Framework of Reference for Languages (CEFR) to ensure a structured approach to skill development. The model also underlines the importance of comprehensible input (Krashen, 1982), ensuring that students can engage with and understand learning materials effectively. Activities such as collaborative tasks, video-based learning, and gamification were specifically designed to meet the cognitive and developmental needs of primary school students.

Students' opinions towards English language learning designed based on the developed active learning model was largely positive. Students demonstrated increased engagement and confidence in their use of English. Group work, games, and watching English videos were particularly well-received, as they reduced boredom and encouraged active involvement. These findings are consistent with Vygotsky's theory of social interaction in learning, which highlights the role of peer collaboration in cognitive development (Vygotsky, 1978). They also support active learning principles, as these interactive methods effectively lessen boredom and encourage active participation. However, there are some students who expressed need for more opportunities for speaking skills practice, suggesting an essential for a greater focus on conversation-based activities. This aligns with previous research indicating that non-native language learners require more enthusiastic time for speaking practice than is typically provided in traditional curricula (Peregoy & Boyle, 2017). Therefore, the challenge of providing sufficient speaking practice still be a vital area for future improvement of the model.

These findings are consistent with Sari's view that learning becomes meaningful when learners interact with experiences, as well as Vygotsky's emphasis on social interaction and scaffolding. In this study, group work, pair work, games, and teacher encouragement served as scaffolding mechanisms that reduced learner anxiety and supported participation. The findings also extend CLT-oriented English teaching by showing that communicative confidence can be developed gradually through low-pressure, activity-based tasks before learners are expected to perform more demanding oral communication.

In short, this research underlines the importance of a well-structured, engaging, and resource-supported learning environment. The ROI-Active English Learning Model offers a capable pedagogical framework for primary schools' teachers to create effective English instruction. While the model has demonstrated positive outcomes, future repetitions should aim to address the identified limitations related to speaking practice and the workload on educators to guarantee its long-term possibility and effectiveness. However, the findings should be interpreted within methodological limitations. The sample was relatively small and selected through volunteer participation, and the study emphasized descriptive statistics and qualitative evidence rather than experimental statistical comparison. Future research should therefore apply the model with larger samples, use pre-test and post-test measures of English proficiency, report reliability indices such as Cronbach's alpha for Likert-scale instruments, and compare results across different school contexts.

Suggestion

Based on the research findings, the suggestions are leparated into two categories:
Policy-Level

First, systematic and continuous professional development should be established for primary school English teachers, with a strong focus on active learning instruction and alignment with the Common European Framework of Reference for Languages (CEFR). Such initiatives would contribute to the modernization of instructional practices and enhance teachers' pedagogical competence.

Second, equitable resource allocation especially for small and rural schools should be prioritized. Increased investment in instructional infrastructure such as language laboratories, audiovisual learning tools, and stable internet connectivity is crucial for supporting active and communicative English language learning environments.

Third, teachers' non-teaching workloads should be significantly minimized through policy measures. Assigning dedicated administrative personnel to manage routine documentation and reporting tasks would allow teachers to devote more time to lesson planning, instructional delivery, and professional reflection, thereby improving overall teaching effectiveness.

School-Level

At the school level, professional collaboration among English teachers should be reinforced through formal teacher networks and communities of practice. These platforms can facilitate the sharing of effective instructional strategies and the collaborative development of context-sensitive teaching materials.

Furthermore, experiential and community-based learning opportunities should be expanded. Activities such as English camps, project-based learning, and real-life language practice, while encouraging parental and community involvement can boost students' motivation and provide meaningful contexts for authentic language use.

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Theme-Rheme Framework in Hemingway's The Old Man and The Sea: A Systemic Functional Linguistics Perspective

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Abstract

This paper explores the theoretical framework of Theme and Rheme within Systemic Functional Linguistics (SFL) and its relevance to Ernest Hemingway's novella *The Old Man and the Sea*. Drawing on Halliday and Matthiessen's (2014) model, the study examines how thematic structures, including topical, textual, and interpersonal Themes, organize the flow of information and contribute to textual coherence. A literature review approach was employed, synthesizing three main strands: applications of Theme-Rheme in literary texts, its role in English as a Foreign Language (EFL) writing, and linguistic as well as literary analyses of Hemingway's work. The findings revealed that Theme-Rheme analysis offers valuable insights into Hemingway's minimalist style, paratactic sentence structures, and symbolic representations, while also highlighting the novella's suitability for pedagogical use in ELT contexts. The study identifies gaps in previous research, noting limited integration of Theme-Rheme with Hemingway studies, and underscores the framework's interdisciplinary potential. Overall, this paper lays the groundwork for future research applying Theme-Rheme analysis to literary texts, bridging linguistic theory, literary interpretation, and language pedagogy.

Keywords: Hemingway's *The Old Man and the Sea*, Systemic Functional Linguistics Perspective, Theme-Rheme Framework

Introduction

This paper investigates the theoretical framework of Theme and Rheme in Ernest Hemingway's novella *The Old Man and the Sea*. Theme and Rheme, central concepts within Systemic Functional Linguistics (SFL), describe how information is structured in a clause and how meaning unfolds in discourse (Halliday & Matthiessen, 2014). Over the past decades, Theme-Rheme analysis has been widely applied across disciplines, including literary studies (Khalfan, Irshad, & Khawar, 2021), discourse analysis (Martin & Rose, 2022), and English as a Foreign Language (EFL) writing (Shi & Yuan, 2019; Himphinit & Astia, 2023). Such applications demonstrate the framework's value in uncovering textual coherence, stylistic features, and communicative strategies.

The Old Man and the Sea, awarded the Nobel Prize in Literature in 1954, is regarded as one of Hemingway's most enduring masterpieces. Its concise prose, symbolic depth, and distinctive narrative rhythm have inspired extensive literary scholarship (Handayani, 2021; Rauf, 2023). However, while many studies focus on symbolism, the Iceberg Theory, or narrative style, relatively fewer have explored the novella through the lens of SFL, particularly Theme-Rheme structures. Recent scholarship has emphasized the importance of integrating linguistic and literary perspectives to achieve deeper textual interpretation (Thompson, 2021). Against this background, the present paper reviews the Theme-

Rheme framework and explores its potential for analyzing Hemingway's narrative style. In doing so, it also highlights pedagogical implications for English Language Teaching (ELT), where thematic analysis can enhance learners' awareness of textual organization and coherence.

Rationale of the Study

This study holds significance from both linguistic and literary perspectives. From a linguistic standpoint, it extends the application of Theme–Rheme analysis to a literary text, demonstrating how information is sequenced, how discourse is organized, and how textual coherence is achieved. From a literary standpoint, the use of Theme–Rheme theory provides deeper insights into Hemingway's minimalist style and his celebrated Iceberg Theory, illustrating how meaning is constructed both explicitly and implicitly in the narrative. By bridging these perspectives, the study not only reviews the theoretical framework of Theme and Rheme in relation to *The Old Man and the Sea* but also highlights its broader implications for linguistic analysis, literary interpretation, and English Language Teaching (ELT).

Systemic Functional Linguistics (SFL) and the Theme–Rheme Framework

Systemic Functional Linguistics (SFL) is widely recognized as a fundamental analytical framework for examining language as a social semiotic system. It is described as a functional-semantic approach to grammar that explores how people use language in different contexts and how linguistic structures are organized to create meaning (Eggins, 2004; Matthiessen, 2019). According to Martin, Matthiessen, and Painter (1997), Halliday's original purpose in formulating SFL was to provide a general grammar for the analysis and interpretation of texts. Unlike traditional formal grammar, SFL emphasizes meaning over form, offering richer insights into how texts function in context (Thompson, 2021).

Halliday and Matthiessen (2014) identify three metafunctions of language, each reflecting a distinct dimension of meaning-making:

1. Ideational Metafunction – This metafunction organizes human experience into meaning, enabling the representation of processes, participants, and circumstances. It consists of two components:
 Experiential function: encodes processes and participants in discourse.

- Logical function: expresses relationships between clauses, contributing to the organization of the text (Martin & Rose, 2022).

2. Interpersonal Metafunction-This metafunction manages social interaction, conveying attitudes, judgments, and speaker intentions. It includes mood (statements, questions, commands), modality (certainty, obligation), and evaluation. For example, in *The Old Man and the Sea*, Hemingway's use of declaratives and interrogatives creates authentic dialogue and reveals character relationships (Thompson, 2021).

3. Textual Metafunction-This metafunction ensures cohesion and coherence by organizing information flow across discourse. Theme and Rheme are central to this metafunction, as they structure clauses into points of departure (Theme) and development (Rheme), thereby shaping textual progression and coherence (Halliday & Matthiessen, 2014).

Among these metafunctions, the Theme-Rheme framework is particularly relevant to this study because it highlights how information is sequenced, how coherence is maintained, and how meaning is foregrounded within Hemingway's narrative style.

Theme-Rheme Structure

The Theme-Rheme framework is one of the key theories in SFL. According to Halliday and Matthiessen (2014), Theme is the element that serves as the point of departure of the message, which locates and orients the clause within its context; while Rheme is the remainder of the message in which the Theme is developed. Based on this definition, a clause consists of a Theme accompanied by a Rheme, and the structure is expressed by the order in which whatever is chosen as the Theme is put first (Halliday & Matthiessen, 2014). Table 1 shows the Theme-Rheme structure.

Table 1: Theme-Rheme Structure

Theme	Rheme
Sarah	has given Aisha that doll
Aisha	has been given that doll by Sarah
That doll	Sarah has given to Aisha

As shown in Table 1, the three clauses convey the same propositional content, but the choice of Theme highlights different elements as the point of departure, thus creating different thematic prominence. Hence, a clause can be regarded as a message unfolding from the chosen Theme (the part the speaker or writer highlights for the addressee) to the Rheme (the part that further develops the message) (Halliday & Matthiessen, 2014).

Marked and Unmarked Themes

Having introduced the basic Theme-Rheme structure, it is important to consider how Theme can be further distinguished as marked or unmarked according to its position within the clause. As Halliday and Matthiessen (2014) suggested, in a declarative clause, if a Theme is conflated with the Subject, it refers to the Unmarked Theme of that declarative clause. Conversely, if a Theme is something other than the Subject, it is defined as a Marked Theme. Table 2 presents the usual forms of Marked Theme.

Table 2: Usual Forms of Marked Theme

Forms	Examples
Adverbial Group	today, suddenly, somewhat distractedly
Prepositional Phrase	at night, in the corner,

source: Halliday and Matthiessen, 2014, p.98

Group / Phrase Complexes as Theme

In the examples above, the Theme consists of a single element. However, in some cases, the Theme may include two or more groups or phrases functioning together as one structural unit (Halliday & Matthiessen, 2014). Table 3 represents this type of Theme.

Table 3: Group Complex or Phrase Complex as Theme

Theme	Rheme
The Walrus and the Carpenter	were walking close at hand
From house to house	I went away

source: Halliday & Matthiessen, 2014, p. 92

As shown in Table 3, such Themes still count as simple Themes, since the group complex or phrase complex constitutes a single element within the clause. For instance, in the first clause, the Theme comprises two nominal groups (“the Walrus and the Carpenter”), forming a nominal group complex; in the second clause, the Theme is realized by two prepositional phrases (“from house to house”), forming a prepositional phrase complex.

Thematic Equative

In contrast to group and phrase complex functioning as simple Themes, another thematic structure worth noting is the thematic equative. This refers to an identifying clause with a thematic nominalization, and its function is to express the Theme-Rheme structure in such a way as to allow the Theme to consist of any subset of the elements of the clause (Halliday & Matthiessen, 2014). This type of thematic structure is expressed by some form of the verb *be*. Examples are shown in Table 4.

Table 4: Examples of Thematic Equative

Theme	verb be	Rheme
Nominalization as Theme What no one seems to notice The thing that impressed me	Was is	the writing on the wall their enthusiasm for the job.
Nominalization as Rheme Two pence a day The Walrus	was is	what my master allowed me the one I like the best

source: Halliday & Matthiessen, 2014, P.96

As shown in Table 4, in the typical instance, the nominalization functions as Theme since the Theme is the prominent element in the Theme-Rheme structure (Halliday & Matthiessen, 2014). *What no one seems to notice* in the first clause and *the thing that impressed me* in the second clause are of this type. However, there is a marked alternative, in which the usual relationship is reversed and the nominalization becomes the Rheme (Halliday & Matthiessen, 2014). Such as *what my master allowed me* in the third clause, and *the one I like the best* in the fourth clause.

Predicated Theme

Predicated Theme is another resource that often occurs in the organization of the clause as a message, which involves a particular combination of thematic and informational choices (Halliday & Matthiessen, 2014), and the structure is frequently associated with an explicit formulation of contrast-typically realized as it was (not)..., that/which/who... An example is provided in Table 5

Table 5: An example of the Predicated Theme

	It	was his teacher	who	persuade him to continue
(a)	Theme	Rheme	Theme	Rheme
(b)	Theme		Rheme	

source: Halliday & Matthiessen, 2014, P.124

Table 4 provides a complete thematic analysis, with the local thematic structure (version a) in which it and who are both subjects, and the thematic structure of the whole clause as predicated Theme (version b) in which it was his teacher functions as the Theme of the whole clause.

The Classification of Theme Types

Beyond specific realizations such as thematic equative and predicated Theme, Halliday and Matthiessen (2014) further classify Theme into three types according to their function in the clause: topical, textual, and interpersonal Theme. Each type of Theme is composed of different constituents. Topical Theme refers to the Theme of a clause that ends with the first constituent: participant, circumstance, or process. Other elements in a clause preceding the topical Theme are textual or interpersonal Themes, and these two types of Themes play no part in the experiential meaning of the clause. Table 6 presents the components of each type of Theme.

Table 6: Components of Each Type of Theme

Types of Themes	Components
Textual Theme	Continuative Conjunction (structural Theme) Conjunctive Adjunct
Interpersonal Theme	Modal/comment Adjunct Vocative Finite operator
Topical Theme	participant Circumstance Process

source: Halliday & Matthiessen, 2014, P.107

As shown in Table 6, textual Themes can be summarized as continuative, conjunction (structural Theme), and conjunctive Adjunct. Table 7 illustrates the components of each element with definitions and representative examples.

Table 7: Components of Textual Theme

Types of components	Definition	Examples
Continuative	A small set of words signaling a move in the discourse, such as a response, in dialogue, or a new move to the next point if the same speaker is continuing.	1. Yes 2. No 3. Well 4. Oh 5. Now
Conjunction	A word or group links (paratactic) or binds (hypotactic) the clause in which it occurs structurally to another clause.	Paratactic: and, or, nor, either, neither, but, yet, so, then... Hypotactic: when, while, before, after, until, although, that...

Types of components	Definition	Examples
	Semantically, it sets up a relationship of expansion or projection.	
Conjunctive Adjunct	Adverbial groups or prepositional phrases that relate the clause to the preceding text. They cover roughly the same semantic space as conjunctions.	Appositive: that is, in other words Corrective: or rather, at least dismissive: in any case, anyway...
For more examples, see Halliday & Matthiessen's (2014) Halliday's Introduction to Functional Grammar (4 th edition), pages 108-109.		

source: Halliday & Matthiessen, 2014, p. 107-109

On the other hand, the interpersonal theme can be summarized as modal/comment Adjunct, vocative, and finite verbal operator (in yes/no interrogative). Vocative is any item, typically a personal name, being used to address. In contrast, Modal/comment Adjuncts express the speaker or writer's judgement on or attitude to the content of the message. In comparison, the finite verbal operator is the small set of finite auxiliary verbs (including their negatives) construing primary tense or modality. They are also the unmarked Theme of yes/no interrogatives (Halliday & Matthiessen, 2014).

Together with topical Themes, these categories provide a comprehensive framework for analyzing how Themes contribute to the organization of meaning in discourse.

Theme in Bound, Embedded, Minor, and Elliptical Clauses

In addition to free clauses, Themes also function in various clause structures, such as bound, minor, and elliptical clauses, in which the analysis and identification are crucial for a comprehensive understanding of thematic organization. Table 8 concludes Theme in these structures with representative examples.

Table 8: Theme in Bound, Minor, and Elliptical Clauses

Types of Clauses	Theme Identification	Example
Dependent Bound Clauses	If finite, these typically have a conjunction as a structural Theme, followed by a topical Theme	[They know] that (structural Theme) in spring (topical Theme) the snow would melt (Rheme).
	If the bound clause begins with a WH-element, that element constitutes the topical Theme.	[I asked] why (topical Theme) no one was around (Rheme).
	If non-finite, there may be a conjunction or preposition as structural Theme, which may be followed by a Subject as topical Theme; but many non-finite clauses have neither, in which case they consist of Rheme only.	With (structural Theme) all the doors (topical Theme) being locked (Rheme), [we had no way in]

Types of Clauses	Theme Identification	Example
Embedded Clauses	These clauses function inside a nominal group's structure, defining relative clauses. However, due to their down-ranking, the fact that they do not function as constituents of a sentence, their thematic contribution to the discourse is minimal, and for practical purposes can be ignored.	Who came to dinner in The man who came to dinner. The dam broke in the day the dam broke. Requiring travel permits in all personnel requiring travel permits.
Minor Clauses	These clauses have no mood or transitivity structure, typically as calls, greetings, exclamations, and alarms. They are not regarded as clauses because they have no independent speech function.	Mary! Good night! Well done!
Elliptical Clauses	Conversational Ellipsis: In dialogue, the Theme is often omitted when contextually recoverable, especially in responses.	Q: Who ate the cake? A: John.
	Implicit Theme in Imperative Clauses	Close the door (Implied Theme: You).
	Shared Theme in Coordinated Clauses	She opened the door and walked in (the second clause omitted the Theme "she").

source: Halliday & Matthiessen, 2014, p. 125-128

The foregoing discussion has outlined the theoretical framework of Theme and Rheme. The following section turns to previous studies that have applied this framework in different contexts.

Different Studies on Theme-Rheme

The Theme-Rheme framework has been applied across diverse fields, particularly in literary narratives and EFL writing. This section reviews selected studies to illustrate how the framework has been developed and applied.

Theme-Rheme in Literary Narratives

Dashela (2021): Theme and Rheme in *Sleeping Beauty*

Dashela (2021) conducted an SFL-based analysis of Theme-Rheme structures in Charles Perrault's *Sleeping Beauty*, examining 45 clauses. The study identified three main findings: 1) topical Themes were typically realized as subjects or adverbials, 2) textual Themes included conjunctive adjuncts, continuatives, and conjunctions, and 3) interpersonal Themes were absent. This absence suggests that thematic structures may vary across genres. While the study successfully classified Theme types, its scope was limited, given the small dataset. Moreover, it did not fully explain why interpersonal Themes were missing, whether

this was due to genre conventions or authorial style, and how this absence influenced reader engagement and narrative construction.

Khalfan et al. (2021). Theme and Rheme in Edgar Allan Poe's Poetry

Khalfan et al. (2021) analyzed Theme–Rheme structures in four dream-themed poems by Edgar Allan Poe (A Dream, Dreams, Dreamland, and A Dream within a Dream). Their findings revealed that unmarked Themes dominated, while textual and multiple Themes contributed to textual cohesion and flow. Marked Themes were also employed to create ambiguity and emphasis, reflecting Poe's stylistic choices. The study demonstrates how Theme–Rheme analysis can uncover more profound coherence and interpretive layers in poetry.

Together, the studies by Dashela (2021) and Khalfan et al. (2021) highlight how different literary genres employ Theme–Rheme structures in varying ways. Narrative texts such as fairy tales rely heavily on topical and textual Themes to maintain coherence. At the same time, poetry tends to incorporate a higher proportion of marked Themes to create emphasis, ambiguity, and emotional resonance. These findings confirm that Theme–Rheme analysis is a versatile tool for uncovering stylistic and genre-specific patterns in literary texts.

Table 8: Comparison of the Two Studies

Study	Primary Text Type	Dominant Theme Type	Key Findings
Dashela (2021)	Narrative	Topical & Textual	Interpersonal Themes were absent. Thematic continuity was maintained through repeated subjects.
Khalfan et al. (2021)	Poetry	Topical & Interpersonal	More frequent use of Interpersonal Themes in dialogue-heavy poetry.

These studies suggest that text type significantly influences thematic structuring:

Narrative texts rely on Topical and Textual Themes to maintain coherence and continuity.

Poetry employs a higher frequency of Interpersonal Themes to convey emotion, address the reader, and introduce rhetorical devices.

The findings of these studies provide a methodological foundation for the present paper. They demonstrate that:

Different literary genres exhibit distinct Theme–Rheme structures, affecting textual coherence.

Topical Themes remain dominant in narrative and poetic texts, but Interpersonal Themes vary based on the text's communicative function.

While the above studies highlight how Theme–Rheme structures vary across literary genres, another important line of research concerns their role in EFL writing. This strand of work explores how learners organize information and achieve coherence through thematic choices.

Theme and Rheme in EFL Writing

The Theme–Rheme framework has been widely applied in EFL writing research, where it plays a crucial role in textual organization, coherence, and cohesion, all of which directly affect writing quality. Shi and Yuan (2019) investigated the thematic structures of

Chinese EFL students' compositions from the College English Test-6 (CET-6). Their analysis revealed that high-scoring texts displayed a greater variety of Theme types and thematic progression patterns. In contrast, low-scoring texts relied heavily on repetitive topical Themes, resulting in weak cohesion and disorganized structures. The authors concluded that explicit instruction in Theme-Rheme analysis could enhance students' ability to produce coherent academic writing.

Building on these findings, Himphinit and Astia (2023) examined Theme use among Indonesian undergraduates. Their study showed that high- and mid-proficiency learners successfully employed topical, textual, and interpersonal Themes. In contrast, low-proficiency learners often failed to apply them, sometimes producing Rhemes without preceding Themes, which led to incoherent sentences. These results closely align with those of Shi and Yuan (2019), despite the different educational contexts, reinforcing the argument that writing proficiency is closely tied to the ability to diversify Theme choices.

Collectively, these studies emphasize that proficient learners tend to employ a balanced mix of Theme types, while less proficient learners rely almost exclusively on topical Themes. This echoes Paltridge's (2006) observation that native speakers intuitively use thematic progression, whereas second-language learners require explicit guidance. More recent scholarship further highlights that instruction in Theme-Rheme analysis not only improves writing coherence but also raises learners' awareness of textual organization as a resource for meaning-making (Wei, 2023).

Together with research on literary texts, these EFL writing studies confirm the versatility of the Theme-Rheme framework. While literary analyses employ it to uncover stylistic and interpretive patterns, EFL research highlights its diagnostic and pedagogical value in assessing and developing writing competence. This convergence of findings provides a strong foundation for the present study, which applies Theme-Rheme theory to Hemingway's *The Old Man and the Sea* to explore both its linguistic and literary significance.

Previous Studies on *The Old Man and the Sea*

Among Hemingway's works, *The Old Man and the Sea* is widely regarded as a masterpiece, and numerous studies have examined its stylistic and literary significance. Four major areas emerge from this scholarship: Hemingway's writing style, the use of symbolism, the Iceberg Theory, and linguistic approaches rooted in Systemic Functional Linguistics (SFL). Together, these perspectives provide a foundation for exploring how Theme-Rheme structures contribute to textual coherence in the novella.

Writing Style

Hemingway's prose is renowned for its brevity and precision, and *The Old Man and the Sea* exemplifies this minimalist style. The language is natural, direct, and unadorned, producing clarity and immediacy. When Hemingway does not employ short, simple sentences, he frequently links clauses paratactically, often through the conjunction *and* (Xie, 2008). From an SFL perspective, such usage functions as a textual Theme, guiding readers seamlessly through the narrative. Another defining feature of his style lies in the use of dialogue. As Xie (2008) observes, interpolations such as *he said* are often omitted, lending a conversational quality that makes readers feel as though they are "listening" rather than "reading." Viewed through Theme-Rheme analysis, this style opens space for examining how interpersonal Themes shape character interaction and narrative flow.

Symbolism

The novella is rich in symbolism, which deepens its thematic resonance. According to Handayani (2021), both characters and natural elements serve symbolic roles. For example, the marlin represents a worthy opponent and the dignity of struggle, the sea embodies life's vast unpredictability, and the lions in Santiago's dreams symbolize youth, strength, and

resilience. From a linguistic perspective, Hemingway reinforces these symbols through the repetition of topical Themes (e.g., “the marlin,” “the sea”), which ensures their centrality and cohesion throughout the narrative. Thus, symbolic meaning and thematic structuring work hand in hand to sustain the novel’s coherence.

The Iceberg Theory

Hemingway’s Iceberg Theory emphasizes the power of implicit meaning, suggesting that the surface of the text reveals only part of the story while more profound truths remain submerged (Todd, 2007; Rauf, 2023). In *The Old Man and the Sea*, this is evident in the sparse prose that conveys themes of endurance, human-nature relationships, and existential struggle. As Rauf (2023) notes, the novella encourages readers to uncover hidden meanings through allegory and symbolism. From an SFL standpoint, the Iceberg Theory can also be analyzed through Theme-Rheme choices, as Hemingway’s structuring of Themes subtly directs interpretation and foregrounds key ideas without overt exposition.

Linguistic Approaches to *The Old Man and the Sea*

Several studies have applied SFL frameworks directly to the novella. Khrisna et al. (2018) used the Appraisal Framework to analyze Santiago’s characterization across the narrative’s three stages, orientation, complication, and resolution. Their findings showed that Affect (emotions) dominated over Judgement (personality) and Appreciation (physical condition), portraying Santiago primarily through his emotional experiences. For example, the line “He had felt faint and dizzy, and that had worried him” highlights Santiago’s vulnerability, reinforcing the centrality of emotion in his characterization.

Setyaji et al. (2019) focused on clause structures and logical relations, examining the distribution of parataxis and hypotaxis. Their results revealed that parataxis dominates (65.3%), with expansion relations far more frequent than projection, underscoring Hemingway’s preference for direct, additive structures. This aligns with Xie’s (2008) observation that Hemingway’s prose is often built on sequential connections, which serve as textual Themes to maintain narrative cohesion.

Together, these studies illustrate complementary dimensions of Hemingway’s style. While Khrisna et al. (2018) highlight how evaluative resources construct Santiago’s emotional identity, Setyaji et al. (2019) emphasize the structural and cohesive mechanisms of the text. Both approaches demonstrate the value of SFL in literary analysis, yet neither explicitly applies the Theme-Rheme framework. This gap underscores the potential of the present study to explore how Hemingway’s narrative coherence and stylistic effects can be systematically explained through Theme-Rheme analysis.

The reviewed studies have shown that *The Old Man and the Sea* has been analyzed extensively from literary and linguistic perspectives that highlight Hemingway’s minimalist style, symbolic richness, and use of implicit meaning through the Iceberg Theory. Linguistic research grounded in SFL, such as Appraisal and clause structure analysis, has also revealed valuable insights into character construction and narrative coherence. However, these approaches stop short of systematically applying the Theme-Rheme framework to the novella. Since Theme-Rheme analysis provides a powerful tool for uncovering how information is sequenced, how cohesion is maintained, and how textual coherence is achieved, this gap represents an opportunity for deeper interdisciplinary inquiry. The present study addresses this need by positioning Theme-Rheme analysis as a bridge between literary interpretation, linguistic description, and pedagogical application, thereby offering fresh insights into Hemingway’s narrative techniques and their relevance to English Language Teaching (ELT).

Critical Analysis and Discussion

Building on the reviewed literature, this section critically examines how the Theme-Rheme framework has been applied in literary texts, EFL writing, and research on *The Old*

Man and the Sea. The discussion highlights the framework's strengths in revealing textual organization and stylistic effects, while also pointing out its limitations and unexplored areas.

Studies on literary narratives and poetry demonstrate that Theme-Rheme structures significantly shape textual organization and stylistic meaning. Dashela (2021), for example, found that narrative texts rely heavily on topical and textual Themes to maintain coherence, while Khalfan et al. (2021) showed that poetry employs interpersonal Themes more frequently to express emotion and engage readers. These findings indicate that thematic choices vary across genres, reflecting differences in communicative function. While such studies are valuable, they tend to be narrowly focused, often analyzing a limited number of clauses or texts. Consequently, their findings, though insightful, lack generalizability. To strengthen claims about thematic structuring in literature, future research should employ broader corpus-based investigations that can capture patterns across multiple works and genres.

In the field of EFL writing, Theme-Rheme research highlights a strong relationship between thematic variety and writing proficiency. Shi and Yuan (2019) showed that high-scoring Chinese students employed diverse Theme types and progression patterns, while low-scoring students relied primarily on topical Themes, producing texts with weaker cohesion. Similarly, Himphinit and Astia (2023) found that Indonesian undergraduates with higher proficiency successfully used topical, textual, and interpersonal Themes, while lower-proficiency learners sometimes produced Rhemes without preceding Themes, leading to incoherent sentences. These consistent findings across different educational contexts confirm that mastery of Theme-Rheme correlates with writing quality. However, the studies stop short of offering pedagogical frameworks for explicitly teaching Theme-Rheme usage. As Paltridge (2006) notes, native speakers use thematic progression intuitively, whereas second-language learners require direct instruction. This suggests that Theme-Rheme analysis should not only be seen as a diagnostic tool but also integrated into writing pedagogy to help learners consciously improve textual coherence. More recent studies (Wei, 2023) reinforce this point, demonstrating that explicit training in thematic progression enhances students' awareness of textual organization and overall writing performance.

When turning to literary studies of *The Old Man and the Sea*, most research has focused on style, symbolism, and Hemingway's Iceberg Theory. Xie (2008) highlighted the paratactic sentence structures that create rhythm and clarity, often linked through *and*. Handayani (2021) examined the novel's symbolism, showing how repeated motifs such as the marlin, the sea, and lions reinforce thematic depth. Rauf (2023) emphasized the Iceberg Theory, noting how Hemingway's sparse surface prose conceals profound existential themes. While these studies provide valuable literary insights, they are not grounded in linguistic frameworks, leaving questions about how Hemingway achieves narrative coherence at the clause level.

Some research has employed Systemic Functional Linguistics (SFL) to analyze the novella. Khrisna et al. (2023) applied the Appraisal Framework to show how Santiago is primarily characterized through Affect (emotion), while Setyaji et al. (2019) analyzed clause structures, finding that parataxis dominates and expansion relations outnumber projections. Together, these studies reveal how linguistic choices shape characterization and narrative flow. However, neither explicitly applies Theme-Rheme analysis, which could reveal how coherence is maintained through clause-level organization and thematic progression.

Taken together, the reviewed studies demonstrate the value of both literary and linguistic approaches, but also highlight an important gap. Literary analyses illuminate symbolism and implicit meaning, while linguistic studies provide insight into characterization and clause structures. However, neither strand explicitly examines how Theme-Rheme contributes to textual coherence in *The Old Man and the Sea*. Addressing this gap, the present

study positions Theme-Rheme analysis as a bridge between literary interpretation, linguistic description, and EFL pedagogy. By doing so, it contributes not only to a deeper understanding of Hemingway's minimalist style but also to the practical integration of linguistic frameworks into language teaching.

Gaps in the Literature

The reviewed studies demonstrate that Theme–Rheme analysis has the potential to bridge literary interpretation, linguistic description, and pedagogical application. In literary texts, it explains how stylistic and symbolic choices contribute to textual coherence; in EFL writing, it functions as both a diagnostic and instructional tool; and in Hemingway studies, it offers a systematic method to examine narrative techniques. Nonetheless, the literature remains fragmented. Literary analyses often neglect linguistic theory, EFL studies are limited in scope and generalizability, and SFL-based analyses of Hemingway rarely integrate Theme–Rheme explicitly. This gap highlights the need for interdisciplinary research that combines literary, linguistic, and educational perspectives, applying Theme–Rheme analysis to enrich understanding of narrative techniques and textual cohesion.

Implications

Several key implications emerge from the reviewed literature. First, studies on *Sleeping Beauty* (Dashela, 2021) and Poe's poetry (Khalfan et al., 2021) confirm the feasibility of applying Theme–Rheme analysis to literary texts, showing how thematic choices shape text organization and narrative structure. Second, EFL writing research (Shi & Yuan, 2019; Himphinit & Astia, 2023) indicates that learners with greater awareness of Theme–Rheme produce more coherent writing, suggesting that teachers can integrate this framework into classroom instruction. For example, writing tasks can be designed to focus on Theme–Rheme shifts, helping learners move beyond repetitive topical Themes toward more varied and cohesive textual organization. Third, *The Old Man and the Sea* demonstrates the suitability of a literary text for Theme–Rheme analysis. Its brevity, clarity, and symbolic elements make it not only ideal for linguistic exploration but also highly adaptable for ELT pedagogy. By encouraging students to trace how Themes recur and shift across passages, teachers can enhance learners' sensitivity to textual progression while simultaneously deepening their literary appreciation.

Conclusion

This paper has reviewed the theoretical framework of Theme-Rheme and its applications in literary studies, EFL writing, and Hemingway scholarship. Three key insights emerge. From a literary perspective, Theme-Rheme analysis illuminates how information flows, how coherence is maintained, and how Hemingway's minimalist style and Iceberg Theory are linguistically realized. From a linguistic perspective, studies using SFL have revealed characterization strategies and clause structures in the novella; however, they have not yet systematically addressed thematic progression. From a pedagogical perspective, research confirms that Theme-Rheme analysis can be integrated into writing instruction to improve coherence and cohesion. At the same time, Hemingway's novella provides rich, authentic material for classroom use.

Despite these advances, a noticeable gap remains: the Theme-Rheme framework has not been systematically applied to *The Old Man and the Sea*. Addressing this gap would enrich both linguistic and literary analysis while demonstrating the framework's interdisciplinary potential. Future studies could conduct clause-by-clause Theme-Rheme mapping of the novella to reveal how narrative flow is achieved, how symbolic motifs are reinforced, and how coherence is sustained. Such research would provide practical benefits

for ELT by offering models for writing tasks, reading comprehension exercises, and classroom discussions. In this way, Theme-Rheme analysis can move beyond theory to serve as a practical resource, enabling learners to understand how meaning unfolds in texts and to apply these strategies in their own academic and creative writing.

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A Relationship Between English Achievement and Perceived English Learning Motivation: Self-Determination Theory Perspective

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Abstract

This study aimed to investigate the relationship between English achievement and perceived English learning motivation among first-year undergraduate students at an international university in Thailand. A quantitative correlational design was adopted to explore how these psychological needs relate to students' English achievement. A total of 252 undergraduate students participated in this study, and their motivational levels were assessed through a questionnaire based on the SDT framework. The results showed that students reported an overall high level of motivation, with autonomy rating the highest, followed by competence and relatedness. Pearson correlation analysis found a significant positive relationship between English achievement and all three motivating factors, with autonomy having the strongest correlation. These findings indicate that students with higher levels of autonomy, competence, and relatedness are more likely to achieve greater English achievement outcomes.

Keywords: English Achievement, Perceived English Learning Motivation, Self-Determination Theory (SDT)

Introduction

English has become a global language, and international students studying in Thailand depend on it for academic achievement, professional development, and cross-cultural communication. As Thailand positions itself as Southeast Asia's education hub, it attracts students from neighboring countries such as Myanmar, Laos, and China. Despite diverse backgrounds, these students often struggle with mastering English, which can hinder their confidence and classroom performance. Khaokaew and Pongpaioj (2020) found that international students in Thailand often face difficulties in English, which affects both academic success and adjustment. Although universities require proficiency through tests like IELTS or TOEFL, many students still feel unprepared for academic life (Srisang, 2019).

Motivation has been consistently identified as a key factor in English language learning. Without sufficient motivation, even strong teaching methods and curricula cannot guarantee success (Dornyei, 1998). Learners who lack motivation are less likely to achieve their goals, while motivated learners are more likely to persist and succeed (Dornyei & Csizer, 1998; Guilloteaux & Dörnyei, 2008). The ability to actively use English and compete internationally requires motivation that enhances learning outcomes (Mandasari & Aminatun, 2020, as cited in Pranawengtias, 2022). Students who have a clear desire or goal in acquiring the language perform better than those who study without strong motivational drivers (Noviana & Ayu, 2022).

The importance of motivation is particularly evident for first-year international undergraduates, who face challenges in adjusting to English-medium instruction. The transition from high school to university requires self-regulation, goal-setting, and greater independence, which can be difficult for students unfamiliar with learner-centered methods. Noels et al. (2019) further highlight that students who perceive English learning as enjoyable or goal-driven are more likely to achieve success.

Despite the global application of SDT, limited research has examined its relevance in first-semester English-medium academic environments in Thailand. Few studies have explored how autonomy, competence, and relatedness shape language learning motivation during this critical transitional stage. To address this gap, the present study focuses on first-year students enrolled in Communicative English 1 at an international university in Thailand, offering new insights into how SDT-based motivational needs influence English achievement and learning experiences during the academic transition.

Objectives

1. To investigate the relationship between English achievement and the perceived English learning motivation of undergraduate students at the international university in Thailand through Self-Determination Theory (SDT).

Literature Review

Relationships Between English Achievement and Motivation

This paper explores the relationship between motivation to learn English and English achievement as demonstrations of the building of language proficiency, by students. Previous literature indicates that these factors are interconnected and affect the challenges a student experiences when learning a language, although the character of the interaction can be different in different situations. The concept of English proficiency is greatly acknowledged in academic circles as a source of learner autonomy and academic independence. These students were better at understanding lectures, completing assignments, and participating in discussions without external support. However, earlier studies have not clearly explored the interaction between English achievement as a measurable academic outcome and motivational constructs, which this research aims to address.

The relationship between English achievement and motivation is both critical and reciprocal. As proficiency improves, often reflected in higher English achievement, learners tend to develop stronger intrinsic motivation due to a greater sense of accomplishment. Noels et al. (2000) also emphasized that autonomy-supportive learning environments enhance intrinsic motivation, suggesting that as learners gain confidence and competence, they feel more in control of their learning journey. Proficiency, therefore, enables self-regulation, as students with stronger language skills are better positioned to set goals, solve problems, and sustain motivation. While these dynamics have been explored in Western settings, there is a lack of empirical research in Thailand that quantitatively investigates the relationship between English achievement and the components of Self-Determination Theory autonomy, competence, and relatedness.

Self-Determination Theory (SDT)

Self-Determination Theory (SDT), introduced by Deci and Ryan (1985), is a macro theory of human motivation that emphasizes three basic psychological needs- autonomy, competence, and relatedness-as essential for fostering optimal motivation. Autonomy refers to learners' ability to make choices based on personal interests and values, supporting intrinsic motivation and learner agency (Ryan & Deci, 2020). Competence involves the belief in one's

ability to master tasks, where constructive feedback and practice opportunities enhance students' confidence and persistence (Deci & Ryan, 1985; Chen, 2025). Relatedness reflects the need to feel connected with peers and teachers, with supportive classroom environments promoting motivation and well-being.

SDT extends earlier motivational frameworks emphasized integrative and instrumental orientations. By focusing on internal psychological processes, SDT provides a deeper lens into the quality of motivation (Noels et al., 2020). Recent studies confirm SDT's relevance across linguistic contexts, highlighting how fulfilling psychological needs enhances learners' academic and emotional engagement (Afsharmehr, 2025; Baglioni, 2025).

Overall, SDT offers a valuable framework for examining English learning motivation in international university settings, guiding educators to design supportive environments that strengthen engagement, achievement, and personal growth.

Related Studies of SDT

Previous research has examined motivation in English learning using Self-Determination Theory (SDT), but relatively few studies have directly explored how English achievement interacts with intrinsic motivation shaped by autonomy, competence, and relatedness. While some studies have emphasized motivation strategies (Alamer, 2021), social learning settings (Kul, 2023), and digital tools that enhance proficiency, the direct link between achievement and SDT constructs has been less investigated.

This study addresses these gaps by examining how undergraduate students' English achievement, measured through Communicative English 1 scores, correlates with their perceived autonomy, competence, and relatedness. Research has shown that autonomy-supportive environments foster intrinsic motivation (Afsharmehr, 2025; Baglioni, 2025), yet few studies have linked autonomy directly with achievement in EFL university settings. Competence, or the belief in one's ability to master language tasks, is associated with academic success (Liu & Oga-Baldwin, 2022; Takiguchi, 2025), but the influence of actual proficiency scores on competence perceptions is underexplored. Similarly, while relatedness through peer and teacher connections has been shown to enhance motivation (Derakhshan, 2022; Kul, 2023), little research has investigated how it interacts with English achievement in international programs.

In conclusion, while SDT provides a strong foundation for understanding language learning motivation, the interplay between achievement and SDT needs remains under-researched in Thai higher education. By integrating quantitative achievement data with perceived motivational dimensions, this study aims to contribute a more holistic perspective on English learning motivation and inform strategies for supporting diverse learners in international universities.

Methodology

Participants

The participants were 252 first-year undergraduate students enrolled in Communicative English 1 at an international university in Thailand. Both Thai and non-Thai students participated, reflecting diverse linguistic and cultural backgrounds. These students were between 18 and 25 years of age. Data were collected through an online questionnaire distributed via Google Forms, specifically targeting first-year students enrolled in Communicative English 1. To ensure ethical compliance and safeguard the confidentiality of both the institution and participants, the name of the university and specific student records were not disclosed.

Research Design

This study employed a quantitative correlational design to analyze the relationship between English achievement (independent variable) and students' perceived English learning motivation based on the components of Self-Determination Theory (autonomy, competence, and relatedness) as dependent variables. The design allowed examination of correlations between variables without manipulation. A survey questionnaire was used to assess motivation, while English achievement

was measured through academic performance. Statistical tools such as mean and standard deviation were applied to describe central tendencies and variability, ensuring consistency, reliability, and a structured analysis of how motivational factors influence undergraduate students' English learning experiences.

Validity and Reliability

To ensure content validity, the instrument was reviewed by three experts in English Language Teaching. Minor adjustments were made to improve clarity and alignment with the study context. A pilot study tested with 30 students (not included in the final sample) was conducted to assess reliability. The overall Cronbach's alpha coefficient exceeded an average score of 0.72-0.90, indicating high reliability and confirming that the items effectively measured the intended concepts.

Data Collection

Data were collected using a self-report survey questionnaire designed to assess English achievement and perceived English learning motivation based on Self-Determination Theory (autonomy, competence, and relatedness). The questionnaire administered online via Google Forms, consisted of three sections: demographic information, items on autonomy, competence, and relatedness, and measures of English achievement. Participation was voluntary, and students were assured of confidentiality and the right to withdraw at any time. Completed responses were compiled in Excel and prepared for statistical analysis.

Data Analysis

The collected data were analyzed using statistical software. Descriptive statistics were used including mean scores and standard deviations. These were computed for each dimension of the SDT and overall mean scores. The interpretation of mean values followed the scales below:

- 1.00-1.80 means the level of English motivation is 'very low'.
- 1.81-2.60 means the level of English motivation is 'low'.
- 2.61-3.40 means the level of English motivation is 'moderate'.
- 3.41-4.20 means the level of English motivation is 'high'.
- 4.21-5.00 means the level of English motivation is 'very high'.

Research Results

As mentioned above, the Likert scale was utilized to determine the mean score (M) and standard deviation (SD) of the levels of motivation across these dimensions within the SDT framework.

Table 1: Mean of overall domains of English learning motivation perceived by the students.

Domains	N	Mean	SD	Interpretation
Ability	252	3.90	0.77	High
Freedom	252	4.05	0.78	High
Willingness	252	3.91	0.84	High
Capacity	252	3.88	0.78	High
Confidence	252	3.84	0.90	High
Feedback	252	4.11	0.78	High
Interaction	252	3.88	0.80	High
Collaborative Learning	252	3.59	0.66	High
Overall	252	3.89	0.79	High

Table 4.1 presents the mean of each domain of English learning motivation perceived by the students. As shown in the table, the highest rating was observed in the feedback domain ($\bar{X} = 4.11$, $SD = 0.78$) which implies that students appreciate being given comments and instructions on how to improve by their teachers and classmates. This means that feedback is

a key in motivating students and enhancing their performance. Students also perceived Freedom ($\bar{X}=4.05$, $SD=0.78$) as high, which indicates that students enjoy being given the chance to make their own decisions and have control over parts of their learning.

This shows that students have a relatively high level of motivation for learning English which is the result of personal effort, confidence and the motivation which comes from feedback and freedom.

Table 2: Perceived English learning motivation of the respondents in terms of ability.

Statement	Mean	SD	Responses	Interpretation
I believe that I can manage different learning tasks by using English four skills.	3.91	0.89	Agree	High
I believe that I can decide which learning methods work best for me when studying English.	3.93	0.87	Agree	High
I believe that I can effectively plan and organize my time for studying English.	3.84	0.88	Agree	High
Overall	3.89	0.89	Agree	High

As shown in Table 2, all three statements under the ability dimension received high agreement ratings. The highest mean score was 3.93 ($SD = 0.87$) for the statement “I believe that I can decide which learning methods work best for me when studying English,” followed closely by “I believe that I can manage different learning tasks by using English four skills” ($M = 3.91$, $SD = 0.89$). The lowest, though still high, was “I believe that I can effectively plan and organize my time for studying English” ($M = 3.84$, $SD = 0.89$). The overall mean score was 3.89 ($SD = 0.88$), interpreted as “Agree” and “High.”

Table 3: Perceived English learning motivation of the respondents in terms of freedom.

Statement	Mean	SD	Responses	Interpretation
I have freedom to choose my English learning strategies.	3.99	0.86	Agree	High
I have freedom to choose the resources for learning English. (e.g., books, apps, videos).	4.08	0.94	Agree	High
I have freedom to choose English learning activities that I find interesting or enjoyable.	4.07	0.87	Agree	High
Overall	4.04	0.89	Agree	High

Table 3 indicates that the mean ratings accorded to the three statements, all which factor into the dimension of autonomy, were high. The statement with the highest mean score was 4.08 ($SD = 0.94$) about having freedom in choosing the resources to learn English, and the next in the list is the statement about having freedom in choosing the English learning activities, which he/she finds appealing or enjoyable to learn ($M = 4.04$, $SD = 0.87$). The least but comparably big was: I have the freedom to select my own strategies of learning English ($M = 3.90$, $SD = 0.86$). The Final average was 4.04 ($SD = 0.89$), which was translated as “Agree” and (High).

Table 4: Perceived English learning motivation of the respondents in terms of willingness.

Statement	Mean	SD	Responses	Interpretation
I enjoy working with classmates during English activities because it makes learning more fun for me.	3.87	0.95	Agree	High
I feel excited to try new ways of learning English, even when they are difficult.	3.93	0.92	Agree	High
Overall	3.90	0.94	Agree	High

As shown in Table 4, both statements under the willingness dimension received high agreement ratings. The highest mean score was 3.93 (SD = 0.94) for the statement “I feel excited to try new ways of learning English, even when they are very difficult,” followed by “I enjoy working with classmates during English lessons because it makes learning more fun for me” (M = 3.87, SD = 0.95). The overall mean score was 3.90 (SD = 0.94), interpreted as “Agree” and “High.”

Table 5: Perceived English learning motivation of the respondents in terms of capacity.

Statement	Mean	SD	Responses	Interpretation
I can decide the English content that I want to learn.	3.88	0.90	Agree	High
I can effectively use English in different situations.	3.85	0.94	Agree	High
Overall	3.86	0.92	Agree	High

As shown in Table 5, the two statements that belong to the capacity dimension had high levels of agreement. The highest mean score was 3.88 (SD = 0.90) for the statement “I can decide the English content that I want to learn,” followed by “I can effectively use English in different situations” (M = 3.85, SD = 0.94). The overall mean score was 3.86 (SD = 0.92), interpreted as “Agree” and “High.”

Table 6: Perceived English learning motivation of the respondents in terms of confidence.

Statement	Mean	SD	Responses	Interpretation
I am confident that I can learn English well.	3.91	0.95	Agree	High
I am confident in my ability to use English.	3.76	0.96	Agree	High
Overall	3.83	0.96	Agree	High

As shown in Table 6, both statements under the confidence dimension received high agreement ratings. The highest mean score was 3.91 (SD = 0.95) for the statement “I am confident that I can learn English well,” followed by “I am confident in my ability to use English” (M = 3.76, SD = 0.96). The overall mean score was 3.83 (SD = 0.96), interpreted as “Agree” and “High.”

Table 7: Perceived English learning motivation of the respondents in terms of feedback.

Statement	Mean	SD	Responses	Interpretation
The feedback from my teacher helps me improve my English skills.	4.18	0.87	Agree	High
I feel more motivated to learn English when I receive helpful feedback from my teacher.	4.06	0.87	Agree	High
My teacher explains clearly how I can do better in English assignments or tasks.	4.04	0.89	Agree	High
Overall	4.09	0.88	Agree	High

As shown in Table 7, all three statements under the feedback dimension received high agreement ratings. The highest mean score was 4.18 (SD = 0.87) for the statement “The feedback from my teacher helps me improve my English skills,” followed by “I feel more motivated to learn English when I receive helpful feedback from my teacher” (M = 4.10, SD = 0.80), and “My teacher explains clearly how I can do better in English assignments or tasks” (M = 4.00, SD = 0.87). The overall mean score was 4.09 (SD = 0.88), interpreted as “Agree” and “High.”

Table 8: Perceived English learning motivation of the respondents in terms of interactions.

Statement	Mean	SD	Responses	Interpretation
I enjoy discussing English learning issues with my classmates in and out of the classroom.	3.79	0.95	Agree	High
I enjoy discussing English learning issues with my English teachers in and out of the classroom.	3.81	0.94	Agree	High
I can actively interact with my teachers in the English classroom.	4.00	0.89	Agree	High
I can actively interact with my classmates in English class.	3.87	0.93	Agree	High
Overall	3.87	0.93	Agree	High

As shown in Table 8, all statements under the interaction dimension received high agreement ratings. The highest mean score was 3.87 (SD = 0.89) for the statement “I can actively interact with my classmates in English class,” followed by “I enjoy discussing English learning issues with my English teachers in and out of the classroom” (M = 3.81, SD = 0.94), and “I can actively interact with my teachers in the classroom” (M = 3.80, SD = 0.89). The overall mean score was 3.80 (SD = 0.93), interpreted as “Agree” and “High.”

Table 9: Perceived English learning motivation of the respondents in terms of collaborative learning.

Statement	Mean	SD	Response	Interpretation
I enjoy learning English through group activities.	3.74	0.99	Agree	High
Group discussions help me understand and increase my English knowledge.	3.87	0.92	Agree	High
Group discussions help me gain a deeper understanding of English learning content.	3.80	0.92	Agree	High
Group discussions enable me to analyze English content deeper.	2.89	1.17	Neutral	Moderate
Overall	3.57	1.00	Agree	High

As shown in Table 9, the respondents expressed high agreement with statements related to enjoyment and knowledge acquisition through group activities. The highest mean score was 3.87 (SD = 0.92) for the statement “I enjoy learning English through group activities. Group discussions help me understand and increase my English knowledge.” The second statement, “Group discussions help me gain a deeper understanding of English learning content,” received a mean of 3.80 (SD = 0.92), also interpreted as “Agree.” However, the third statement, “Group discussions enable me to analyze English content deeper,” received a lower mean of 2.89 (SD = 1.17), interpreted as “Neutral.” The overall mean score was 3.57 (SD = 1.00), interpreted as “Agree.”

Table 10: Midterm scores of students in English.

	N	Minimum	Maximum	Mean	SD
Midterm Scores	252	33	80	59.18	10.72

Table 10 shows that students’ midterm scores ranged from 33 to 80 out of 80, with an average of 59.18 and a standard deviation of 10.72. The mean score falls below the 75% passing rate, indicating that overall English achievement was moderately low. The wide variation in scores suggests differing levels of proficiency: while some students demonstrated strong skills, many fell short of the expected standard. This highlights the need for remedial support, focused practice, and differentiated teaching approaches to address diverse proficiency levels in the class.

Table 11: Relationship between the dimensions of perceived English learning motivation and score of the respondents.

Motivation	R _s	p-value	Decision	Conclusion
Autonomy				
Ability	0.29	0.00	Reject Ho	Significant relationship
Freedom	0.20	0.00	Reject Ho	Significant relationship
Willingness	0.17	0.00	Reject Ho	Significant relationship
Competence				
Capacity	0.12	0.05	Reject Ho	Significant relationship
Confidence	0.19	0.00	Reject Ho	Significant relationship
Feedback	0.25	0.00	Reject Ho	Significant relationship

Motivation	R _s	p-value	Decision	Conclusion
Relatedness				
Interaction	0.19	0.00	Reject Ho	Significant relationship
Collaborative Learning	0.09	0.11	Fail to reject Ho	No significant relationship

Note: Reject Ho if p-value is less than or equal to 0.05.

Table 11 correlation analysis revealed a statistically significant positive relationship between English achievement and all three SDT dimensions: autonomy ($r = .42$, $p < .01$), competence ($r = .38$, $p < .01$), and relatedness ($r = .31$, $p < .05$). These results confirm the theoretical speculation that the higher achievement regulates a more motivating involvement.

Conclusion

This study examined the relationship between English performance and motivation among 252 Thai undergraduates in an international university, framed through Self-Determination Theory (SDT). Using a quantitative correlational design and a structured Likert-scale survey, it assessed student motivation across autonomy, competence, and relatedness, and analyzed their association with English achievement. The findings showed moderate to high motivation across all dimensions, with autonomy rated highest, followed by competence and relatedness. Correlation analysis revealed significant positive links between English achievement and autonomy, competence, and relatedness, with feedback and confidence as strong predictors, while collaborative learning showed no significant effect. Overall, the results confirmed that higher English achievement is tied to stronger motivational beliefs, supporting SDT's assertion that autonomy, competence, and relatedness sustain intrinsic motivation and academic success.

Suggestions

Future research should include larger, more diverse samples across different institutions and cultural contexts to improve generalizability and allow cross-cultural comparisons. Mixed-methods approaches, combining quantitative analysis with interviews or focus groups, are encouraged to capture deeper motivational insights. Alternative measures of proficiency, such as standardized tests and assessments of productive and receptive skills, would provide a more comprehensive evaluation of achievement. Longitudinal designs could reveal developmental trends and causal relationships, while experimental or quasi-experimental studies may test the effectiveness of interventions like gamification, collaborative learning, and autonomy-supportive practices. Overall, integrating diverse samples, innovative methods, and culturally sensitive perspectives will strengthen the application of Self-Determination Theory in understanding and enhancing language learning motivation and achievement.

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Pathways From Knowledge-Sharing Culture to Organizational Creativity: The Mechanism of Tacit Knowledge Sharing

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Abstract

This study explores how five conditions - knowledge-sharing culture, tacit knowledge sharing, explicit knowledge sharing, organizational trust, and leadership support - combine to generate high organizational creativity, with a focus on the critical role of tacit knowledge sharing across multiple configurations. Using fuzzy-set qualitative comparative analysis (fsQCA), this study conducted semi-structured interviews and surveys with middle/senior managers and team leaders from 22 high-tech enterprises in eastern China, yielding 22 valid cases. Results showed that five equifinal pathways to high organizational creativity are revealed, which can be summarized into three typical patterns: “tacit-driven” - combinations of knowledge-sharing culture and tacit knowledge sharing, complemented by either organizational trust or leadership support; “explicit-tacit synergy” - both explicit and tacit knowledge sharing serve as core conditions; and “system-supported” - all five conditions present simultaneously. Tacit knowledge sharing appears as a core condition in four of the five pathways, the highest frequency among all conditions, whereas explicit knowledge sharing must be matched with tacit knowledge sharing to be effective.

Keywords: Knowledge-Sharing Culture, Tacit Knowledge Sharing, Organizational Creativity, Fuzzy-Set Qualitative Comparative Analysis (FsQCA), Configurational Perspective

Introduction

In the knowledge-based economy, knowledge, as an organization’s most strategically valuable resource, has become the core driver of competitiveness and innovation (Drucker, 1993; Grant, 1996). Organizational creativity - defined as an organization’s ability to generate novel and useful products, ideas, procedures, or processes - has been widely recognized as a critical antecedent of innovation performance and sustainable development (Amabile, 1996; Woodman et al., 1993; Anderson et al., 2014). Against this backdrop, knowledge management practices, particularly knowledge-sharing behaviors, have received continuous attention from both academia and practitioners regarding their role in enhancing organizational creativity (Wang & Wang, 2012; Lin, 2007; Nonaka & Takeuchi, 1995).

Knowledge sharing occupies a central position in knowledge management research (Bock et al., 2005; van den Hooff & de Ridder, 2004). A large body of empirical studies has revealed a positive association between knowledge-sharing behaviors and organizational creativity/innovation performance. However, there remains considerable scope for exploring the differentiated mechanisms through which different types of knowledge - tacit vs. explicit - influence organizational creativity. According to Polanyi’s (1966) classic distinction, tacit knowledge is highly personal, difficult to articulate and transfer, in contrast to explicit

knowledge, which can be systematically recorded, stored, and disseminated. The SECI model proposed by Nonaka and Takeuchi (1995) further reveals the dynamic transformation and mutual reinforcement between tacit and explicit knowledge in the process of organizational knowledge creation. This theoretical framework suggests that treating the two knowledge types as homogeneous predictors may obscure their unique mechanisms and interaction patterns.

Recent empirical studies provide preliminary evidence for this theoretical concern. Balkan Akan et al. (2025), in a study published in the *Journal of Knowledge Management*, found that in the relationship between knowledge-sharing culture and organizational creativity, tacit knowledge sharing - rather than explicit knowledge sharing - played a partial mediating role, particularly in the ICT industry. Wang and Wang (2012) found that explicit knowledge sharing had a stronger impact on innovation speed and financial performance, while tacit knowledge sharing was more strongly associated with innovation quality and operational performance. These findings suggest that tacit knowledge sharing may play a unique and critical role in fostering organizational creativity, but our understanding of this mechanism is still limited by a variable-oriented “net-effect” mindset.

Despite significant progress in validating linear relationships between knowledge sharing and organizational creativity, at least two important theoretical gaps deserve attention. First, most existing studies adopt a net-effect perspective, assuming that the influence of a given independent variable on the dependent variable is stable across contexts. This variable-oriented approach cannot readily answer the inherently configurational question: “which combinations of conditions jointly produce high creativity?” (Fiss, 2011; Ragin, 2008). In real organizations, high organizational creativity often results not from the isolated effect of a single factor, but from multiple factors combining in different ways to produce equifinality - i.e., multiple distinct combinations of conditions can lead to the same outcome. Second, although tacit knowledge sharing is repeatedly emphasized in theoretical discussions, it is often positioned in empirical studies as a symmetrical mediator alongside explicit knowledge sharing. How tacit knowledge sharing interacts with other organizational factors remains under-rexplored. In other words, we do not yet know whether tacit knowledge sharing is a core necessity, a supplementary element, or a factor that substitutes for or complements other conditions.

Given these theoretical gaps, this study adopts a configurational perspective and qualitative comparative analysis to address the following core research question: 1) Which combinations of conditions generate high organizational creativity? 2) What role does tacit knowledge sharing play in these configurations - a core condition, an auxiliary condition, or a factor with complex interactions? Specifically, we select five antecedent conditions - knowledge-sharing culture, tacit knowledge sharing, explicit knowledge sharing, organizational trust, and leadership support - and identify multiple equifinal pathways to high organizational creativity based on interview and survey data from 22 high-tech enterprises in eastern China.

Literature Review

Knowledge-Sharing Culture and Organizational Creativity

The academic exploration of “creativity” can be traced back to Guilford’s (1950) seminal presidential address to the American Psychological Association. Since then, creativity research has undergone a paradigm shift from individual traits to contextual interactions, notably with Amabile’s (1983, 1996) Componential Theory. Woodman et al. (1993) defined organizational creativity as “the creation of valuable, useful new products, services, ideas, procedures, or processes by individuals working together in a complex social system,” emphasizing that creativity is inherently multilevel and embedded in organizational contexts. Amabile (1996) further argued that organizational creativity depends not only on individual

creative abilities but also fundamentally on the shaping influence of organizational climate, resource support, and leadership practices.

Knowledge-sharing culture is defined as the set of values, norms, and shared beliefs within an organization that encourage, recognize, and facilitate knowledge exchange among members (Bock et al., 2005; De Long & Fahey, 2000). In organizations with a strong knowledge-sharing culture, members believe that sharing knowledge benefits both themselves and the organization, and they are less likely to deliberately hide knowledge out of fear of losing power or status derived from that knowledge (Connelly et al., 2012). Research indicates that knowledge-sharing culture fosters a positive climate for knowledge exchange, thereby providing the institutional basis and cognitive conditions for the generation, incubation, and integration of creative ideas (Lin, 2007; van den Hooff & de Ridder, 2004).

However, culture does not directly generate creativity. The effects of culture are transmitted and realized through specific knowledge-handling behaviors - particularly knowledge-sharing behaviors. Balkan Akan et al. (2025), based on survey data from 155 IT experts in the Turkish ICT industry using a combination of necessary condition analysis and PLS-SEM, found that knowledge-sharing culture influences organizational creativity indirectly through tacit knowledge sharing rather than explicit knowledge sharing, with tacit knowledge sharing playing a partial mediating role. This finding suggests that tacit knowledge sharing may be a key transmission mechanism in the relationship between knowledge-sharing culture and organizational creativity.

Tacit vs. Explicit Knowledge Sharing

The theoretical distinction between knowledge types is a logical starting point for understanding the effects of knowledge sharing. Polanyi (1966) famously asserted, "We can know more than we can tell." This statement laid the philosophical foundation for the concept of tacit knowledge: tacit knowledge originates from personal experience and embodied cognition, making it difficult to fully codify, articulate, and transmit. In contrast, explicit knowledge can be systematically recorded and disseminated in the form of language, symbols, formulas, manuals, etc.

Building on Polanyi's ideas, Nonaka and Takeuchi (1995) proposed the SECI model of organizational knowledge creation, revealing the dynamic transformation between tacit and explicit knowledge through four modes: socialization, externalization, combination, and internalization. The profound contribution of this theoretical framework is its insight that organizational knowledge creation is not merely the accumulation of explicit knowledge, but a dynamic, spiraling process of continuous interaction between tacit and explicit knowledge. The SECI model has been widely accepted in knowledge management and has inspired extensive theoretical and empirical research.

The effects of tacit versus explicit knowledge sharing on organizational creativity may differ systematically in terms of mechanisms and outcomes. Explicit knowledge sharing is characterized by improved information accessibility, reduced knowledge search costs, and avoidance of cognitive redundancy; it has advantages in solving well-defined problems and accelerating innovation processes. However, the standardized nature of explicit knowledge may also limit recipients' ability to absorb, transform, and creatively recombine knowledge. In contrast, tacit knowledge sharing - such as sharing lessons learned, demonstrating operational skills, conveying intuitive judgments, and collaboratively solving complex problems - provides richer cognitive resources and contextual embeddedness for creativity (Nonaka & Toyama, 2015). Yet, the sticky and embedded nature of tacit knowledge also makes its sharing more challenging. Huang et al. (2024), analyzing 289 questionnaires from the Chinese construction industry, found that inter-organizational IT innovation influenced team creativity through the joint mediation of both tacit and explicit knowledge sharing, whereas intra-organizational IT innovation only mediated through explicit knowledge sharing, with no significant mediation via tacit knowledge sharing. This finding implies that tacit knowledge

sharing is not an automatic, endogenous process; it requires specific organizational support and cultural conditions.

Organizational Trust and Leadership Support

Knowledge-sharing behaviors are inherently social rather than purely technical. Organizational trust and leadership support constitute key social conditions that enable knowledge sharing.

Organizational trust is defined as the overall belief of organizational members in the reliability, fairness, and benevolence of colleagues, teams, and managers (Mayer et al., 1995). In the knowledge management context, trust reduces the social risks and transaction costs of knowledge sharing - when employees believe that sharing knowledge will not be misused, devalued, or misattributed, they are more willing to contribute their core expertise and proprietary knowledge. A recent study by Amjad et al. (2025) found that knowledge-oriented leadership indirectly affects innovation performance through the mediation of organizational trust, indicating that trust plays a critical transmission role in converting leadership behaviors into innovation outcomes. In the context of tacit knowledge sharing, trust is particularly important because tacit knowledge is difficult to verify externally and protect by contract; its sharing largely depends on interpersonal trust and reciprocal expectations between the sharer and the recipient (Levin & Cross, 2004).

Leadership support (especially knowledge-oriented leadership) provides structural guarantees for knowledge sharing and organizational creativity. Leadership support can be manifested in multiple dimensions, including resource allocation, incentive system design, knowledge management system development, and exemplary behaviors (Bryant, 2003; Carmeli et al., 2013). A fuzzy-set QCA study on “why those in high positions refrain from sharing knowledge” (in Chinese, 2024) revealed that factors such as supervisors’ face concerns, status security considerations, and team climate perceptions significantly affect their willingness to share knowledge. This inversely illustrates the critical role of leadership support - especially leaders’ own knowledge-sharing behaviors and recognition of subordinates’ knowledge contributions - in shaping the organizational climate for knowledge sharing.

Configurational Perspective and Research Framework

The literature review above indicates that the factors influencing organizational creativity are multiple and not isolated in their effects. However, traditional research has largely followed a linear independent-variable-mediator-dependent-variable model, using regression analysis or structural equation modeling to test the “net effect” of individual variables on the outcome. While such analytical strategies can reveal average causal relationships, they struggle to capture the “conjunctural causation” prevalent in organizational phenomena - i.e., the emergence of an outcome is not determined by a single condition but by multiple conditions combined in specific ways (Ragin, 2008).

The configurational perspective offers a complementary methodological paradigm for knowledge management research. Fiss (2011) notes that configurational approaches assume equifinality - that different combinations of conditions can produce the same outcome. From this perspective, an organization’s knowledge management practices, trust mechanisms, and leadership behaviors are not mutually exclusive competing explanations; rather, they may form coherent “configurations” in multiple ways that collectively shape creativity outcomes. Fréour et al. (2024), in an fsQCA study of knowledge work characteristics, found seven distinct configurations of work characteristics that stimulate high levels of innovative work behavior, with “problem-solving ability” as a core condition in six of them. Such studies demonstrate that the configurational perspective can reveal complex interaction patterns obscured by traditional variable-oriented methods.

Drawing on SECI theory’s emphasis on tacit-explicit interaction, preliminary empirical evidence pointing to the central role of tacit knowledge sharing, and configurational theory’s emphasis on equifinal causality, this study constructs an analytical framework comprising five

antecedent conditions: knowledge-sharing culture (C), tacit knowledge sharing (T), explicit knowledge sharing (E), organizational trust (R), and leadership support (L). Together, these five conditions define the theoretical space for explaining organizational creativity (OC). Rather than presupposing a single “correct” model, this study systematically explores which combinations of conditions (pathways) produce high organizational creativity, with particular attention to the varying role of tacit knowledge sharing across different pathways - does it appear as a necessary condition in all pathways, or does it play a critical role only in specific combinations?

Research Methods

Research Design and Methodological Choice

This study adopts qualitative comparative analysis (QCA), specifically the fuzzy-set QCA (fsQCA) developed by Ragin (2008). The theoretical basis of QCA lies in the observation that social phenomena typically exhibit complexity, equifinality, and asymmetry, limitations that traditional linear regression methods struggle to address. QCA combines Boolean algebra with small-N case analysis to identify combinations of conditions that lead to a given outcome. fsQCA, as a fuzzy-set extension, allows conditions to have varying degrees of membership between fully in and fully out of a set, preserving more information and avoiding the loss of detail associated with dichotomization. This is particularly suitable for the nuanced calibration of conditions such as tacit knowledge sharing in this study.

Case selection criteria for this study were: 1) high-tech enterprises registered for at least three years; 2) employee size of 50 or more, ensuring the presence of formal knowledge management activities and observable organizational creativity; 3) enterprises located in eastern coastal economically developed regions of China (Beijing, Shanghai, Jiangsu, Zhejiang, Guangdong) to control for macroeconomic and industrial ecological differences affecting knowledge management practices.

The final sample comprised 22 valid cases, including 14 from the information technology services industry, 5 from advanced manufacturing, and 3 from the biomedical industry. Among these, 6 firms had 50-100 employees, 9 had 101-300 employees, and 7 had over 300 employees. The average operational age of the firms was 9.7 years. This case number follows the principle of small-N analysis (10-50 cases) in QCA, sufficient to support meaningful Boolean minimization without falling into the “too many conditions, too few cases” trap (Ragin, 2008; Marx et al., 2014).

Data Collection

Data collection proceeded in two stages. The first stage involved semi-structured interviews; the second stage used structured questionnaires for supplementation and validation. Between September 2024 and January 2025, researchers conducted in-person or online semi-structured interviews with middle/senior managers (1-2 per firm) and team leaders (2-3 per firm) from the 22 enterprises, totaling 63 interviews. The interview protocol covered the following themes: organizational climate and practices of knowledge sharing; methods, frequency, and effectiveness of tacit knowledge transfer; use of explicit knowledge management systems; the influence of organizational trust on knowledge exchange; managerial support practices for knowledge sharing and creativity; and representative creative and innovative achievements in the past two years. Each interview lasted 45-90 minutes, was audio-recorded with informed consent, and transcribed verbatim, producing approximately 350,000 words of raw text. All enterprises were anonymized with codes (F01-F22), and interviewee identities were de-identified.

Interview transcripts were initially coded using thematic analysis to extract characteristic descriptions and critical incident evidence related to the five antecedent conditions. On this basis, each enterprise completed a supplementary self-rating on a 5-point Likert scale (5 = highest, 1 = lowest)

for all conditions. The interview transcripts and self-rating data together formed the raw material for fsQCA calibration. This multi-source data strategy enhances the reliability and validity of condition assignment.

Calibration of Conditions

Calibration is a critical step in fsQCA, transforming raw data into fuzzy-set membership scores between 0 and 1. Following Ragin (2008), three qualitative anchors were determined for each condition: full membership threshold (approximately the 95th percentile of raw data, indicating a “high” state), crossover point (median or the point of maximum ambiguity), and full non-membership threshold (approximately the 5th percentile or a “low” state). The calibration bases for each condition were as follows.

Knowledge-sharing culture (C): Calibrated based on interview descriptions of the firm’s knowledge-sharing climate. If the firm had institutionalized, systematic knowledge exchange mechanisms and high employee willingness to share, membership approached 1; if only sporadic or informal sharing behaviors existed, membership approached 0.5; if significant knowledge hiding tendencies or barriers to sharing were present, membership approached 0.

Tacit knowledge sharing (T): Calibrated based on the frequency and depth of experience transfer between frontline employees and teams, mentoring program operation, community of practice activities, and face-to-face problem-solving exchanges. If experienced employees commonly participated in transferring experiential knowledge and tacit knowledge visibly flowed across teams and levels, membership was high; if tacit knowledge sharing was largely confined to the same team or department, membership was medium; if no effective tacit knowledge flows were observed or reported, membership approached 0.

Explicit knowledge sharing (E): Calibrated based on whether the firm used knowledge management systems (KMS), document repositories, internal wikis, standard operating procedures (SOPs), or case databases, and on the extent to which employees actually used these systems to solve problems and foster innovation. If system usage was high and employees reported that the systems were practically helpful, membership was high; if a system was deployed but underused or poorly received, membership was medium; if no systematic explicit knowledge management practices existed, membership approached 0.

Organizational trust (R): Calibrated based on employees’ overall perception of managerial decision fairness, reliability of colleagues’ motives, and leaders’ concern for employee welfare. Behavioral cues identified in interviews included whether employees willingly sought help, worried about knowledge appropriation, or felt comfortable exposing their own cognitive limitations.

Leadership support (L): Calibrated based on whether managers provided resource support (time, budget, platforms) for knowledge sharing, recognized and rewarded subordinates’ knowledge contributions, and modeled knowledge-sharing behaviors themselves. If managers incorporated knowledge sharing and creativity into performance evaluation systems and removed barriers to cross-team knowledge exchange, membership was high.

Organizational creativity (OC): Calibrated based on factual evidence of product innovations, process improvements, novelty of problem solutions, and market feedback in the past two years. Interviewees were asked to provide specific examples. If the firm had major innovations that were successfully recognized in the market or internally, membership was high; if only incremental improvements existed, membership was medium; if no or unverifiable significant innovations were reported, membership approached 0.

These anchor points were operationalized by mapping raw scores for each condition across all firms to the $[0, 1]$ interval based on percentile distributions. The calibrated data formed the basis for subsequent fsQCA analysis.

Data Analysis Procedure

Data analysis was performed using fsQCA 3.0 software, comprising the following steps: 1) necessity analysis; 2) truth table construction; 3) Boolean minimization and sufficiency analysis; 4) robustness checks.

Necessity analysis identifies whether any condition is necessary for the outcome. In fsQCA, if a condition (or its negation) consistently has membership scores not lower than the outcome's membership, it is considered necessary. The consistency threshold is typically set at 0.9, with coverage as a secondary reference. If any condition has consistency above 0.9, it indicates that the condition is indispensable for all high-creativity cases.

Sufficiency analysis proceeds by constructing a truth table. Two parameters must be set: case frequency threshold and raw consistency threshold. Given the moderate case number, the case frequency threshold was set to 1. The raw consistency threshold for sufficiency analysis was set to 0.80, meaning that a condition combination is considered sufficient for high organizational creativity only if it is consistent with that outcome in at least 80% of the cases. PRI consistency was used to exclude contradictions (cases that are simultaneously subsets of both outcome and its negation).

In the Boolean minimization stage, the Quine-McCluskey algorithm was applied to simplify all sufficient combinations in the truth table to identify parsimonious condition combinations. The final complex, parsimonious, and intermediate solutions were used to determine the role of each condition (core vs. peripheral) in each pathway. Core conditions appear in both parsimonious and intermediate solutions, indicating logically indispensable causal importance.

Data Presentation and Analysis

Overview of Calibrated Data

Before fsQCA analysis, each of the 22 cases was individually calibrated. Membership scores for antecedent conditions (C, T, E, R, L) and outcome (OC) ranged from 0 to 1, with means between 0.4 and 0.6.

All conditions showed good asymmetry, with medians concentrated between 0.45 and 0.52. Tacit knowledge sharing (T) and explicit knowledge sharing (E) had standard deviations of 0.27 and 0.26 respectively, reflecting notable variation in knowledge sharing practices across firms.

Necessity Analysis of Single Conditions

Before analyzing condition combinations, single conditions (or their negations) were tested for necessity for high organizational creativity. A condition is considered necessary if, whenever the outcome occurs, the condition (presence or absence) also occurs. In fsQCA, a consistency threshold of 0.9 is commonly used to indicate necessity.

The necessity analysis shows that none of the antecedent conditions reach the conventional necessity threshold of 0.90. The highest is tacit knowledge sharing (T: consistency = 0.88, coverage = 0.92). This indicates that T is "near-necessary" - while no single condition is strictly necessary, tacit knowledge sharing appears in a very high proportion of high-creativity cases. This result aligns with configurational theory: no single condition is sufficient or necessary; combinations of conditions jointly enable high organizational creativity.

Sufficiency Condition Combinations for High Organizational Creativity

Following necessity analysis, we investigated which combinations of antecedent conditions are sufficient for high organizational creativity. The truth table was constructed with a raw consistency threshold of 0.80, PRI consistency threshold of 0.70, and case frequency threshold of 1. Boolean minimization produced the following condition combinations.

The overall solution consistency is 0.92, and overall coverage is 0.58. Consistency exceeds the acceptable threshold of 0.80, indicating that these condition combinations are highly sufficient for high organizational creativity. Coverage of 0.58 means that 58% of high-creativity cases are explained by at least one of the five pathways, which is reasonable given the multifaceted nature of organizational creativity.

From the five pathways, three typical patterns can be summarized:

Pattern 1: “Tacit-driven” (Paths H1, H2, H4). In this pattern, tacit knowledge sharing is consistently present as a core condition. H1 includes knowledge-sharing culture, tacit knowledge sharing, and organizational trust as core conditions, with explicit knowledge sharing and leadership support playing smaller roles. This path suits firms with a strong knowledge-sharing climate that rely on high-quality organizational trust to enable tacit knowledge flows and thus creativity. H2 includes tacit knowledge sharing and leadership support as core conditions; organizational trust becomes non-core when leadership support is high. This path fits organizations with strong leader-driven styles but less developed egalitarian trust – leaders use demonstration and incentives to guide tacit knowledge sharing. H4 includes tacit and explicit knowledge sharing as core conditions, complemented by organizational trust, but does not require high leadership support or a strong knowledge-sharing culture. This path suggests that when explicit mechanisms are solid and mutual trust enables tacit flows, creativity can be achieved even with moderate leadership support.

Pattern 2: “Explicit-tacit synergy” (Path H3). H3 includes knowledge-sharing culture, tacit knowledge sharing, and explicit knowledge sharing as core conditions, but organizational trust and leadership support are at low levels. In other words, even when trust is not high and leadership intervention is low, creativity can still be achieved if institutionalized knowledge-sharing culture and dual knowledge flows (both formal and informal) are in place. This path is particularly relevant for startups or firms where trust systems are still under construction, indicating that processes and mechanisms can compensate for trust deficits in enabling knowledge exchange.

Pattern 3: “System-supported” (Path H5). H5 includes all five antecedent conditions as core conditions. When all five conditions are highly developed, the organization’s knowledge management ecosystem is optimal, leveraging both tacit wisdom for breakthrough innovation and institutional environments for stable implementation. However, it is important to note that not all high-creativity cases require all five conditions – the presence of three “tacit-driven” pathways and one “explicit-tacit synergy” pathway confirms the equifinality principle: organizational creativity can be achieved through multiple distinct configurations.

Analysis of Tacit Knowledge Sharing’s Role Across Pathways

Across all five pathways to high organizational creativity, tacit knowledge sharing (T) appears as a core condition in four pathways and as a peripheral condition in one pathway. This distribution points to a theoretically significant finding: tacit knowledge sharing plays an indispensable core role in the majority of pathways that generate high organizational creativity. In contrast, explicit knowledge sharing (E) appears as a core condition in only three pathways (H3, H4, H5), and makes little contribution in H1 and H2.

The relationship between tacit and explicit knowledge sharing is asymmetrical in our findings. Pathways H3 and H4 require both types of knowledge sharing as core conditions, illustrating a “dual-drive” effect. However, in H1 and H2, explicit knowledge sharing is not necessary. This means that in some organizational contexts (e.g., those with strong trust mechanisms or capable leadership), relying on tacit social channels for knowledge exchange is sufficient to generate high creativity, and the supporting role of formal information systems is secondary. This finding challenges the “universal effectiveness” assumption of explicit knowledge management

systems, suggesting that when evaluating investments in such systems, managers should carefully consider the vitality of tacit knowledge flows in their organization.

In the “system-supported” path H5, the synergy between tacit and explicit knowledge sharing is maximized. This path has the highest consistency and coverage of all five pathways, indicating that organizations combining culture, dual knowledge flows, institutional trust, and strategic leadership are most likely to generate sustained organizational creativity. However, H5 may be resource-intensive and not easily accessible to growing firms with limited resources.

Discussion

Theoretical Implications of the Findings

Our findings speak to three core issues in knowledge management theory: the role of tacit knowledge in organizational creativity, the interaction patterns of knowledge types, and the epistemological shift from a “net-effect” to a “configurational” paradigm.

First, regarding the role of tacit knowledge, our findings resonate with the mediating role of tacit knowledge identified by Balkan Akan et al. (2025) but provide richer mechanistic insights. While Balkan Akan et al. found that tacit knowledge (not explicit) partially mediates the knowledge-sharing culture - creativity relationship, we adopt a configurational perspective and place tacit knowledge sharing within a system of conditions. We find that it occupies a core position in most pathways to high creativity. This not only reaffirms the importance of tacit knowledge but also shows that the way organizations activate tacit knowledge sharing differs – some rely on long-term mutual trust, others on leadership drivers, and still others on balancing explicit systems and tacit flows. This configurational insight offers more flexible and actionable guidance than simple mediation models.

Second, regarding interaction patterns between knowledge types, our findings reveal both substitution and complementarity between tacit and explicit knowledge sharing in creativity formation. The dual-core pathways (H3, H4, H5) show that under certain conditions, tacit and explicit sharing can jointly drive creativity. However, in H1 and H2, when trust or leadership mechanisms are strong, explicit knowledge management can recede to a secondary position. This finding prompts a cautious reassessment of the “IT determinism” view in global KM literature – that building sophisticated knowledge management systems is a near-necessary path to innovation. Organizations need to assess whether their cultural trust and leadership capabilities can already support high-quality tacit exchange before investing heavily in documentation systems.

Third, by adopting a configurational perspective to examine multiple causal pathways to organizational creativity, this study extends the application of QCA in knowledge management research. Most existing KM-creativity studies are constrained by linear models and symmetric thinking, assuming that the independent contribution of a single variable is a sufficient and necessary condition for creativity. Our findings show that high-creativity organizations can follow fundamentally different routes - some relying on trust and tacit knowledge cycles, others on comprehensive systems and dual knowledge flows, and still others on core creative processes as the main lever. Fréour et al. (2024) arrived at a similar conclusion regarding knowledge characteristics and innovative behavior, identifying seven different configurations. More broadly, knowledge management theory is undergoing a key shift: from “one best system” to “multiple equifinal configurations.” This will have lasting methodological implications for future KM research design.

Dialogue with the Chinese Organizational Context

The five equifinal pathways identified in Chinese high-tech enterprises carry certain cultural sensitivities. Chinese organizational culture often differs from Western counterparts in the form of trust – formal institutional trust coexists with guanxi-based trust. In our interviews, many managers did not reject modern information systems but also supported tacit knowledge flows through informal activities (team building, one-on-one mentoring, private cognitive coaching). When leadership and organizational trust are unevenly developed, H1 and H2 provide adaptation options for different trust modes. H1 more closely resembles systemic trust combined with explicit-tacit integration, while H2 introduces strong leadership intervention, reducing the cost of tacit knowledge closure due to trust deficits.

The finding that tacit knowledge sharing occupies a core position in three-quarters of high-creativity pathways may also relate to the persistence of embodied knowledge transfer methods in Chinese enterprises, such as “master-apprentice” relationships and experience-sharing sessions. For firms where high-tech work is deeply embedded in practical experience (e.g., industrial control, precision manufacturing, complex customer collaboration), relying solely on database-stored standardized documents is insufficient for outstanding innovation; human-to-human interaction is essential. This study contributes multi-pathway evidence for the Chinese context: as long as an organization seizes one of the three levers - culture, trust, or leadership - to build a good tacit knowledge transfer system, and then complements it with one or two other levers, actual creativity results can be achieved.

Practical Implications

For managers, our findings offer implications at three levels. First, tacit knowledge sharing is a strategic resource for organizational creativity, not merely a rhetorical emphasis. Concretely, managers can foster tacit experience through communities of practice, mentoring programs, informal internal exchanges, observational learning, and situational training, rather than relying solely on knowledge extraction functions of systems. Even without a high-trust climate, leadership role-modeling and public recognition can be an entry point for high-quality tacit sharing. Second, organizations should recognize equifinality. Not every firm needs to simultaneously advance all five conditions to their maximum. Resource-constrained teams can start from a lower-cost pathway, such as focusing on two core conditions (explicit-tacit synergy) or using leader demonstration effects to activate tacit flows. For firms at different stages and scales, prioritizing institutionalization of tacit knowledge sharing often yields higher returns than heavy investment in explicit systems. Third, while the “all-factors-present” path H5 is the ideal vision, managers should not treat it as the only path. The five pathways have moderate raw coverage and high overall consistency, so firms can build one or two pathways that fit their reality and then iterate toward improvement.

Conclusion

Using fsQCA to examine how five conditions - knowledge-sharing culture, tacit knowledge sharing, explicit knowledge sharing, organizational trust, and leadership support - combine to produce high organizational creativity in Chinese high-tech enterprises, this study reaches the following main conclusions.

First, no single condition is strictly necessary for high organizational creativity, but tacit knowledge sharing is near-necessary (consistency = 0.88), appearing in most high-creativity cases. This suggests that while tacit knowledge sharing is highly prevalent in creative organizations, it is possible - through deep alignment of other mechanisms - to achieve high creativity even when tacit sharing is not extremely high. The system-supported path (all five conditions) has the highest coverage and

consistency, indicating that synergy among culture and dual knowledge flows has the greatest error-tolerant and catalytic potential.

Second, five equifinal pathways to high creativity are identified, summarized as three patterns: tacit-driven (tacit sharing as core, combined with subsets of culture, trust, or leadership support), explicit-tacit synergy (both knowledge flows as core), and system-supported (all five conditions fully developed). Firms can select and iterate configurations suited to their own contexts.

Third, tacit knowledge sharing occupies a core position in almost all high-creativity pathways, appearing as peripheral in only one. In contrast, explicit knowledge sharing must be matched with tacit sharing or other conditions to be effective. While trust and leadership support are important, they are not always indispensable. The existence of three tacit-driven pathways means that institutional trust and leadership support can substitute for each other: if trust is low, leader role-modeling can fill the gap; if leadership is weak, organizational trust and institutionalized tacit systems can also support tacit flows.

Limitations and Future Research Directions

Despite rigorous design, several limitations should be acknowledged. First, the small case number (22 firms) is a common challenge in fsQCA. Although the richness of in-depth information partly compensates for potential missing combinations due to limited cases, future research with larger and more diverse samples (including traditional manufacturing or service industries) would help test cross-industry robustness and uncover potential differences in condition combinations. Second, although fuzzy-set membership scores were based on a combination of semi-structured interviews and self-ratings, the cross-sectional design cannot capture long-term dynamics of knowledge environment evolution and cumulative innovation outputs. Future longitudinal or process-tracing QCA designs would help identify causal order and dynamic mechanisms. Third, self-reported organizational creativity data carry potential risks of common method bias, although multi-source informants (middle/senior managers and team leaders) partially mitigate this. Future studies could incorporate third-party outcome data such as objective patents, product launch rates, and improvement rates to enhance robustness. Fourth, the sample is limited to Chinese firms; international expansion may reveal new pressures on configurations from different institutional and business environments, enriching cross-cultural theory. We encourage future scholars to explore cross-cultural equivalence or differentiation in configurational patterns, providing context-scientific guidance for knowledge management practice worldwide.

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Real Estate Purchasing Decisions Among Generation X and Generation Y Consumers of AP (Thailand) Public Company Limited

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Abstract

This quantitative study examined factors influencing real estate purchasing decisions among Generation X and Generation Y consumers, using AP (Thailand) Public Company Limited as a case study. The study focused on three independent variables: location factors, corporate image factors, and motivational factors. Data were collected through an online questionnaire from 400 consumers with perceptions or experiences related to real estate purchasing and analyzed using descriptive statistics and multiple regression analysis.

The findings showed that motivational factors received the highest level of agreement, followed by location and corporate image factors. Multiple regression analysis indicated that corporate image factors had a statistically significant positive influence on real estate purchasing decisions ($\beta = 0.649$, $p < 0.001$), while location factors also had a statistically significant influence ($\beta = -0.159$, $p = 0.002$). However, motivational factors did not have a statistically significant influence ($\beta = 0.020$, $p = 0.733$). The regression model explained 42.5% of the variance in purchasing decisions ($R^2 = 0.425$). Furthermore, no statistically significant difference was found between Generation X and Generation Y in their real estate purchasing decisions ($t = -0.199$, $p = .843$).

The findings suggest that corporate image and location are important factors influencing real estate purchasing decisions. The results can guide AP (Thailand) Public Company Limited in developing real estate projects and marketing strategies that emphasize corporate credibility, reputation, service quality, safety, convenience, and public utilities.

Keywords: Purchase Decision, Real Estate, Ap (Thailand) Public Company Limited, Case Study, Generation X, Generation Y

Introduction

In an era of rapid economic and digital technological change, the Thai real estate market remains an important sector contributing to economic development through investment, employment, construction, infrastructure development, and household consumption. The market is highly competitive, particularly in Bangkok and metropolitan areas, where urban expansion and the development of BTS and MRT systems have increased housing demand and expanded residential areas.

Consumer behavior has also changed significantly. Beyond price and location, consumers increasingly consider quality of life, design, convenience, safety, environmental quality, and overall residential experience. These changes have created challenges for developers to meet diverse consumer expectations and have made consumer perceptions and expectations important factors in real estate purchase decisions.

Generation X and Generation Y are influential consumer groups in the Thai real estate market but demonstrate different preferences. Generation X generally emphasizes long-term value, spacious living areas, privacy, security, family-oriented environments, developer credibility, and investment stability. In contrast, Generation Y tends to prioritize convenient locations, proximity to public transportation, lifestyle facilities, digital information, and investment potential. However, financial concerns, flexibility, and the burden of long-term debt continue to influence consumers' decisions to rent rather than purchase real estate.

Despite these challenges, the Thai residential property market continues to grow, reflecting sustained demand for both residential and investment purposes. Therefore, understanding the expectations and purchasing behaviors of Generation X and Generation Y is important for developing effective marketing strategies and residential projects.

This study focuses on AP (Thailand) Public Company Limited, a leading Thai real estate developer recognized for lifestyle-oriented residential development under the concept "Space That's Worth Living." AP integrates Smart Living, digital lifestyle solutions, green spaces, and environmentally friendly materials to enhance residents' quality of life.

Accordingly, this study investigates factors influencing the real estate purchasing decisions of Generation X and Generation Y toward AP (Thailand) Public Company Limited. The study examines location factors, corporate image factors, and motivational factors, while also considering demographic characteristics. The findings are expected to provide useful insights for developing effective marketing strategies and real estate projects that better meet the needs of these consumer segments.

Objectives

1. To examine the influence of location factors on real estate purchasing decisions in the context of AP (Thailand) Public Company Limited.
2. To examine the influence of corporate image factors on real estate purchasing decisions in the context of AP (Thailand) Public Company Limited.
3. To examine the influence of motivational factors on real estate purchasing decisions in the context of AP (Thailand) Public Company Limited.
4. To examine whether real estate purchasing decisions differ across selected demographic characteristics, including generation, gender, education level, occupation, and income.

Research Hypotheses

H1: Location factors significantly influence real estate purchasing decisions toward AP (Thailand) Public Company Limited.

H2: Corporate image factors significantly influence real estate purchasing decisions toward AP (Thailand) Public Company Limited.

H3: Motivational factors significantly influence real estate purchasing decisions toward AP (Thailand) Public Company Limited.

H4: There is a significant difference in real estate purchasing decisions between Generation X and Generation Y consumers toward AP (Thailand) Public Company Limited.

Literature Review

Concepts and Theories Related to Demographics

Demographic factors are fundamental variables that influence individual behavior and decision-making in multiple dimensions, including consumption behavior, information perception, and service selection. Key demographic characteristics commonly include age, gender, income, and educational level. These characteristics reflect individuals' social roles, experiences, and needs at different stages of life. Individuals who share similar demographic profiles tend to exhibit similar behavioral patterns because they are influenced by comparable social roles and environmental conditions (DeFleur & Ball-Rokeach, 1996). Consequently, demographic factors are regarded as essential data for analyzing target consumer behavior in contemporary research.

Gender is an inherent personal characteristic acquired at birth. In general, populations consist of males and females, typically in relatively balanced proportions due to the natural equilibrium of sex distribution at the population level.

Age is a characteristic that changes throughout the life course and is a crucial variable in demographic analysis, as it reflects individuals' physical development, psychological maturity, and life experiences. These aspects influence one's ability to understand content, perceive information, and interpret received messages. Moreover, age differences affect interests in various domains, such as politics, entertainment, and future planning, leading individuals in different age groups to exhibit distinct behavioral patterns and needs.

Educational level reflects individuals' learning capacity, comprehension skills, and analytical potential, directly influencing their selection and interpretation of information. Individuals with higher levels of education generally possess broader and deeper knowledge, enabling them to evaluate content more critically and rationally. Education also plays a significant role in shaping attitudes, values, and moral perspectives, resulting in variations in behavioral patterns among individuals based on their educational experiences.

Occupation reflects individuals' social roles, job responsibilities, and lifestyle characteristics, which influence behavior, needs, and decision-making patterns in multiple dimensions. Different occupations involve varying work environments, income levels, and responsibilities, leading to differences in lifestyle patterns and interests. Occupation also affects information exposure, sensitivity to factors such as price, quality, and utility, and ultimately results in differences in consumption behavior and decision-making.

Income is a variable that clearly influences individuals' behavior, lifestyle, and decision-making. It reflects individuals' purchasing power and access to various goods and services. Individuals with different income levels tend to have distinct consumption patterns, attitudes, and needs. Income also plays a key role in information selection, value evaluation,

and price sensitivity, leading individuals with higher and lower income levels to respond differently to marketing strategies and stimuli according to their economic capacity.

Concepts and Theories Related to Generation Y

Generation Y refers to individuals born approximately between 1981 and 1996. This cohort emerged during a transitional period in which information technology began to play an increasingly important role in society, although it had not yet become as pervasive as in the present day. Consequently, members of this generation were raised in an environment characterized by the coexistence of traditional communication systems and gradually evolving digital media (Howe & Strauss, 2000). As a result, Generation Y has developed a high level of technological adaptability and familiarity with continuous technological transformation.

In addition, individuals in Generation Y tend to place strong emphasis on self-development and self-expression, holding the belief that the acquisition of skills and experiences contributes to both personal and professional advancement (Twenge, 2010). They demonstrate a preference for practical and flexible learning approaches, utilizing both online and offline learning platforms according to their needs (Evans, 2018).

Furthermore, Generation Y relies heavily on digital communication channels in their daily lives, including social media, email, and instant messaging applications. These platforms facilitate extensive social connectivity and experience sharing in online environments (Bolton et al., 2013). In terms of work-related attitudes, this generation places importance on career advancement opportunities, job security, and supportive working environments. They also show a strong preference for organizations that encourage individual potential, provide opportunities for self-expression, and offer flexible working arrangements (Myers & Sadaghiani, 2010).

Overall, Generation Y represents a consumer and workforce segment characterized by technological adaptability, experiential learning orientation, digital communication dependency, and a strong emphasis on personal and professional growth. These characteristics significantly influence their lifestyle choices, consumption behavior, and decision-making processes.

Concepts and Theories Related to Generation X

Generation X refers to individuals born between 1965 and 1980. Based on Mannheim's (1952) generational theory, individuals who grow up during the same historical period are influenced by similar social, economic, political, and technological contexts, resulting in shared values, beliefs, and behavioral patterns. Accordingly, Generation X developed during a period of significant global transformation, including economic recessions in many countries, structural changes in family systems from extended families to nuclear families, increasing female workforce participation, and the emergence of early computer technologies.

These contextual influences shaped Generation X into a cohort characterized by a high degree of self-reliance, rational worldviews, and a strong emphasis on life stability compared to preceding and succeeding generations. This generation is often perceived as highly independent, having grown up during an era in which many parents were heavily engaged in work, thereby requiring children to manage their lives independently from an early age. Consequently, Generation X tends to exhibit strong self-confidence and pragmatic attitudes, emphasizing realistic decision-making.

Members of Generation X generally make decisions based more on rational considerations than emotional impulses. They place significant importance on value for money, reliability, and long-term stability. Moreover, Generation X was the first cohort to experience the transition into the digital era. Although they did not grow up directly with the internet, they possess strong adaptability to technological change and are often categorized as "digital immigrants" (Prensky, 2001) due to their ability to effectively adopt and utilize emerging digital technologies.

Concepts and Theories Related to Location Factors

Location refers to areas or sites that are easily accessible, safe, and convenient for consumers. In the context of the real estate industry, location is considered a critical factor that directly influences consumers' purchase decisions because it reflects residential suitability, area safety, and overall living convenience (Dwi et al., 2019). Therefore, location selection serves as a key strategic element in responding to consumer needs by emphasizing safety, convenience, and the availability of public utilities within residential areas.

Safety refers to environmental conditions that protect residents from potential hazards and reduce risks to life and property in both daily activities and residential living. Safety measures may include surveillance camera systems, controlled access, on-site security personnel, and standardized building structures. These measures enhance residents' confidence and sense of security within residential environments (Nattanun, 2025).

Convenience refers to the ease of living or working by reducing physical and psychological discomfort, difficulties, and burdens. Factors contributing to convenience may include the availability of comprehensive facilities, appropriate accessibility time, and supportive services that enable individuals to carry out daily activities more smoothly and efficiently (Weissman, 2012).

Public utilities refer to essential infrastructure necessary for daily living, such as electricity, water supply, communication systems, and transportation networks. These utilities play a vital role in enhancing residential convenience and quality of life. Complete and efficient public utilities increase locational potential, livability, and property value, thereby enabling residential buildings to better satisfy consumer needs (Adam, 2023).

Concepts and Theories Related to Corporate Image Factors

Corporate image refers to the perceptions and feelings held by external stakeholders, such as customers, society, and communities, toward an organization. These perceptions are formed through both direct experiences, such as the use of products and services, and indirect experiences, such as communication, public relations, word-of-mouth, and organizational-related events. Corporate image therefore reflects what society "perceives" and "evaluates" about an organization rather than merely what the organization intends to project. In other words, corporate image represents the collective mental picture held by the public regarding what the organization is like, how trustworthy it is, and whether it is worthy of support. This image directly influences brand perception, service evaluation, reputation, and credibility (Kotler & Keller, 2016).

Brand refers to a name, term, symbol, sign, or design element used to identify and differentiate products and organizations from competitors. However, a brand is not limited to its visual appearance; it also encompasses the image, emotions, experiences, and values perceived by consumers through their interactions with the brand and the organization (Aaker, 1996).

Service quality refers to the processes and interactions through which organizations deliver value to consumers, focusing on customer satisfaction, positive experiences, and perceived value. Service quality depends on the degree of consistency between customer expectations and actual service performance (Zeithaml, Bitner, & Gremler, 2018).

Reputation refers to the external evaluation and perception of an organization's competence, reliability, and quality, which are developed through accumulated experiences, communication, and performance over time. A favorable reputation enhances consumer confidence and directly influences purchase decisions (Fombrun, 1996).

Credibility (Trustworthiness) refers to the extent to which consumers feel confident in a brand or organization, believing that it is competent, honest, and capable of fulfilling its promises. Credibility has a direct impact on consumers' confidence and purchase decisions (Pasu Decharin, 2018).

Concepts and Theories Related to Motivation Factors

Motivation is a fundamental concept used to explain human behavior across various contexts. The term is derived from the Latin word *movere*, meaning “to move” or “to cause action,” indicating the internal force that drives individuals to engage in behaviors in order to satisfy their needs (Kidd, 1973). From a psychological perspective, Lovell (1980) described motivation as a process that stimulates individuals to attempt to fulfill unmet needs. Similarly, Domjan (1996) viewed motivation as a state that intentionally increases behavior aimed at achieving specific goals, representing deliberate actions rather than automatic responses Rattanaserekiat, S. (2012).

Rational motivation serves as a key mechanism influencing consumers’ purchasing behavior, particularly in the digital era where information can be accessed rapidly and from diverse online sources. This accessibility enables consumers to systematically evaluate and compare alternatives before making purchase decisions (Döring, 2007). Consumers employ logical and analytical thinking processes to assess available information prior to purchasing products and services. Stahl and Van Prooijen (2018) explained that rational motivation arises from decision-making processes based on objective evaluation and reasoned analysis. Consumers typically consider tangible factors such as price, quality, durability, and product value in order to maximize utility from their expenditures. Such behavior reflects cautious purchase decisions and emphasizes economic benefits as primary considerations Nangkaew, S., Khamkhunkaew, P., & Thanitbenjasit, P. (2025).

Emotional motivation is a significant factor that directly influences consumers’ purchasing behavior, particularly in digital purchasing contexts characterized by interactive and emotionally stimulating content. These environments often feature real-time presentations that evoke emotions and facilitate interactions, prompting consumers to respond to purchasing opportunities more immediately (Park & Lin, 2020). Such digital settings stimulate positive emotions such as excitement, enjoyment, and urgency, which drive emotion-based purchasing behavior. According to Fanselow (2018), emotional motivation reflects decision-making processes driven more by personal feelings than by rational analysis or economic benefits. Consumers may make purchase decisions to gain social acceptance, experience pleasure from product ownership, or feel excitement from participating in real-time online activities. These emotional factors therefore play a crucial role in influencing consumer decisions in modern digital marketing environments, where responses tend to occur more rapidly and with higher levels of automaticity Nangkaew, S., Khamkhunkaew, P., & Thanitbenjasit, P. (2025).

Conceptual Framework

This study aims to examine the factors influencing real estate purchase decisions toward AP (Thailand) Public Company Limited among Generation X and Generation Y consumers by identifying independent and dependent variables as follows.

Independent Variables

1. Location Factors Including: Safety Convenience Public Utilities
2. Corporate Image Factors Including: Brand Service Quality Reputation Credibility
3. Motivational Factors Including: Rational Motivation Emotional Motivation

Dependent Variable

Factors Affecting the Decision to Purchase Real Estate from AP (Thailand) Public Company Limited among Generation X and Generation Y

Research Framework

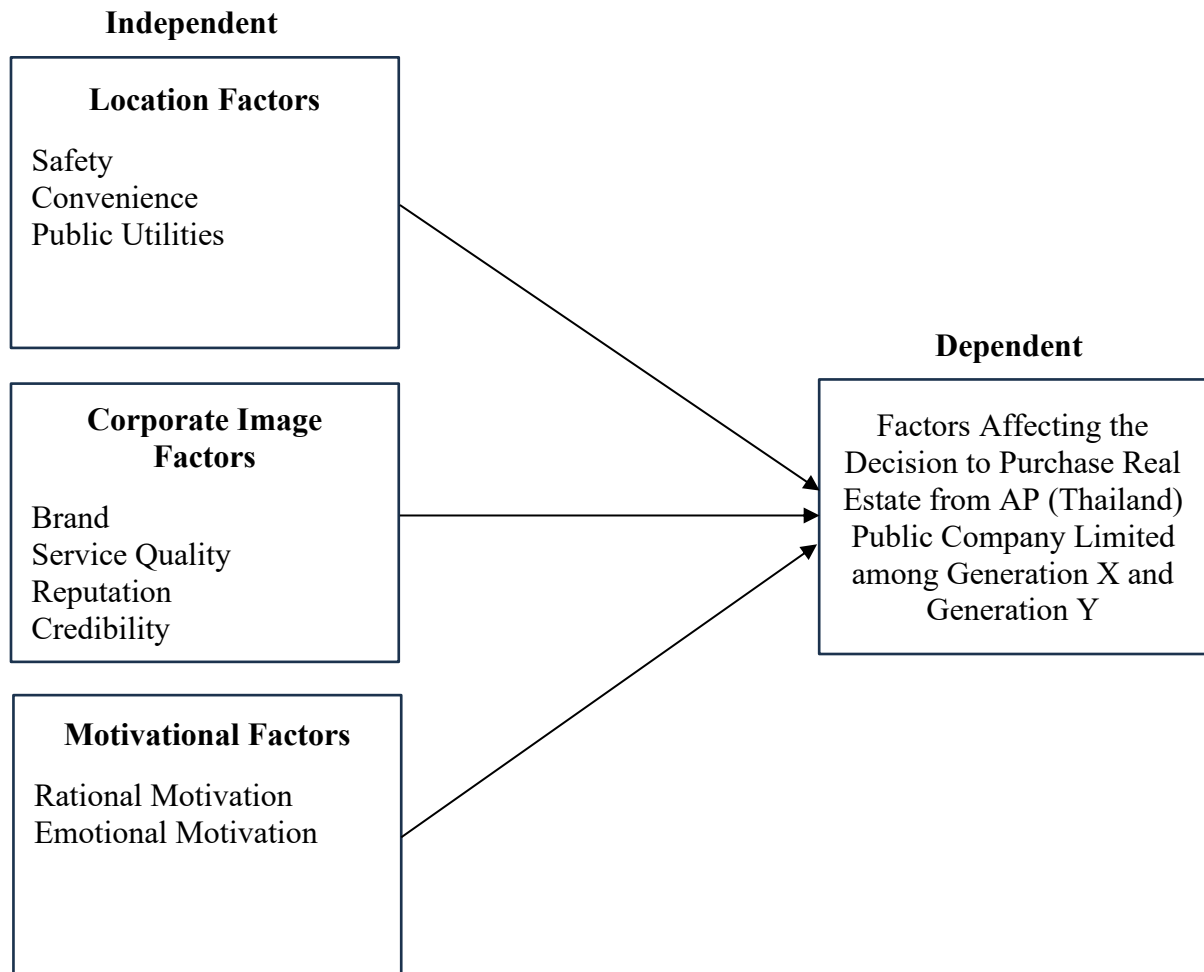


Figure 1: Research Framework

Research Methodology

This study employed a quantitative research approach focusing on Generation Y and Generation X consumers who emphasize value for money, reliability, long-term stability, and seek investment opportunities that can enhance property value in the future.

The sample comprised Generation Y individuals aged 27-44 years and Generation X individuals aged 45-60 years. The sample size was determined using Cochran's (1977) formula, as the actual population proportion and total population size were unknown. With a 95% confidence level and a $\pm 5\%$ margin of error, the total sample size was set at 400 respondents.

Data were collected using an online questionnaire designed in accordance with the study's concepts, theories, and variables. The questionnaire consisted of four sections:

Section 1: Demographic information of the respondents

Section 2: General background and status of the respondents

Section 3: Items related to location factors, corporate image factors, motivational factors,

and factors influencing the real estate purchase decisions of Generation Y and Generation X consumers toward AP (Thailand) Public Company Limited

Section 4: Additional suggestions and comments

A pilot test was conducted with 30 respondents to assess the reliability of the questionnaire. Cronbach's alpha coefficients were calculated using statistical software, with an acceptable reliability threshold set at 0.70 or higher. The pilot test yielded a Cronbach's alpha coefficient of 0.881, indicating a high level of internal consistency.

Population and Sampling Criteria

The target population of this study comprised Generation X consumers aged 45-60 years and Generation Y consumers aged 27-44 years who had perceptions or experiences related to purchasing real estate developed by AP (Thailand) Public Company Limited. A total of 400 respondents were included in the study.

The study employed purposive sampling, a non-probability sampling technique. Respondents were selected based on the following eligibility criteria: 1) respondents belonged to Generation X or Generation Y according to the specified age ranges; 2) respondents had perceptions or experiences related to purchasing real estate developed by AP (Thailand) Public Company Limited; and 3) respondents voluntarily agreed to participate in the study. Respondents who did not meet these criteria were excluded from the study.

Statistical Analysis

Statistical analysis refers to the systematic process of organizing, examining, and analyzing quantitative data collected from Generation X and Generation Y consumers who possess perceptions or experiences related to purchasing real estate developed by AP (Thailand) Public Company Limited. The analysis was conducted to describe data characteristics and to test relationships among variables in accordance with the research objectives and hypotheses. Measurement scales used in data collection served as the basis for data interpretation to ensure accuracy, reliability, and factual representation.

This study employed quantitative data analysis using both descriptive and inferential statistics to explain and examine the level of influence of factors affecting the real estate purchase decisions of Generation X and Generation Y consumers toward AP (Thailand) Public Company Limited (Vanida Wadjaroen, Rangsarn Lertnaisat, & Sombat Teekhasap, 2017).

1. Descriptive statistics - Descriptive statistics refer to the analysis of data related to demographic factors and factors influencing housing purchase decisions by summarizing frequencies, percentages, means, and standard deviations. The results are presented in the form of tables, bar charts, and pie charts, as appropriate (Phattharaphon Tupimai, 2023).

2. Inferential Statistics - Inferential statistics involve the use of sample data to make generalizations about the population, including parameter estimation and hypothesis testing. Quantitative data collected from respondents are analyzed using inferential statistical techniques in order to draw conclusions consistent with the objectives of the research (Weerasak Jinarat, 2014).

Research Finding

Demographic Characteristics of Respondents

The sample obtained through purposive sampling consisted of 44.4% male respondents, 42.0% female respondents, and 13.6% LGBTQAI+ respondents. The majority of respondents belonged to Generation Y, aged between 29-44 years (50.8%), followed by Generation X, aged between 45-60 years (49.2%). Most respondents held a master's degree (53.6%), were self-employed or business owners (54.8%), and reported an average monthly income ranging from 40,001 to 55,000 THB (38.0%).

Analysis of Means and Standard Deviations

The analysis of factors influencing the real estate purchase decisions of Generation X and Generation Y consumers toward AP (Thailand) Public Company Limited revealed that motivational factors were rated at a high level of agreement (Mean = 4.16, S.D. = 0.35). This was followed by location factors (Mean = 4.14, S.D. = 0.44), corporate image factors (Mean = 3.81, S.D. = 0.60), and purchase decision factors (Mean = 3.48, S.D. = 0.97), respectively.

Differences in Intention by Demographic Characteristics

To examine whether intention to purchase real estate differed across demographic characteristics, an independent-samples t-test was used to compare Generation X and Generation Y, while one-way ANOVA was conducted to compare groups based on gender, education level, occupation, and income. Post hoc tests were conducted where appropriate to identify pairwise differences between groups.

Table 1: Comparison of Mean Scores by Demographic Characteristics Using t-test and One-Way ANOVA

Demographic Variable	Group	Mean	Test Si Statistic	Sig.	Post Hoc	Conclusion
Generation	Generation X	3.4715	t = -0.199	.843	-	Not significant
	Generation Y	3.4961				
Gender	Male	3.4099	F = 1.919	.149	Tukey: p > .05	Not significant
	Female	3.4667				
	LGBTQAI+	3.7794				
Education	Bachelor's degree	3.2311	F = 3.510	.031*	Games-Howell: p > .05	Significant overall ANOVA, but no significant pairwise differences
	Master's degree	3.6138				
	Doctoral degree	3.5272				
Occupation	Self-employed	3.5712	F = 1.632	.183	Tukey: p > .05	Not significant
	Private-sector employee	3.2200				
	Student	3.5625				
	Government/state enterprise employee	3.4902				
	15,000-25,000 baht	3.3864	F = 0.426	.735	Tukey: p > .05	Not significant
	25,001-40,000 baht	3.5702				
	40,001-55,000 baht	3.4237				
	≥55,001 baht	3.4886				

* p < .05. An independent-samples t-test was used for Generation X and Generation Y, while one-way ANOVA was used for demographic variables with more than two groups. Tukey HSD was used when the homogeneity of variance assumption was satisfied, whereas Games-Howell was used when the assumption was violated.

The results showed that there was no statistically significant difference in intention between Generation X and Generation Y ($t = -0.199$, $p = .843$). Similarly, no statistically significant differences were found across gender ($F = 1.919$, $p = .149$), occupation ($F = 1.632$, $p = .183$), or income groups ($F = 0.426$, $p = .735$).

For education level, the overall ANOVA result was statistically significant ($F = 3.510$, $p = .031$). However, the Games-Howell post hoc test did not identify any statistically significant pairwise differences among the three education groups.

Multiple Regression Analysis

The results of the regression analysis indicate that [Note: Key statistical values, including beta coefficients (β), t-values, p-values, and the coefficient of determination (R^2), have not yet been reported and should be included to enhance the completeness and robustness of the findings. In the absence of these statistics, the results can only be presented at an overall interpretative level.

Nevertheless, the overall findings suggest that the factors examined in this study play a significant role and exert a significant influence on the real estate purchase decisions of Generation X and Generation Y consumers toward AP (Thailand) Public Company Limited.

Table 2: Results of Multiple Regression Analysis of Factors Influencing the Real Estate Purchase decisions of Generation X and Generation Y Consumers toward AP (Thailand) Public Company Limited

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	β		
(Constant)	0.571	0.688		0.829	0.408
Location Factors	-0.347	0.112	-0.159	-3.114	0.002
Corporate Image Factors	1.058	0.094	0.649	11.297	0.000
Motivational Factors	0.057	0.165	0.020	0.342	0.733

Note: $R = 0.652$, $R^2 = 0.425$, Adjusted $R^2 = 0.415$, $F = 45.223$, $*P = 0.000$

Based on Table 1, the results of the multiple regression analysis of factors influencing the real estate purchase decisions of Generation X and Generation Y consumers toward AP (Thailand) Public Company Limited indicate that The multiple regression analysis revealed that corporate image factors had a statistically significant positive relationship with real estate purchasing decisions ($\beta = 0.649$, $p < .001$), whereas location factors had a statistically significant negative relationship with real estate purchasing decisions ($\beta = -0.159$, $p = .002$). Motivational factors did not have a statistically significant relationship with real estate purchasing decisions ($\beta = 0.020$, $p = 0.733$). The regression model explained 42.5% of the variance in real estate purchasing decisions ($R^2 = .425$).

Discussion

Hypothesis 1: The results indicate that location factors were significantly associated with real estate purchasing decisions toward AP (Thailand) Public Company Limited, with a negative standardized coefficient ($\beta = -0.159$, $p = .002$). This indicates that, when corporate image and motivational factors were statistically controlled, location factors showed a negative partial relationship with purchasing decisions. Therefore, the result should not be interpreted

as meaning that consumers consider location unimportant or undesirable. Rather, the negative coefficient reflects the direction of the relationship within the multiple regression model.

This finding differs from previous studies that generally identified location as an important consideration in residential purchasing decisions, particularly in terms of accessibility, convenience, safety, and surrounding facilities (Pojanee, 2018; Dwi et al., 2019). The difference may be related to the simultaneous inclusion of corporate image and motivational factors in the regression model. In this study, corporate image demonstrated a substantially stronger positive standardized coefficient ($\beta = 0.649$), which may indicate that consumers' purchasing decisions toward AP Property were more strongly associated with perceptions of the company's brand, service quality, reputation, and credibility than with location factors when the predictors were considered simultaneously.

Therefore, the negative coefficient for location should be interpreted cautiously as a statistical result within the regression model rather than as evidence that consumers generally have negative perceptions of location.

Hypothesis 2: Corporate image factors influence the real estate purchase decisions of Generation X and Generation Y consumers toward AP (Thailand) Public Company Limited in Thailand.

The findings indicate that corporate image has a statistically significant effect on the real estate purchase decisions of Generation X and Generation Y consumers of AP (Thailand) Public Company Limited in Thailand. These results support the proposed hypothesis and confirm that corporate image plays a critical role in purchase decisions involving high-value and high-risk real estate products.

These findings are consistent with the perspective that corporate image and corporate reputation emerge from stakeholders' perceptions of an organization's past actions and are utilized as mechanisms for evaluating organizational credibility (Dowling, 1993; Dutton et al., 1994; Weigelt & Camerer, 1988). In the real estate context, location functions as a functional attribute that can be clearly observed and evaluated, which consumers use as a proxy to infer the competence and expertise of property developers (Kennedy, 1977).

Furthermore, the results can be explained by signaling theory, which posits that corporate image and reputation serve as informational signals that reduce decision-making uncertainty, particularly in markets where consumers cannot fully assess product quality prior to purchase, such as the real estate market (Fombrun et al., 2000; Walker, 2010). Consistent development in high-potential locations therefore becomes a signal reflecting an organization's long-term value-delivery capability.

When examined across generational cohorts, both Generation X and Generation Y consumers were found to place importance on location as a representation of corporate image, despite differences in their attribute-based expectations. This finding aligns with Yoon et al. (1993), who suggested that corporate image is formed through consumers' evaluations of organizational attributes to which varying levels of importance are assigned.

In conclusion, this study reinforces the role of corporate image as a signaling mechanism influencing real estate purchase decisions and extends theoretical understanding by demonstrating that location is not merely a project attribute but a core component of corporate image that helps mitigate consumers' perceived decision-making risk in the real estate market.

Hypothesis 3: Motivational factors do not significantly influence the real estate purchase decisions of Generation X and Generation Y consumers toward AP (Thailand) Public Company Limited in Thailand.

The results of the study indicate that motivational factors do not have a statistically significant influence on the real estate purchase decisions of Generation X and Generation Y consumers toward AP (Thailand) Public Company Limited in Thailand. This finding reflects

that real estate purchase decisions, which involve high-value assets and long-term financial planning, tend to be driven more by rational decision-making processes than by motivational impulses.

This finding contradicts the study of Awayawanon, P., & Oraphan, P. (2017). which found a positive relationship between motivation and purchase intention toward luxury condominium properties, indicating that consumers with both emotional and rational motivations exhibit higher purchase intentions. Such differences may stem from variations in product characteristics and purchasing contexts. Specifically, luxury real estate may better satisfy emotional motivations related to social status, self-image, and personal gratification than general residential properties.

Furthermore, Generation X and Generation Y consumers exhibit diverse demographic characteristics in terms of age, income, family responsibilities, and financial goals. These factors may lead them to rely more heavily on rational considerations-such as price, value for money, location, and long-term stability-rather than personal motivational factors when making real estate purchase decisions.

Therefore, it can be concluded that, in the context of AP (Thailand) Public Company Limited, motivational factors are not primary determinants of real estate purchase decisions among Generation X and Generation Y consumers.

The findings indicate that corporate image factors had the strongest positive relationship with real estate purchasing decisions, while location factors showed a statistically significant negative relationship. Motivational factors were not significantly associated with purchasing decisions. These findings suggest that, when the factors were considered simultaneously, consumers' purchasing decisions toward AP (Thailand) Public Company Limited were more strongly associated with corporate image than with location or motivational factors.

Hypothesis 4: Demographic factors significantly influence the real estate purchase decisions of Generation X and Generation Y consumers toward AP (Thailand) Public Company Limited in Thailand.

The results of this study indicate that most demographic characteristics did not result in statistically significant differences in the real estate purchase decisions of Generation X and Generation Y consumers. No significant differences were found based on generation, gender, occupation, or income. However, education level showed an overall statistically significant difference, while the Games-Howell post hoc test did not identify any significant pairwise differences among the education groups. Therefore, H4 was not supported.

This finding partially differs from traditional marketing perspectives, which suggest that demographic characteristics, such as age, gender, education, occupation, and income, play important roles in consumer behavior (Kotler & Keller, 2016; Schiffman & Wisenblit, 2019). In addition, age and income are associated with consumers' purchasing power and life-cycle stages, which may influence housing demand (Solomon, 2020; Blackwell et al., 2006). However, the findings of this study may indicate that Generation X and Generation Y consumers place greater importance on perceived value, corporate image, developer credibility, location, project quality, and long-term benefits than on demographic characteristics alone. This is consistent with Zeithaml's (1988) value-based perspective, which suggests that purchase decisions are influenced by consumers' perceived value.

Therefore, real estate developers should focus on creating perceived value and building corporate credibility, while emphasizing project quality, convenient locations, and long-term benefits rather than relying primarily on demographic characteristics when developing marketing strategies to encourage real estate purchase decisions.

Suggestion

Recommendations for Applying the Research Findings

1. Corporate Image - Since the findings indicate that corporate image factors exert the strongest influence on the real estate purchase decisions of Generation X and Generation Y consumers toward AP (Thailand) Public Company Limited, businesses should place strong emphasis on developing and communicating their corporate image across all dimensions. Particular attention should be given to brand identity, reputation, credibility, and service quality, which should collectively reflect the company's positioning as a reliable real estate developer offering high-quality projects.

Consistent communication of the concept "Space That's Worth Living" through digital media, authentic customer reviews, and post-purchase experiences can strengthen consumer trust and enhance long-term purchase motivation among Generation X and Generation Y consumers.

2. Location Factors - Although location factors showed a statistically significant negative relationship with purchasing decisions in the regression model, location remains an important aspect of residential evaluation. Therefore, AP (Thailand) Public Company Limited should carefully examine consumers' perceptions of safety, convenience, and public utilities associated with project locations. Marketing communication should focus on identifying and addressing potential concerns regarding accessibility, safety, and surrounding facilities rather than assuming that location characteristics automatically increase purchase decisions.

In addition, marketing communications should focus on conveying the "livability value of the location" rather than merely promoting housing units or properties. Communicating aspects of convenience, safety, and surrounding amenities that enhance residents' quality of life can effectively strengthen purchase motivation and support informed decision-making.

3. Motivational Factors - Although the findings indicate that motivational factors do not have a statistically significant direct influence on purchase decisions, developers can still utilize rational and emotional motivations as decision-enhancing mechanisms. Marketing communications should emphasize investment value, long-term stability, and aspirational lifestyle imagery associated with the projects in order to reduce consumer hesitation and increase confidence prior to purchase decisions.

Recommendations for Future Research

1. Expanding the Sample Scope - Future studies should expand the sample to include other generations, such as Generation Z and Baby Boomers, in order to compare behavioral differences and factors influencing real estate purchase decisions across age groups more comprehensively.

2. Conduct in-depth studies using qualitative research methods - Future studies should incorporate in-depth interviews and focus group discussions alongside quantitative research methods to gain deeper insights into consumers' underlying reasons, emotions, and attitudes. Particular emphasis should be placed on corporate image factors, which were found to exert a strong influence on purchase decisions.

3. Future research may conduct comparative studies between AP (Thailand) Public Company Limited and other real estate developers in order to identify strengths, weaknesses, and strategic differences that influence consumers' purchase decisions.

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