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The journal has the following objectives:

- a). To stimulate the creation and synthesis of beneficial information, as well as its broad dissemination, especially in the varied fields of the humanities and social sciences,
- b). To foster a deeper understanding regarding the impact of business policies and practices on society, and
- c). To promote the adoption of best practices in communities through education, and to aid in the resolution of community issues for the betterment of society; this represents the development aspect referred to in its name.

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From the Editor

Human Behavior, Development and Society (HBDS) is an international, open-access, and interdisciplinary peer-reviewed journal published three issues a year by Asia-Pacific International University (AIU). *HBDS* publishes academic research articles in the humanities, social sciences, education, business administration, religion, health, public administration, development, tourism, and other social sciences areas that contribute to the development of concepts, theories, as well as new knowledge for developing the community and society. The journal's scope is to advance knowledge through the use of classical methods of investigation and to foster the examination of cross-cultural issues that increase mutual understanding among diverse social groups within the international community, with a particular emphasis on Southeast Asia.

This is the second issue of *Human Behavior, Development and Society (HBDS)* for 2025. For this issue, there are 15 articles, 11 of which were written by researchers external to the university, and four were authored by AIU researchers. We are delighted to see reports and findings from various disciplines, including business, education, language, communication, and nursing education. Most articles in this issue reflect studies conducted in ASEAN contexts, including Cambodia, the Philippines, and Thailand, as well as articles from China and Nepal. We hope that this issue of *HBDS* will contribute to the development of society and serve as a source of information for various academic fields and research projects.

We would like to invite readers to publish your valuable papers with us. All articles in the journal are indexed by the Thai-Journal Citation Index Centre (TCI), ASEAN Citation Index (ACI), and the EBSCO database. More information may be found on our website, <https://www.tci-thaijo.org/index.php/hbds>. We would also appreciate comments or suggestions from you to help us improve the journal. Finally, we appreciate the hard work of authors, reviewers, editorial board members, executive board members, and journal staff members who have contributed to making this achievement a reality.

Assistant Professor Dr. Damrong Sattayawaksakul, Editor

Human Behavior, Development and Society

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The Effect of Perceived Organizational Support on Turnover Intention in the Health and Fitness Industry: A Case Study From Beijing, China

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Abstract

Purpose: The global health and fitness industry has experienced significant growth, particularly in China, where Beijing serves as a central hub for fitness enterprises. However, high employee turnover remains a pervasive issue, threatening service quality, customer loyalty, and long-term business sustainability. This research seeks to explore the issue of employee retention within the health and fitness sector by investigating how Perceived Organizational Support (POS) influences turnover intention. Specifically, it examines the mediating roles of organizational commitment and job burnout, while also considering the moderating effect of Person–Organization Fit (P–O Fit). By exploring these dynamics within the unique cultural and organizational context of Beijing, China, this research sought to provide industry-specific insights into reducing turnover and enhancing employee retention.

Introduction/Background: The global fitness industry has experienced rapid growth, with China emerging as a significant market. However, high employee turnover threatens business sustainability and service quality. While POS has been extensively studied in Western contexts, its role in reducing turnover intention within China's fitness sector remains underexplored. Furthermore, the interplay between POS, organizational commitment, job burnout, and P–O Fit requires empirical validation to inform retention strategies in this unique industry.

Methods: A quantitative research approach was used, with survey data from 401 fitness employees in Beijing. Purposive sampling was used, ensuring that respondents worked in fitness organizations and resided in Beijing. Data was collected through an online questionnaire, which included validated scales for POS, organizational commitment, job burnout, turnover intention, and P–O Fit. Structural Equation Modeling was used to test direct, mediating, and moderating effects. Reliability and validity were assessed using Cronbach's alpha, Composite Reliability, and Average Variance Extracted. Hierarchical regression analysis was conducted to examine the moderating role of P–O Fit.

Findings: The study presents several research findings. First, POS negatively affected turnover intention, indicating that employees perceiving higher organizational support were less likely to leave. Second, POS positively influenced organizational commitment, reinforcing employees' loyalty. Third, POS negatively impacted job burnout, suggesting that higher organizational support reduces employee exhaustion. Fourth, organizational commitment negatively affected turnover intention, affirming that committed employees were less likely to leave. Next, job burnout positively influenced turnover intention, indicating that burnout contributes to employees' desires to leave. Furthermore, organizational commitment mediated the relationship between POS and turnover intention, implying that POS enhanced commitment, which subsequently reduces turnover intention. In addition, job burnout mediated the negative relationship between POS and turnover intention, showing that POS reduces burnout, which in turn lowers turnover intention. Finally, P–O Fit moderated the relationship between POS and turnover intention, revealing that when employees' values align with organizational values, the impact of POS on reducing turnover intention is stronger.

Contribution/Impact on Society: This study extended organizational behavior research by applying established theories to the fitness industry, a sector often overlooked in retention studies. It provides

empirical evidence on how POS, organizational commitment, and job burnout interact to shape turnover intention, while also introducing P–O Fit as a crucial moderating variable. For organizations, the findings highlight the necessity of fostering a supportive work environment, strengthening organizational commitment, and mitigating burnout to enhance employee retention.

Recommendations: First, organizations should implement career development programs, mentorship initiatives, and mental health resources to improve POS. Moreover, structured interventions, such as flexible work schedules and workload management, should be introduced to reduce burnout. Furthermore, hiring strategies should prioritize candidates with high P–O Fit to ensure long-term alignment with organizational values. Lastly, leadership training focusing on emotional intelligence and communication should be implemented to enhance employee engagement.

Research Limitations: This study had certain limitations, one of which was its geographical focus on Beijing, potentially restricting the applicability of the findings to other regions. Additionally, the use of self-reported survey data may have led to potential biases, such as social desirability bias. The study also did not explore other potential moderating or mediating factors, such as leadership style or work-life balance, which could provide further insights into turnover intention.

Future Research: Future studies should expand the geographic scope to include multiple cities or countries for cross-cultural comparisons. Researchers should explore additional moderating factors, such as leadership style and job embeddedness, to develop a more comprehensive model of turnover intention. Longitudinal studies could also be conducted to track the long-term effects of POS on employee retention in dynamic industries like fitness.

Keywords: *Health, fitness, turnover intention, perceived organizational support*

Introduction

The global health and fitness industry has experienced rapid growth, driven by rising health awareness, technological progress, and the diversification of fitness solutions. As a key segment of the wellness economy, China's fitness sector has expanded significantly, with Beijing emerging as a major hub for fitness businesses (China Briefing, 2024). Despite this growth, the industry faces a persistent challenge: high employee turnover, which threatens service quality, customer retention, and long-term business viability.

Addressing this requires a thorough understanding of the factors that shape turnover intentions, with particular emphasis on Perceived Organizational Support (POS). POS reflects employees' perception that their organization recognizes their contributions and prioritizes their well-being (Eisenberger et al., 1986). While extensively researched in Western settings, POS remains relatively understudied in China's fitness industry (Xu et al., 2021). Given the distinct cultural and organizational characteristics in China, it is crucial to explore how POS interacts with psychological and organizational factors to influence employees' turnover decisions.

Most existing studies on POS and turnover intention have focused on corporate, healthcare, and manufacturing sectors, with limited attention to service-driven industries such as fitness (Xu et al., 2021). Unlike conventional workplaces, fitness professionals frequently engage in intense emotional labor, maintain direct client interactions, and navigate irregular work schedules, factors that may influence how POS affects turnover intentions (Brotheridge & Grandey, 2002). Additionally, the role of person-organization fit as a moderating variable in the POS-turnover relationship remains largely unexamined. While POS generally mitigates turnover, its impact may vary depending on how well employees' values align with those of their organization (Astakhova, 2016).

To address these gaps, this study investigated the influence of POS on turnover intention among fitness employees in Beijing. Specifically, it explored the mediating roles of organizational commitment and job burnout, alongside the moderating influence of person-organization fit. A quantitative research design was employed, using survey data analyzed through Structural Equation Modeling to test the proposed relationships. By situating the findings within the fitness industry, this research

provides industry-specific insights that extend beyond traditional corporate environments, offering practical recommendations for improving employee retention.

Research Objectives

1. To study how employees' POS affects their turnover intention in the health and fitness industry in China.
2. To examine what role organizational commitment plays in translating POS into employees' turnover intention.
3. To investigate what role job burnout plays in the relationship between POS and employees' turnover intention.
4. To determine whether person-organization fit moderates the relationship between POS and turnover intentions.

Literature Review

POS refers to employees' perception of how much their organization appreciates their contributions and prioritizes their well-being (Eisenberger et al., 1986). Recent research has consistently highlighted the negative relationship between POS and turnover intention. Sartori et al. (2023) found that higher POS correlates with increased job motivation and stronger organizational commitment, both of which are associated with lower turnover intentions. Similarly, Tamundong and Caballero (2024) found that employees who perceived their organization as supportive were more likely to have higher job satisfaction, which in turn reduced their likelihood of leaving. Additionally, Huang et al. (2024) identified low POS as a significant predictor of higher turnover intentions among social workers, particularly in large organizations. Therefore,

H_1 : POS negatively impacts turnover intention.

Organizational commitment refers to the emotional and psychological bonds that employees develop with their organizations, which play a crucial role in their intention to remain with the organization (Herscovitch & Meyer, 2002). Medina-Garrido et al. (2023) explored this concept in the Spanish tourism sector, examining how organizational support for work-family balance influenced employee well-being and commitment. Their study revealed that when employees perceive strong support for balancing work and family responsibilities, their organizational commitment strengthens, leading to improved workplace well-being. This highlighted the crucial role of POS in creating a supportive work environment that strengthens employee commitment.

Furthermore, Hessari et al. (2023) examined the influence of technostress on organizational commitment, considering the mediating effect of individual innovation. Their findings suggested that while technostress negatively affects commitment, POS can counteract this impact by encouraging innovation among employees. Thus, POS not only directly reinforces organizational commitment, but also serves as a protective factor against workplace stressors like technostress. Hence,

H_2 : POS positively influences organizational commitment.

Job burnout refers to a psychological condition that arises from ongoing interpersonal stress in the workplace, typically marked by emotional exhaustion, a sense of detachment or cynicism toward others (depersonalization), and a diminished sense of effectiveness or achievement in one's role (Maslach & Florian, 1988). Xu et al. (2025) utilized psychometric network analysis on a sample of 945 Chinese primary and secondary school teachers to explore the structure of job burnout and its connections to protective factors, including career satisfaction, POS, and perceived social support. Their results revealed a negative correlation between POS and job burnout, suggesting that increased organizational support can mitigate burnout among teachers. Similarly, Ren et al. (2024) examined how psychological capital and work engagement mediated the relationship between POS and burnout in Chinese nurses. Their study found that POS not only directly reduced burnout, but also did so indirectly by fostering psychological capital and work engagement, thereby lowering overall burnout levels. Additionally, Yu et al. (2021) identified a significant negative predictive relationship between

POS and job burnout, with job satisfaction acting as a mediator. This suggests that POS enhances job satisfaction, which in turn helps to mitigate burnout. Hence,

H₃: POS negatively affects job burnout.

Turnover intention represents employees' intentional and considered desires to resign from their jobs, often seen as the immediate precursor to actual departure from the organization (Ahmad et al., 2023). Recent studies have also explored the link between organizational commitment and turnover intention in various industries. For instance, Guzeller and Celiker (2020) conducted a meta-analysis of 13 studies within the tourism and hospitality sector, revealing a moderate negative correlation between organizational commitment and turnover intention. Their findings suggested that employees with stronger emotional commitment to their organizations were less inclined to consider leaving. Similarly, Özkan (2021) conducted a meta-analysis focusing on turnover intention among IT professionals. This study confirmed that organizational commitment serves as a negative predictor of turnover intention, emphasizing that employees with higher commitment levels are less likely to leave their jobs. Hence,

H₄: Organizational commitment negatively influences turnover intention.

Job burnout, which includes emotional exhaustion, depersonalization, and a diminished sense of personal accomplishment, has been extensively studied in relation to turnover intention. Chen et al. (2019) investigated the mediating role of job satisfaction in this relationship among medical professionals. Their study found a positive relationship between job burnout and turnover intention, with job satisfaction serving as a partial mediator. This indicated that higher burnout levels increase turnover intentions, in part due to decreased job satisfaction. Furthermore, Salama et al. (2022) investigated the impact of work stress and job burnout on turnover intention among hotel employees. Their results showed that job burnout played a significant mediating role in the relationship between work stress and turnover intention, suggesting that stress-induced burnout was a key driver of employees' intent to leave. Therefore,

H₅: Job burnout positively influences turnover intention.

Palma-Moreira et al. (2022) investigated how affective organizational commitment mediated the relationship between POS and turnover intention. Their findings indicated that affective commitment served as a mediator, suggesting that when employees perceive strong organizational support, their emotional attachment to the organization increases, ultimately reducing their intention to leave. Guna and Satrya (2021) discovered that organizational commitment mediated the relationship between POS and turnover intention. Their findings emphasized that greater organizational support fosters stronger commitment, which in turn decreases employees' likelihood of leaving. Hence,

H₆: Organizational commitment mediates the impact of perceived organizational support on turnover intentions.

Ren et al. (2024) studied the relationship between POS and burnout among newly graduated nurses in Southwest China, exploring the chain mediating roles of psychological capital and work engagement. Their findings revealed a negative correlation between POS and both burnout and turnover intention, with psychological capital and work engagement acting as mediators. This suggested that higher POS strengthens psychological resources and engagement, which in turn reduces burnout and turnover intentions. Ali et al. (2024) investigated the effect of POS on turnover intention among nursing staff, emphasizing the mediating role of job burnout. Their results showed a significant negative association between POS and turnover intention, with job burnout acting as a mediator in this relationship. Specifically, greater POS reduces job burnout, which subsequently lowers turnover intentions. Therefore,

H₇: Job burnout mediates the negative relationship between POS and turnover intention.

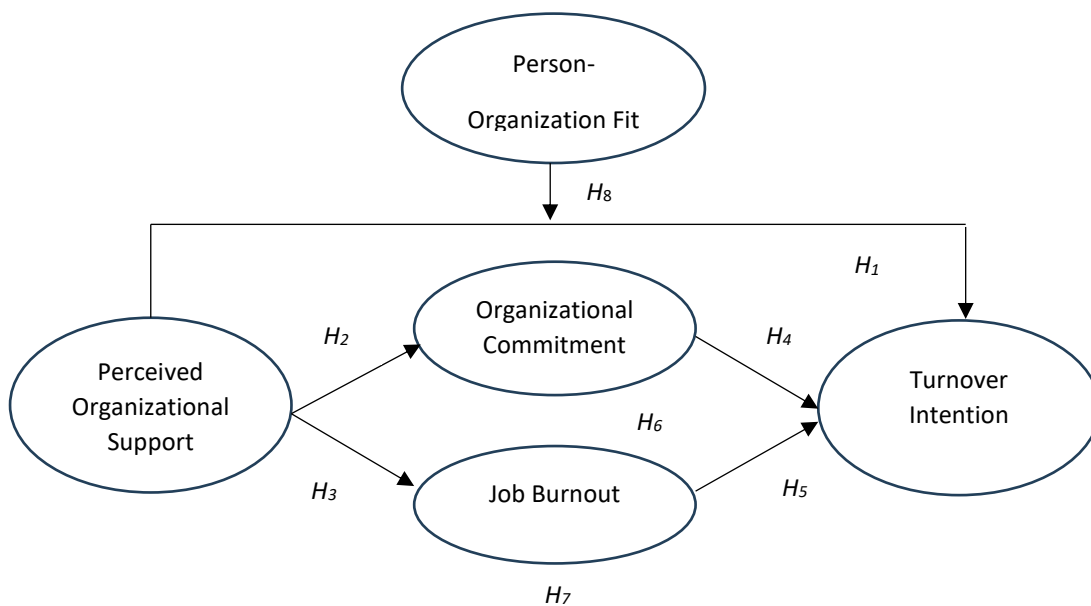
P–O Fit refers to the congruence between an individual's values, beliefs, and behaviors and those of the organization (Kristof, 1996). Muhammad and Huzaifa (2021) examined the impact of P–O value fit on employee attitudes, emphasizing the moderating role of POS. Their study highlighted that P–O

Fit positively influenced employee attitudes, such as job satisfaction and organizational commitment. Furthermore, POS was shown to moderate this relationship, suggesting that when employees perceive strong organizational support, the positive effects of P–O Fit on attitudes were amplified, which could lead to a reduction in turnover intentions. Jin et al. (2016) explored how employee followership and job satisfaction mediated the relationship between P–O Fit and turnover intention. Their findings indicated that high P–O Fit was linked to lower turnover intention, primarily through increased job satisfaction and proactive followership behaviors. Although POS was not the primary focus of their study, the results suggest that organizational support could further enhance these positive outcomes, further reducing turnover intentions. Hence,

H_8 : P–O fit moderates the role of POS on turnover intentions.

Building on the above discussion, this study's conceptual framework is illustrated in Figure 1.

Figure 1 *Conceptual Framework*



Methodology

The present investigation employed a quantitative methodology to analyze the interconnections among POS, organizational commitment, job burnout, and turnover intention. This research focused on employees currently working in health and fitness organizations and clubs in Beijing, China. Beijing was selected as the case study location due to its representativeness and significance. As China's capital, Beijing exemplifies the country's rapid urbanization over the past three decades and stands as a central hub for politics, culture, and education. Moreover, Beijing has the highest concentration of gyms, health clubs, and fitness centers in the country, with 5,504 such establishments recorded in 2022 (China Daily, 2023). This concentration, alongside its strategic importance, makes it an ideal location for studying the dynamics of the health and fitness industry.

According to demographic data from IBISWorld (2024), the health and fitness industry in Beijing employed 265,000 people in 2023, providing a well-defined population for the survey. The determination of participant numbers was conducted using Yamane's established sampling framework (1967), a frequently utilized statistical approach for population-based sample estimation. Employing a confidence interval of 95% with an acceptable error margin set at 5 percentage points, the computation yielded a target participant count of approximately 400 organizational members.

Data for this study was collected through an online survey targeting employees in health and fitness organizations and clubs in Beijing, China, using purposive sampling. To ensure eligibility, the questionnaire included two initial screening questions to confirm that potential participants were employed in the health and fitness industry and currently resided in Beijing. Those who did not meet these criteria were automatically excluded from the survey.

To achieve the research objectives and thoroughly examine the relationships among the variables, a two-phase data collection process was used. The first phase involved a pilot survey with 30 employees from Beijing's health and fitness sector, conducted prior to the main survey. The second phase consisted of the formal survey, which ran from January to February 2025. At the end of the survey, a total of 401 valid responses was obtained, fulfilling the requirement of at least 400 respondents, as calculated using the Yamane formula.

The study employed a survey questionnaire developed through an extensive review of relevant literature to ensure both methodological rigor and relevance. The final version of the questionnaire was organized into three sections. The first part included screening questions designed to identify eligible respondents, ensuring that the data collection was focused on the intended population. The second section collected demographic information, providing context for the analysis and helping to characterize the sample population. The third section addressed the five key constructs under investigation: POS, organizational commitment, job burnout, turnover intention, and P–O fit. The measurement instrument incorporated a Likert-type scaling system, featuring a five-point continuum for evaluating participant responses. It included 36 items, drawn from well-established scales used in previous research, ensuring the reliability and validity of the measurements.

We employed SPSS 25 and AMOS 28 for data analysis. SPSS 25 was used to conduct descriptive statistics and reliability analysis, ensuring the consistency and accuracy of the data. AMOS 28 was utilized for Structural Equation Modeling (SEM), which enabled the evaluation of relationships among the variables, hypothesis testing, and the assessment of mediating and moderating effects.

Research Findings

Descriptive Analysis

The demographic analysis of the workforce in Beijing's health and fitness sector provides important insights into its composition. First, the workforce is predominantly male, with 64.84% of respondents identifying as male and 35.16% as female, revealing a notable gender imbalance in the industry. Age-wise, the workforce is primarily composed of younger professionals, with the largest group (41.65%) falling within the 18–29 age range. Regarding education, most employees hold at least a bachelor's degree, indicating a well-educated workforce that likely values professional qualifications and formal training. In terms of work experience, nearly half (49.38%) of the employees have been in the industry for less than three years, suggesting a dynamic, transient labor market with frequent career shifts and turnover. The relatively small percentage of employees with more than eight years of experience highlights the challenges of long-term retention in this sector, emphasizing the importance of structured career development and organizational support to promote stability. As for monthly income, most employees earn between 8,001 and 12,000 Yuan, indicating a competitive salary range for mid-tier professionals. Lastly, the occupational distribution showed that general coaching roles were the most prevalent, with nearly half of the workforce employed in these positions.

Reliability and Validity

The quality of the observed variables was assessed according to reliability, convergence validity, and discriminant validity. Reliability was evaluated using Cronbach's alpha, Composite Reliability (CR), and Average Variance Extracted (AVE). The empirical findings shown in Table 1 revealed that all measurement scales exceeded the conventional psychometric benchmarks, with Cronbach's alpha and CR values surpassing .70, and AVE measurements exceeding .50. These results confirmed the measurement model's superior reliability and convergent validity, substantially exceeding the minimum thresholds recommended by Hair et al. (2010).

Table 1 *Cronbach's Alpha, Composite Reliability, and Average Variance Extracted*

Construct		Factor Loading	CR	AVE	Alpha
Perceived Organizational Support	POS1	.665	.889	.500	.887
	POS2	.681			
	POS3	.725			
	POS4	.736			
	POS5	.719			
	POS6	.711			
	POS7	.709			
	POS8	.704			
Organizational Commitment	OC1	.721	.933	.538	.932
	OC2	.749			
	OC3	.778			
	OC4	.737			
	OC5	.756			
	OC6	.731			
	OC7	.745			
	OC8	.73			
	OC9	.726			
	OC10	.71			
	OC11	.706			
	OC12	.707			
Job Burnout	JB1	.815	.936	.746	.935
	JB2	.875			
	JB3	.874			
	JB4	.896			
	JB5	.855			
Turnover Intention	TI1	.806	.911	.674	.910
	TI2	.87			
	TI3	.877			
	TI4	.827			
	TI5	.715			
Person–Organization Fit	POF1	.765	.929	.723	.927
	POF2	.832			
	POF3	.874			
	POF4	.884			
	POF5	.891			

The discriminant validity assessment, as illustrated in Table 2, demonstrated that the AVE's square root for each latent variable surpassed its corresponding inter-construct correlation coefficients. The observed pattern of results aligned with the discriminant validity standards established by Fornell and Larcker (1981), confirming that each construct maintained its unique conceptual identity within the measurement framework. Therefore, the study demonstrated strong discriminant validity.

Table 2 *Discriminant Validity*

	POS	OC	JB	TI	POF
POS	.706				
OC	.321	.733			
JB	-.411	-.394	.864		
TI	-.282	-.235	.479	.821	
CFI POF	.324	.285	-.318	-.234	.850

Code: POS = Perceived Organizational Support; OC = Organizational Commitment; JB = Job Burnout; TI = Turnover Intention; POF = Person-Organization Fit.

Structural Model

The structural equation modeling analysis yielded favorable goodness-of-fit statistics, suggesting strong correspondence between the theoretical framework and empirical observations. Multiple fit indices were examined to assess the model's adequacy, with all critical metrics falling within acceptable ranges established in methodological literature. The summary of fit statistics for the measurement model was as follows: $\chi^2/df = 2.416$, RMSEA = .048, SRMR = .053, CFI = .996, and TLI = .995. These values surpassed the threshold criteria for model fit indices recommended by Hair et al. (2010), indicating a good fit of the model to the data.

Hypothesis Testing

The results of the hypothesis testing are presented in Table 3. The standardized path coefficient between POS and turnover intention was $-.264$ ($p < .001$), indicating a significant negative relationship between the two. This supported H_1 , confirming that higher levels of POS are associated with lower turnover intention. Additionally, POS had a significant positive influence on organizational commitment, with a path coefficient of $\beta = 0.507$ ($p < .001$). This suggested that higher POS led to greater organizational commitment, thus fully supporting H_2 . Consistent with H_3 , the results revealed that POS negatively affected job burnout, with a coefficient of $\beta = -.480$ ($p < .001$), meaning that higher POS was linked to lower job burnout, thereby fully supporting H_3 . For H_4 , organizational commitment had a negative effect on turnover intention ($\beta = -.231$, $p < .001$), suggesting that higher organizational commitment was linked to lower turnover intention, thereby fully supporting H_4 . Finally, regarding H_5 , job burnout significantly positively influenced turnover intention, with a coefficient of $\beta = .250$ ($p < .001$), showing that higher levels of job burnout were associated with higher turnover intention, thus fully supporting H_5 .

Table 3 Results of Direct Effect Test

Hypothesis	Path	β	Estimate	SE	CR	p	Result
H_1	POS→TI	-.264	-.239	.059	4.063	.000***	Accepted
H_2	POS→OC	.507	.491	.054	9.107	.000***	Accepted
H_3	POS→JB	-.480	-.530	.062	8.550	.000***	Accepted
H_4	OC→TI	-.231	-.216	.050	4.285	.000***	Accepted
H_5	JB→TI	.250	.205	.046	4.498	.000***	Accepted

Note. POS = Perceived Organizational Support; OC = Organizational Commitment; JB = Job Burnout; TI = Turnover Intention; POF = Person-Organization Fit. *** $p < .001$, ** $p < .01$, * $p < .05$.

The mediating effects in this study were assessed using a bias-corrected non-parametric percentile bootstrap confidence interval method, which involved resampling the sample 5,000 times to estimate the mediation effects within a 95% confidence interval. The results of these tests are presented in Table 4. For the POS → OC → TI mediation path, the Bias-corrected 95% CI was $[-.169, -.065]$, and the Percentile 95% CI was $[-.161, -.060]$. Since neither confidence interval included 0, this indicated that organizational commitment significantly mediated the relationship between POS and turnover intention. Therefore, H_6 was supported, confirming that organizational commitment partially mediated the relationship between POS and Turnover Intention. Similarly, for the POS → JB → TI mediation path, the Bias-corrected 95% CI was $[-.164, -.053]$, and the Percentile 95% CI was $[-.171, -.056]$. Since neither of these confidence intervals included 0, they showed that job burnout also played a mediating role in the relationship between POS and turnover intention. Thus, H_7 was supported, confirming that job burnout partially mediated the relationship between POS and Turnover Intention.

Table 4 *Mediation Effect Test*

Parameter	Effect	SE	Bias-corrected 95% CI			95% Percentile CI		
			Lower	Upper	<i>p</i>	Lower	Upper	<i>p</i>
POS→OC→TI	-.106	.026	-.169	-.065	.005	-.161	-.060	.010
POS→JB→TI	-.109	.029	-.164	-.053	.020	-.171	-.056	.010

Note. POS=Perceived Organizational Support; OC= Organizational Commitment; JB= Job Burnout; TI= Turnover Intention; POF= Person-Organization Fit.

The examination of Person-Organization Fit's moderating effect on the POS-TI association was performed through a hierarchical regression approach, following established methodological protocols (Cohen et al., 2003). The analytical procedure began with the establishment of a foundational model incorporating demographic controls such as employee age, compensation level, and organizational tenure. Subsequently, the model was expanded to include both POS and Person-Organization Fit as predictor variables. Empirical outcomes from this phase demonstrated statistically reliable effects for both primary variables on employee turnover intention, as documented in Table 5. The final analytical stage involved the computation and integration of an interaction component, derived from the multiplicative combination of POS and Person-Organization Fit measures. The statistically reliable interaction coefficient ($\beta = -.192, p < .01$) provided empirical confirmation of Person-Organization Fit's conditional influence on the POS-TI relationship, thereby supporting the hypothesized moderating effect. Furthermore, the inclusion of the interaction term enhanced the explanatory power of the model for turnover intention ($R^2 = 35.1\%$), with a significant improvement in model fit observed between the second and third stages. These findings confirmed the presence of a significant moderating effect, thereby validating the proposed hypothesis H_8 in the study.

Table 5 *Testing the Moderation Effect*

Model	Dependent Variable: Turnover Intention			
	Model 1	Model 2	Model 3	Model 4
<i>Step 1: Control Variable</i>				
Age	-.120	-.074	-.084	-.085
Income	-.185	-.119	-.108	-.105
Tenure	-.179***	-.187***	-.187***	-.162***
<i>Step 2: Main Effect</i>				
POS		-.242***	-.261***	-.273***
POF			-.230*	-.200*
<i>Step 3: Interactions</i>				
POS * POF				-.192**
<i>F</i>	6.100***	16.58***	16.79***	12.28***
<i>R</i> ²	.060	.302	.324	.351
Adjusted <i>R</i> ²	.020	.298	.305	.348

Discussion & Conclusion

This study explores the connection between POS and turnover intention among employees within Beijing's health and fitness sector. The results offer valuable insights for both academic research and practical applications by elucidating how various factors interact to shape turnover intention.

First, the study revealed a significant negative correlation between POS and turnover intention. These results align with earlier studies by Sartori et al. (2024), along with those of Tamundong and Caballero (2024), which have consistently demonstrated a strong connection between organizational support and employee retention. Within the health and fitness sector, these findings emphasize the pivotal role of POS in mitigating turnover intentions, underscoring the need for organizations to foster a supportive workplace culture.

Second, the study confirmed that POS significantly enhances organizational commitment, a result consistent with prior research. This finding supports the work of Hessari et al. (2023), who argued that

when employees feel valued, recognized, and respected by their organizations, their social and emotional needs are fulfilled, thereby strengthening their sense of belonging and organizational identification (Medina-Garrido et al., 2023). For instance, in knowledge-driven industries such as IT and higher education, the impact of POS on organizational commitment is particularly pronounced, as employees in these fields depend heavily on organizational resources and opportunities for career growth.

Third, the study demonstrated that POS significantly reduces job burnout, suggesting that greater organizational support is associated with lower levels of employee exhaustion. This finding corroborates the research of Xu et al. (2025) and Yu et al. (2021), further emphasizing the critical role of POS in alleviating burnout. Fourth, the study establishes that organizational commitment has a significant negative effect on turnover intention, indicating that employees with higher commitment levels are less likely to leave. This result aligns with the findings of Guzeller and Celiker (2020), highlighting the importance of organizational commitment in influencing turnover decisions.

Fifth, the study confirms that job burnout significantly increases turnover intention, consistent with earlier research by Chen et al. (2019) and Salama et al. (2022). As burnout escalates, employees often seek to replenish their depleted resources by pursuing alternative employment, thereby heightening their turnover intention (Lee et al., 2019). Emotional exhaustion serves as a key mechanism linking burnout to turnover intention (Lee et al., 2019). In high-pressure, customer-facing industries like fitness, employees frequently engage in emotional labor, which can deplete their energy, diminish job satisfaction, and ultimately raise the likelihood of leaving the organization (Chen et al., 2019). These results emphasize the significance of tackling job burnout as a key strategy to minimize turnover intention.

Furthermore, the empirical results of this investigation revealed that organizational commitment mediated the relationship between POS and employees' turnover intention. This outcome aligns with the research of Palma-Moreira et al. (2022) and Guna and Satrya (2021), both of whom argued that when employees perceive support, recognition, and care from their organization, they develop a stronger sense of organizational commitment, which subsequently lowers the likelihood of voluntary turnover. Additionally, this study underscored the mediating role of job burnout in the relationship between POS and turnover intention. This finding aligns with Ren et al. (2024), who argued that employees with higher perceived organizational support have access to critical psychological resources, such as emotional support, career development opportunities, and a fair work environment, all of which contribute to reducing job burnout.

Finally, this study confirmed that P-O Fit moderates the relationship between POS and employees' turnover intention, a result that aligns with previous research by Muhammad and Huzaifa (2021) and Jin et al. (2016). This finding suggests that the effect of POS on turnover intention depends on the degree of alignment between employees' values, goals, and organizational culture. Specifically, when P-O Fit is high, employees are more likely to identify with the organization, as their personal values and goals align with those of the organization. Consequently, they are more responsive to organizational support, which strengthens their organizational commitment and reduces turnover intention (Muhammad & Huzaifa, 2021). For employees with high P-O Fit, POS enhances emotional commitment, thereby reducing turnover intention.

In conclusion, this study investigated the relationships among Perceived Organizational Support (POS), organizational commitment, job burnout, turnover intention, and Person-Organization Fit (P-O Fit) among employees in Beijing's health and fitness industry. The findings revealed that POS plays a central role in reducing turnover intention by enhancing organizational commitment and mitigating job burnout. Moreover, both organizational commitment and job burnout serve as mediators in the POS–turnover intention relationship, while P-O Fit moderates this relationship, strengthening the impact of POS when value alignment is high. These results highlight the importance of fostering supportive organizational environments and promoting value congruence to improve employee retention and well-being in high-turnover industries.

Implications and Contributions

This study advances organizational behavior research by applying established theories to the health and fitness industry. It enriches the literature on Person-Organization Fit by empirically demonstrating its moderating role in the relationship between POS and turnover intention. While prior studies have largely focused on direct relationships between these variables, this research provides empirical evidence supporting their interaction effect, opening new pathways for future theoretical exploration.

For managers in the fitness industry, this study highlights the importance of creating a supportive work environment while ensuring balance. First, organizations should establish structured support systems, such as career development programs, mentorship initiatives, and mental health resources. For instance, a Beijing-based fitness chain introduced a mentorship program where experienced trainers guided new employees, leading to a 15% rise in retention rates over two years. Second, employers must address burnout risks by implementing interventions like workload management, flexible scheduling, and stress reduction initiatives. For example, a fitness center in Shanghai launched a "Wellness Wednesday" program featuring yoga and meditation sessions for staff, which decreased burnout-related turnover by 25%. Third, hiring processes should emphasize Person-Organization Fit by evaluating candidates' values and expectations to ensure alignment with organizational culture. Fitness clubs can draw inspiration from companies like Zappos, which prioritize employee well-being through incentives, career development opportunities, and a culture of recognition, thereby enhancing retention. Finally, organizations should invest in leadership development to cultivate psychologically safe environments and promote open communication. A fitness club in Guangzhou, for example, implemented leadership training focused on emotional intelligence and communication skills, resulting in a 20% increase in employee satisfaction scores. These practical strategies highlight the importance of aligning organizational practices with employee needs to reduce turnover and enhance workplace well-being.

Limitations and Suggestions for Future Research

Although this study has made significant contributions, it still had some limitations. First, its research scope was limited to Beijing, China, which may have restricted the general applicability of the research results. Future studies should expand their scope to cover other regions in China and other countries, thereby enhancing the applicability of the research results in diverse cultural and organizational contexts. Second, the exclusive dependence on self-reported measures may introduce potential measurement artifacts, where participants might overstate their commitment or downplay their intention to leave. To address this limitation, future studies could incorporate qualitative methods, such as interviews, or utilize secondary data sources like HR turnover records to complement self-reported data and improve the robustness of the findings. Finally, while this study examined organizational commitment, job burnout, and Person-Organization Fit as key factors, other potential moderators or mediators such as leadership style, work-life balance, compensation fairness, or job embeddedness were not explored. Including these variables in future research studies would provide more in-depth insights for enterprises in their employee retention strategies.

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Challenges and Possible Solutions Faced by General Conference Auditors in the Southern Asia-Pacific Division of Seventh-day Adventists

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Abstract

Aim/Purpose: This study examined the challenges faced by General Conference Auditing Service (GCAS) auditors in the Southern Asia-Pacific Division (SSD) during financial audits. The objective was to identify key obstacles that hinder the efficiency and accuracy of audits, assess client compliance with financial regulations and international standards, and propose solutions. Given the essential role of financial audits in ensuring transparency, accountability, and regulatory compliance, it is crucial to understand these challenges and explore ways to improve auditing processes.

Introduction/Background: Auditing is a key component of financial governance, ensuring an organization's compliance with regulations and maintaining financial integrity. However, audits are often hindered by various operational, technological, and procedural difficulties. Auditors encounter issues such as inadequate documentation, outdated financial systems, and communication barriers that impede the ability to conduct thorough inspections. These challenges are particularly pronounced in regions with inconsistent financial management practices and regulatory adherence. This study explored the experiences of auditors in the Southern-Asia Pacific Division (SSD), highlighting recurring issues and suggesting strategies to enhance audit quality and efficiency.

Methodology: A qualitative research approach was used to gain an in-depth understanding of the challenges auditors face. Semi-structured interviews were conducted with ten General Conference Auditing Service auditors, focusing on three areas: background information, the financial audit process, and specific auditing challenges. The study examined client compliance, technological limitations, and external factors affecting audit effectiveness. This approach allowed for the collection of real-world experiences, providing valuable insights into audit processes in the SSD.

Findings: The study identified several critical challenges. One persistent issue was unresolved audit recommendations from previous years, leading to inefficiencies and repeated financial mismanagement. When past recommendations are not implemented, the same issues resurface in subsequent audits, making it difficult for auditors to provide accurate and efficient appraisals. Another significant challenge was the presence of insufficiently finance personnel in organizational clients. Many finance teams lacked the necessary expertise to maintain proper financial records and comply with audit standards, resulting in errors and inconsistencies that slowed down audit processes. Furthermore, incomplete documentation frequently hampered auditors' ability to conduct thorough evaluations, as missing financial records created gaps in financial reporting and compliance verification.

Technological limitations also played a significant role in complicating the audit process. Many organizations rely on outdated accounting systems that do not meet modern financial reporting requirements, making it difficult for auditors to locate data efficiently. Auditors also face difficulties due to inconsistent client financial practices, requiring them to navigate varying record-keeping and reporting methods. Communication barriers pose another challenge, especially in regions where English is not widely spoken. Language differences often lead to misunderstandings, making it harder for auditors to obtain accurate financial information. While cultural differences have a relatively small impact, they still influenced certain aspects of client interactions and audit engagements.

Despite these challenges, auditors demonstrated resilience by leveraging professional networks, adopting technological workarounds, and tailoring communication to suit their clients' environment.

Contribution: This study contributes to the broader understanding of the operational, technological, and cultural factors that influence global auditing practices. By identifying specific barriers to effective audits, it provides insights for auditors, financial professionals, and regulatory bodies seeking to improve audit quality and compliance. Strengthening internal controls, improving client training, and modernizing technology are critical steps to addressing these challenges. Implementing these recommendations can help organizations achieve greater financial transparency, regulatory compliance, and operational efficiency, ultimately enhancing financial governance in the region.

Recommendations: To enhance financial audits, the study recommends key strategies. First, finance personnel should receive comprehensive training to improve their knowledge of financial reporting and compliance, reducing errors and inefficiencies. Additionally, organizations should upgrade their accounting systems with modern financial software that meets international standards, ensuring that auditors can quickly access accurate data, simplifying the audit process. Addressing language barriers is also crucial—offering translation services, language training, or hiring bilingual staff could enhance auditor-client communication. Lastly, organizations must take corrective action on past audit recommendations to prevent recurring issues. Strengthening follow-up mechanisms would support long-term compliance and improve financial governance.

Research Limitations: This study had certain limitations. The small sample size of ten auditors restricts the generalizability of its findings. Additionally, the study focused specifically on the SSD region, meaning that the challenges identified may not fully represent auditing experiences in other areas. Another limitation was that the study primarily captured auditors' perspectives rather than insights from clients or regulatory bodies. Incorporating client viewpoints could provide a more comprehensive understanding of the factors influencing financial audits. Future research should address this gap by including a broader range of stakeholders.

Future Research: Building on this study's findings, future research could explore client perspectives on challenges they face during audits, as this may provide a more holistic understanding of audit processes. Additionally, further studies could assess the impact of emerging technologies such as artificial intelligence on financial auditing. These technologies can potentially streamline processes and improve accuracy. Longitudinal research is recommended to evaluate long-term effects of audit recommendations on financial compliance and operational efficiency. By tracking changes over several years, researchers can determine whether proposed solutions effectively address persistent audit challenges. This study lays a foundation for further research into improving audit practices and ensuring that financial audits contribute to transparency, accountability, and sound financial management in SSD and beyond.

Keywords: *Audit recommendations, implementation, internal control, Seventh-day Adventist*

Introduction

Seventh-day Adventists are a global family of Christians who hold the Bible as their ultimate authority. The roots of Adventism can be traced back to the Second Great Awakening, a period of spiritual revival that swept the United States in the late 1700s and early 1800s. In 1863, the General Conference of Seventh-day Adventists was established for the purpose of sharing a deeper understanding of Scripture and preparing people for eternity with Christ (A Historic Look at the Seventh-day Adventist Church, 2023).

The General Conference of Seventh-day Adventists (SDA) is the worldwide coordinating body of the denomination. The SDA Church, like any other organization, needs an audit function to monitor financial activities and ensure that they adhere to church policies. The General Conference Auditing Service (GCAS) is the denomination's organizationally independent audit function that audits or

arranges for audits of all organizations worldwide. Furthermore, it reports on whether church entities have prepared financial statements in accordance with Generally Accepted Accounting Principles and complied with denominational policies (General Conference Auditing Service, 2023). GCAS provides audits for institutions owned by the Seventh-day Adventist Church, functioning much like an external auditing body since the auditors are not employees of the specific SDA institutions that they audit. This audit function is important because it gives a reasonable level of assurance that an organization's internal control, governance, and risk management procedures are working properly (Mitchell, 2022).

Auditing Reinforces Accountability

Auditing is an important function because financial statements are reviewed to ensure accuracy in reports (Girardin, 2023). The objective of an audit of financial statements is to enable the auditor to express an opinion as to whether the financial statements were prepared fairly in all material respects and in accordance with auditing standards (Adebayo, 2011). The primary goal of a financial audit is to verify and validate the financial operations and information reported by an organization's management. The result of this work is an opinion on the financial statements and a report to management. This benefits organizations in several ways, such as maintaining consistency, finding possible errors, and detecting and preventing fraud (Corporate Finance Institute, 2023). Auditors are vital because they validate an organization's financial statements from an objective and independent point-of-view. In addition, the auditing process is smoother when organizations cooperate with auditing teams, whether internal or external.

Accountability is an essential financial priority of the SDA church. A study by Howson et al. (2014) reported that the reasoning behind having GCAS conduct audits within the SDA denomination appears to have been driven by a desire to save money, stemming from a strong sense of stewardship and previous experience with the high costs of audits by non-denominational firms. This decision appears to have been influenced by the fact that the church must be accountable to its members regarding how their tithes and offerings are used in order to maintain credibility. Administrators need the protection of an independent audit, and constituents deserve assurance that financial resources have been managed in accordance with church policies. Furthermore, senior denominational organizations and third parties require affirmation that the financial statements on which decisions are based fairly present an entity's affairs. The ultimate advantage to the church of audits is that they create confidence, foster credibility, and offer assurance regarding the organization's risks and controls. That in turn encourages faithful stewardship and generosity (Korff, 2000; Kristensen et al., 2021). Since GCAS auditors are paid in accordance with denominational wage rates, this independent service is provided to the church at a cost that is significantly less than if it were purchased at market rates from auditors in public practice.

GCAS auditors conduct financial audits, examine tithe and offering records, and perform tests of policy compliance. They explain whether church organizations followed denominational rules and widely accepted accounting practices when preparing their financial statements. They also check each organization's financial records to see if the financial statements are fairly stated. When an audit is finished, a report is given to the organization's officers which should be shared with its operating board. According to Herzel (2010), there are six phases to an audit engagement; each of those phases has to be carefully completed to ensure that the final report accurately represents the facts regarding the entity's financial affairs.

Literature Review

Challenges Faced by Auditors

Auditors face certain challenges when auditing a client's financial statements. These challenges include incomplete documentation, unprepared clients, non-implementation of previous audit recommendations, policy compliance and internal control issues, and unqualified audit committee members, which may prolong the entire audit process.

Incomplete Documentation

The auditor should implement reasonable processes to safeguard audit documentation because it frequently contains confidential client information. Providing certain audit documents to a regulator or a lawfully designated representative may be required by law, regulation, or audit contract (PCAOB, 2023). Documentation is considered the backbone of an audit. It provides the basis for conclusions about the extent to which an audit's objectives were achieved (Jindal, 2022).

Non-Implementation of Previous Audit Recommendations

According to the Australian National Audit Office (2015), when audit recommendations are implemented, entity performance is enhanced. Realizing the full benefits of an audit depends largely on management's prompt adoption of audit recommendations. If implementation is not prompt and individual risks remain untreated, the audit's value is not achieved (Wadesango et al., 2017). Risks will continue to threaten an entity if management decides not to carry out audit recommendations (Daniel, 2014). According to D'Onza et al. (2015), when audit suggestions are not followed, management may misrepresent the organization and serious misstatements may go undetected (Newman et al., 2019). This is why organizations should promptly implement audit recommendations.

Unprepared Clients

Some organizations struggle to complete audit preparations on time, which creates a problem for the auditor because the client may not be ready for the audit (Kroll, 2020). It is also frustrating for an auditor to revisit an organization and find the same deficiencies and problems year after year. This creates tension between auditors and auditees, with organizations still facing needless risks and auditors feeling that their work is futile (Kroll, 2020).

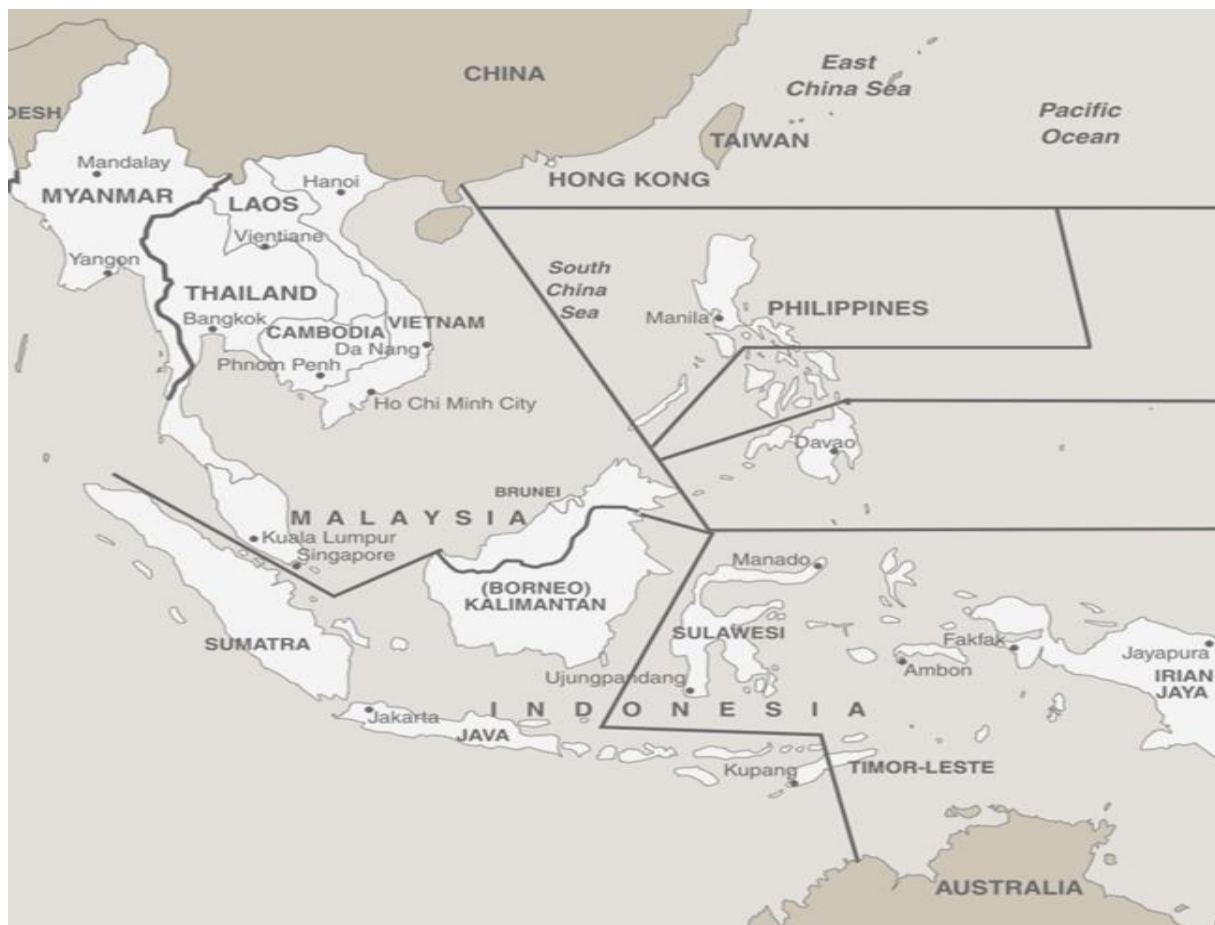
If a client is not ready for an audit, this may impact the final report. A client is responsible for preparing for an audit after being notified by the auditor. The key to reducing the stress of an audit and maximizing its benefits is effective communication and thorough preparation (Cradock, 2022). If a client is not ready for an audit, it may lead to inaccurate financial statements and errors in decision-making, potentially damaging the organization's reputation (RSM South Africa, 2023).

The Southern Asia-Pacific Division of Seventh-day Adventists

The Southern Asia-Pacific Division (SSD) is one of thirteen regional organizations of the General Conference of the Seventh-day Adventist Church. It oversees the work of spreading the saving truths of the gospel in the Southeast Asian countries of Brunei Darussalam, Cambodia, Indonesia, Laos, Malaysia, Myanmar, the Philippines, Singapore, Thailand, Timor-Leste, and Vietnam. Over 1.3 million Seventh-day Adventists worship in more than 7,000 churches in this territory, which has a population of over a billion. Almost 90 percent of its members live in Indonesia or the Philippines (Seventh-day Adventist Church, 2024).

The Adventist Church in the SSD operates 782 primary schools, 231 secondary schools, and 17 colleges and universities. It also operates 19 hospitals and 20 medical clinics. The SSD has 11 regional offices called Unions, and although Buddhism and Islam are the dominant religions within its territory, Christianity has made inroads in most SSD countries. One of the greatest challenges the SSD faces is how to share Jesus with the people in these countries in ways that they can understand and appreciate. The division is also home to the Adventist International Institute of Advanced Studies, which is a graduate degree institution serving the world church in Asia (Southern Asia-Pacific Division, 2018). Figure 1 below shows the SSD Region.

Figure 1 Territory of Southern Asia-Pacific Division of Seventh-day Adventists



Research Questions

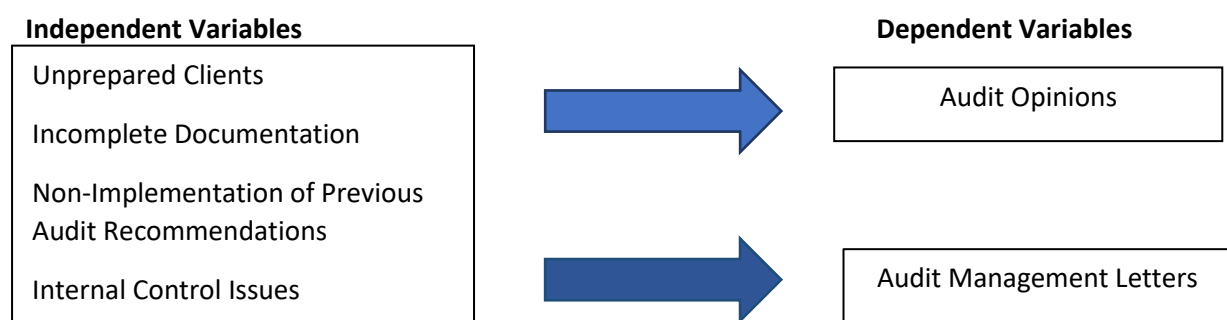
Three research questions addressing the major challenges faced by GCAS auditors in the Southern Asia-Pacific Division of Seventh-day Adventists during financial audits were explored, along with auditors' recommendations for addressing these issues.

1. What are the crucial challenges that GCAS auditors face during audits in the SSD?
2. To what extent do clients follow the recommendations from previous audit reports?
3. What potential solutions would help to resolve the major audit difficulties?

Conceptual Framework

A summary of the anticipated problems and challenges faced by GCAS auditors is illustrated in the conceptual framework shown below.

Figure 2 Conceptual Framework of Problems and Challenges Faced by GCAS Auditors



The conceptual framework shows how the dependent variables, which are audit opinions and audit management letters, may be affected by the independent variables, which are incomplete documentation, non-implementation of previous audit recommendations, and internal control issues.

Methodology

Research Approach

A qualitative descriptive design was employed, using phenomenology to provide a clearer picture of the challenges that auditors face during the financial audit process. Granberg and Höglund (2011) suggested employing a qualitative research design because auditing is a service, and a quantitative research design may not capture all aspects, such as nonverbal communication. Furthermore, Silverman (2015) suggested that a qualitative research method is suitable when studying procedures and experiences.

Population and Sample

Interviews were requested with 10 out of the 21 auditors who work for GCAS in the Southern Asia-Pacific Division region. They were selected using a snowball sampling method, and had worked at GCAS from 2 months to 13 years. Interviewing nearly half of the total auditor population (10 out of 21) allowed for a strong representation of experiences, and data saturation was achieved, as no new themes emerged during the final interviews.

Research Instrument

The interview questions were designed to identify the challenges that auditors face and explore potential solutions. With input from three experienced researchers, the interview guide was developed and divided into three sections: background questions, questions related to the financial audit process, and in-depth questions. After reviewing the interview guide and data collection plan, permission and ethical approval for the study was granted by the Asia-Pacific International University Research Committee (AIU.RO.23 (2)/2023, 24 November 2023).

Interview Process

An informed consent form was signed by each participant, and online interviews were conducted via Zoom. The researcher assured the participants that all information recorded during the sessions was confidential and would only be used in the research study. Each interview lasted between 15 and 20 minutes; the interviews were recorded and important points transcribed. Notes taken during the interviews were safely stored and analyzed. This method provided a clear picture of the various challenges that impacted the audit financial process, and how auditors believed that they could be addressed. The interview questions are shown in Table 1 on the following page.

Table 1 *Interview Question Protocol*

Research Questions	Interview Questions and Prompts
1. What are the crucial challenges that GCAS auditors face during the audit process?	1. What difficulties and challenges, if any, have you encountered in conducting audits Southern Asia-Pacific Division during the past three years? 2. Which of these have occurred the most frequently? Are the most important? 3. What (if any) common internal control issues have you encountered? 4. How long have you been working for GCAS, and what interested you in auditing work? 5. What are some things that you like about auditing work? That you dislike? 6. Does GCAS provide ongoing training? How often?
2. a. To what extent do the clients comply with the regulations and international standards? b. To what extent do clients follow the recommendations from previous audit reports?	7. What techniques, processes and methods do you use to obtain reliable audit evidence? 8. How would you describe the level of adherence to accounting standards in the organizations you audit? What problems, if any, have you encountered? 9. How do you assess risk? 10. How do you detect the existence of related party transactions? 11. Roughly what percent of your audit opinions are: <ul style="list-style-type: none"> • Unqualified • Adverse • Qualified • Disclaimer 12. What is the level of compliance with core denominational financial policies?
3. What potential solutions would help to resolve the major audit difficulties?	13. What recommendations or possible solutions would be helpful in addressing these difficulties and challenges? 14. What impact, if any, has COVID-19 had on your audits? Does that impact still exist? 15. How has your time working as an auditor been overall? 16. Is there anything else related to your auditing work that has been left out?

Findings/Results

The key themes that emerged from the data analysis were related to the challenges faced by GCAS auditors, including insufficient implementation of previous audit recommendations, insufficiently trained accountants, incomplete documentation, technological limitations, and language and cultural barriers. These themes were interconnected, and the analysis revealed that a lack of implementation had a significant impact on the overall auditing process. These themes and the number of participants who mentioned each one are shown in Table 2.

Table 2 *Themes of the Study*

Theme	No. of Participants
Lack of Implementation	6
Untrained Accountants	3
Incomplete Documentation	4
Technological Limitations	3
Language and Culture	4
Recommendations from GCAS Auditors	10

Failure to Implement Previous Recommendations

Auditors expressed growing frustration over clients' repeated failure to act on audit recommendations, citing a lack of accountability and insufficient engagement from senior leadership. This lack of follow-through often leads to recurring issues, draining time and resources, and ultimately reducing the effectiveness of the audit process. As one auditor put it,

It seems like our clients do not care about the recommendations, and it's frustrating because they are not reprimanded. It is also a waste of resources because they are not taking any action; therefore, it becomes repetitive for me as an auditor.

Another highlighted the crucial role of leadership in implementing audit findings:

It would be beneficial for senior management to take a more active role in addressing issues. During our exit meetings after an audit, we present our findings, but if management isn't genuinely interested in resolving these problems, they often remain unaddressed. Therefore, it's crucial for senior management to lead the effort in tackling these findings.

Accountants Lack Sufficient Training or Experience

A significant challenge identified by auditors was the presence of accountants with insufficient training, whose limited knowledge often resulted in frequent errors in financial statements. These inaccuracies made the audit process more time-consuming and complex. High staff turnover among accounting personnel further exacerbated this issue, resulting in inconsistent financial practices and a failure to implement proper procedures. In addition, incomplete or disorganized documentation frequently delayed audit fieldwork and, in some cases, led to scope limitations, resulting in qualified audit opinions or even disclaimers.

One auditor described the impact of poor training as follows. "When the client is unsure of what they're doing; it becomes more difficult for the auditor to explain things or obtain the necessary documents." Another added,

Most or some of the audit clients' accountants are not adequately trained to perform the accounting work, resulting in numerous errors in their financial statements. This may be the main challenge we face. As auditors, we have many aspects to check and adjustments to propose because the accountants lack sufficient knowledge in accounting.

Incomplete Documentation

Incomplete or improperly prepared documentation was often a primary factor that led to the issuance of a disclaimer opinion. All the participants had issued disclaimer opinions. One participant mentioned that when clients fail to submit all required documents, such as financial statements, bank reconciliations, and bank statements, this is a major problem that leads to a difficult audit process.

In addition, all the participants stated that they rely on complete and accurate documentation to obtain sufficient evidence for verifying financial transactions and processes. Incomplete records hinder auditors from drawing reliable conclusions and cause delays in reporting. When clients fail to provide necessary supporting documents, this prevents auditors from performing essential procedures to verify financial information. One participant emphasized that if clients cooperated by providing these documents promptly, this issue would be significantly reduced.

Technological Limitations

Technological limitations, such as outdated accounting systems and inadequate IT infrastructure, also impacted audit processes. Auditors noted that modernized systems would improve efficiency and reduce errors.

One of the participants mentioned how the technological limitations affect their line of work:

One of the challenges we face is technological limitations, meaning the organization isn't using the most up-to-date Internet infrastructure or software. For example, the accounting system may be outdated, which creates a significant issue, especially in terms of auditing. It's much more efficient

when the system is designed not only to be user-friendly for those who have been working with it for years but also accessible and intuitive for auditors. This would make it easier for newcomers, like ourselves, to quickly adapt to the system and ensure smoother audit processes.

Language

Furthermore, language barriers, particularly in international audits, were highlighted as minor but noteworthy obstacles, sometimes affecting communication and understanding between auditors and clients. Participants described the challenges of working across the diverse regions within the Southern Asia-Pacific Division, where audits take place in countries with distinct languages and cultural norms. While English is the primary language used during engagements, it is not widely spoken or understood in some areas, creating communication gaps that hinder audit efficiency. To navigate these issues, auditors often relied on tools like Google Translate to interpret documents and communicate with clients; however, these tools have limitations, and inaccuracies in translation could lead to misunderstandings, misinterpretation of critical information, and delays. One participant explained,

Language barriers can be a challenge here in Asia, as there are many different languages, and in some areas, few people are fluent in English. Another factor is the cultural differences. However, it's worth noting that, as Adventists, all the clients I've worked with have been respectful and accommodating.

This added complexity required auditors to invest extra time and effort to ensure clear communication and accurate data collection, affecting the overall effectiveness of the audit process.

Culture

Cultural differences were also identified as influencing the audit process, though their impact was generally seen as less significant than that of language barriers. Participants noted that variations in professional etiquette, communication styles, and attitudes toward authority could present subtle challenges in establishing rapport and encouraging client cooperation. These cultural nuances may shape how auditors are perceived and how their recommendations are received, potentially affecting the overall success of the audit engagement.

Recommendations from GCAS Auditors

All participants offered recommendations to help improve the audit process for both auditors and clients. A recurring concern was that many clients failed to act on audit recommendations, often resulting in repeated issues and, in some cases, disclaimers of opinion. Several auditors noted that engagements became repetitive due to clients' ongoing lack of implementation. Participants emphasized that senior management should take a more proactive role in addressing audit findings after the exit meeting, as doing so could enhance the efficiency and effectiveness of future audits, reduce recurring issues, and foster stronger auditor-client relationships.

Another key recommendation was the need for targeted training for accountants, as many of the errors identified during audits were attributed to a lack of knowledge or skills. Auditors also pointed out that such errors can influence the final audit opinion. To improve accuracy and consistency, participants recommended that all finance personnel receive adequate training—not only in general accounting principles but also in the use of the SunPlus accounting system, which is widely used across the region.

Discussion

Significance of Study Results

The findings of this study provide valuable insights into the key challenges that auditors have faced when conducting financial audits in the Southern Asia-Pacific Division. These challenges, which include a lack of implementation of audit recommendations, insufficiently trained accountants, incomplete documentation, technological limitations, and language barriers, have significant implications for the overall efficiency and effectiveness of the audit process. By identifying these barriers, this study

contributes to a broader understanding of systemic issues in financial auditing and highlights the need for targeted interventions to improve audit practices and compliance with international standards.

One of the most critical implications of this study is the impact of not implementing audit recommendations. When previous audit findings are not addressed in a timely manner, the audit process becomes inefficient, leading to repeated findings and wasted resources. This issue not only affects the credibility of audits, but also raises concerns about an organization's commitment to internal controls and financial integrity. The study reinforced the importance of accountability mechanisms within organizations to ensure that audit recommendations are followed. Additionally, the study highlights the significance of proper training for accountants and financial personnel. The prevalence of errors due to inadequate training indicates a need for continuous professional development programs. This is particularly relevant in an era where financial regulations and accounting standards are constantly evolving. Strengthening financial literacy among accounting staff can mitigate errors and enhance the reliability of financial reporting. Technological limitations also emerged as a significant barrier to efficient audits. Outdated accounting systems and unreliable Internet connectivity create unnecessary delays and increase the risk of errors. Standardizing and upgrading accounting systems could significantly enhance audit efficiency and ensure that financial data is accurate and easily accessible.

Finally, the study shed light on the impact of language barriers and cultural differences, which, although not universally experienced by all participants, still present notable challenges in certain audit engagements. Addressing these challenges through better communication tools and training programs can improve auditor-client interactions and overall audit effectiveness.

Comparison of Findings with Previous Studies

The findings of this study were aligned with and expanded upon previous research in the field of audit challenges and compliance. A key area of agreement was the impact of not implementing audit recommendations. A study by Daniel (2014) emphasized that unresolved risks persist when organizations fail to act on audit findings. Similarly, Hamra and Namkote (2020) highlighted that the failure to implement recommendations led to inefficiencies and diminished trust in financial oversight. This study reinforced these conclusions by demonstrating that auditors frequently encounter the same issues due to management's lack of accountability. Moreover, this study's findings supported Wadesango et al. (2017), who argued that non-implementation undermines the value of audits. The current findings confirmed that when audit recommendations are ignored, the effectiveness of the audit process is significantly compromised, often resulting in repeated audit opinions with disclaimers due to unresolved risks.

One notable addition to existing literature is this study's emphasis on insufficiently trained accountants, and the direct effect on audit efficiency. While previous research has revealed knowledge gaps in financial reporting, this study suggests that the issue may be more widespread than realized. Frequent errors in financial records, improper application of accounting principles, and a general lack of compliance with standards suggest a pressing need for enhanced training programs. The findings expand upon prior studies by illustrating that auditors not only face documentation issues, but also must often compensate for clients' inadequate financial knowledge.

The study also brings new insights regarding the role of technological limitations in the audit process. While Hamra and Namkote (2020) and Chulkasate and Hamra (2023) acknowledged the need for better compliance mechanisms, they did not focus extensively on the technological factors affecting audit efficiency. This study provides detailed accounts from auditors struggling with outdated accounting systems, system incompatibility issues, and unreliable digital infrastructure, all of which create significant obstacles to effective auditing.

This study also highlighted language barriers as a challenge, a factor that has not been widely explored in previous research. While Hamra and Namkote (2020) examined compliance issues, they did not address how communication barriers impact audit effectiveness in international settings. This

study builds upon their work by demonstrating how language limitations can delay audits, lead to misinterpretations, and necessitate additional resources to bridge communication gaps.

Another key contribution of this research is its reflection on auditors' personal experiences, and how their long-term involvement in audit engagements influences their perspectives. Unlike prior studies that mainly focused on procedural inefficiencies, this study also considered the human aspect of auditing, particularly how auditors' experiences evolve over time. Participants highlighted how frequent travel, initially perceived as exciting, eventually became a challenge as they sought work-life balance. This perspective is rarely addressed in traditional audit literature, but is essential for understanding auditor retention and job satisfaction. Furthermore, the study is aligned with recent governance initiatives highlighted by the Adventist News Network and the Adventist Review (2020). These initiatives emphasize the importance of compliance with governance frameworks to enhance operational efficiency. This study supported these findings by demonstrating that improved governance and compliance policies can help mitigate systemic challenges, such as recurring audit findings and ineffective financial management.

Finally, the study expanded on the recommendations proposed by Chulkasate and Hamra (2023), who suggested that policy violations should be systematically monitored by organizational boards. The current study reinforces this recommendation by illustrating that accountability structures are essential for ensuring that audit recommendations are acted upon promptly.

Recommendations/Implications

Theoretical Contribution and/ or Implications of Study

This study contributes valuable insights into how operational, technical, and cultural factors influence the auditing process, particularly within the Southern Asia-Pacific Division of Seventh-day Adventists. Its findings underscore the interconnectedness of these factors and their collective impact on audit efficiency and outcomes. Specifically, the study highlights the following issues.

The Importance of Internal Controls

The findings emphasize the need for robust internal control mechanisms within organizations. Strengthening these controls not only improves compliance with audit recommendations, but also prevents unintentional errors and reduces fraud, thus reducing risk and enhancing financial reporting accuracy.

The Role of Technology in Modern Auditing

By identifying technological limitations as a key challenge, this study sheds light on the critical need for modernized accounting systems. Theoretical advancements can focus on integrating emerging technologies, such as artificial intelligence (AI), to automate and improve auditing processes, setting a foundation for future research.

Cultural and Linguistic Sensitivity in Global Audits

The study contributes to a growing body of research on the impact of cultural diversity in professional environments. It underscores the importance of cultural awareness and linguistic adaptability in audit engagements, offering a basis for training and development initiatives tailored to international auditors.

Limitations and Suggestions for Future Studies

Sample Size and Geographical Scope

The study was based on the experiences of ten GCAS auditors, which may not fully capture the diversity of challenges faced across the entire Southern Asia-Pacific Division. A larger sample size could provide a more comprehensive understanding of the issues. While the focus was on the Southern Asia-Pacific Division, its findings may not be directly applicable to other regions with different cultural,

economic, and operational contexts. Further research in other divisions or global comparisons would be necessary to generalize the results.

Subjectivity

Although measures were taken to minimize researcher bias, the interpretation of participants' responses may be somewhat subjective. Similarly, participants' views may reflect their personal experiences rather than an objective assessment of the challenges, potentially influencing the findings. By acknowledging these limitations, the study provides a framework for refining future research efforts to build on these initial insights.

Conclusions

The purpose of this study was to examine the challenges faced by GCAS auditors in the Southern Asia-Pacific Division of Seventh-day Adventists during audits, and to ask participants how these issues could be successfully addressed. Through semi-structured interviews with ten GCAS auditors, the study identified several key challenges impacting the audit process. The major findings revealed that a lack of implementation of previous audit recommendations significantly affects audit effectiveness, often leading to repetitive findings and inefficiencies. Additionally, insufficiently trained accountants and incomplete documentation were identified as major obstacles, contributing to errors and delays. Technological limitations, such as outdated accounting systems and unreliable Internet connectivity, further hindered the efficiency of audits. Language barriers and cultural differences also emerged as challenges, though their impact varied across different engagements. Overall, the findings highlight systemic issues that affect audit quality and compliance, underscoring the need for improved governance, stronger accountability measures, and investments in training and technology to enhance audit processes.

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An Autoethnographic Exploration of the Use of Basic Thai Phrases as a Code-Switching Strategy in Undergraduate English Classrooms: Benefits and Challenges

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Abstract

Aim/Purpose: This autoethnographic study explored the firsthand experience of a Filipino English as a Foreign Language (EFL) teacher in Thailand, focusing on using basic Thai phrases as a code-switching strategy during activity instructions. The study investigated how this approach influenced various classroom aspects such as student engagement, comprehension, and overall classroom dynamics.

Introduction/Background: This study explored the use of basic Thai phrases by a Filipino EFL teacher in a Thai university classroom as a code-switching strategy during activity instructions. Basic Thai phrases refer to common classroom expressions such as greetings, simple commands, and clarification phrases. These expressions help to clarify meaning and reduce confusion while maintaining English as the main language of instruction. The use of Thai phrases is aligned with the concept of code-switching, where two languages are alternated within a conversation. In the Thai EFL context, this can occur as inter-sentential switching (Thai phrases between English sentences), intra-sentential switching (Thai within English sentences), or tag switching (short Thai expressions added to the end of English sentences). When used selectively, code-switching supports student comprehension, reduces anxiety, and promotes engagement without detracting from English language exposure.

This study examined both the benefits and challenges of using Thai phrases in the EFL classroom. Benefits include improved understanding and classroom participation, while challenges involve pronunciation, limited fluency in Thai, and sensitivity to cultural nuances. By focusing on the experiences of a Filipino teacher, this study offers insight into how the strategic use of students' native languages can enhance classroom communication and support effective multilingual teaching practices.

Methodology: This study employed autoethnography as its primary research method, offering a reflective and deeply personal examination of teaching experiences through journal entries that captured the researcher's lived encounters in the classroom. Unlike traditional methods that rely on external observations or standardized tools, autoethnography provides an insider's perspective on the complex interplay of language, culture, and pedagogy, allowing for a nuanced understanding of how linguistic barriers and cultural contexts shape teaching practices and student engagement. The journal entries served as the primary data source and were analyzed using reflexive thematic analysis. This analytic approach enabled the emergence of meaningful patterns rooted in context and experience, with themes guided by the researcher's reflections and shaped by the cultural nuances embedded in the teaching environment.

Findings: As an autoethnographic study, this research drew on my personal experiences as a Filipino EFL teacher in Thailand who used basic Thai phrases as a code-switching strategy during classroom instruction. Integrating these Thai expressions at key moments—such as when giving task instructions or clarifying directions—noticeably enhanced student engagement and comprehension. For example, inserting simple Thai phrases during activity instructions helped students to focus more effectively and complete tasks with greater accuracy.

However, using Thai as a non-native speaker also presented challenges. My limited proficiency occasionally led to pronunciation errors, which sometimes caused confusion. In some instances,

students would turn to their peers for clarification rather than asking me directly. One particular example involved an activity where my incorrect intonation in delivering instructions led to student hesitation and uncertainty, highlighting the potential risks of code-switching without full fluency in the local language.

Cultural sensitivity also emerged as a key factor in shaping classroom interactions. The Thai language is deeply connected to cultural norms, particularly in terms of politeness and social hierarchy. Using appropriate polite markers was essential for maintaining classroom respect and encouraging participation. When these markers were unintentionally omitted, students became more reserved, indicating that cultural nuances play a significant role in how instructional language is received. These reflections revealed that while strategic code-switching using basic Thai phrases can support learning and classroom management, its effectiveness depends heavily on the teacher's language proficiency and cultural awareness. As a Filipino educator in a Thai context, navigating these linguistic and cultural dynamics required continuous adjustment and reflection to foster a more inclusive and responsive learning environment.

Contribution/Impact on Society: This study provides valuable insights into the role of language proficiency and cultural sensitivity in enhancing EFL instruction. It demonstrates how thoughtful and strategic code-switching can positively impact student engagement and comprehension. Additionally, the study emphasizes the need to support non-native Thai-speaking EFL teachers in overcoming language barriers by offering targeted language and cultural training. Providing such support can foster a more inclusive and effective teaching environment, ultimately improving educational outcomes for students.

Recommendations: Based on these findings, I recommend that educational institutions develop professional development programs for foreign teachers in Thailand, focusing on improving Thai language proficiency—especially in pronunciation and conversational fluency. These programs should also incorporate cultural awareness training to help teachers navigate the nuances of Thai language and culture effectively.

Research Limitation: This study, being autoethnographic in nature, is based solely on my personal experiences. While it offers deep insights into my teaching practice, it may not fully capture the diverse experiences of other non-native Thai-speaking educators. Thus, the findings should be considered reflective of my individual perspective rather than representative of the broader teaching community.

Future Research: Future studies could explore the long-term effects of code-switching training on non-native teachers' instructional practices, and the resulting student outcomes. A comparative study involving native and non-native Thai-speaking educators could also provide valuable insights into the effectiveness of different teaching strategies and language use. Such research would contribute to a more comprehensive understanding of how to enhance communication and student engagement in multilingual classrooms.

Keywords: *Auto-ethnography, Thai language, code-switching, English–Foreign Language*

Introduction

In Thailand, English is taught as a foreign language to students whose native language is Thai. Since English is not widely used in daily life, it is primarily taught to enhance students' global communication skills (Foley, 2005; Baker & Jarunthawatchai, 2017; Lee, 2019). As a Filipino English as a Foreign Language (EFL) teacher in a Thai public university, I have observed that students' English language skills are quite diverse, a situation that reflects the findings of Ambele and Boonsuk (2020). This diversity poses challenges, as students exhibit varying levels of English proficiency and are influenced by different linguistic factors. When instructions are delivered exclusively in English, they may not be clear to all students, especially those whose English skills are not yet well developed. While some

students have advanced English skills, most do not, and this affects their understanding and participation in class activities.

In this study, *basic Thai phrases* refer to common classroom expressions like greetings, commands, and clarification phrases. These phrases help students understand instructions while retaining English as the main language of instruction. Using Thai phrases selectively supports students by reinforcing meaning, reducing confusion, and improving engagement without shifting the focus away from English. This approach is aligned with code-switching, where two languages are used within the same conversation (Crystal, 1987; Hoffmann, 1991). In Thai English classrooms, this occurs in three main ways: inter-sentential switching, where Thai phrases appear between English sentences; intra-sentential switching, where Thai words are mixed into an English sentence; and tag switching, where short Thai expressions are added for emphasis or confirmation (Gumperz, 1982; Romaine, 1989).

I used all three types of code-switching in my classroom. Inter-sentential switching was used when I inserted Thai phrases between English sentences to reinforce instructions. Intra-sentential switching happened when I mix Thai words within an English sentence to clarify key concepts. Lastly, tag switching occurred when I briefly add Thai expressions to English sentences to check for understanding or emphasize a point. Research studies have suggested that when used carefully, code-switching enhances student comprehension and engagement rather than causing distractions (Gumperz, 1982; Romaine, 1989). It provides cognitive and contextual support, helping students to process new information more effectively while remaining immersed in English. Given these benefits, I became interested in studying how basic Thai phrases in English classrooms could improve learning. Understanding how code-switching affects students can help teachers use it to enhance, rather than disrupt, language learning.

In a previous study, Phamunchakko and Indrambarya (2021) examined a Filipino teacher's use of code-switching with Mathayom-level (high school) Thai students, highlighting functions such as reiteration, message qualification, interjections, and personalization. Similarly, Cejudo et al. (2024) conducted a phenomenological study involving seven respondents, five of whom were Filipino EFL teachers in Thailand. Their findings revealed that code-switching enhanced socialization, vocabulary, grammar, and instruction while reducing student anxiety. However, they also noted that excessive code-switching can negatively impact learning the target language. Therefore, effective code-switching in an EFL classroom requires teachers to possess at least conversational proficiency when using Thai phrases.

These studies demonstrated the potential of code-switching to improve communication clarity and engage students in learning activities. Therefore, I aimed to expand upon their findings by incorporating personal perspectives based on my experience as an EFL teacher for undergraduate Thai students. This investigation may enrich this discussion by focusing specifically on the perceived advantages and challenges faced by a Filipino EFL teacher, distinct from the experiences of teachers from other nationalities. While the use of basic Thai phrases can facilitate immediate comprehension and encourage student participation, fluently communicating these phrases can be challenging for non-native Thai speakers, potentially leading to misunderstandings or inconsistent usage.

I adopted an autoethnographic approach to provide an accessible, firsthand exploration of using basic Thai phrases for instruction in an EFL classroom. As a Filipino EFL teacher in Thailand, this approach was particularly fitting because it allowed me to share an insider's perspective rooted in personal experience. Autoethnography, as described by Qutoshi (2015), offers a reflective narrative that captures nuanced, context-specific ways that language fosters understanding in the classroom. Unlike traditional research methods, it enables a deeper examination of bilingual instructional strategies from a practitioner's standpoint. Through my lived experiences and self-reflections, I aimed to reveal practical teaching dynamics often overlooked by quantitative studies or external observations. The insights derived from this study seek to inform and enhance multilingual teaching practices, contributing to more effective language instruction and improved student outcomes.

Review of Related Studies

This study incorporates theoretical perspectives, empirical evidence, and practical considerations to examine code-switching as a pedagogical strategy in English as a Foreign Language (EFL) instruction. Research focusing on the use of code-switching with Thai EFL students provides valuable insights into multilingual classroom dynamics.

Theoretical Foundations on the Use of Code-Switching

Krashen's Input Hypothesis (1982) emphasized the need for comprehensible input, positioning code-switching as a useful teaching strategy. By blending students' native languages with English, instructors can facilitate comprehension, particularly for those with lower proficiency levels. Similarly, Curran's Community Language Learning framework (as cited in Richards & Rodgers, 2001) highlighted the importance of a supportive learning environment, where meaningful communication and emotional connections aid language acquisition. Code-switching fosters an inclusive atmosphere, promoting student participation.

Recent studies have indicated that both EFL teachers and students perceive code-switching positively, as it enhances comprehension and eases the learning process (Promnath & Tayjasanant, 2016; Patmasari et al., 2022; Cejudo et al., 2024). By incorporating code-switching into their teaching practices, educators align with Krashen's and Curran's principles, thereby enriching the language learning experience.

Empirical Evidence on Code-Switching in EFL Contexts

A substantial body of research has highlighted the benefits of code-switching in education. Hussein et al. (2020) identified its key functions, such as overcoming language barriers, providing instructions, and managing classroom dynamics. This strategy helps students to navigate language difficulties, reinforce understanding through translation, and express their emotions. Similarly, Olivera (2021) found that code-switching boosted students' confidence and engagement in the classroom.

In Thai EFL contexts, code-switching improves comprehension (Promnath & Tayjasanant, 2016) and addresses the limited exposure to English outside of class (Baker & Jarunthawatchai, 2017). It also accommodates varying proficiency levels, promoting equitable interactions (Ambele & Boonsuk, 2020). Phamunchakko and Indrambarya (2021) found that Filipino teachers frequently use extra-sentential code-switching to clarify messages and manage interactions. Likewise, Cejudo et al. (2024) reported that code-switching improved comprehension in EFL classrooms, highlighting its role in communication and engagement.

Challenges and Mixed Perspectives on Code-Switching

Research supports the use of code-switching to enhance comprehension, classroom management, and student confidence (Sakaria & Priyana, 2018; Hussein et al., 2020). However, its potential drawbacks should also be considered. Although code-switching has many reported benefits, several concerns need to be addressed. Sert (2005) and Selamat (2014) cautioned that excessive reliance on code-switching may prevent students from fully engaging with target languages. May and Aziz (2020) reported mixed views among ESL teachers; some found it helpful for explaining difficult concepts and managing classroom interactions, but others worried that it may hinder students' ability to think and communicate independently in English. Thus, the decision to incorporate code-switching as a pedagogical tool requires careful consideration to balance its benefits with the risks of overuse.

Autoethnographic Perspective on Code-Switching in Thai EFL Classrooms

Existing research provides valuable insights into code-switching, but it lacks personal, reflective perspectives on its real-world application. Studies by Phamunchakko and Indrambarya (2021) and Cejudo et al. (2024) examined the types and purposes of code-switching, yet they did not address the daily challenges teachers face in using this strategy. This study addresses this gap by adopting an autoethnographic approach, documenting my experiences as a Filipino EFL teacher in Thailand through self-written journals. By reflecting on my use of basic Thai phrases, this autoethnographic

perspective offers a deeper understanding of the emotional and relational aspects of code-switching, contributing new insights to the literature. Krashen's Input Hypothesis (1982) and Curran's Community Language Learning (1976) offered a theoretical foundation for this reflection. For instance, Krashen's theory on comprehensible input is aligned with my personal practice of using Thai phrases to facilitate student understanding, especially those with lower English proficiency. Similarly, Curran's framework underscored the importance of emotional connections in the classroom, which is evident in my use of culturally sensitive code-switching to foster a positive, inclusive classroom environment.

Conceptual Framework and Theoretical Foundations

This study was grounded in the intersection of language acquisition theories and pedagogical practices within EFL classrooms. Specifically, it drew on Krashen's Input Hypothesis (1982) and Curran's Community Language Learning (1976) to examine how strategic code-switching—the selective use of basic Thai phrases—enhances student comprehension, engagement, and classroom interaction.

Krashen's Input Hypothesis (1982) asserted that comprehensible input is crucial for language acquisition. In this study, basic Thai phrases function as scaffolding tools, helping students—especially those with limited English proficiency—grasp lesson content (Promnath & Tayjasanant, 2016). When strategically integrated, these phrases enhance linguistic comprehension and reduce cognitive overload (Hussein et al., 2020). This is aligned with research studies that highlight the role of scaffolding in improving instructional clarity, where using Thai phrases to explain complex English instructions enhances student comprehension (Ambele & Boonsuk, 2020; Phamunchakko & Indrambarya, 2021). By reflecting on my classroom experiences, this study examined the extent to which code-switching serves as an instructional aid without impeding English language development.

Curran's Community Language Learning (1976) emphasized the emotional and social dimensions of language learning. In this study, culturally sensitive code-switching—such as the use of polite markers like 'krub' (ครับ) and 'kha' (ค่ะ)—creates a supportive and respectful classroom environment (Cejudo et al., 2024). This, in turn, fosters student confidence, encourages participation, and strengthens teacher-student rapport (Olivera, 2021). Research has further supported that code-switching fosters inclusivity and increases student engagement (Hussein et al., 2020; Olivera, 2021), reinforcing its role in promoting active classroom participation. However, challenges such as pronunciation accuracy must be considered, as mispronunciations during code-switching may create confusion and reduce student confidence (Selamat, 2014). Additionally, ensuring that code-switching aligns with Thai cultural norms is crucial to maintaining classroom engagement (Cejudo et al., 2024).

By incorporating both cognitive and affective perspectives, this framework offers a holistic view of code-switching's role in EFL instruction. Strategic code-switching is expected to improve student comprehension by increasing their understanding and retention of lesson content. Moreover, the use of culturally sensitive code-switching can promote active learning and foster a positive classroom atmosphere, contributing to increased engagement. Finally, a balanced approach to code-switching may enhance students' comfort in both English and Thai, facilitating smoother communication and improving overall language proficiency.

The conceptual framework for this study as illustrated in Figure 1 outlines the pedagogical purposes, challenges, and expected outcomes of code-switching as a teaching strategy.

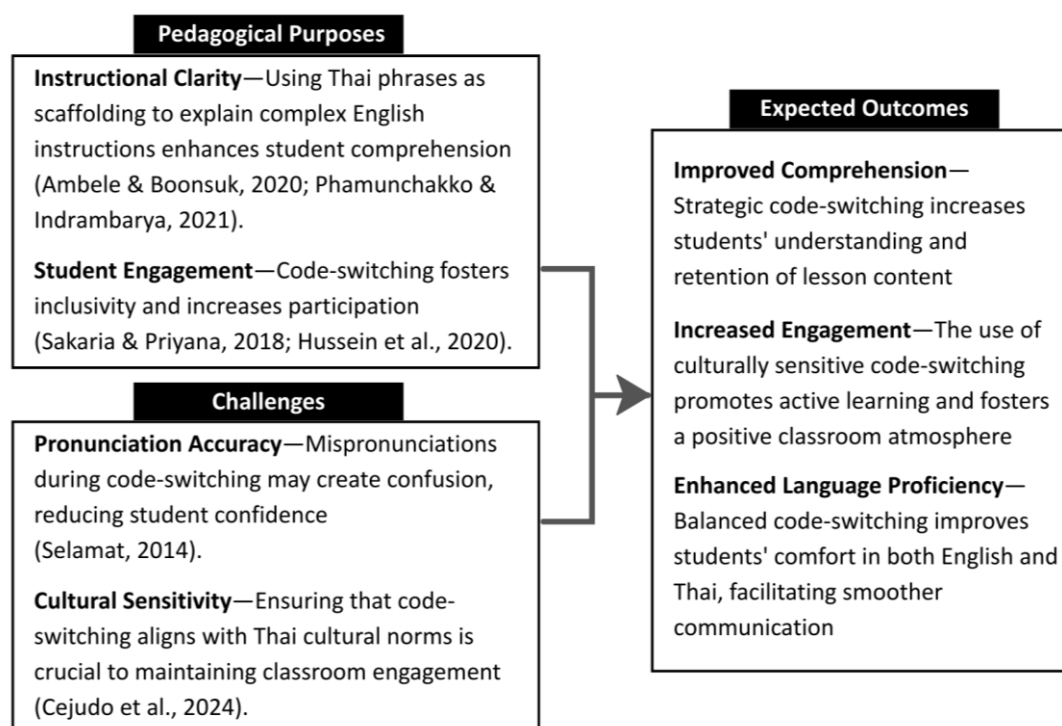
Research Objectives

This autoethnographic study examined the use of basic Thai phrases by a Filipino EFL teacher, a non-native Thai speaker, in delivering activity instructions in the classroom. It sought to determine how limited Thai proficiency influences instructional clarity and student comprehension. Specifically, the study aimed to:

1. Examine the role of basic Thai phrases in enhancing student comprehension during EFL classroom activities (listening, speaking, reading, and writing).

2. Explore the impact of pronunciation accuracy on the effectiveness of code-switching in facilitating communication between the instructor and students.
3. Investigate the role of culturally sensitive code-switching (e.g., polite markers) in fostering positive classroom dynamics, engagement, and student comfort.
4. Assess the challenges faced by a non-native Thai-speaking EFL instructor when integrating Thai phrases into instruction, with a focus on pronunciation issues and cultural sensitivity.
5. Evaluate the overall pedagogical benefits of code-switching as a tool for improving EFL teaching practices in a Thai cultural context.

Figure 1 *Conceptual Framework of Code-Switching in Thai EFL Instruction*



This study drew on instructor journal reflections to analyze the role of basic Thai phrases in classroom interactions. By addressing these objectives, it provides insights into the practical application of basic Thai phrases in EFL instruction and their impact on student engagement and understanding.

Researcher Positionality

I have over a decade of experience teaching EFL to students from grade school to undergraduate levels in Thailand, navigating challenges related to language barriers and cultural differences. As a non-native Thai speaker, these experiences have shaped my teaching practices and informed the research questions used in this study. I have observed how using basic Thai phrases can improve instructional clarity and student engagement, which was the focus of this autoethnographic study.

The study was conducted with undergraduate students enrolled in "English for Social Communication 1," with A1 to A2 CEFR-level proficiencies. Over two months during the first semester of 2024, I worked with an average of 35 students across seven groups, totaling around 245 different students. This context informed my approach to enhancing classroom communication using Thai phrases. By examining the impact of basic Thai on student engagement and comprehension, this study highlights the value of personal experience in addressing the complexities of teaching in multilingual classrooms.

Methodology

Research Design

An autoethnographic approach was adopted in this study to investigate the use of basic Thai phrases in explaining activity instructions within an undergraduate EFL classroom. This approach was described by Reed-Danahay (1997) as a specialized version of ethnography that combines elements of autobiography and ethnography. Ellis et al. (2011) defined it as a qualitative research method that allows researchers to reflect on their firsthand experiences and motivation to seek knowledge that can bring positive changes. In addition, Mirhosseini (2018) highlighted its potential in language education, since this inquiry shaped possibilities for diving into deeper layers of language teachers' experiences. By integrating personal narratives with cultural and contextual analysis, this study aimed to explore how basic Thai phrases impact instructional effectiveness and student engagement from the perspective of a Filipino EFL teacher in Thailand.

Ethical Considerations

Ethical considerations were addressed to ensure that all reflections and journaling preserved participant confidentiality and adhered to principles of academic integrity. When documenting events, the researcher avoided including students' personal details in the journal entries. Also, the journaling was strictly conducted after classes to avoid interference with the learning process. Additionally, the students, who were young adults with an average age of 20 years old, were informed that the teacher was observing the class for research purposes, and sought their written consent in digital form using vocabulary at the A1 CEFR level to assure comprehension. Lastly, no images, audio, or video recordings were collected during the research process.

Data Collection

Personal Reflections. The primary data source was the researcher's personal reflections; this approach was aligned with the core principles of autoethnography, where the researcher is both a subject and an observer. The researcher maintained a detailed journal throughout the study to document experiences and observations related to the use of basic Thai phrases during various classroom activities. The journal entries included descriptions of how basic Thai phrases were used to explain instructions for activities such as listening activities, formative writing activities, speaking exercises involving group role-play, and reading comprehension exercises. This reflective practice is essential in autoethnography, as it allows researchers to critically analyze and interpret the impact of their teaching strategies (Jones et al., 2013).

Consultation of Published Research Articles. To further contextualize and validate the observed events and reflections recorded in the researcher's diary, relevant published research articles were consulted. These articles provided theoretical and empirical frameworks that helped to shed light on the observed phenomena, such as the use of code-switching in EFL classrooms and its impact on student engagement and comprehension. By integrating insights from existing literature, more robust conclusions could be drawn about the effectiveness of using basic Thai for classroom instructions. This approach is aligned with Chang's (2008) recommendation for incorporating external sources in autoethnographic studies to enhance analytical depth and theoretical rigor. The use of multiple data sources enhances the validity of the findings, and provides a richer, more nuanced account of the instructional process (Creswell & Poth, 2018).

Data Analysis

The data collected from personal reflections and classroom observations were analyzed using thematic analysis, a method well-suited to qualitative research that involves identifying, analyzing, and reporting patterns (themes) within data (Braun & Clarke, 2008). The thematic analysis enabled the researcher to explore the impact of using basic Thai phrases in the EFL classroom on both instructional clarity and student engagement, drawing on autoethnographic insights and providing depth and context to the findings. The analysis process involved coding the data inductively, followed

by categorization into emerging themes (Guest et al., 2012). This approach was consistent with the interpretive nature of autoethnography, where the focus is on meaning-making and the researcher's role in the process (Ellis et al., 2011).

Findings

This autoethnographic study, grounded in reflections on four fundamental classroom activities—listening, writing, speaking, and reading—examined how integrating basic Thai phrases influenced EFL instruction. These activities are crucial for developing students' macro language skills (Brown, 2007), providing rich data for understanding both the benefits and challenges of code-switching in a non-native Thai-speaking context.

To provide context for the qualitative analysis, two tables were prepared containing quantitative and qualitative summaries of the data. They are shown in Appendix 1: Table 1: Overview of Word and Sentence Counts in Personal Reflections Journal and Table 2: Emerging Themes in Personal Reflections Journal. The analysis identified three core themes:

1. Strategic Code-Switching for Instructional Clarity and Student Comprehension.
2. Pronunciation Accuracy as a Challenge in Effective Communication.
3. Culturally Sensitive Code-Switching for Classroom Engagement.

These themes directly addressed the research questions by examining (a) how basic Thai phrases support student comprehension across different classroom activities, (b) the challenges associated with pronunciation accuracy in a non-native Thai-speaking context, and (b) the cultural implications of using Thai phrases in EFL instruction. The following sections further explore these findings.

Strategic Code-Switching for Instructional Clarity and Student Comprehension

The strategic use of basic Thai phrases significantly enhanced student comprehension and prompted positive responses. This was most evident in listening and writing activities, where students demonstrated understanding through positive non-verbal cues such as nodding and improved task performance. For example, the phrase "write a full sentence" (เขียนประโยคเต็ม) during writing activities effectively clarified instructions and increased student engagement. Similarly, in listening activities, the phrase "listen carefully. Laew haa main point na" (แล้วหา main point นะ) helped students focus on key details, as seen in their improved responses.

These reflections indicated that code-switching played a crucial role in reducing clarification requests and supporting students in processing instructions more efficiently. This finding is aligned with Macaro's (2009) concept of code-switching as a cognitive scaffold, which aids comprehension without diminishing cognitive engagement.

Pronunciation Accuracy as a Challenge in Effective Communication

While code-switching facilitated comprehension, pronunciation challenges sometimes diminished its effectiveness. This issue was particularly prominent in speaking and reading activities, where mispronunciations led to student hesitation and misunderstanding. For instance, in a speaking task, an attempt to instruct students to "speak more naturally" resulted in confusion due to a mispronounced word. Instead of proceeding confidently, students paused and sought peer clarification.

Such moments highlighted the tension between the benefits of code-switching and the limitations posed by non-native Thai proficiency. These findings echoed Cejudo et al. (2024), who emphasized the importance of teacher language proficiency in non-native code-switching contexts. Moreover, the reflections suggested that pronunciation errors not only affect instructional clarity, but also influenced student confidence and participation.

Culturally Sensitive Code-Switching for Classroom Engagement

The study underscored the importance of cultural sensitivity in code-switching, particularly in speaking and classroom management interactions. The inclusion of polite markers, such as “krub” (ครูครับ) and “kha” (ค่ะ), significantly influenced student engagement. When these markers were used, students responded positively, displaying increased attentiveness and participation. Conversely, their absence led to visible discomfort and reduced engagement, indicating the importance of aligning classroom communication with Thai cultural norms.

This finding reinforced Holmes’ (2013) argument that culturally appropriate language fosters inclusivity and engagement in educational settings. In this context, Thai politeness markers functioned as more than mere linguistic additions—they shaped classroom dynamics by building rapport and trust with students.

Discussion

This study critically reflected on the pedagogical implications of integrating basic Thai phrases into EFL instruction, emphasizing the benefits and challenges associated with non-native Thai proficiency.

The first theme, Strategic Code-Switching for Instructional Clarity and Student Comprehension, highlighted how code-switching enhances comprehension in listening and writing tasks. This supported existing research on code-switching as a scaffolding strategy (Macaro, 2009), and demonstrated its effectiveness in reducing clarification requests and improving student engagement. However, these findings also emphasized the importance of teacher competence in balancing Thai and English to optimize instructional clarity.

The second theme, Pronunciation Accuracy as a Challenge in Effective Communication, presented a critical limitation of non-native code-switching. While integrating Thai phrases supported comprehension, mispronunciations led to confusion, hesitation, and reliance on peer clarification. This finding extends the discussion in Cejudo et al. (2024) by showing how pronunciation errors influence both teacher effectiveness and student participation. It suggests a need for professional development programs tailored to non-native teachers working in multilingual contexts.

The third theme, Culturally Sensitive Code-Switching for Classroom Engagement, reinforced the role of cultural awareness in effective communication. The findings affirmed that politeness markers play a crucial role in fostering student engagement (Holmes, 2013), particularly in a Thai educational setting where cultural norms shape classroom interactions. This study highlights that cultural sensitivity is not an optional component of code-switching, but a fundamental factor influencing its effectiveness.

Conclusions

This study examined the role of basic Thai phrases in facilitating EFL instruction for a Filipino teacher in Thailand. The findings illustrated that code-switching can enhance comprehension and engagement, but it requires careful adaptation, linguistic accuracy, and cultural sensitivity.

The key takeaways from this study are:

1. Strategic code-switching supports instructional clarity, reducing student confusion and improving participation.
2. Pronunciation accuracy is a critical challenge, as mispronunciations can hinder comprehension and affect student confidence.
3. Culturally sensitive code-switching, particularly through politeness markers, enhances teacher-student rapport and classroom engagement.

This study emphasized that code-switching should be employed as a deliberate pedagogical strategy rather than a convenience-based approach. Teachers in similar contexts should integrate linguistic and cultural considerations into their instructional practices to maximize student comprehension and engagement.

Ultimately, this autoethnography contributes to a broader understanding of code-switching in multilingual education. It highlights that for code-switching to be effective, teachers must engage in

continuous professional development, critically reflect on their teaching strategies, and adapt to students' linguistic and cultural needs. These insights are valuable for educators navigating cross-cultural teaching environments, emphasizing the importance of continuous learning and adaptation in inclusive language instruction.

Recommendations

Based on the findings of this study, the following recommendations are proposed for practice, teacher education, and future research:

1. Language and Cultural Training—Professional development initiatives should focus on supporting non-native Thai-speaking EFL teachers in overcoming language barriers, particularly in pronunciation and conversational fluency. Such training would enable teachers to communicate more effectively, thereby improving their ability to provide clear instructions, engage students, and create a positive classroom atmosphere. Furthermore, integrating cultural awareness into these programs is crucial, as it helps teachers to understand social norms, polite markers, and context-specific language usage, all of which are vital for fostering respect and encouraging student participation in Thai classrooms. This combined focus on language proficiency and cultural understanding not only enhances teaching effectiveness, but also promotes a more inclusive and responsive learning environment for students.

2. Future Research—Future studies could explore the long-term effects of code-switching training on non-native teachers' instructional practices and student outcomes. A comparative study involving native and non-native Thai-speaking educators could provide valuable insights into the effectiveness of different teaching strategies and language use. Such research would contribute to a more comprehensive understanding of how to enhance communication and student engagement in multilingual classrooms.

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Appendix 1

Table 1 Overview of Word and Sentence Counts in Personal Reflections Journal

Activity Journal	Group Counts	Total Word Counts	Total Sentence Counts	Words per Sentence
Listening Activities Journal	7	771	68	11.34
Writing Activities Journal	7	1060	88	12.05
Speaking Activities Journal	7	689	64	10.77
Reading Activities Journal	7	819	73	11.22

Table 2 *Emerging Themes in Personal Reflections Journal*

Activities	Observation/Quotes	Code-Switching Type	Initial Codes	Themes
Listening Activities	"Listen carefully, laew haa main point na" (แล้วหา main point นะ) – listen carefully. Then find the main point. They started nodding and looked much more focused." "Listen carefully, laew leuak detail thee thook tong (แล้วเลือก detail ที่ถูกต้อง) –listen carefully. Then choose the correct detail. "This instruction was followed by some blank expressions caused by my mispronunciation of a word, which was later clarified as one student hinted that I was trying to utter the word "leuak (เลือก)"	Inter-sentential; Intra-sentential	Code-Switching for Key Instruction; Non-native Thai Pronunciation Difficulty; Student Non-Verbal Cues	Code-Switching as a Teaching Strategy; The Impact of Mispronunciation on Students' Understanding
Writing Activities	"Write full sentences and avoid just writing words or phrases, khian pen prayok tem tem mai chai khae kham rue wa li (เขียนเป็นประโยคเต็มๆ ไม่ใช่แค่คำหรือวลี)." Although positive responses were noted in these students, some students wrote single words and phrases, appearing unsure. I then added "These are the example, Nii kuu tuayang (นี่คือตัวอย่าง)" This proved helpful.	Inter-sentential; Intra-sentential	Instructional Clarity; Code-Switching for Explanation; Student Uncertainty; Clarification Strategy	Enhancing Instructional Clarity Through Code-Switching; Addressing Student Uncertainty Through Examples
Speaking Activities	"Group into five and then have a one-minute conversation, Jap glum kan ha khon lae poot koi kan nueng nati (จับกลุ่มกันห้าคน และพูดคุยกันหนึ่งนาที)." They looked unsure as if waiting for something. I repeated the instructions in Thai, adding "ครับ (krab) at the end." This experience taught me that sounding unsure in Thai, and omitting polite markers, can lead to hesitation in understanding, as reflected in the students' facial expressions, which indicated uncertainty about whether the instruction was complete.	Inter-sentential; Tag switching; Intra-sentential	Instructional Code-Switching; Nonverbal Cues and Student Comprehension; Role of Politeness Markers in Communication	The Influence of Politeness and Cultural Cues on Classroom Comprehension
Reading Activities	"Read this article, then answer the questions, An bot khwam ni laew top kham tham na krab (อ่านบทความนี้ แล้วตอบคำถามนะครับ)." Students' were receptive, started reading, but hesitations arose when I stated, "make sure to note the important details." This was clarified by adding, "Jot yang samkan wai duay na krab (จดอย่างสำคัญไว้ด้วยนะครับ)."	Inter-sentential; Tag switching; Intra-sentential	Instructional Code-Switching; Clarification Strategies; Student Comprehension and Response; Code-Switching for Emphasis; Politeness Markers in Classroom Discourse	Code-Switching as an Instructional Tool for Enhancing Classroom Comprehension and Engagement

Note. The author, with developing ability in Thai, recorded phrases used in instruction primarily via transliteration. The exact Thai phrases in Thai script were added later in the journal and are presented here in parentheses.

Determinants of User Retention in Streaming Services: The Role of Content Library and User Experience

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Abstract

Aim/Purpose: This study aimed to delve into the determinants of user satisfaction and the intention to continue using streaming services, employing structural equation modeling as the analytical framework. Understanding these determinants is crucial for service providers who seek to enhance user retention and ensure long-term success in a competitive market. By identifying the key factors that influence user satisfaction and continued usage, service providers can tailor their strategies to meet user needs more effectively.

Introduction/Background: The rapid proliferation of streaming services has transformed how content is consumed, making it imperative to understand what drives user satisfaction and retention. This paper addresses the critical problem of identifying the factors that influence user satisfaction and the intention to continue using streaming services. The study aimed to illuminate how service providers can improve user satisfaction and foster continued usage by focusing on essential aspects such as the content library and user experience. By doing so, the research provides valuable insights into the elements that contribute to a positive user experience and sustained engagement with streaming platforms.

Methodology: To achieve the study's objectives, data were collected from a sample of 487 respondents who are active users of streaming services. The data collection process involved a comprehensive survey designed to capture various aspects of user satisfaction and usage intentions. The collected data were then analyzed using Structural Equation Modeling (SEM) to test the proposed hypotheses. SEM is a robust statistical technique that allows the examination of complex relationships between multiple variables, providing a comprehensive understanding of the determinants of user satisfaction. Various statistical techniques, including confirmatory factor analysis and path analysis, were employed to validate the model and ensure the reliability and validity of the findings.

Findings: The analysis revealed that both the content library and user experience were significant determinants of user satisfaction. A diverse and extensive content library was found to be a critical factor in enhancing user satisfaction, as it provides users with a wide range of options to choose from, catering to diverse preferences and interests. Similarly, a high-quality user experience, characterized by ease of use, seamless navigation, and reliable performance, was shown to significantly influence user satisfaction. Furthermore, the study found that user satisfaction had a direct and significant impact on the intention to continue using the streaming service.

Contribution/Impact on Society: The findings of this study contribute to the existing body of knowledge by providing empirical evidence on the importance of the content library and user experience in driving user satisfaction and retention in the context of streaming services. The larger implications of these findings suggest that service providers should prioritize these aspects to maintain and grow their user base. By focusing on enhancing the content library and user experience, service providers can create a more engaging and satisfying experience for users, leading to higher retention rates and sustained growth. This, in turn, can positively impact society by ensuring that users have access to high-quality, diverse content and a seamless viewing experience.

Recommendations: Based on the findings, it is recommended that streaming service providers focus on expanding their content library to include a wide variety of genres, languages, and formats to cater to diverse user preferences. Additionally, continuous improvements to the overall user experience should be prioritized, including user interface enhancements, performance optimizations, and personalized recommendations. Regular assessments of user preferences and experiences should be conducted to adapt to changing user needs effectively. By doing so, service providers can ensure that they remain competitive and meet the evolving demands of their user base.

Research Limitation: The study was limited by its sample size and the specific context of streaming services, which may not be generalizable to other types of services or industries. The sample of 487 respondents, while substantial, may not have fully captured the diversity of streaming service users. Additionally, the study's focus on streaming services meant that the findings may not apply to other digital services or industries. Further research is needed to explore additional factors influencing user satisfaction and retention in different contexts and to validate the findings across larger and more diverse samples.

Future Research: Future research should explore the determinants of user satisfaction and retention in different industries and contexts to build a comprehensive understanding of user behavior. This could include studies on other digital services, such as e-commerce platforms, social media, and online gaming, to identify common and unique factors influencing user satisfaction and retention. Additionally, longitudinal studies could provide insights into how these determinants evolve over time, aiding service providers in adapting their strategies accordingly. By examining the long-term trends and changes in user behavior, future research can offer valuable guidance for service providers looking to sustain user engagement and satisfaction over the long term.

Keywords: *Streaming services, content library, user experience, retention*

Introduction

The rise of streaming services has revolutionized the entertainment industry, providing users with unprecedented access to a vast array of content at their fingertips. As these platforms continue to grow in popularity, understanding the factors that influence user satisfaction and the intention to continue using these services becomes crucial for service providers. Among these factors, the content library plays a significant role in shaping user experiences and satisfaction. A rich and diverse content library can enhance user engagement, increase perceived value, and foster loyalty.

Several studies have highlighted the importance of content richness and variety in streaming services. For instance, Dextre-Mamani et al. (2022) found that content richness positively impacted user satisfaction and brand equity in streaming platforms (Dextre-Mamani & Villanueva, 2022). These findings underscore the need for streaming services to invest in a robust content library to meet and exceed user expectations.

Moreover, User Experience (UX) is another critical factor influencing satisfaction and continuance intention. A positive UX, characterized by ease of use, intuitive navigation, and high-quality streaming, can significantly enhance user satisfaction and loyalty. Research by Fumić et al. (2023) demonstrated that perceived ease of use and perceived usefulness are significant determinants of satisfaction in music streaming services (Fumić & Šimunić, 2023). These insights can be extended to other streaming services, highlighting the importance of a seamless and enjoyable user experience.

In Thailand, the growth of Internet usage has been a significant driver of the popularity of streaming services. As of early 2024, there were approximately 63.21 million Internet users in Thailand, representing an internet penetration rate of 88.0% (International Telecommunication Union, 2024). This growth is driven by the expansion of digital infrastructure, increased affordability of Internet services, and the widespread use of smartphones and other Internet-enabled devices.

The streaming services market in Thailand has experienced significant growth, driven by increasing Internet penetration and consumer demand for digital entertainment, with platforms like Netflix, Disney+ Hotstar, Max (formerly HBO Go), and Amazon Prime Video leading the industry (Statista,

2024). These services offer a wide range of content, including movies, TV shows, live sports, and original programming, catering to diverse tastes and preferences. The convenience and variety provided by these platforms have contributed to their widespread adoption and popularity among Thai users. iQIYI has made significant inroads in the Thai market by releasing multiple Thai original productions and collaborating with top local production houses (Asia News Network, 2024). The platform's focus on localized content and high-quality streaming has resonated well with Thai audiences, contributing to its popularity. Viu is also a leading streaming service in Thailand, known for its extensive library of Asian dramas and variety shows. Viu has implemented a localization strategy, including Thai dubbing and regional language dubbing, to better cater to local viewers (Dataxet, 2025). This approach, along with partnerships with Thai TV production houses, has helped Viu maintain a strong presence in the Thai market (Dataxet, 2025).

Scope of the Study

This research examined four key variables: Content library, user experience, user satisfaction, and intention to continue using the streaming service. It did this by surveying 487 active streaming service users to provide generalized insights across various markets without geographic restrictions. The study employed a structural equation model (SEM) to analyze the relationships between these variables, ensuring a thorough and comprehensive analysis.

Research Objectives. The primary objective of this study was to assess the impact of the content library and user experience on user satisfaction, and how this satisfaction influenced the intention to continue using streaming services. Specifically, the study aimed to determine how much a diverse and rich content library and a positive user experience contribute to user satisfaction. It also sought to evaluate the relationship between user satisfaction and users' intention to continue using the service. To validate these relationships, structural equation modeling (SEM) was employed to test the proposed hypotheses.

Significance of the Study. This study endeavors to provide valuable insights for streaming service providers by emphasizing the importance of a diverse content library and high-quality user experience in enhancing user satisfaction and retention. Understanding these factors allows providers to make informed decisions to boost customer loyalty and business performance.

Additionally, the research contributes to the theoretical understanding of user behavior in digital services, serving as a foundation for future studies on related topics. Policymakers and regulators can also benefit from these insights to develop guidelines that promote fair competition and consumer protection. Overall, this study addresses a gap in existing literature and offers practical applications in the evolving digital service landscape.

Conceptual Framework and Hypothesis Development

The conceptual framework for this study illustrates the expected relationships between the variables: content library, user experience, user satisfaction, and intention to continue using streaming services. A content library is a centralized repository that houses and organizes various types of marketing content, such as blog posts, articles, videos, and social media posts, allowing marketers to easily access and manage their content assets (Gravel, 2023; Karr, 2024). The content can be categorized based on criteria such as topic, format, target audience, or stage in the buyer's journey. User experience encompasses the overall interaction and satisfaction users have with the platform, including ease of use, interface design, and technical performance (Hassenzahl & Tractinsky, 2006). User satisfaction is the degree to which users feel content with the services provided (Deng et al., 2010), and intention to continue using measures the likelihood of users remaining subscribed to the service (Yoon & Kim, 2023).

Three hypotheses were constructed as follows:

H_1 : Content library positively influences user satisfaction.

A comprehensive content library is pivotal for user satisfaction in digital services. Wu et al. (2019) emphasized that a diverse and regularly updated content library meets users' varied preferences and significantly enhances their satisfaction with streaming services. Similarly, Adeyemi and Fatoki's

(2013) and Kaba et al.'s (2024) studies suggested that access to a wide range of resources was crucial for user satisfaction in library services. Supporting this hypothesis, Ota et al. (2024) found that the variety of content available on streaming platforms significantly impacted user satisfaction. Additionally, Hussien and Mokhtar (2018) highlighted the importance of content variety in maintaining user engagement and satisfaction. These studies collectively suggest that a well-curated and rich content library plays a crucial role in driving user satisfaction.

H₂: User experience positively influences user satisfaction.

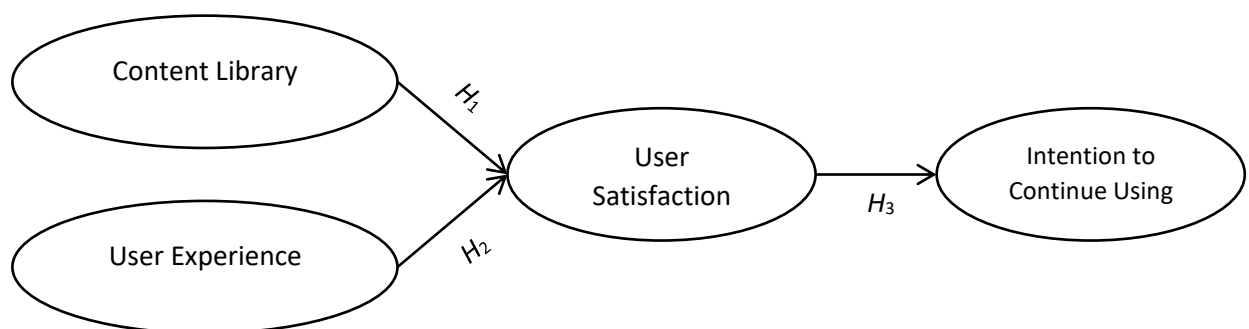
User experience (UX) is a crucial determinant of user satisfaction in digital platforms. A positive user experience, characterized by ease of use, intuitive interface design, and high-quality streaming, contributes significantly to higher user satisfaction. Hassenzahl and Tractinsky (2006) asserted that a well-designed interface, smooth navigation, and personalized recommendations are key contributors to a positive user experience, thereby enhancing satisfaction. They also demonstrated that user experience significantly affects user satisfaction. Pushparaja et al. (2021) further identified factors like attractiveness, efficiency, dependability, stimulation, and novelty as significant UX elements that drive user satisfaction. Similarly, Bouraqia et al. (2019) showed that technical performance and user-friendly interfaces contributed to higher user satisfaction. These findings underscore the importance of investing in a high-quality user experience to enhance user satisfaction.

H₃: Satisfaction positively influences the intention to continue using the streaming service.

User satisfaction is widely regarded as an essential predictor of continual usage intention in digital services. This hypothesis suggests that higher user satisfaction increases the likelihood of users continuing to use the streaming service. Deng et al. (2010) proposed that user satisfaction, derived from cognitive absorption and perceived utility, profoundly affects continued usage intentions. Additionally, Yoon and Kim (2023) revealed that satisfaction, derived from perceived value and service quality, is a crucial determinant of users' intention to continue using Over-The-Top platforms (digital media services that deliver streaming content directly to viewers via the Internet, bypassing traditional cable or satellite television providers). These studies indicate that user satisfaction is a crucial determinant of users' intention to continue using streaming services, emphasizing the need for service providers to focus on enhancing user satisfaction to foster loyalty and retention.

Figure 1 represents this study's conceptual model, depicting relationships among the hypotheses.

Figure 1 *The Conceptual Model*



Research Methodology

Study Respondents and Sampling Procedure

Respondents for this study were carefully selected to ensure a representative sample of streaming service users. The population included individuals who actively use streaming services, encompassing various demographics such as different age groups, genders, and levels of familiarity with streaming platforms. To ensure meaningful insights, only individuals who watched streaming content at least once a week were included.

The sample size consisted of more than 400 respondents, selected using purposive sampling, which allowed the researcher to intentionally choose participants based on specific characteristics relevant to the study. A sample size exceeding 400 enhances the study's statistical power, ensuring more reliable and generalizable findings (Field, 2021). Larger samples reduce margin of error, improve confidence intervals, and help identify patterns and trends more accurately, making the results more applicable to the broader population of streaming service users (Creswell & Creswell, 2023).

Regarding age groups, this study categorized respondents into the following age groups: 18–24 year old, 25–40 year old, 41–56 year old, and more than 56 year old. These divisions align with generational breakdowns commonly recognized in 2022. Specifically, Generation Z (born ~1997–2012) constitutes a significant portion of younger streaming audiences, characterized by their preference for mobile-based, on-demand content (Ameen et al., 2023). Additionally, Millennials (born ~1981–1996) represent a substantial segment of streaming users, often balancing traditional and digital media consumption habits (Media Culture, 2023).

The combination of a high response rate and a well-structured selection process enhanced the reliability and applicability of these findings, offering valuable insights into the factors influencing user satisfaction and continued streaming service usage.

Research Instruments / Questionnaire

To ensure reliability and validity, the variables in this study were measured using adapted scales from established sources. The content library measurement included three items with a Cronbach's alpha of .729, adapted from the work of Periaiya and Nandukrishna (2023). The user experience measurement, based on three items with a Cronbach's alpha of .846, drew from the scales by Hassenzahl and Tractinsky (2006) and Deng et al. (2010). For user satisfaction, three items were used, yielding a Cronbach's alpha of .899, adapted from Oliver (1997) and Yapp and Yeap (2020). Lastly, the intention to continue using was assessed with three items, resulting in a Cronbach's alpha of .890, adapted from Bhattacharjee (2001). These well-validated and reliable instruments enhanced the credibility and robustness of the study's findings. Table 1 illustrates the variable measures, including the number of items and Cronbach's Alpha (α) values.

Table 1 Summary of Measures and Item Reliability (N = 487)

Measures	Items	Cronbach's α
Content Library	3	.729
1. The variety of content available on this streaming service meets my needs.		
2. The streaming service regularly updates its content library with new releases.		
3. The streaming service offers a wide range of genres.		
User Experience	3	.846
1. The interface of this streaming service is user-friendly.		
2. I find it easy to navigate through the content on this streaming service.		
3. This streaming service provides a satisfying viewing experience.		
User Satisfaction	3	.899
1. I am satisfied with the overall service provided by this streaming platform.		
2. This streaming service meets my expectations.		
3. I feel happy using this streaming service.		
Intention to Continue Using	3	.890
1. I intend to continue using this streaming service in the future.		
2. I will recommend this streaming service to friends and family.		
3. I am likely to continue my subscription to this streaming service.		

Participants were instructed to rate their responses to each question using a 5-point Likert scale, where 1 represented Strong Disagreement, 2 indicated Disagreement, 3 was Neutral, 4 Signified Agreement, and 5 corresponded to Strong Agreement. Across the 487 samples, Cronbach's Alpha values ranged from .729 to .899, which were deemed reliable as per Malhotra (2007).

Data Gathering Procedure

To gather data for this study, a structured questionnaire was administered via Google Forms. Respondents accessed it by scanning a QR code distributed through Facebook Messenger, LINE, or in a classroom setting. This multi-channel approach ensured broad accessibility and facilitated a diverse respondent pool, capturing a wide range of user experiences.

Before participation, potential respondents were screened with an initial question to confirm their regular usage of streaming services. Only those who met this criterion received a QR code, directing them to the online questionnaire. This selection process ensured the inclusion of relevant participants, enhancing the accuracy and reliability of the collected data. A total of 487 respondents completed the questionnaire. The use of QR codes streamlined data collection, making it a convenient and efficient method for engaging participants and gathering valuable insights.

Research Results

Demographic Profile of Respondents

The demographic profiles in this study comprised four main sections, including gender, age, the most used streaming platform, and frequency of watching. The Google Form provided descriptive data, including frequency and percentage. The results are shown in Table 2.

From Table 2, out of 487 respondents, the majority were female (291, representing 59.8%), while 196 respondents (40.2%) were male. Among the age groups defined by previous generational breakdowns, the largest was the 18–24 age group, comprising 347 respondents (71.3%). Regarding the most-used streaming platforms, the majority of respondents (382, or 78.4%) favored YouTube. The remaining respondents used other platforms: Netflix (88, or 18.1%), iQIYI (6, or 1.2%), HBO (Max) (4, or 0.8%), Prime Video (2, or 0.4%), and Viu (2, or 0.4%).

Table 2 Demographic Profile of Respondents (n=487)

Demographic Profile of Respondents		Descriptive Statistics	
		Frequency	Percent
Gender	Male	196	40.2
	Female	291	59.8
Age (years)	18–24	347	71.2
	25–40	95	19.5
	41–56	31	6.4
	> 56	14	2.9
Most used streaming platform	Disney+	3	0.6
	HBO (Max)	4	0.8
	iQIYI	6	1.2
	Netflix	88	18.1
	Prime Video	2	0.4
	Viu	2	0.4
	YouTube	382	78.5
Frequencies of watching	2–3 times a week	58	11.9
	Daily	421	86.5
	Once a week	8	1.6

Confirmatory Factor Analysis

Confirmatory Factor Analysis (CFA) was conducted to evaluate the model's fit. Two categories of goodness-of-fit measures were employed: Absolute Fit and Incremental Fit, as suggested by Hair et al. (2006) and Ho (2006). The primary indices for Absolute Fit included Chi-square statistics, Goodness-of-Fit Index (GFI), and Root Mean Square Error of Approximation (RMSEA). These indices helped assess whether the proposed model matched the data. For Incremental Fit, measures such as Normed Fit Index (NFI), Relative Fit Index (RFI), Incremental Fit Index (IFI), Tucker-Lewis Index (TLI), and Comparative Fit Index (CFI) were used to show improvements for the hypothesized (default) model.

While Chi-square statistics (χ^2) generally should not exceed 2.0, Hair et al. (2006) and Ho (2006) observed that Chi-square ratios tend to increase with larger sample sizes, particularly when the number of respondents surpasses 200. Therefore, key indices like GFI and RMSEA are advised to be considered. The CFA results from this study, shown in Table 3, using modification fit indices, indicated that the model appropriately fit the dataset, $\chi^2(N = 487, df = 47) = 2.358, p < .05$. The GFI showed an acceptable fit at .964, which is close to 1 (0 = poor fit and 1 = perfect fit). For RMSEA, smaller values indicate a better model fit, with values ranging from .05 to .08 being considered acceptable, values from .08 to .10 indicating mediocre fit, and values greater than .10 reflecting poor fit (Ho, 2006).

Table 3 Summary of CFA Fit indices of Measurement Model

	Measures of Absolute Fit			Measures of Incremental Fit				
	χ^2/df	RMSEA	GFI	NFI	RFI	IFI	TLI	CFI
Requirement	< 2.0	Acceptable at .05 - .08	Close to 1	.900	.900	.900	.900	.900
Model	2.358	.053	.964	.973	.962	.984	.978	.984

Hypothesis Testing

Structural Equation Modeling (SEM) was used to investigate and explain the relationships between the predictor and dependent variables. A summary of the SEM Fit Indices of the Measurement Model is provided in Table 4, showing that the model exhibited a good fit with the dataset.

Table 4 Summary of SEM Fit indices of Measurement Model

	Measures of Absolute Fit			Measures of Incremental Fit				
	χ^2/df	RMSEA	GFI	NFI	RFI	IFI	TLI	CFI
Requirement	< 2.0	Acceptable at .05 - .08	Close to 1	.900	.900	.900	.900	.900
Model	2.527	.056	.959	.970	.959	.981	.975	.981

Structural Equation Modeling (SEM) was applied to examine the hypotheses and elucidate the relationships between the independent and dependent variables. According to Table 5, the SEM results showed that all unstandardized regression weights were significant based on the critical ratio test (C.R. > $\pm 1.96, p < .05$).

Table 5 A Summary of Hypothesis Testing

No.	Path of Relationship	Unstandardized Regression Weight (B)	Standardized Regression Weight (β)	Critical Ratio (CR)	p Value	Hypothesis Supported
H ₁	Content library positively influences user satisfaction.	.323	.371	2.832	.005	Yes
H ₂	User experience positively influences user satisfaction.	.597	.623	5.493	.000	Yes
H ₃	Satisfaction positively influences the intention to continue using the streaming service.	.925	.933	22.834	.000	Yes

The findings indicated that both the content library and user experience had a significant and positive effect on user satisfaction, demonstrated by positive unstandardized and standardized regression weights, along with *p*-values below .05. Moreover, user satisfaction significantly and

positively impacted the intention to continue using the streaming service. These outcomes aligned with the findings of previous studies reviewed in this research.

Discussion and Conclusion

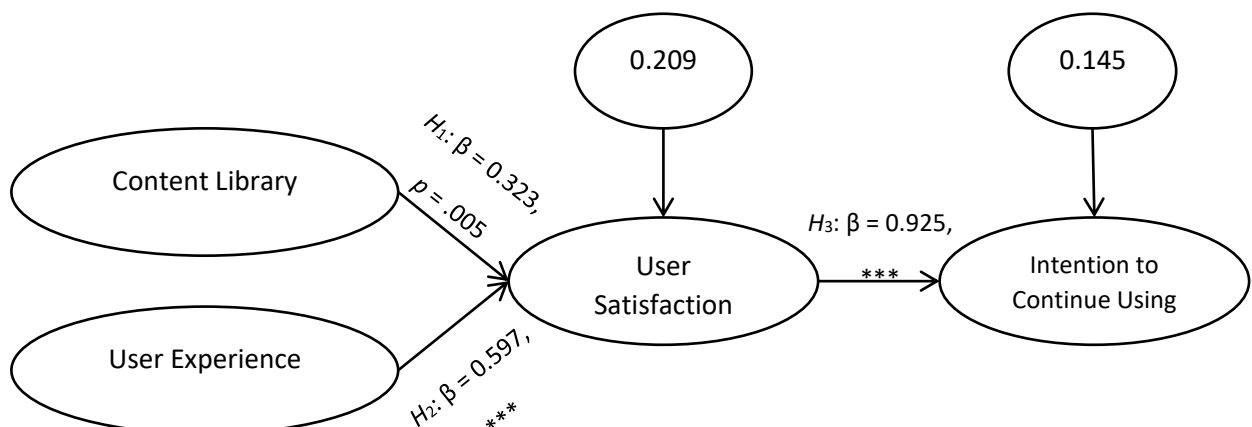
This study successfully achieved its objectives of investigating the impact of the content library and user experience on user satisfaction, and how this satisfaction influenced the intention to continue using the streaming service. The results showed that both the content library and user experience significantly enhanced user satisfaction, which in turn, positively impacted the intention to continue using the service.

Figure 2 illustrates the structural path model, showing the supported hypotheses (H_1 to H_3). The arrows indicate the unexplained (residual) variances for user satisfaction and intention to continue using. R -squared (R^2) is a statistical measure representing the proportion of the variance for a dependent variable explained by the independent variables in a regression model. In this study, R^2 values indicated how well the content library and user experience explained user satisfaction and the intention to continue using the streaming service. For the hypothesized model, 20.9% of the variance in user satisfaction was unexplained, meaning 79.1% was accounted for by the content library and user experience. Similarly, 14.5% of the variance in the intention to continue using was unexplained, indicating that 85.5% was explained by the other variables. These high R^2 values suggested that the model has a strong explanatory power.

Residuals are the differences between the observed values and the values predicted by the model. They represent the portion of the variance not explained by the independent variables. In this study, the residual variances for user satisfaction and the intention to continue using indicated the amount of variance that remained unexplained by the content library and user experience. For example, a residual variance of 20.9% for user satisfaction means that there were other factors not included in the model that account for this unexplained variance.

In summary, the explained variances for all independent variables are represented by the R^2 values, with user satisfaction accounting for 79.1%, and the intention to continue using accounting for 85.5%. The residual variances for the measurement variables ranged from 14.5% to 20.9%, indicating the proportion of variance that was not explained by the model.

Figure 2 Structural Path Model with Summary of Findings



Note. *** $p < .001$.

Research Implications

The findings of this study have several important implications for both academia and practitioners in the streaming service industry.

Academic Implications

From an academic perspective, this study contributes to the growing body of literature on user satisfaction and retention in digital services. The study's conceptual framework and findings provide a deeper understanding of how content library and user experience influence user satisfaction, and how this satisfaction, in turn, affects the intention to continue using streaming services.

This research supports and extends previous studies (Hassenzahl & Tractinsky, 2006; Bouraqia et al., 2019) by empirically validating the relationships between these variables using structural equation modeling (SEM). The study also highlights the importance of considering both content and user experience in understanding user behavior in digital services.

Furthermore, this study contributes to theoretical advancements in digital service research by integrating user engagement theories with technology acceptance models. By examining the interplay between content diversity, interface usability, and streaming quality, the findings provide a comprehensive framework for understanding consumer behavior in subscription-based digital platforms.

Additionally, the study offers methodological contributions by employing SEM, which allows for a robust analysis of the causal relationships between user satisfaction, retention, and service quality. This approach enhances the predictive validity of the findings and provides a strong empirical foundation for future research in digital media consumption.

Given streaming services' rapid evolution, this study also underscores the need for longitudinal research to track changing user preferences and technological advancements. Future studies could explore cross-cultural differences in streaming behavior, as well as the impact of emerging technologies such as AI-driven content recommendations and interactive streaming experiences.

Practical Implications

For practitioners, particularly streaming service providers, the study offers valuable insights into enhancing user satisfaction and retention. The findings suggest that investing in a diverse and rich content library is crucial for maintaining high levels of user satisfaction. Service providers should focus on regularly updating and diversifying their content to cater to the varied preferences of their users.

Additionally, improving user experience by ensuring ease of use, intuitive interface design, and high-quality streaming can significantly enhance user satisfaction. These improvements can lead to increased user loyalty and a higher likelihood of continued usage, as satisfied users are more inclined to remain subscribed to the service (Yoon & Kim, 2023).

Beyond content and interface improvements, streaming platforms should consider personalization strategies to enhance engagement. AI-driven recommendation systems, adaptive streaming quality, and interactive features can create a more immersive and tailored viewing experience.

Moreover, pricing strategies play a crucial role in user retention. Offering flexible subscription plans, bundled services, and discounted renewal options can encourage long-term commitment. Platforms should also explore ad-supported models to provide affordable access while maintaining revenue streams.

Finally, the study emphasizes the importance of community-building within streaming services. Features such as watch parties, user-generated content, and social media integration can foster a sense of belonging, increasing user engagement and retention.

By implementing these strategies, streaming service providers can strengthen their competitive advantage, maximize user satisfaction, and ensure sustainable growth in the evolving digital entertainment landscape.

Further Research Directions

The study's results also open avenues for future research. Researchers could explore additional factors influencing user satisfaction and retention in streaming services, such as pricing models, social interactions, and technological advancements. Additionally, the applicability of the study's findings to

other digital service platforms could be investigated to provide a more comprehensive understanding of user behavior in the digital age.

About the Author

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The Influence of DEI and Organizational Justice on Employee Engagement: A Comparative Study between Gen Y and Z

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Abstract

Aim/Purpose: This study explored how Diversity, Equity, and Inclusion (DEI) practices, specifically through Inclusive Leadership, Diversity Attributes, and a DEI-oriented organizational climate, influenced perceptions of fairness and employee engagement among Generations Y and Z in Bangkok, Thailand. It addresses the need to understand generational differences in responses to DEI initiatives and their impact on workplace engagement.

Introduction/Background: Organizations face challenges in addressing the specific needs of multigenerational workforces, and this study offers a framework for understanding how DEI practices can effectively tackle these challenges. The emphasis on generational differences reflects shifting workforce expectations and the growing demand for inclusivity in leadership and decision-making processes. This research bridges the gap between theoretical frameworks and practical applications of DEI, equipping organizations with tools to navigate generational complexities effectively.

Methodology: A quantitative methodology was employed in this research study. Self-administered questionnaires were used to collect data from 793 participants, including 392 individuals from Generation Z and 401 from Generation Y. A stratified convenience sample was used to ensure representation across various industries in Bangkok, Thailand. The questionnaire assessed perceptions of inclusive leadership, organizational justice, and employee engagement using validated scales. The Structural Equation Modeling (SEM) technique was applied to analyze relationships among the key variables and evaluate the significance of observed effects. The use of validated scales and SEM analysis enhanced the study's precision and generalizability, offering valuable insights into the interplay between leadership, justice, and engagement. Additionally, the stratified sampling approach ensured that the data represented a diverse range of industries and organizational settings, broadening the applicability of the findings.

Findings: Inclusive Leadership, marked by transparency, approachability, and support, boosts perceptions of fairness, especially among Generation Z. This generation values leadership that fosters trust and inclusivity. Organizational Justice—covering Distributive, Procedural, Interactional, and Informational Justice—is key to engagement for both Gen Z and Gen Y. Gen Z prioritizes fairness in resource allocation, processes, communication, and transparency, while Gen Y focuses on alignment with personal goals. These generational differences highlight the need for DEI-driven leadership and policies that meet diverse expectations, fostering cohesion, reducing conflicts, and improving productivity.

Contribution/Impact on Society: This research advances the understanding of employee engagement in diverse workplaces by integrating generational perspectives into DEI and Organizational Justice theories. It underscores the critical role of inclusive and transparent leadership in driving engagement, and highlights the necessity of tailored DEI initiatives to meet the distinct preferences of different generational cohorts. The findings have broader implications for organizational practices, emphasizing equity and inclusivity as essential to enhancing workforce engagement and well-being. This research also provides actionable insights for policymakers and practitioners striving to create equitable and inclusive organizational environments that foster innovation and collaboration.

Recommendations: Organizations should invest in leadership development programs that emphasize inclusive leadership styles focused on transparency, approachability, and supportiveness. Creating a positive diversity climate through policies and practices that prioritize equity and inclusion is essential for fostering a sense of belonging and psychological safety among employees. Engagement strategies should be tailored to the unique needs of Generations Y and Z, recognizing their distinct expectations and preferences. Recommendations include implementing mentorship programs, establishing forums for open dialogue on diversity issues, and aligning DEI goals with organizational values and strategies. Organizations should integrate DEI metrics into performance evaluations to ensure accountability and continuous improvement in fostering inclusivity. Leveraging technology to enhance communication and collaboration across generational cohorts can further strengthen engagement and drive innovation.

Research Limitations: This study's reliance on self-reported data may have introduced bias, and it focused on a single geographical area (Bangkok, Thailand). While the sample size was robust, these factors may limit the generalizability of its findings to other cultural or organizational settings. External factors influencing employee engagement, such as economic conditions or industry-specific considerations, were not explored in depth. Future research studies could address these limitations by employing longitudinal designs and incorporating qualitative methods to gain deeper insights into employees' lived experiences. While the quantitative methods used were rigorous, nuanced or context-specific factors influencing fairness and engagement perceptions may have been overlooked.

Future Research: Future studies should broaden the geographical and cultural scope to validate these findings in different contexts. Longitudinal research could provide deeper insights into how generational preferences and engagement evolve over time. Further research also could explore the interplay between DEI practices and organizational factors like innovation, employee retention, and performance metrics. Investigating the impact of technological advancements and remote work on DEI outcomes could offer valuable insights for modern workplaces. Examining cultural diversity within generational cohorts also could help refine strategies. Understanding the influence of macroeconomic trends and global movements on DEI perceptions could provide a holistic view of how societal changes shape workplace dynamics.

Keywords: *Diversity, equity, inclusion leadership, Generations Y & Z*

Introduction

High employee turnover rates can lead to losses for a company. The turnover phenomenon begins with turnover intention, which is influenced by a healthy workplace culture, fair compensation, and employee well-being (Cedaryana & Safria, 2024). High employee turnover continues to challenge organizations, negatively affecting productivity, recruitment costs, sales, and morale (Mor Barak, 2015). Despite initiatives to combat turnover, resignation rates remain high, particularly among younger generations with differing workplace expectations. Key contributors are thought to include insufficient management support for Diversity, Equity, and Inclusion (DEI), ineffective organizational justice, and a lack of inclusive leadership. These leave employees feeling excluded, disengaged, and undervalued, which increases their likelihood of leaving the organization.

Diversity, Equity, and Inclusion are critical for fostering organizational belonging and fairness. Diversity encompasses varied attributes such as race, gender, age, and abilities, encouraging innovation and improving problem-solving. Diverse workplaces are 35% more likely to outperform less diverse ones in terms of profitability (Hunt et al., 2015). Equity ensures fair treatment and addresses systemic inequalities, while inclusion creates environments where employees feel valued and respected. Inclusive workplaces significantly enhance engagement and retention, with inclusive cultures being 2.3 times more likely to drive innovation, and 3.8 times more likely to retain employees (Deloitte, 2018).

Equity-driven policies support career growth, particularly for underrepresented groups, strengthening trust and loyalty. For instance, Salesforce's Equal Pay initiative improved pay parity, enhancing trust in its workforce and building a strong commitment to the organization (Salesforce, 2019). DEI also is aligned with global priorities like the United Nations Sustainable Development Goals, which address inequality and promote sustainable growth. Organizations adopting DEI principles, such as Unilever through its Sustainable Living Plan, have seen significant improvement in employee engagement and societal impact (Unilever, 2020).

Organizational Justice is another essential factor, encompassing distributive, procedural, informational, and interactional fairness. Perceived injustice leads to dissatisfaction and disengagement, contributing to turnover. Generations Y and Z, who form much of today's workforce, highly value fairness and transparency, making justice crucial for retention. A previous study showed that fairness-driven organizations experienced 30% lower turnover and 40% higher engagement (Colquitt et al., 2001).

Inclusive Leadership identifies these challenges by prioritizing fairness, valuing diverse perspectives, and fostering belonging in the workplace. Leaders who fail to embrace inclusivity risk alienating younger employees who value transparency and collaboration. For example, Google's Inclusive Leadership training has boosted team performance and innovation (Google, 2021). Inclusive leaders mitigate feelings of exclusion, reducing turnover and increasing engagement.

Employee Engagement, a vital retention factor, hinges on interconnected elements like a positive DEI climate, organizational justice, and inclusive leadership. These create a supportive environment where employees feel intellectually and emotionally committed. Engaged teams are 21% more profitable and experience 59% less turnover than disengaged ones (Gallup, 2020). Companies like Adobe leverage DEI initiatives, such as employee resource groups, to enhance retention and innovation (Adobe, 2020).

Generations Y (born from 1981 to 1996) and Z (1996 to 2012) bring distinct workplace expectations. Millennials (Gen Y) prioritize career growth and collaboration, while Gen Z emphasizes authenticity, equity, and social responsibility. Both generations demand visible DEI commitments, with Gen Z being particularly intolerant of inaction (Dimock, 2019). Organizations failing to adapt risk disengagement and high turnover.

This research explored DEI's influence on employee engagement, focusing on policies, diversity dimensions, inclusive leadership, and organizational justice, particularly concerning Generations Y and Z. Addressing these issues may enable organizations to align with global DEI priorities, foster innovation, and build sustainable, inclusive workplaces.

Literature Review

This literature review explored five key constructs—Inclusive Leadership, Diversity Characteristics, DEI Climate, Organizational Justice, and Employee Engagement of Generations Y and Z—which formed the foundation of the study's conceptual framework. Each element is critical in understanding how modern organizations can cultivate equitable, innovative, and high-performing workplaces. Together, these components provide a comprehensive lens for examining how justice and inclusivity drive employee engagement and organizational success.

Inclusive Leadership

Inclusive leadership creates an environment in which individuals feel bonded, respected, and empowered to make valuable contributions. Grounded in transformational and servant leadership, this model focuses on appreciation of multiple perspectives, allowing all perspectives to be heard, and building trust through transparency, empathy, and approachability. Central to this is psychological safety, where employees feel secure expressing themselves, taking risks, and innovating without fear of negative consequences (Edmondson, 1999).

Inclusive leadership enhances team outcomes, particularly in diverse teams, by encouraging mutual respect, collaboration, and innovation (Randel et al., 2018). It positively promotes team

bonding and organizational effectiveness, thus promoting knowledge-sharing and creative problem solving (Nishii & Mayer, 2009). In addition to moral obligations, inclusive leadership offers valuable strategic advantages: it enhances employee engagement, adaptability, and competitiveness in fast-moving markets. By fostering inclusivity, organizations can drive innovation and remain resilient in globalized workforces (Hollander, 2012). According to this evidence, the following hypothesis was proposed:

H₁: Inclusion leadership (consisting of Openness, Accessibility, and Availability) positively influences organizational justice.

Diversity Characteristics

Workplace diversity, encompassing both surface-level (e.g., gender, race, age) and deep-level attributes (e.g., values, personality), offers significant organizational benefits when managed effectively. Surface-level diversity enhances creativity and innovation, particularly when diverse perspectives are valued, improving team performance and organizational reputation (Ely & Thomas, 2001; Sabharwal, 2014). Addressing age-based biases through mentorship, clear promotion policies, and flexible work hours fosters inclusion, boosts employee engagement, and reduces turnover.

Though less visible, deep-level diversity promotes innovation and collaboration by encouraging unconventional thinking and cultural understanding (Hofstede, 1980; Jehn et al., 1999). Diverse teams aligned in values outperform homogeneous ones, driving resiliency, adaptability, and problem-solving capabilities (Phillips et al., 2003). Bringing diversity into organizational practices increases trust, employee satisfaction, and long-term success, making organizations more inclusive, innovative, and competitive in the globalized world. The following hypothesis was proposed based on this evidence:

H₂: Diversity Characteristics (focusing on both Surface and Deep-Level attributes) positively influences organizational justice.

Diversity, Equity, and Inclusion (DEI) Climate

A strong Diversity, Equity, and Inclusion (DEI) climate reflects an organization's commitment to creating an equitable, inclusive workplace where employees feel included, valued, and respected. DEI initiatives eliminate systemic barriers, promote fairness, and empower employees to engage actively in decision-making (Mor Barak, 2015).

Research has shown that a positive DEI climate enhances job satisfaction, increases employee effort, and fosters stronger engagement (Kossek & Zonia, 1993). Organizations with inclusive DEI practices experience reduced turnover, improved innovation, and enhanced employee well-being (Gonzalez & DeNisi, 2009). Equitable management, including pay equity and transparent promotions, directly improves job satisfaction and retention, particularly among younger generations focused on fairness and social justice (Travis & Mor Barak, 2010; Schroth, 2019). Through efforts to close systemic gaps and promote inclusivity, organizations may attract the best and brightest talent, improve performance, and become viable by sustaining longevity. On the basis of this reported data, the following hypothesis was suggested:

H₃: DEI climate (i.e., DEI policies, culture, racial equity, empowerment, and representation and participation) positively influences organizational justice.

Organizational Justice

Organizational justice (including distributive, procedural, interactional, and informational justice) promotes fairness, trust, and satisfaction in the workplace. Distributive justice guarantees the fairness of reward distribution according to equity, equality, or need, contributing to satisfaction and motivation, and thus to diminished turnover. Procedural justice is concerned with fair, equitable decision-making processes (see Brockner, 2002). Interactional justice is concerned with respectful, empathetic, sensitive, and constructive communication-building, with morale-enhancing and conflict-reducing effects, which is especially needed in crisis moments. Informational justice facilitates timely,

transparent, and forthright communication that contributes to greater trust, motivation, and comprehension of decisions (Bisel, 2021).

In combination, these fairness dimensions enhance job satisfaction, performance, and retention, as well as build trust, especially in Generations Y and Z, who prefer transparency and authenticity. Organization-based justice efforts promote employee participation, trust, and better organizational outcomes. The following hypotheses were proposed based on this evidence:

H_{4a}: Distributive Justice positively influences Employee Engagement of Generation Y and Z employees.

H_{4b}: Procedural Justice positively influences Employee Engagement of Generation Y and Z employees.

H_{4c}: Informational Justice positively influences Employee Engagement of Generation Y and Z employees.

H_{4d}: Interactional Justice positively influences Employee Engagement of Generation Y and Z employees.

Engagement of Generation Y and Z Employees

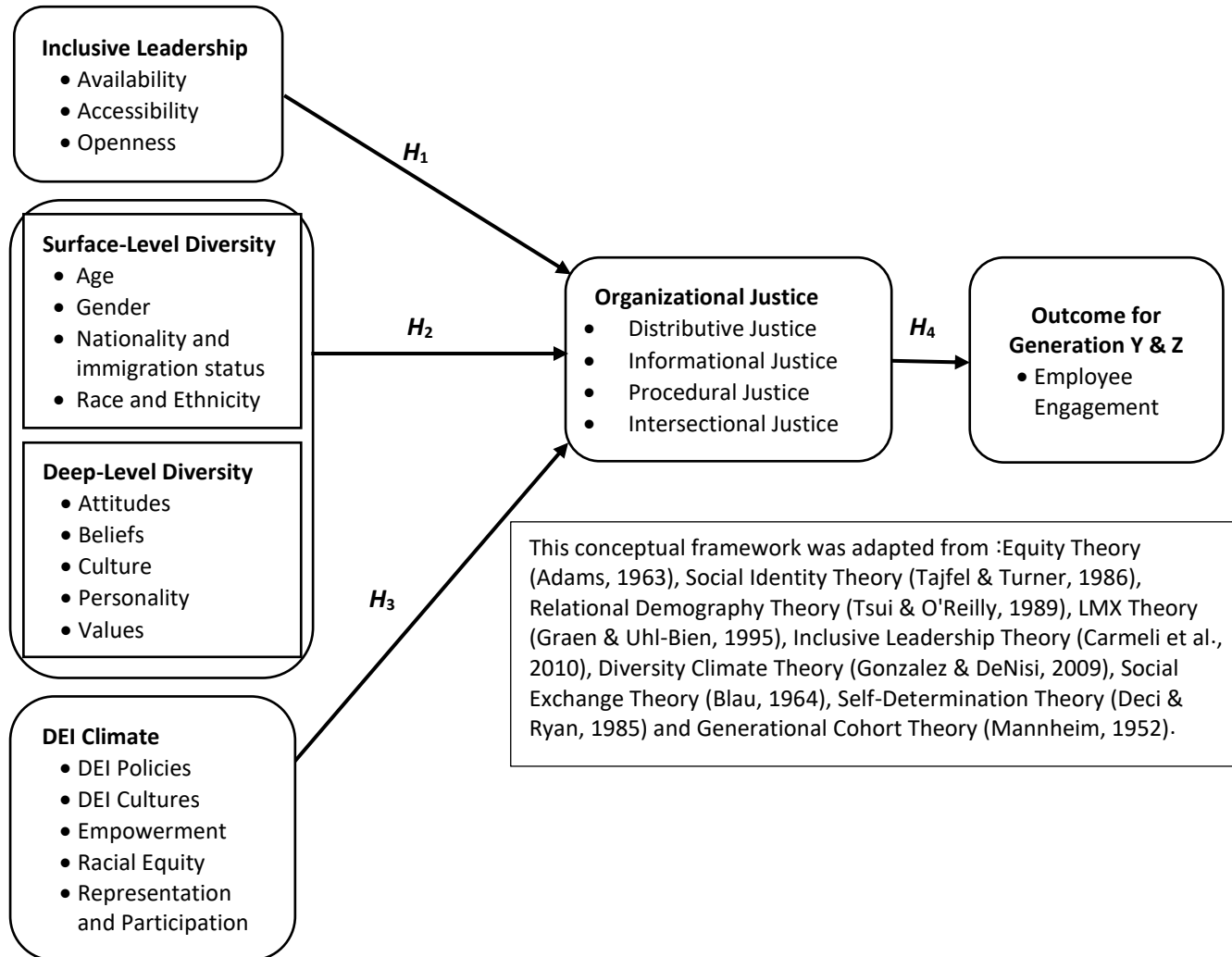
Generations Y (Millennials, 1981–1996) and Z (1997–2012) bring unique expectations to the workplace. Millennials are driven by work-life balance, career development, and good work, whereas Gen Z employees are motivated by authenticity, social justice, and technological savvy (Schroth, 2019). Both generations are committed to diversity, equity, and inclusion and believe that organizations' cultures and policies should formally reflect these principles. Evidence points to Millennials abandoning workplaces that neglect inclusion and identity, while Gen Z flourishes in cultures that validate voice and values.

Employee Engagement, defined as active emotional and physical commitment (Kahn, 1990), fosters productivity, innovation, and retention. Aligning engagement strategies with the values of Generations Y and Z—such as inclusivity, purpose, and flexibility—enables organizations to motivate employees, drive innovation, and achieve sustainable success. Based on this evidence, the following hypothesis was proposed:

H_{4e}: Overall, Organizational Justice positively influences Employee Engagement of Generation Y and Z employees.

The above hypotheses were generated and displayed in a conceptual framework (Figure 1). Underlying the framework is its description of the relationships between social media marketing, customer experience, trust, brand awareness, and consumer purchase intent, pointing out the complex associations and mediating processes that drive consumer decision-making.

Figure 1 *Conceptual Framework*



Source: Developed by Authors

Methodology

A quantitative research method was employed in this study. An online survey was conducted using items with a 7-point Likert scale (*Strongly Agree* = 7; *Agree* = 6; *Somewhat Agree* = 5; *Neither Agree nor Disagree* = 4; *Somewhat Disagree* = 3; *Disagree* = 2; *Strongly Disagree* = 1). The questionnaire, divided into six parts (demographic data, inclusive leadership, diversity characteristics, DEI climate, organizational justice, and employee engagement), was translated into Thai using the back-translation technique to ensure linguistic and conceptual equivalence. The target population included Generation Y and Generation Z employees working in medium to large companies in Bangkok, Thailand.

To validate the content of the questionnaire, the Index of Item-Objective Congruence (IOC) was employed. Three independent experts reviewed each item to assess its relevance to the study's objectives. Using a scoring system ranging from -1 (*not relevant*) to 0 (*uncertain relevance*) to +1 (*relevant*), the experts evaluated the clarity and alignment of each item with the intended construct. An IOC score of .50 or higher was considered acceptable for inclusion in the final survey instrument. Items that scored below this threshold were revised or removed. This process ensured that the survey maintained strong content validity and minimized measurement error, making it suitable for pilot testing and subsequent data collection.

A pilot test was conducted with 39 respondents to assess reliability and validity, followed by Cronbach's Alpha (CA) and Exploratory Factor Analysis (EFA). The Inclusive Leadership scale, consisting of 5 items, achieved a CA score of .854. The Diversity Characteristic scale, comprising 3 items, had a reliability coefficient of .793, indicating good reliability. The DEI Climate scale, also with 3 items,

showed solid internal consistency with a CA score of .916. The Organizational Justice dimension was divided into four sub-scales: Procedural Justice (4 items; CA .960), Distributive Justice (3 items; CA .885), Interactional Justice (3 items; CA .976), and Informational Justice (3 items; A .976).

The Engagement with Organization Event scale, with 4 items, achieved a CA of .966. Overall, the pilot study confirmed that the instrument was reliable and appropriate for the main study, as all constructs exceeded the suggested threshold of .70 for Cronbach's alpha, indicating strong reliability.

After refining the survey questionnaire, data were collected from a convenience sample of 793 respondents (401 from Generation Y and 392 from Generation Z) using a self-administered online questionnaire. The final data were reviewed and analyzed using descriptive statistics, Cronbach's alpha analysis for scale reliability, Confirmatory Factor Analysis (CFA) to assess validity, and Structural Equation Modeling (SEM) to analyze the conceptual model and test hypothesis paths.

Data Analysis

The data analysis was conducted using SPSS 28.0 and AMOS 28.0 to explore generational differences, assess internal consistency, and validate the measurement model. Below is a detailed explanation of the statistical methods that were utilized.

Descriptive statistics were performed to summarize demographic and occupational differences between Generation Y ($n = 401$) and Generation Z ($n = 392$). Key findings included: Sexuality: While the majority identified as Straight, Generation Z showed a higher proportion of Bi-sexual (11.99%) and Lesbian (9.44%) individuals; Occupation: Both groups were predominantly Employees, but Generation Z had more Students (8.16%) and Business Owners (5.36%); Ethnicity: Most respondents were Asian or South Asian, highlighting the sample's diversity; Industry Representation: Generation Z was more represented in Technologies (13.52%) and Banking (10.46%), while Generation Y leaned toward Other industries (63.09%); Education: Generation Y included more Master's degree holders, whereas Generation Z had more Bachelor's degree holders; Income: Generation Y concentrated in higher income brackets (e.g., 38.65% earning B100,000–B150,000), whereas Generation Z had a greater proportion in the lower bracket (e.g., 36.73% earning under B15,000).

Cronbach's alpha was calculated using SPSS to evaluate the internal consistency of all constructs. The results demonstrated high reliability across constructs: Inclusive Leadership: .932 for Generation Y and .831 for Generation Z; Diversity Characteristics: .858 for Generation Y and .872 for Generation Z; DEI Climate: .844 for Generation Y and .876 for Generation Z; Organizational Justice: Ranged from .856 to .886 across dimensions for both groups; Engagement with Organization Events: .884 for Generation Y and .899 for Generation Z. These scores indicate strong internal consistency, confirming the reliability of the measurement constructs.

CFA was performed using AMOS 28.0 to validate the measurement model and ensure construct validity. Fit indices, including CMIN/DF, GFI, CFI, and RMSEA, were used to evaluate its goodness-of-fit for the overall sample and each generation. The results demonstrated an acceptable model fit across groups, as detailed in the CFA section. The analyses were conducted using licensed versions of SPSS 28.0 and AMOS 28.0, ensuring compliance with copyright regulations. SPSS was employed for descriptive reliability analyses due to its robust data management capabilities, while AMOS was utilized for CFA and SEM, enabling graphical modeling and detailed evaluation of latent variables.

Confirmatory Factor Analysis (CFA) was conducted to evaluate the measurement model's fit across the overall sample, Generation Y (Gen Y), and Generation Z (Gen Z). Table 1 summarizes the model fit indices and thresholds used for assessment.

For the overall sample, the model fit was moderate. The Chi-square to degrees of freedom ratio (CMIN/DF) was 6.389, exceeding the recommended threshold of < 3.0 (Byrne, 2016). This higher value can be attributed to the complexity of the model and the large sample size, which is known to inflate Chi-square statistics (Hair et al., 2013). However, the Goodness of Fit Index (GFI) was 0.909, meeting the acceptable threshold of $> .90$, and the Comparative Fit Index (CFI) was .916, surpassing the criterion of $> .90$, indicating a robust model fit. The Root Mean Square Error of Approximation (RMSEA)

was .082, slightly above the recommended threshold of < .08 (Hu & Bentler, 1999), reflecting a model that is acceptable, but could benefit from further refinement.

Table 1 *Model Fit Index*

Principle	Type	Threshold	Model
CMIN / DF	Overall	< 3.00	6.389
	Gen Y		4.393
	Gen Z		3.315
GFI	Overall	> .09	.909
	Gen Y		.874
	Gen Z		.884
CFI	Overall	> .90	.916
	Gen Y		.901
	Gen Z		.918
RMSEA	Overall	< .08	.082
	Gen Y		.092
	Gen Z		.077

Note. Minimum Value of Discrepancy (χ^2/df), Goodness of Fit Index (GFI), Comparative Fit Index (CFI), Root Mean Square Error of Approximation (RMSEA).

For Generation Y, the model demonstrated acceptable fit indices. The CMIN/DF ratio was 4.393, slightly above the ideal threshold, but within reasonable limits for exploratory models. The GFI value of .874 fell slightly below the recommended threshold of .90, but remained close. The CFI was .901, meeting the acceptable criterion of > .90. The RMSEA value was .092, marginally exceeding the threshold of < .08, indicating a moderate fit. These results suggest that while some indices deviated from recommended thresholds, the overall model fit was within an acceptable range for this cohort.

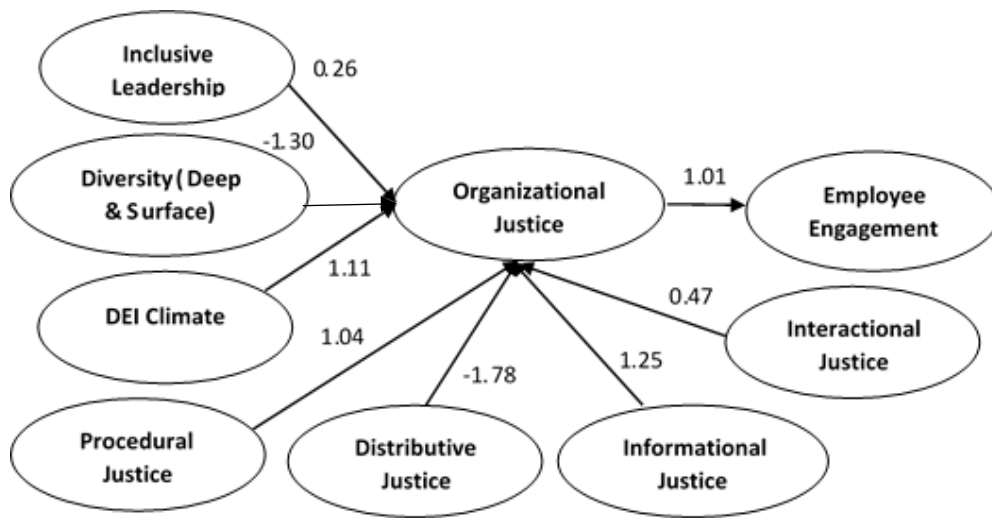
For Generation Z, the CFA results showed a comparatively better fit. The CMIN/DF ratio was 3.315, approaching the recommended threshold of < 3.0. The GFI value of .884 was close to the acceptable threshold, while the CFI value of .918 exceeded the benchmark of > .90, signifying a robust model fit. Additionally, the RMSEA value was .077, within the acceptable range of < .08, indicating a good fit. These results suggested that the measurement model aligned more closely with Generation Z compared to the other group. The results demonstrated that the model was reliable and valid across all groups, with variations in fit indices reflecting generational differences.

For the overall sample and Generation Y, some indices (e.g., CMIN/DF and RMSEA) exceeded recommended thresholds. These deviations, however, were consistent with literature on structural equation modeling, which highlights that larger sample sizes and complex models tend to inflate Chi-square values and affect fit indices (Hair et al., 2013). Despite these deviations, the indices remained within an acceptable range for exploratory research. Both GFI and CFI values for the overall sample and Gen Z met or exceeded recommended thresholds, indicating a robust model fit. For Gen Y, although the GFI and RMSEA were slightly below ideal levels, the results were still acceptable for exploratory contexts. The comparatively better fit for Gen Z suggested that the model's constructs were aligned more closely with this group's perceptions and experiences. This generational distinction could reflect unique attitudes, behaviors, or environmental influences associated with Gen Z.

Overall, the CFA results indicated an acceptable to good model fit across the samples, with Generation Z displaying the strongest alignment with the measurement model.

In this study, Structural Equation Modeling was used to investigate the relationships between inclusive leadership, diversity characteristics, DEI Climate, and organizational justice that impact employee engagement and compare the overall results (Gen Y & Gen Z), as well as those for Gen Y and Gen Z. The structural model is illustrated in Figure 2.

Figure 2 Summary of Structural Equation Modeling for Both Generations Y and Z



This section presents the hypothesis testing results of the structural equation model, summarized in Table 2. The proposed model included 8 hypotheses related to inclusive leadership, diversity characteristics, DEI Climate, and organizational justice that impact employee engagement.

Table 2 Hypothesis Testing Results

Hypothesis	Variables	Generation	Estimate	SE	CR	p	Finding
<i>H₁</i>	Inclu → Org_Just	Overall	0.27	.17	1.44	.15	Supported
		Gen Y	-0.28	.28	-0.59	.55	Not supported
		Gen Z	0.69	.46	1.50	.13	Not supported
<i>H₂</i>	DivChar → Org_Just	Overall	-1.31	.18	-6.90	.00***	Supported
		Gen Y	-0.77	.37	-1.61	.028*	Supported
		Gen Z	-1.32	.27	-5.03	.00***	Supported
<i>H₃</i>	DEI → Org_Just	Overall	1.12	1.20	.93	.35	Not supported
		Gen Y	1.44	1.30	1.10	.27	Not supported
		Gen Z	0.66	.25	2.58	.01**	Supported
<i>H_{4a}</i>	Prod → Org_Just	Overall	1.04	1.10	.95	.34	Not supported
		Gen Y	1.22	1.40	.87	.39	Not supported
		Gen Z	0.96	.90	1.07	.29	Not supported
<i>H_{4b}</i>	Dis → Org_Just	Overall	-1.78	.41	-3.83	.00***	Supported
		Gen Y	0.19	.28	0.43	.67	Not supported
		Gen Z	-1.19	.41	-3.05	.002**	Supported
<i>H_{4c}</i>	Inter → Org_Just	Overall	0.47	.49	0.85	.39	Not supported
		Gen Y	0.77	.28	1.87	.06	Not supported
		Gen Z	0.06	.66	0.08	.93	Not supported
<i>H_{4d}</i>	Info → Org_Just	Overall	1.25	.29	3.86	.00***	Supported
		Gen Y	-1.27	.32	-2.65	.008**	Not supported
		Gen Z	1.17	.39	3.12	.002**	Supported
<i>H_{4e}</i>	Org_Just → Em	Overall	1.01	1.30	.78	.43	Not supported
		Gen Y	1.01	1.20	.84	.40	Not supported
		Gen Z	1.02	1.40	.73	.46	Not supported

Code. β = Beta; SE = Standard Error; CR = Composite Reliability; * $p < .05$; ** $p < .01$; *** $p < .001$

Theoretical Contributions and Managerial Implications

This study analyzed the impact of Diversity, Equity, and Inclusion practices—Inclusive Leadership, Diversity Characteristics, and DEI Climate—on Organizational Justice and Employee Engagement among Generations Y and Z in Bangkok, Thailand. It identified generational differences in perceptions of DEI initiatives and Organizational Justice, offering actionable strategies to better engage and retain these workforce cohorts. The findings both confirm and challenge existing theories and practices.

Inclusive leadership (H_1) positively impacted organizational justice overall; however, the non-significant results across generational cohorts suggested that inclusive practices alone are insufficient. This contrasted with earlier studies that underscored inclusive leadership's importance in fostering fairness (Carmeli et al., 2010). Managers should integrate inclusive leadership with transparent communication and decision-making to create fair perceptions across diverse employee groups.

Diversity Characteristics and Organizational Justice (H_2), along with the negative impact of diversity characteristics on organizational justice, particularly for Generation Z, emphasized the need to manage perceptions of diversity proactively. This finding supported Social Identity Theory, which highlights subgroup dynamics (Tajfel & Turner, 1986), and was aligned with research indicating that unmanaged diversity can lead to concerns about fairness (Harrison et al., 1998). To mitigate these challenges, managers can implement bias training, mentorship programs, and open dialogue.

DEI Climate and Organizational Justice (H_3): for Generation Z, the significant positive relationship between DEI climate and organizational justice reflected their heightened sensitivity to inclusivity. This confirms generational research that has linked DEI initiatives with fairness perceptions (Schroth, 2019). Managers can prioritize visible, authentic DEI efforts, including employee resource groups and inclusive policies, to engage younger employees effectively.

Procedural Justice and Organizational Justice (H_{4a}): the lack of significant impact of procedural justice across all groups indicated that transparent processes alone were insufficient to enhance fairness perceptions. This challenges earlier findings that procedural justice drives fairness (Colquitt et al., 2001). Managers should combine procedural fairness with other dimensions, such as distributive and informational justice, to foster a holistic sense of organizational justice.

Distributive Justice and Organizational Justice (H_{4b}): the significant negative impact of distributive justice on organizational justice for Generation Z, highlighted the critical importance of equitable resource allocation. This finding is aligned with Equity Theory, which emphasizes fairness in outcomes (Adams, 1965). Managers should establish transparent criteria for distributing rewards and resources to meet younger employees' expectations for equity.

Interactional Justice and Organizational Justice (H_{4c}): the non-significant impact of interactional justice on organizational fairness perceptions, diverged from prior studies emphasizing respectful treatment (Greenberg, 1993). Managers should consider embedding interactional fairness within broader justice strategies, and training leaders to prioritize respectful communication.

Informational Justice and Organizational Justice (H_{4d}): the significant positive influence of informational justice, particularly for Generation Z, highlights the critical role of transparent communication. This supported earlier research linking informational justice with trust and fairness (Colquitt et al., 2013). Managers should leverage digital tools to ensure timely, clear communication of organizational decisions and policies.

Organizational Justice and Engagement (H_{4e}): the non-significant impact of organizational justice on engagement across all groups, suggested that fairness alone does not drive engagement. This finding aligns with broader engagement research emphasizing the importance of meaningful work and a supportive organizational culture (Kahn, 1990). Managers should integrate fairness initiatives with broader strategies to foster employee engagement.

Conclusions

A key finding of this study was the importance of the interplay between DEI climate, justice dimensions, and employee engagement and could be the focus of future research. Organizations could benefit significantly from tailored DEI strategies that account for generational and cultural diversity.

By embedding core values of inclusivity and fairness into their policies and practices, companies can foster a more engaged and equitable workplace. Practical implications might include designing leadership training programs that align with the inclusive leadership styles valued by Generations Y and Z or implementing flexible policies that address the evolving needs of a multigenerational workforce.

Limitations and Suggestions for Future Research

This study's focus on Generations Y and Z provides valuable insights into their perceptions of Diversity, Equity, and Inclusion and Organizational Justice. However, its generalizability is limited due to its exclusion of older cohorts, such as Generation X, and emerging ones, like Generation Alpha. These limitations highlight the need for future research to encompass a broader age range to capture diverse perceptions across all workforce generations. Such efforts would provide a more comprehensive understanding of generational dynamics and their impact on DEI climate and employee engagement.

The study's geographic focus on Bangkok limits its applicability to other regions. Future studies should include diverse geographic and cultural contexts within Thailand and internationally to examine how regional, cultural, and organizational differences influence perceptions of DEI and Justice. Incorporating cross-cultural comparisons could shed light on universal principles versus culturally specific approaches to fostering inclusivity and fairness in organizations.

This study relied solely on self-reported data, which may have introduced response biases such as social desirability or subjective interpretation of survey items. To mitigate these limitations, future research could integrate objective performance and retention data to provide a more balanced and nuanced understanding of DEI's impact on employee engagement. Combining subjective and objective data would enhance the reliability and applicability of the findings. A longitudinal research design could also provide deeper insights into how generational values, organizational structures, and societal expectations evolve. Such an approach would allow researchers to observe changes in DEI and justice perceptions as workforce demographics shift, new policies emerge, and societal norms evolve. For example, longitudinal studies could explore whether the increasing emphasis on intersectionality and diverse leadership styles continues to shape workplace inclusion or if new trends emerge that redefine engagement strategies.

The interplay between DEI climate, justice dimensions, and employee engagement could profitably be a focus of future research by examining specific drivers of perceptions across different industries and professional roles. For instance, exploring why Generation Z respondents are more represented in technology and banking industries while Generation Y is more prominent in "Other" industries could offer valuable industry-specific insights into engagement strategies.

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Self-Efficacy and Locus of Control as Correlates of CGPA Among Students at a Private University in Thailand

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Abstract

Aim/Purpose: This study investigated the relationship between self-efficacy, locus of control, and academic performance as measured by cumulative grade point average (CGPA) among students at a faith-based international university in Thailand. It aimed to address a gap in understanding whether internal locus of control and higher self-efficacy levels are correlated with improved academic outcomes in this geographical and sociological context. Additionally, it examined the influence of gender and academic year on these psychological constructs. These elements have produced mixed results, suggesting that other antecedents may be influencing the results, and so the intention of this study was to provide additional knowledge on these complex relationships.

Introduction/Background: Given the increasing focus on psychological factors influencing student performance, this paper explored the extent to which self-efficacy and locus of control affected grade point average. Many studies have suggested that internal locus of control and high self-efficacy positively impact academic achievement, but findings have remained inconsistent across different cultural and institutional contexts. This research specifically examined these relationships in a Southeast Asian setting to contribute to the global understanding of student performance predictors.

Methodology: This study utilized a quantitative research approach through an online survey administered to 211 students. The research employed validated measurement instruments, including the General Self-Efficacy Scale (GSE) (Schwarzer & Jerusalem, 1995) and Rotter's Locus of Control Scale (LOC) (1966b), alongside self-reported CGPA scores. The sample included 31.8% male and 68.2% female students, with a predominant representation of freshmen (47.4%). Statistical analyses, including correlation and regression analysis, were conducted using a statistical software package to determine the relationships among self-efficacy, locus of control, and CGPA.

Findings: Analysis of the data from this study produced four findings that add to our understanding of the complex relationships that exist between Grade Point Average, self-efficacy, and locus of control. The first finding was that no statistically significant relationship was found between CGPA and self-efficacy ($r = 0.04$). Secondly and similarly, no statistically significant relationship was found between CGPA and locus of control ($r = -0.03$). Thirdly, regression analysis indicated that self-efficacy and locus of control had minimal predictive power on GPA ($R^2 = 0.03$). A fourth finding was that no significant differences in self-efficacy and locus of control were observed based on gender or academic year level. Finally, the reliability of Rotter's LOC Scale in this context was notably low (Cronbach's $\alpha = 0.51$), which suggests that there may be cultural limitations in its applicability.

Contribution/Impact on Society: This study contributes to the growing body of knowledge on psychological predictors of academic performance, particularly in Southeast Asian contexts. The findings challenge the widely held assumption that self-efficacy and locus of control strongly influence GPA, suggesting that additional cultural, social, and institutional factors may also play a mediating role. The research highlights the importance of contextualizing psychological theories when applying them across diverse student populations.

Recommendations: A number of recommendations can be derived from this research. First, educational institutions should adopt a holistic approach that considers cultural and institutional influences when designing academic interventions based on self-efficacy and locus of control. Second, universities should incorporate psychological support mechanisms, including academic counselling and self-efficacy training that is tailored to regional cultural contexts. Finally, researchers may find it beneficial to refine measurement tools like Rotter's LOC Scale to enhance reliability and validity across different cultures.

Research Limitations: A number of research limitations are acknowledged. First, the study relied on self-reported data, which may have introduced response bias. Second, the sample was limited to a single university, restricting its generalizability to broader populations. Third, the overrepresentation of freshmen (47.4%) may have skewed findings, as younger students might provide socially desirable responses or have underdeveloped self-perceptions. Finally, some language barriers and cultural influences may have affected participants' understanding of the survey questions.

Future Research: A number of suggestions for future research studies spring from this report. First, a longitudinal study could be conducted to assess changes in self-efficacy and locus of control over time. This would help to increase understanding about the dynamic or static nature of these concepts. Second, future studies could be expanded to multiple universities across different cultural contexts to compare findings and improve generalizability. Third, qualitative methods, such as interviews, could provide richer insights into students' academic motivations and self-perceptions. Finally, despite a majority of studies showing statistically significant relationships between grade point average and self-efficacy, and between grade point average and locus of control, a sizable minority of reports have indicated that no such relationships exist. Given the disparate nature of results, it is strongly advised that future work include additional factors, such as faith, social beliefs, and regional culture, and that these should be explored as potential mediators in the relationships between self-efficacy, locus of control, and grade point average.

Keywords: *Self-efficacy, control locus, academic performance, faith-based*

Introduction

In recent years, there has been a growing interest in the role of psychological constructs, such as self-efficacy and locus of control, in shaping academic performance (Auliya et al., 2023; Eze et al., 2022; Kader, 2022). While numerous studies have posited a positive correlation between an internal locus of control, high self-efficacy, and academic success, results have remained inconsistent across cultural and institutional boundaries. This article explores these relationships within the unique setting of a faith-based international university in Thailand, providing insight into how these constructs are manifest in a Southeast Asian context. By examining whether students' belief in their own abilities (self-efficacy) and their perceived control over outcomes (locus of control) relate to cumulative grade point average (CGPA), this study contributes to a global discourse on the psychological determinants of student achievement.

The links between psychological conceptions such as mental health, self-awareness, and academic performance are complex. When examining the antecedents of academic performance, these links have been shown to be multifaceted. Cassidy and Eachus (2000), Landis et al. (2007), and Lopez-Garrido (2025) have all stated that several predictors of GPA exist, including attitudes, learning strategies, personality, self-efficacy, and locus of control. Other researchers have also included mental and physical health as factors influencing university students' GPAs (Gordon, 2023).

These first three predictors are complex and challenging to measure. It is generally accepted that these are often developed in individuals during their elementary and high school years and are thus less susceptible to influence, making them less suitable for investigation.

Mental and physical health are also related to and interact with students' learning strategies, personality, self-efficacy, and locus of control (AbuSabha & Achterberg, 1997; Gordon, 2023; O'Leary, 1992; Roddenberry & Renk, 2010). The influencing factors developed include critical thinking, family

and community culture, psychological education, self-regulation, and social skills (Gordon, 2023). Inclusion of mental and physical health as influences on university GPA also has support; however, the extensive nature of these concepts would have made it difficult to maintain focus on the key variables examined in this research.

In contrast to these psychological elements, the two predictors of self-efficacy and locus of control can be described as more focused, but less fixed in nature. Bandura (1997) suggested that self-efficacy is highly malleable. Further research from Gerhardt and Brown (2006) showed that the level of self-efficacy can be changed through training. Similarly, locus of control is also considered malleable. Although it was previously thought to be relatively fixed (Rotter, 1966a), more recent research has shown that it can be influenced (Hunter, 1994; Newton, 1998). Therefore, the more pliable nature of self-efficacy and locus of control led to their inclusion in the current research project. Because these factors may be influenced, they were considered suitable for further investigation. Institutions and students may reflect on possible structural or cognitive changes that could be implemented to encourage positive academic outcomes.

Statement of the Problem and Research Questions

A significant part of finding a sense of belonging is identifying levels of self-efficacy and locus of control (Li et al., 2021; Torres, 2007). The problem that this research attempted to address is the lack of understanding of how self-efficacy, locus of control, and academic performance interact in an Asian context. Previous research studies of these variables have produced mixed outcomes; thus, this study aimed to provide some clarity in a Southeast Asian context. Furthermore, it appears that limited work has been done by educational institutions to assist students in developing an understanding of their self-efficacy and locus of control in Southeast Asian countries. Because the predictors of academic success are complex and varied, this study aimed to add to the body of knowledge on relationships between the variables under study.

Consequently, this study was guided by the following research questions:

1. To what extent is students' academic performance, as measured by CGPA, influenced by their levels of self-efficacy in an Asian context?
2. To what extent is students' academic performance, as measured by CGPA, influenced by their level of locus of control in an Asian context?
3. What influence do gender and year of study have on self-efficacy and locus of control, and their respective impacts on academic performance?

Literature Review

Definition of Terms

Locus of Control (LOC), as a psychological concept, commonly refers to individuals' beliefs about their ability to influence outcomes in their lives. In an educational context, it pertains to how students perceive the causes of their academic success or failure. Introduced by Rotter (1966a), locus of control can be either internal (a belief in personal control) or external (a belief in control by external factors) (Kasilingam & Sudha, 2010).

Self-Efficacy was defined first in the late 1970s, and it reflects belief in one's ability to accomplish specific tasks and adapt to challenges (Bandura, 1978). Students with high self-efficacy view challenges as opportunities for growth and typically exhibit an internal locus of control, fostering a sense of influence over their circumstances (Sagone & De Caroli, 2014).

Cumulative Grade Point Average (CGPA) is a standardized measure of a student's academic performance, usually on a scale from 1.0 to 4.0, indicating the average grades earned over a specified period. It serves as a key indicator of a student's knowledge and skills (Potter, 2025).

Correlates of University GPA

Numerous studies highlight the complex factors influencing university GPA, including study habits (Meepradit et al., 2022), student learning goals (Robbins et al., 2004), and socio-economic factors

(Bukodi & Goldthorpe, 2013). Research has indicated that an internal locus of control is often associated with higher academic performance, while the conviction that external factors are prevalent can negatively impact motivation and outcomes (Alfred & Idoghor, 2020). This study aimed to explore the roles of locus of control and self-efficacy in a Southeast Asian context, contributing to existing literature in this region (Chinedu & Nwizuzu, 2021).

Types of Self-Efficacy

Self-efficacy influences student academic behaviours, including motivation, resilience, and stress management (Schunk & Ertmer, 2000). Four categories of self-efficacy include mastery experiences, social modelling, social persuasion, and psychological responses (Cherry, 2024).

Influence of Gender, Age, and Academic Experience

Research indicates that females generally report higher self-efficacy than males, though results can vary by subject or discipline. For instance, females often excel in language arts, while males may show greater self-efficacy in STEM fields (Huang, 2013; Li & Singh, 2021). Societal stereotypes can significantly affect these perceptions, influencing students' confidence and interest in various subjects (Sachitra & Bandara, 2017). Huang has also pointed out that the impact of academic self-efficacy by gender varied with age, especially for those over 23 years of age.

Self-efficacy tends to improve with academic experience. Lower-level students often seek peer support, while those in higher years demonstrate increased self-efficacy due to accumulated experiences (Sachitra & Bandara, 2017). Positive academic outcomes can also enhance students' confidence and engagement, reinforcing their self-efficacy (Loo & Choy, 2013).

Relationships Between Locus of Control, Self-Efficacy, and University GPA

Locus of control can be a significant predictor of academic success. Students who perceive their achievements as a result of internal factors (ability, effort) are more likely to succeed (Rose et al., 1996). Conversely, those with a high external locus of control may experience stress and lower academic performance (Roddenberry & Renk, 2010). Research has linked higher self-efficacy to better academic engagement and outcomes (Lee et al., 2021; Schunk & Ertmer, 2000).

The independent variables of self-efficacy and locus of control have been shown to have an impact on the dependent variable of university GPA. Nevertheless, the impact of psychological factors on educational outcomes is varied.

Contradictory Results

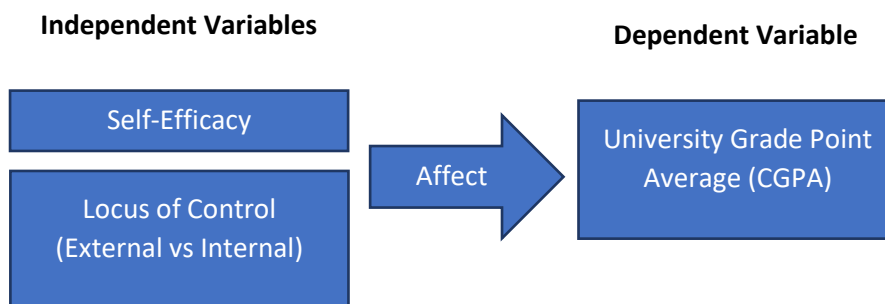
Some studies, like those of Naik (2015), along with Rastegar and Heidari (2013), have indicated no significant gender differences in locus of control among students. However, many investigations have suggested that gender influences locus of control. For instance, Sherman et al. (1997) noted that both males and females shift from internal to external locus of control, with females generally exhibiting a higher external orientation. The key differences between the genders were related to relationships and life events; an internal locus of control aids females in adapting to social changes, while it predicts success for males.

Additionally, Parsons and Schneider (1974) found that locus of control varies by country, with Japanese students showing a higher external locus compared to Indian students, who exhibited more internal traits. Notably, differences among Asian countries are more pronounced than in European ones, leading to potentially contradictory findings. For example, Waghmare's (2016) concluded that females have a higher internal locus of control than males, contrary to Naik's results in 2015. These inconsistencies may stem from social or cultural factors, highlighting the need for further research to understand these variables better. This paper aimed to contribute to this understanding.

Conceptual Framework

Many factors may potentially impact CGPA, such as academic experience, adaptability, attitudes toward university, effort, gender, habits, learning strategies, mental and physical health, self-efficacy, and locus of control. However, the choice to restrict this research to the last two independent variables was justified for the following reasons. First, many personal factors are more fixed in nature, and second, it was deemed appropriate to focus on the more malleable factors of self-efficacy and locus of control. In summary, locus of control and self-efficacy were selected as the independent variables for this study, as can be seen in blue in Figure 1.

Figure 1 *Independent and Dependent Variables for the Study*



There were also two categorical variables, gender and year of study level, and these were considered as intermediate factors that may affect self-efficacy and locus of control involved in this study.

Methodology

This study used quantitative data to explore the relationship between locus of control, self-efficacy, and university CGPA. A number of categorical variables, such as gender and year level, were also analysed to determine how they may affect levels of locus of control and self-efficacy. Questionnaires were used in this study, as they have proven to be very effective and useful tools for knowledge or attitude research (Singh, 2017). In addition, the confidentiality and anonymity provided by a questionnaire affords respondents with peace of mind about their privacy (Bartram, 2019).

Sample

The selection criteria used for this sample involved ensuring that all respondents were students at a private faith-based university in Thailand, where $N \approx 1,100$. The acceptable criteria for inclusion involved both males and females who were actively involved in their studies for the following year levels: freshman to senior.

Based on the work of Conroy (2018) and Krejcie and Morgan (1970), a sample size of around 200–250 respondents was planned for this research project. The collection of data, as shown in the results section, was determined to be a satisfactory outcome, with $n = 211$.

Measurement Tool and Procedure

The questionnaire had three parts, including the range of the student's self-reported GPA in the previous year, the General Self-Efficacy scale (GSE) (Schwarzer & Jerusalem, 1995) (10 questions), and the LOC scale (29 questions). The final questionnaire contained 42 questions that were beta-tested for clarity, and the test could be completed within 15 minutes as planned. Students were invited to participate in the research by email, with both a QR code and a link provided. The survey request included a consent form that explained the ethical considerations, and noted that ethics approval was obtained from the Institutional Review Board before data collection commenced.

The GSE is a psychometric scale that uses 10 questions to measure how optimistic people are when dealing with life's difficulties. It uses a four-point Likert scale that has the following categories: 1 = *not at all true*; 2 = *hardly true*; 3 = *moderately true*; 4 = *exactly true*. Originally published with 20 questions in the German language, it has since been shortened and translated into English, resulting

in its use in numerous studies with hundreds of thousands of participants (Schwarzer & Jerusalem, 1995).

The LOC scale uses a forced-choice from paired statements approach. The total score is calculated by summing all items. People with high scores are considered to have an external locus of control, and a low score indicates an internal locus of control. All data were analysed using a software package 29 during the statistical analysis phase.

Reliability of Measurement Instrument

The reliability analysis of Rotter's 23-item Locus of Control (LOC) scale yielded a Cronbach's alpha of .51, which was below the acceptable threshold. This finding contrasted with previous studies that reported higher reliability (.65–.79) scores. Since variability across countries may have affected these results, caution is advised when interpreting findings related to LOC. In contrast, the General Self-Efficacy (GSE) scale demonstrated high reliability with a Cronbach's alpha of .88, indicating strong internal consistency.

Results of the Study

Participant Demographics

A total of 211 participants were surveyed, comprising 67 males (31.8%) and 144 females (68.2%). This cohort was primarily composed of freshmen (47.4%), with the remaining students distributed fairly evenly across sophomores (18.5%), juniors (18.5%), and seniors (15.6%). This predominance of younger participants may have influenced the data and its interpretation.

GPA Distribution

The GPA distribution reflected relatively high academic performance, with 61.1% of respondents achieving a GPA above 3.0. The breakdown was as follows:

- Below 2.50: 21 (10.0%)
- 2.50–3.00: 61 (28.9%)
- 3.01–3.50: 60 (28.4%)
- Above 3.50: 69 (32.7%)

The majority of students (32.7%) fell into the highest GPA category; only 10.0% scored below 2.50.

Correlation Analysis

Table 1 presents the frequencies and percentages of respondent Cumulative Grade Point Averages (CGPA). The mean rank of the categories of CGPA was 2.84, indicating that most students ($n = 121$, 57.3%) reported CGPAs of between 2.50 and 3.50.

Table 1 *Frequency and Percentage of CGPAs*

		Frequency	Percent
Valid	Below 2.50	21	10.0
	2.50 to 3.00	61	28.9
	3.01 to 3.50	60	28.4
	Above 3.50	69	32.7
Total		211	100.0

Correlation Analysis

Correlation results in Table 2 showed that there was a very weak positive relationship between CGPA and GSE ($r = .04$), suggesting minimal influence of self-efficacy on GPA. A similar weak negative correlation was found between CGPA and LOC ($r = -.03$) and between GSE and LOC ($r = -.04$), indicating that neither self-efficacy nor locus of control significantly predicted academic performance.

Table 2 *Correlation Analysis*

Variable	Correlation	
	GSE	LOC
Cumulative Grade Point Average	.04	-.03
General Self-Efficacy (GSE)	-	-.04
Locus of Control (LOC)		-

Regression Analysis

Regression analysis revealed an R^2 value of .03, indicating that GSE and LOC explained only 3.0% of the variance in CGPA. This low predictive power suggested that neither variable significantly contribute to variations in academic performance.

Chi-Square Analysis

Chi-square tests examined the relationship between gender and CGPA across four levels (below 2.50, 2.50-3.00, 3.01-3.50, above 3.50). The p -value of .154 indicated no statistically significant differences in CGPA between genders, despite a higher percentage of females in the above 3.50 category (37.5% vs. 22.4%). Similarly, no significant relationship was found between class status and CGPA ($\chi^2 = 4.82$, $p = .85$), indicating uniform distribution across year levels, as seen in Table 3.

Table 3 *Chi-Square Test for Class Status and CGPA**

			CGPA				Total
			< 2.50	2.50–3.00	3.01–3.50	> 3.50	
CLASS STATUS	Freshman	Count	11	24	29	36	100
		% within CLASS	11.0%	24.0%	29.0%	36.0%	100.0%
	Sophomore	Count	4	15	11	9	39
		% within CLASS	10.3%	38.5%	28.2%	23.1%	100.0%
	Junior	Count	4	11	12	12	39
		% within CLASS	10.3%	28.2%	30.8%	30.8%	100.0%
	Senior	Count	2	11	8	12	33
		% within CLASS	6.1%	33.3%	24.2%	36.4%	100.0%
Total	Count		21	61	60	69	211
	% within CLASS		10.0%	28.9%	28.4%	32.7%	100.0%

*Note. $\chi^2 = 4.82$, $df = 9$, $p = .85$

Gender Differences in GSE and LOC

A t -test revealed no significant differences in GSE scores between genders (Males: $M = 2.90$, Females: $M = 2.81$; $t = 1.19$, $p = .24$). A slight trend was observed in LOC scores, with males scoring lower ($M = 0.47$) than females ($M = 0.51$), though this did not reach significance ($t = -1.79$, $p = .08$) as seen in Table 4.

Table 4 *Gender Differences in Self-Efficacy and Locus of Control*

Variable	Gender	<i>n</i>	<i>M</i>	<i>SD</i>	<i>t</i>	<i>df</i>	<i>p</i>	ES(<i>d</i>)
GSE	Male	67	2.90	0.52	1.19	209	.24	0.18
	Female	144	2.81	0.48				
LOC	Male	67	0.47	0.16	-1.79	209	.08	-0.27
	Female	144	0.51	0.13				

Class Differences in GSE and LOC

Analysis of variance showed no significant differences in GSE or LOC scores across class levels. GSE means ranged from 2.78 to 2.86, with a p -value of .89. LOC scores ranged from .46 to .53, with a p -value of .14, suggesting slight trends, but no significant findings. This data provides a framework for

further discussion on implications, limitations, and potential future directions for research, which are addressed in the next section.

Discussion

This section compares the study's findings to previous research that examined links between locus of control (LOC) and general self-efficacy (GSE) to student CGPAs (Brallier, 2020; González Fernández et al., 2020; van Raalte & Posteher, 2019). While its findings contradict studies showing a positive impact, they were aligned with concerns raised by others about these variables (Norman & Bennett, 1996). Many researchers have documented negative or non-significant relationships between self-efficacy (GSE), LOC, and academic outcomes (Oberle, 1991; Vancouver et al., 2002), reinforcing the complexity of these concepts.

The absence of significant gender differences supports the findings of Schultz and Schultz (2009), but does not negate the potential influence of self-efficacy and LOC on CGPA. Future research could balance gender and year-level distributions while exploring the effects of faith, social beliefs, and regional culture on these variables. A multi-country study might better assess these influences.

Most studies have reported a positive correlation between LOC, GSE, and GPA, but some have indicated that they are poor predictors. This raises questions about mixed results, potentially linked to participant demographics and unexamined factors like faith and social beliefs. Freshmen may be particularly inclined to choose socially desirable responses due to inexperience. Measurement tools like surveys may also not fully capture participants' perspectives, and language barriers could affect comprehension.

This research aimed to assess the relationships between GSE, LOC, and academic performance at a faith-based university in Thailand. It was hypothesized that higher internal LOC and self-efficacy would be correlated with higher GPAs. However, the findings suggested no significant relationship, highlighting the multifaceted nature of these concepts. The regression analysis indicated that the proposed model was not a good fit for the data.

Cultural Impact on the Reliability of Instruments

The variability of Cronbach's Alpha in different cultural contexts (Mueller & Thomas, 2001) suggests that the LOC instrument may have been less effective in collectivistic cultures like Thailand. This may explain the lack of correlation between LOC, GSE, and GPA, as evidenced by a low Cronbach's Alpha (.51) for Rotter's LOC.

The overrepresentation of freshmen (47.4%) may also have skewed results, as their lack of experience may have led to socially desirable responses. Personal factors, including personality traits and familial influences, may further have shaped their self-efficacy and locus of control scores.

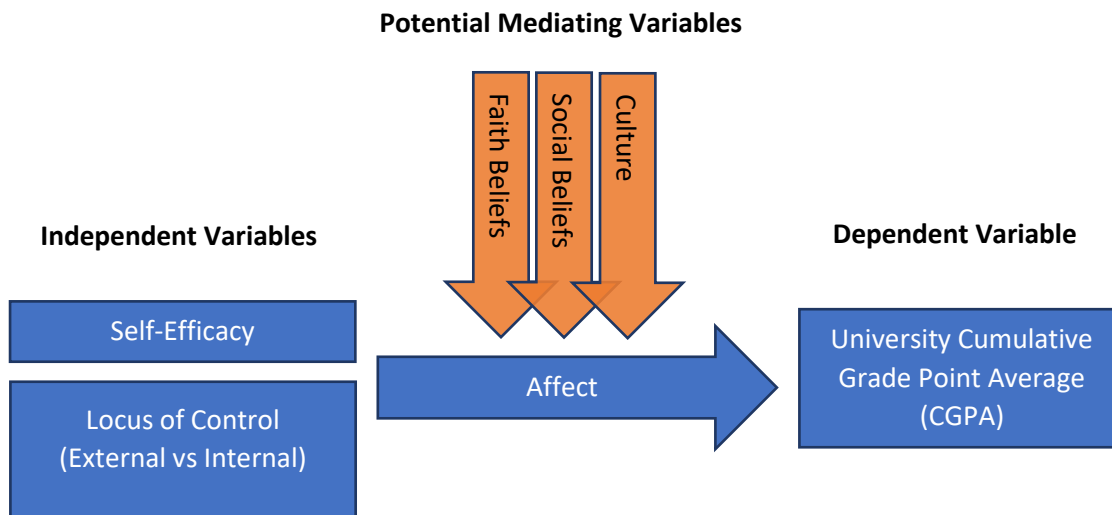
Faith, Social Beliefs, and Regional Culture

Factors such as faith, social beliefs, and regional culture may influence study outcomes, particularly in a faith-based context. Previous research has shown the mixed effects of faith on LOC and GSE (Iles-Caven et al., 2020; Welton et al., 1996). Despite some correlations, results have remained inconclusive. Social beliefs may impact these variables as well, as evidenced by diverse findings across different cultural contexts.

Additionally, the study had a significant gender imbalance (68.2% female), potentially influencing self-efficacy and LOC scores. Although no significant gender differences were found, the small male sample may limit the findings' generalizability. Differences across year levels showed no significant effects for self-efficacy, while trends in LOC were noted. One can also speculate that a large proportion of students with high CGPAs may have influenced results, as the data skewed towards higher academic achievement. Furthermore, the interplay of faith, social beliefs, regional culture, and participant demographics highlighted the complexity of LOC and GSE's relationship with GPA. Future research could incorporate these variables to enhance understanding.

To sum up the findings, the original model (dependent and independent variables, blue elements only) evidently lacks the complexity to identify all the influences that were in operation, and so the inclusion of other mediating factors could be beneficial. For this reason, a modified diagram that incorporates a number of mediating variables (salmon elements) is proposed. These factors of faith, social beliefs, and regional culture have been added to the diagram to illustrate their potential impact on how GSE and LOC may influence student GPA. This tentative suggestion is somewhat exploratory, and while time and space do not permit further data collection, this model is presented for future research in this domain. Until applicable testing has been performed, this concept should be treated with caution.

Figure 2 *Potential Mediating Variables*



Conclusions and Recommendations

This study aimed to examine the degree to which a student's academic performance as measured by cumulative grade point average (CGPA) was influenced by locus of control (LOC) and general self-efficacy (GSE) at a faith-based university in Thailand. In Figure 2, a diagrammatic representation of these variables is presented; the proposed hypothesis stated that students with internal LOC and higher GSE would have higher GPAs than other students. The categorical variables of gender and year of study were also included to determine their impact on LOC and GSE.

This research clearly demonstrated that the impact of LOC and GSE was inconsistent, and as outlined in the results and the discussion, there were no significant correlations between self-efficacy, locus of control, and CGPA for this sample of students. Similarly, the gender and year of study showed a very weak impact on self-efficacy and locus of control. This study, while conflicting with the results of some previous studies, supported the findings of a minority of studies, and suggested that other 'hidden' factors may have a mediating impact on the independent variables. This proposed relationship is illustrated diagrammatically in Figure 2.

Limitations

There were some limitations in this study, such as methodological limitations. First, in this study, only a survey was used, which may have limited the fixed options that forced participants to only choose one answer, instead of collecting unstructured data via interviews. A further research limitation was the use of an online questionnaire, which excluded the rich data that comes from face-to-face interviews, which may help to give a more multifaceted understanding of the concepts under investigation. Further, this format can result in fewer potential candidates responding. Previous research has indicated that responses to online surveys is generally lower than questionnaires that involve pencil and paper (Dewaele, 2018).

Second, this study only collected the data from one university, so even though the targeted participants were from an international university, their geographical backgrounds were still quite restricted. Furthermore, the results may also have been limited by self-reported data, because all responses came from the participants' own beliefs as opposed to any third-party observations. Time constraints prevented this from being a practical alternative.

Last, there was also a process limitation. There was a translation in Thai for Thai students, but students from other countries may not have fully understood the meaning of all the questions, depending on their level of English.

Theoretical Contribution and Future Research Options

As suggested in the discussion, a number of mediating variables, namely faith, social beliefs, and regional culture (see Figure 2), appeared to influence the strength of the impact of LOC and GSE on student academic performance (CGPA). This tentative suggestion is put forward as a possible model for future testing. To include a multi-country research project would involve a commitment of time and finance that was beyond the scope of this current project; however, it is proposed as a possible future framework for further research into explaining why mixed results have been gained for the impact of LOC and GSE.

Furthermore, additional studies on how self-efficacy and locus of control affect students' learning strategies and learning habits may add to the increased understanding of these complex variables. Additionally, future researchers may choose to incorporate discussions and data collection on faith, social beliefs, and regional culture into their studies.

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Management Innovation Initiatives for Enhancing the Resilience of Community Green Spaces During Times of Crisis

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Abstract

Aim/Purpose: This study explored how Suzhou City has applied innovative management strategies to help its community green spaces remain resilient during times of crisis, such as labor shortages, environmental challenges, and disruptions from economic and public health emergencies. This research sought to understand how these strategies can maintain the functionality of green spaces, which are vital for public well-being, especially during difficult times.

Introduction/Background: Community green spaces—such as parks and gardens—play a key role in improving public health and the quality of life in urban areas. They provide spaces for recreation, relaxation, and environmental benefits. During crises, such as the COVID-19 pandemic, these spaces may face significant challenges, including reduced maintenance, limited accessibility, and overall deterioration. This study focused on Suzhou City, which experienced a range of difficulties during the pandemic and other crises. It looked at how the city adapted its management practices to overcome these issues, and ensure that green spaces remained available and sustainable for its communities.

Methodology: The research followed a qualitative approach, combining document analysis, interviews with green space management experts, and field observations. Experts in urban planning and environmental management shared insights into how innovative techniques and strategies were implemented to address challenges in maintaining green spaces. Documents related to city planning, crisis management, and green space policies were reviewed to gather additional data. Observations of several green spaces throughout Suzhou City helped to assess the practical impacts of these management strategies. The data collected were analyzed to identify key themes and strategies that contributed to the resilience of green spaces during crises.

Findings: The study uncovered several significant challenges, including labor shortages, financial constraints, and disruptions from public health crises like COVID-19. Despite these obstacles, Suzhou City successfully implemented several innovative management strategies to ensure the resilience of its community green spaces. One key approach was flexible workforce management, which involved utilizing temporary staff and volunteers to sustain essential maintenance tasks. Additionally, cross-training existing staff to handle multiple roles helped to mitigate the impact of workforce shortages, ensuring that critical functions could continue uninterrupted. Another crucial strategy was the integration of technology into maintenance operations. The city adopted automated irrigation systems, digital monitoring tools, and online task coordination platforms to enhance efficiency and reduce reliance on manual labor. These technological solutions streamlined maintenance processes and optimized resource allocation, making green space management more sustainable.

Moreover, Suzhou City strengthened its emergency response systems to maintain public access to green spaces during and after disruptions. Implementing well-structured protocols allowed for rapid restoration efforts, ensuring that green spaces remained safe and functional for visitors even in times of crisis. Community involvement also played a significant role in maintaining urban green spaces. Encouraging local residents to participate in the upkeep of nearby parks fostered a sense of community ownership and responsibility. This participatory approach proved effective in supplementing municipal efforts, particularly when official staffing was limited. Overall, these

strategies were instrumental in preserving the resilience and accessibility of Suzhou's green spaces throughout various crises. The findings highlighted the importance of adaptable and sustainable management practices that can be swiftly deployed in response to unforeseen challenges, reinforcing the role of innovation in urban environmental management.

Contribution/Impact on Society: This research offers valuable insights into the field of urban planning and crisis management, demonstrating how innovative practices can strengthen the resilience of community green spaces. By focusing on a real-world example from Suzhou City, the study provides practical lessons that can be applied to other cities facing similar challenges. The findings underscore the need for flexibility, technological integration, and community engagement in managing green spaces, especially during times of crisis. These strategies not only help maintain green spaces, but also contribute to improving public health, social cohesion, and environmental sustainability.

Recommendations: The findings suggested key strategies for urban planners and policymakers to enhance green space resilience. Cities should adopt flexible maintenance systems that can quickly adjust to workforce shortages and disruptions. Technology integration, such as automated irrigation and digital monitoring, can streamline maintenance and reduce labor dependency. Developing proactive crisis management plans ensures that green spaces remain accessible and well-maintained during emergencies. Lastly, community participation should be encouraged to supplement municipal efforts and foster a sense of shared responsibility in maintaining urban green spaces.

Research Limitation: One limitation of this study was its focus on Suzhou City, which may not fully represent challenges faced by other cities with different socio-economic conditions or management practices. Additionally, while expert opinions were insightful, the research could have benefited from broader community input, including feedback from residents who use these spaces regularly.

Future Research: Future studies could explore the long-term impacts of the strategies implemented in Suzhou City, particularly how these innovations continue to affect green space resilience after the crises have passed. Additionally, research could examine the role of emerging technologies, such as remote sensing and geographic information systems, in enhancing the management of urban green spaces during both routine times and crises. Expanding the research to include other cities and regions would also help in understanding how these strategies can be adapted and applied in different urban contexts.

Keywords: *Management innovation, community green spaces, crisis resilience*

Introduction

Crises—whether public health emergencies, economic downturns, or environmental disasters—can disrupt societies, impact well-being, and reshape the way people interact with their surroundings (Sutton et al., 2025). In recent years, urban communities have faced increasing challenges in maintaining public spaces, particularly green areas, during periods of instability. Restrictions on movement, workforce shortages, and shifts in public behavior have all influenced how cities manage and sustain these vital spaces (Allioui et al., 2024; Noaime et al., 2025).

The COVID-19 pandemic created a global crisis, affected public health and socioeconomic conditions, and altered the way people live, work, and interact. As of April 2023, the World Health Organization (WHO) reported more than 498 million confirmed cases and over 6.2 million deaths worldwide (WHO, 2023). The pandemic severely impacted various industries, including travel, education, and hospitality, leading governments to implement measures like lockdowns, social distancing, and mandatory face masks to curb the virus's spread.

Lockdowns and social distancing significantly disrupted daily life, leading to unintended adverse effects on physical and mental health (Lambert et al., 2020; Lin et al., 2021). The pandemic occurred at a time when human-nature interactions were already diminishing due to urban expansion and modern lifestyles. The reduced interaction with nature negatively impacted physical and mental well-

being by limiting social and recreational opportunities, exercise, and relaxation activities (Hartig et al., 2014; Lin et al., 2021; Truong & Clayton, 2020).

This crisis not only led to the loss of human life, but also affected the economy, public health, social infrastructure, and the environment, which continued to face global challenges (Kubatko et al., 2023). The pandemic's impact on urban greening efforts, especially in the context of prevention and control measures, has been profound. Greening maintenance units struggled to resume operations during this critical period. Urban green spaces play a crucial role in enhancing both physical and mental well-being, offering spaces for recreation, relaxation, and social interaction (Ojobo et al., 2024). However, disruptions to daily life—such as restrictions on public gatherings, resource constraints, and operational challenges—can limit access to these spaces, potentially affecting community health and quality of life (Robinson et al., 2024).

Suzhou, often referred to as the "City of Gardens," is renowned for its historical landscapes and ecological planning. With a green coverage rate of 41.5% and a total green space of 264 square kilometers (Xiao et al., 2018), the city has long prioritized environmental conservation and sustainable urban planning. However, like many cities worldwide, Suzhou faced challenges in ensuring the resilience of its green spaces during periods of disruption. Labor shortages, logistical constraints, and shifting public needs required new approaches to urban greening efforts.

The quality of urban gardens and green space management directly influences a city's image and residents' quality of life (Ding et al., 2022). Enhancing garden greening management and urban green space landscapes not only improves spiritual well-being, but also plays a crucial role in building an ecological civilization and a beautiful China (Tian, 2022). The way cities manage their green spaces during crises is directly linked to their overall sustainability and resilience. Effective green space management not only preserves environmental quality, but also strengthens social cohesion and urban livability. Therefore, this study aimed to understand how Suzhou City used innovative management strategies to keep its community green spaces resilient during times of crisis such as the COVID-19 pandemic. It also sought to identify practical approaches that can guide future urban planning and policy for green space management.

This study explored the challenges and best practices in managing urban green spaces during times of crisis, with a focus on Suzhou. By examining innovative management strategies, this research aimed to identify management innovation initiatives for maintaining urban greenery, ensuring that these spaces continue to serve their essential role in enhancing community well-being, even during uncertain times.

Literature Review

Management Innovation in Urban Green Space Maintenance During Crises

Management innovation involves the adoption of new or improved management practices, processes, and structures to enhance organizational efficiency and adaptability. It may include the development of innovative business models, the restructuring of organizations, the introduction of novel management techniques, or the integration of advanced technologies (Birkinshaw et al., 2008). Rather than being a sudden or radical shift, management innovation is often a continuous process, refining existing approaches to better address emerging challenges (Hamel, 2006). The COVID-19 pandemic underscored the importance of adaptable management strategies, particularly in maintaining public spaces that contribute to community well-being. Research by Yang et al. (2021) examined how the pandemic affected leisure time physical activity, and found that access to urban green spaces played a crucial role in mitigating declines in physical activity levels. Communities with well-maintained parks and green areas experienced smaller disruptions, as residents sought outdoor spaces for exercise and relaxation. This highlighted the broader role of green spaces in supporting public health and social resilience, especially during times of crisis.

Beyond its immediate health impact, the pandemic created significant operational challenges for urban green space management. Restrictions on movement, workforce shortages, and increased visitor numbers placed additional strain on maintenance efforts. Parks, public landscapes, and

gardens—essential for both ecological balance and community cohesion—required new approaches to ensure their upkeep amid shifting public health measures (Lin et al., 2021). The ability to sustain these spaces during crises was vital not only for environmental reasons, but also for maintaining social stability and mental well-being.

Best Practices in Maintaining Community Green Spaces During the COVID-19 Pandemic Period.

1. “We Garden:” Community Experiment in Shenzhen, China. The “We Garden” community experiment in Shenzhen highlights effective green space maintenance through an innovative top-down governance approach to community gardens, facilitated by nonprofit organizations (Zhang et al., 2022). This model promotes sustainable governance, encourages public participation, and strengthens communication between the government and the community. The involvement of nonprofit organizations plays a pivotal role in developing these gardens and can serve as a valuable reference for similar community governance projects, including urban renewal initiatives. This model has proven to be adaptable and was essential during the COVID-19 pandemic, contributing to community well-being and resilience through green spaces.

2. Management Innovation for Greening Maintenance in Beijing: The Beijing Municipal People’s Government has focused on strengthening prevention measures in key areas and among specific populations. The goal was to implement strategies that enhanced the management of landscaping work while effectively combating the epidemic (Beijing Municipal Bureau of Landscaping and Greening, 2020). Management innovations aimed at preserving green spaces during the COVID-19 pandemic strongly emphasized safeguarding public health and safety while ensuring the continued progress of critical landscaping projects. These regulations served as a model for managing epidemics at construction sites, offering valuable insights for managing urban community green spaces and projects. By adopting these innovative approaches, communities benefited from well-maintained green areas while simultaneously upholding public health during challenging times.

3. Management Innovation for Greening Maintenance in European Cities: The COVID-19 pandemic and climate change have highlighted the urgent need for better management of green spaces in European cities like Wrocław. The lack of pro-ecological solutions and a shortage of woody plants pose significant challenges. During the pandemic, the demand for green spaces that promote physical and mental health became even more pressing. Key contributions from research on this issue include recommendations for creating more resilient, post-pandemic city designs and improving the management of residential greenery. These recommendations involved an inclusive, multi-stakeholder approach with an emphasis on landscape architecture and sustainable urban planning (Dobrzańska et al., 2022), which includes the following strategies:

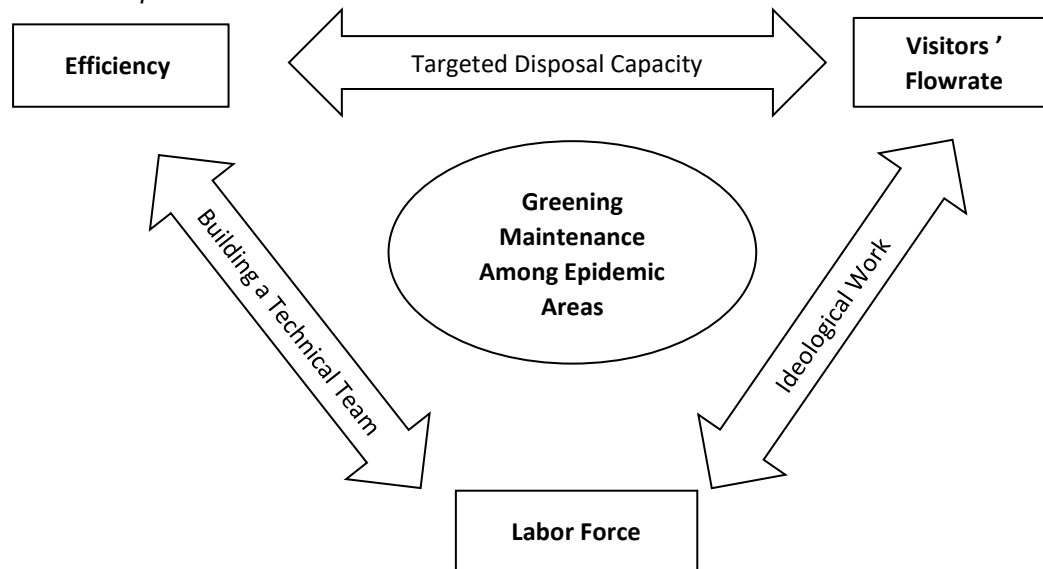
- expanding use of pro-ecological solutions by practitioners, supported by local authorities.
- protecting existing vegetation in legal records of Local Development Plans and balancing cleared versus planted greenery during construction.
- ensuring equal and easy access to high-quality greenery for all city residents.
- implementing continuous monitoring of green areas, using technologies like Normalized Difference Vegetation Index (NDVI), by local authorities.
- offering discounts and incentives for high-quality, appropriate greenery at housing estates

In conclusion, to enhance urban green space management, it is essential to promote pro-ecological practices, protect existing vegetation through legal frameworks, and ensure equitable access to quality greenery for all residents. Continuous monitoring using advanced technologies like NDVI and offering incentives for sustainable greenery in housing estates will also contribute to maintaining healthy and resilient urban environments.

Conceptual Framework

In response to these challenges, this study proposed a framework for management innovation in green space maintenance, focusing on operational efficiency, visitor management, and workforce sustainability. By analyzing how Suzhou City adapted its greening efforts during the pandemic, this research aimed to identify strategies that can enhance the resilience of urban green spaces—not only in health emergencies, but also in future crises that may disrupt urban life.

Figure 1 *Conceptual Framework*



The conceptual framework for managing green spaces in Suzhou City during the COVID-19 pandemic highlights key factors essential for effective maintenance, including operational efficiency, visitor flow management, targeted waste disposal capacity, and workforce sustainability. These elements play a critical role in ensuring that urban green spaces remain accessible and well-maintained, even amid disruptions like those caused by public health crises.

This framework emphasizes the importance of management innovation in adapting to evolving challenges and advocating for the implementation of new strategies to enhance green space upkeep. By examining the dynamic interactions between these factors, the framework provides insights into how adjustments in one area—such as workforce allocation or visitor regulation—can impact overall maintenance effectiveness. Beyond addressing pandemic-related disruptions, the framework serves as a foundation for strengthening the long-term resilience of urban green spaces, ensuring they continue to provide ecological, social, and recreational benefits in future crises.

Research Methodology

A qualitative case study approach, which is well-suited for exploring complex, real-life situations, was used in this study. Suzhou City was chosen because of its strong track record in green space planning and its reputation as the “City of Gardens.” This made it a meaningful and representative example for understanding how cities manage their green spaces during crises. Data were collected through three main methods: document reviews, semi-structured interviews, and on-site observations. These methods were guided by the qualitative research principles of Flick (2006) and Liamputtong (2009), which emphasize careful planning and systematic analysis.

Participants were selected through purposive sampling, focusing on individuals with direct experience in managing Suzhou City’s green spaces during the pandemic. They included 12 community gardening experts and two specialists in innovation management, all of whom were actively involved in maintaining urban green areas. They were chosen based on their professional experience and familiarity with crisis-related challenges in the field. Interview guides were used to ensure that the conversations stayed focused and were consistent across participants.

The data were analyzed using thematic analysis, which followed five key steps: (a) organizing the information, (b) reviewing the content, (c) creating a coding structure, (d) assigning codes, and (e) identifying key themes (Mezmir, 2020; Kiger & Varpio, 2020). The process began with open coding to capture initial ideas, followed by grouping related concepts and narrowing down the most important themes. Content analysis was also applied to visual data—such as photos and videos from field visits—to spot patterns and better understand the physical condition of the green spaces (Hsieh & Shannon, 2005). This combination of methods helped to ensure that the findings were thorough and well-rounded.

Results

Challenges, Problems, and Obstacles of Managing Suzhou Green Spaces During the Pandemic

During the COVID-19 pandemic, both government policies and community efforts were introduced to support the maintenance of urban green spaces in Suzhou. These included tax breaks for green maintenance units, financial aid for service enterprises, and strict safety measures at construction sites. Local communities also stepped in, providing masks and protective gear to workers and helping secure tax exemptions for purchasing health supplies.

While these initiatives were well-intentioned and helped promote a safer and greener environment, major challenges remained. Labor shortages, supply delays, and a surge in visitors put extra pressure on already limited maintenance resources. As one participant shared, “Even with the support, we simply didn’t have enough hands or materials to keep up with the work—especially when more people started using the parks.” These experiences highlighted the gap between policy support and on-the-ground realities during a prolonged crisis. Table 1 provides a detailed overview of these challenges and their impacts.

Table 1 *Challenges and Impacts of COVID-19 on Green Space Maintenance*

Aspect	Findings
Contract Obligations	<ul style="list-style-type: none"> - COVID-19 disruptions caused delays in green maintenance projects, leading to delayed contract obligations and payment delays. - Enterprises' cash flow was significantly impacted, putting pressure on loan repayments and causing a decline in output value.
Labor Force	<ul style="list-style-type: none"> - Work delays for migrant workers and difficulties in resuming production resulted in increased enterprise expenses. - Scattered personnel returning after the epidemic further burdened construction sites economically. Shortage of seedling maintenance personnel made managing projects difficult, especially in different areas with plant loss. - Administrative work lagged, and online communication reduced work efficiency.
Construction Timing	<ul style="list-style-type: none"> - COVID-19 pushed construction into the off-season, causing postponement of planned plantings before high temperatures. - Low survival rates for summer plantings led to significant losses and increased expenses.
Cost Increase	<ul style="list-style-type: none"> - Epidemic-related costs increased, including on-site investigations, disinfection measures, and procurement of protective equipment. - Difficulties acquiring epidemic prevention items like masks, thermometers, and disinfectants.

The COVID-19 pandemic created a complex set of challenges for green space maintenance in Suzhou City, impacting both operations and outcomes. Delays in project execution, supply chain disruptions, and deferred payments also placed pressure on contractors’ financial stability, making it difficult to meet annual targets. Labor shortages—especially among migrant workers—exacerbated these issues, while the lack of skilled personnel for seedling maintenance led to increased plant losses and higher replanting costs. One participant noted, “We couldn’t find enough skilled workers after the lockdowns, and even routine tasks like irrigation became difficult to manage.”

Moreover, the shift to remote administrative processes slowed communication and decision-making, which further hindered timely responses. Off-season planting, a consequence of earlier delays, resulted in low survival rates for summer vegetation, and contributed to both financial and ecological setbacks. These combined issues highlighted the systemic strain faced by urban greening operations during crises, and underscored the importance of flexible and well-resourced management systems. Essential maintenance tasks, such as timely irrigation and pest control, were particularly affected. In some cases, inadequate irrigation during the germination stage compromised plant health, while delays in pest control during spring resulted in failure to meet maintenance standards (see photos shown in Figure 2).

Figure 2 *The Problem of Community Greening in Suzhou During the Epidemic*



Source: Photographed by the Researcher

Furthermore, rising expenses related to on-site inspections and the procurement of epidemic prevention equipment intensified the challenges faced by green space management teams. These additional costs placed a financial burden on maintenance units, further complicating their ability to sustain routine operations. The key challenges and obstacles encountered in managing green spaces during the COVID-19 pandemic in Suzhou City are summarized in Table 2.

Table 2 *Problems and Obstacles in Managing Green Spaces During the Pandemic in Suzhou City*

Finding	Description
Labor Force	During the outbreak, a serious shortage of labor for spring green space maintenance work arose in the community due to controlled personnel flow. This affected timely irrigation and pest control, impacting plant health and overall greening efforts.
Efficiency	The outbreak and effective control of the epidemic affected greening and maintenance operations. Some employees' lack of COVID-19 awareness led to reduced work efficiency and potential impacts on work quality, even resulting in resignations and unexplained absences.
Visitors' Flowrate	Despite implementing closed management measures, communities experienced increased flows of people, posing challenges in controlling visitor numbers in small parks. The labor-intensive nature of greening and maintenance required personnel distribution throughout the community.

During the pandemic, restrictions on personnel movement led to significant labor shortages, particularly during the critical spring maintenance period for community green spaces. Essential tasks such as timely irrigation and pest control were not completed effectively, negatively impacting plant growth and the overall quality of greening efforts. One participant explained, “By the time we could return to work, many of the plants were already damaged—we were always playing catch-up.”

Additionally, the pandemic reduced work efficiency and quality due to some employees' lack of awareness about COVID-19, leading to heightened fear, resignations, and absenteeism. Managing visitor flows in smaller parks also became increasingly challenging. Overcoming these obstacles is crucial in ensuring the continued maintenance and enhancement of green spaces in the community during such crises.

Management Innovation Initiatives to Maintain Community Green Spaces During the Pandemic

Initiatives for management innovation aimed at maintaining green spaces in the community during the COVID-19 pandemic period are shown in Table 3. Explanations follow.

Table 3 *Initiatives for Management Innovation to Maintain Community Green Spaces During the Pandemic*

Key Initiative	Description
Epidemic Prevention and Emergency Management	Develop prevention plans, ensure availability of disinfectants and emergency supplies, regular disinfection, and enhance emergency response capabilities through training and feedback.
Effective Control of Labor Force	Implement a real-name system, track worker movements, maintain detailed records for effective oversight, and ensure transparency and safety through point-to-point management.
Addressing Psychological Well-Being of Workers	Provide mental health support, offer training in technical skills and psychological education, and conduct regular check-ins to reduce stress and anxiety, ensuring focus and productivity.
Leveraging Management Innovation	Establish specialized teams, improve critical thinking, adapt green space management for the "New Normal," set clear goals, and provide continuous training for technicians to improve efficiency.
Managing Visitor Flow in Green Spaces	Implement an online reservation system, stagger visitor arrivals, enforce maximum capacity limits, and install signage to guide visitors, ensuring social distancing and safety protocols.

1. Epidemic Prevention and Emergency Management. To address the challenges posed by crises like the COVID-19 pandemic, robust prevention and emergency management plans are critical in green space maintenance. This involves developing and refining preventative measures, ensuring the availability of disinfectants and emergency supplies, maintaining well-stocked medicine boxes, managing emergency funds, and enforcing strict protocols for workers' housing areas. Routine disinfection and sterilization processes should be implemented regularly. Furthermore, enhancing the emergency response capabilities of project teams is essential, which includes training workers regarding safety practices, and encouraging active feedback and oversight to ensure rapid and effective responses. One participant remarked, "The key wasn't just having a plan—it was making sure everyone knew their role and felt supported when things changed fast." These efforts build confidence and help green spaces stay open and safe, even during uncertain times.

2. Effective Control of Labor Forces. Managing labor forces efficiently during times of crisis requires integrating health and safety measures into daily operations. This includes implementing a real-name system, tracking workers' movements, and maintaining detailed records on each laborer. Each worker's file should include personal details, health status, work history, and performance metrics. This system allows for precise management and tracking, ensuring effective oversight and control of labor activities. To ensure transparency and safety, point-to-point management is necessary, from the construction unit to the worksite.

3. Addressing the Psychological Well-being of Green Space Maintenance Workers. In times of crisis, the psychological well-being of green space maintenance workers is as important as physical health measures. Raising awareness about epidemic prevention and providing mental health support is crucial. Offering training that includes not just technical skills, but also psychological education, can help eliminate fear and build emotional resilience. One participant shared, "Some

workers were afraid to come in, not just because of the virus, but because they felt overwhelmed. Just listening to them made a difference.”

Managers should conduct regular check-ins with employees, especially those dealing with anxiety or emotional distress, and provide support and interventions as needed. By addressing employees' concerns and reducing stress, workers will be more focused, which contributes to a peaceful and productive work environment.

4. Leveraging Management Innovation to Overcome Low Work Efficiency. Research shows that management innovation is key to overcoming low work efficiency during crises. Establishing specialized teams, improving critical thinking, and enhancing emergency preparedness are all essential. Developing a flexible and effective green space management system tailored to the New Normal is necessary. This includes setting clear goals, defining standards, adapting strategies as new challenges arise, and refining management systems continuously. Strengthening the organizational and execution abilities of green space teams will improve both day-to-day operations and crisis response. One participant explained, “We had to reorganize quickly—assigning people to new roles and streamlining tasks so we wouldn’t fall behind.” Further, another added, “What helped most was ongoing training. We needed to understand new tools and methods as situations kept changing.”

Creating a skilled technical team can also elevate the community’s green spaces professionally and aesthetically. Providing ongoing training for technicians ensures they stay updated on emerging technologies and trends. Strengthening team structure and upskilling technical staff not only improved the efficiency of routine tasks, but also helped the green spaces look better and function more smoothly, even during tough times.

5. Managing Visitor Flows in Green Spaces During High-Traffic Periods. Implementing an online reservation system is recommended to ensure social distancing and manage visitor flow, especially during peak times. This system allows visitors to reserve time slots in advance, limiting the number of people in the green space at any given time. A participant shared, “By setting up time-based entry, we could spread visitors out more evenly throughout the day—it really reduced pressure on our staff.”

Staggering visitor arrivals and setting clear entry times further prevents overcrowding. A maximum capacity limit based on social distancing guidelines should be enforced, along with one-way pathways to control movement and minimize close encounters. Installing clear signage and floor markings helps visitors adhere to safety and hygiene protocols. Additionally, employing staff or volunteers to monitor the flow and ensure compliance with these measures enhances the safety and enjoyment of visitors.

Discussion

This study emphasized the critical need for well-structured prevention and emergency management strategies to ensure the ongoing upkeep of community green spaces, particularly during crises such as the COVID-19 pandemic. During such challenging periods, it is essential to have clearly defined protocols to prevent disease transmission. This includes making sure that disinfectants, emergency supplies, and financial resources are readily available to address unforeseen situations. Regular cleaning and disinfecting, along with enhanced emergency response mechanisms, play a vital role in keeping these green spaces safe for the public while ensuring they remain functional. A proactive approach that combines these elements not only safeguards the health and well-being of workers, but also helps to maintain the accessibility, beauty, and value of these spaces for the community at large (Hong et al., 2019).

Moreover, integrating epidemic prevention measures into labor management is key to reducing the spread of diseases, such as COVID-19, among workers responsible for maintaining these spaces. Measures like implementation of a real-name system, meticulous labor recordkeeping, and stringent control over worker movements are critical in preventing outbreaks. These actions help ensure a safer environment for those maintaining the spaces and broader communities who depend on these areas for recreation and leisure (Labrague, 2021).

Throughout the pandemic, it became clear that supporting workers' psychological health and well-being through targeted training and emotional support was essential. Such support systems directly impacted workers' productivity and overall health, showing that a combination of physical and psychological safeguards is necessary for maintaining a resilient workforce (Lovejoy et al., 2021). The health and safety of those involved in green space maintenance are paramount, as they directly impact the long-term viability of these spaces, especially during times of crisis.

This research study also sheds light on how management innovation can significantly enhance the efficiency of green space maintenance, especially under the strain of a crisis. Introducing flexible and adaptable systems, establishing specialized teams, and improving emergency preparedness are all critical to ensuring that green spaces are managed effectively during times of crisis. These strategies not only optimize existing resources, but also ensure that a rapid, coordinated response to any challenges that arise (Obrenovic et al., 2020; Pring et al., 2021; Zhang et al., 2024). The study's findings offer valuable insights for policymakers, landscape managers, and urban planners who wish to improve the resilience and management of green spaces in future crises. By adopting innovative management practices, cities can ensure that their green spaces will continue to thrive, even under the pressure of unforeseen events or challenges, like the "New Normal" or future pandemics.

Conclusions and Implications

In conclusion, this study offers meaningful insights by reimagining community green spaces, not just as city features, but as vital infrastructure for handling crises. It presents a fresh perspective on how green space management must adapt to unexpected challenges like the COVID-19 pandemic. Using Suzhou City as a case study, the research findings show how innovative practices—such as flexible staffing, digital tools, and community involvement—can help keep these spaces functional during difficult times. This shifts the conversation around urban resilience, connecting it directly to the adaptability of our green infrastructure.

The study's contributions are both academic and practical. On the academic side, it adds to current literature by framing green spaces as dynamic systems that need responsive and adaptive management. Practically, it recommends real-world strategies, including using technologies like GIS for better monitoring and encouraging collaboration across sectors to manage resources more effectively.

By adopting approaches like these, cities can protect public health and the environment while also building long-term resilience and public trust. Moving forward, urban policies should formalize these innovations to ensure that green spaces remain accessible, sustainable, and ready to meet both environmental and community needs—especially in times of uncertainty.

For future research studies, it is essential to explore the long-term impact of management innovations introduced during the COVID-19 pandemic, particularly regarding labor planning, cross-training, and technology integration. Understanding how these innovations evolve and whether or not they will become integral to routine practices is crucial for the future sustainability of green space management. Additionally, research studies should assess the challenges and opportunities of incorporating advanced technologies into green space management to ensure its effectiveness in both current and future crises. These findings provide valuable guidance for future urban planning and management strategies.

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Applying the Unified Theory of Acceptance and Use of Technology to Analyze the Adoption of Battery Electric Vehicles in Nepal

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Abstract

Aim/Purpose: This study examined factors influencing battery electric vehicle (BEV) adoption in Kathmandu, Nepal, where transitioning from combustion engines to BEVs could advance sustainable transportation and renewable energy growth. Using the extended Unified Theory of Acceptance and Use of Technology 2 (UTAUT2), Performance Expectancy, Effort Expectancy, Social Influence, Facilitating Conditions, Hedonic Motivation, Price Value, and Government Incentives were analyzed. It also explored how Environmental Concerns mediate Purchase Intention and Usage Behavior, linking intent to actual BEV utilization. The findings aim to inform policies accelerating Nepal's green mobility transition.

Background: With its abundant hydropower resources, Nepal has a unique opportunity to shift toward green mobility and reduce dependence on imported fossil fuels. Despite the increased use of BEVs, there has been limited research on purchase intention factors that significantly impact consumer adoption. This study provides actionable insights for policymakers, manufacturers, and marketers to encourage BEV adoption. This research examined the impact of performance expectancy, effort expectancy, social influence, and facilitating conditions alongside additional constructs such as hedonic motivation, environmental concerns, price value, and government incentives on the purchase intention and subsequent use behavior of BEVs in Nepal.

Methodology: A quantitative research approach was employed in this study to analyze the constructs of the Unified Theory of Acceptance and Use of Technology 2 (UTAUT2). This study focused on vehicle owners aged 18 and above who were interested in purchasing BEVs in Kathmandu, Nepal. The data were collected through a structured questionnaire using a purposive stratified random sampling method. A sample size of 400 respondents was targeted; however, 572 surveys were distributed to enhance reliability, yielding 536 valid responses. Data collection took place between May and June 2024 through online surveys and self-administered questionnaires distributed across various digital platforms. The survey questionnaire included three sections: demographic data (e.g., gender, age, income, education), consumer behavior, and BEV adoption constructs (Performance Expectancy, Effort Expectancy, Social Influence, Facilitating Condition, Hedonic Motivation, Government Incentives, Environmental Concerns, and Price Value), which were measured on a five-point Likert scale. Descriptive statistics (mean, median, mode) and frequency distributions were used to summarize key variables and demographic trends. This study used a partial least squares structural equation modeling (PLS-SEM) analysis tool to determine factors direct and indirect effects on BEV adoption intention in Kathmandu, Nepal.

Findings: The study revealed that purchase intention significantly and directly affected the use behavior of BEVs in Nepal. The UTAUTS constructs, such as Effort Expectancy, Hedonic Motivation, Price Value, Government Incentives, and Facilitating Conditions, significantly impacted the purchase intention of BEV in Kathmandu, Nepal, leading to use behavior. This indicated that purchase intention was a strong predictor of usage behavior. However, Performance Expectancy, Social Influence, and Environmental Concerns did not have a significant impact, suggesting that consumers prioritized

affordability and practical considerations over perceived vehicle performance. These findings indicate that in the Nepalese context, consumers' decisions are more driven by practical benefits and individual preferences rather than performance expectations or social pressures. This divergence from typical UTAUT2 outcomes indicates that Nepalese consumers prioritize immediate and tangible benefits over perceived performance and societal influences. Environmental Concerns, while relevant, did not emerge as a primary factor influencing purchase intentions, which may reflect the current state of environmental awareness and prioritization among Nepalese consumers.

Contribution/Impact on Society: This study provides theoretical insights into BEV adoption by demonstrating that facilitating conditions have a positive influence on adoption intention. By empirically validating this relationship, the findings of the study demonstrated the UTAUT2 framework's applicability to BEV adoption. These findings underscore the essential role of supportive infrastructures, such as charging networks and governmental incentives, in reducing adoption barriers and enhancing consumer willingness to adopt BEVs. This study equips decision-makers with the necessary tools to foster a more sustainable and electrically driven transportation ecosystem in Kathmandu, paving the way toward a cleaner and more livable urban environment.

Recommendations: The adoption of BEVs in Nepal offers wide-ranging benefits. For policymakers, the study provides insights to guide evidence-based decisions, including incentives, infrastructure, and regulatory frameworks. Industry stakeholders can better understand consumer preferences and adoption barriers, informing strategies for product development and market positioning. Environmental organizations can use these findings to advocate for policies that promote emissions reduction and sustainable transport. Consumers gain awareness of BEVs' economic and environmental benefits, empowering informed choices. Academically, the research enriches the literature on technology adoption in developing countries, serving as a foundation for future studies in Nepal and similar contexts.

Research Limitations: This study has a few limitations. First, the sample primarily included owners of combustion engine vehicles, which may limit direct insights into the purchasing behavior of actual BEV users. Second, the geographical scope was confined to Kathmandu and specific regions of Nepal, restricting the generalizability of findings to other areas; future research could benefit from broader geographic coverage. Lastly, the study focused on selected UTAUT2 constructs. At the same time, other potentially influential factors, such as prior use experience, fuel efficiency, and brand loyalty, were not explored, leaving room for future studies to investigate these aspects.

Future Research: Future studies could be expanded to include a larger, more diverse sample of existing BEV users across various regions of Nepal, capturing regional variations and developing targeted strategies. They could also explore additional factors like user experience, perceived fuel efficiency, and brand loyalty to enrich understanding consumer decision-making and adoption dynamics. This study also could be extended into longitudinal research by collecting data from various regions of the country. This would diversify the research findings, providing valuable insight into consumer behavior in this evolving BEV market. Furthermore, consumer perceptions and behavior vary due to changing market demands and government policies.

Keywords: *Electric vehicles, Nepal, purchase intention, usage behavior*

Introduction

The increased demand for addressing climate change and reducing carbon emissions has highlighted the necessity of sustainable transportation solutions. Global conflicts have exacerbated these concerns by exposing the world's dependency on fossil fuels and causing significant disruptions in the global energy landscape (IEA, 2023). These factors emphasize the need to transition to cleaner energy sources, such as renewables and nuclear power, to mitigate economic and environmental impacts. A McKinsey & Company (2022) report forecasted that renewables will account for 80% to

90% of global power generation by 2050, increasing the demand for Electric Vehicles (EVs). They play a crucial role in reducing oil consumption and greenhouse gas emissions. Global EV sales have seen an average annual growth rate of 62% over the past four years, with a 96% surge in 2021, reaching 6.6 million units (McKinsey & Company, 2022). To prevent global temperatures from rising beyond 1.5°C., Asia Pacific economies need to have policy and market-led transition shifts to renewable energy means of transport, such as EVs (Low & Chee, 2023). In 2022, electric car sales surpassed 10 million units, reflecting a 55% increase from 2021, despite supply chain disruptions and economic uncertainties (Irle, 2023).

In Nepal, a developing country heavily reliant on fossil fuel imports, the adoption of EVs is accelerating. EV imports rose from 200 units in 2020/21 to 4,050 units in 2022/23, a 124.12% increase (The HRM Nepal, 2023). Nepal's hydroelectric power generation has bolstered its capacity to support EV adoption (Ingram, 2023). Despite progress, Nepal faces challenges in promoting clean transportation, including infrastructure limitations, economic constraints, cultural attitudes, and policy issues. The research gap addressed in this study lies in understanding these factors within Nepal's socioeconomic and geographical context. The Unified Theory of Acceptance and Use of Technology has been widely used to study technology adoption behavior, but has not been extensively applied to BEV adoption in Nepal. Addressing this gap provides valuable insights for alternative mobility in Nepal and other developing nations.

The purpose of this study was to find answers to the following research questions:

1. How do UTAUT2 Performance Expectancy, Effort Expectancy, Social Influence, Facilitating Conditions, Hedonic Motivation, Price Value, and Government Incentives affect the Purchase Intention of BEVs?
2. How does Environmental Concern affect Purchase Intention and subsequent Use Behavior of BEVs?
3. How does Purchase Intention lead to Use Behavior of BEVs?

Literature Review

Unified Theory of Acceptance and Use of Technology (UTAUT)

The Unified Theory of Acceptance and Use of Technology (UTAUT), developed by Venkatesh et al. (2003), combined major elements from eight existing innovation acceptance theories into a unified model that revealed a comprehensive understanding of the factors influencing behavioral intention to adopt new technology. The UTAUT model identifies four primary factors influencing behavioral intention: Performance Expectancy (PE), Effort Expectancy (EE), Social Influence (SI), and Facilitating Conditions (FC). These primary factors are critical in understanding technology adoption across various contexts.

UTAUT theory was later extended with the addition of three new variables—Hedonic Motivation (HM), Price Value (PV), and Habit (a crucial predictor from sociology) to formulate UTAUT-2 (Venkatesh et al., 2012). This research study focused on the core UTAUT2 constructs while intentionally omitting habit. As noted by Venkatesh et al. (2012), habit is most relevant in post-adoption or mature markets where repetitive usage is established. In Nepal, where BEV ownership remains below .5% of total vehicles (MOPIT, 2023), habitual behavior is not yet a measurable factor.

Performance Expectancy (PE)

Performance expectancy is when individuals believe that technology use will significantly impact productivity and effectiveness (Venkatesh et al., 2003). Studies have consistently demonstrated that higher perceived performance expectancy positively influences EV adoption. Research in Austria and Pakistan has highlighted that perceived benefits, such as cost savings and environmental advantages, significantly impact consumers' intention to adopt EVs (Wolf & Seebauer, 2014; Lee et al., 2021). Empirical studies have suggested that when delivery drivers perceive higher performance expectancy in electric trucks compared to combustion trucks, particularly in terms of cost savings, parking

convenience, and environmental concerns, they were more inclined to use electric trucks in China (Zhou et al., 2021)

H₁: Performance expectancy affects BEV purchase intention.

Effort Expectancy (EE)

Effort expectancy refers to a technology's perceived ease of use and user-friendliness. Prior studies have indicated that lower perceived effort in operating BEVs enhances adoption rates. The intention to buy BEVs is influenced by various factors, with a significant consideration being the perceived ease of use. A previous study showed that effort expectancy was positively linked to expected EV purchase intentions (Samarasinghe et al., 2024). In a case study in Shenzhen and Guangzhou, China, taxi drivers' intentions to drive electric taxis highlighted factors such as easy driving, charging, driving experience, and maintenance, which indicated that effort expectancy positively affected EV purchase intention (Zhou et al., 2021).

H₂: Effort expectancy affects BEV purchase intention.

Social Influence (SI)

Social influence refers to the degree to which an individual believes that significant others consider it necessary for them to utilize a new system (Venkatesh et al., 2003). An empirical study in Malaysia showed a positive and statistically significant relationship between social influences and usage intentions of EVs (Sang & Bekhet, 2015). Research conducted in China showed that consumers' social attribute variables had a significant impact on BEV purchase intentions (Wang et al., 2021).

H₃: Social influence affects BEV purchase intention.

Facilitating Conditions (FC)

Facilitating conditions refers to the degree to which an individual perceives the existence of organizational and technical infrastructure that supports the utilization of a technology (Venkatesh et al., 2003). Research findings in Pakistan revealed a positive relationship between facilitating conditions and individuals' intentions to adopt public cloud technology, underscoring the importance of infrastructural support and regulatory frameworks (Ali et al., 2019). This showed that a new technology's perceived ease of use and usefulness may affect consumers' purchase intention. Similarly, research has shown that facilitating conditions positively impact consumers' behavioral intention to purchase electric vehicles (Tu & Yang, 2019). A study conducted by Jain et al. (2022) showed that facilitating conditions positively affected the adoption intention of EVs.

H₄: Facilitating conditions affect BEV purchase intention.

H_{4a}: Facilitating conditions affect BEV use behavior.

Hedonic Motivation (HM)

Hedonic motivation posits that use of technology is encouraged by a user's enjoyment experience. It was a significant factor in shaping technology acceptance and usage in research conducted by Brown and Venkatesh (2005). Another study showed that hedonic motivation positively affected attitudes toward using electric vehicles in Indonesia (Gunawan et al., 2022). Research has also shown that hedonic attitudes influence consumers' intentions to adopt hybrid electric cars (Zamil et al., 2023).

H₅: Hedonic motivation affects BEV purchase intention.

Price Value (PV)

Price value is an individual's cognitive trade-off between the perceived benefits and costs of using various technologies (Venkatesh et al., 2012). Price value identifies consumers' assessment of the financial trade-offs between the perceived benefits and costs of adopting a technology. Studies have highlighted that favorable financial incentives and cost-effectiveness significantly enhance EV adoption intentions (Larson et al., 2014; Bjerkan et al., 2016).

H₆: Price value affects BEV purchase intention.

Environmental Concerns (EC)

Environmental concerns reflect individuals' awareness and commitment to sustainability, influencing their preference for eco-friendly technologies. Empirical research has confirmed that heightened environmental consciousness is significantly correlated with increased consumer interest in EV adoption (Okada et al., 2019; Manutworakit & Choocharukul, 2022).

H₇: Environmental concerns affect BEV purchase intention.

Government Incentives (GI)

Government incentives include tax reductions, subsidies, and financial and policy mechanisms to promote EV adoption. Studies have indicated that government incentives play a critical role in shaping consumer purchase decisions (Wang et al., 2017; Kim et al., 2019). This shows that government incentives lead consumers to purchase BEVs.

H₈: Government incentives affect BEV purchase intention.

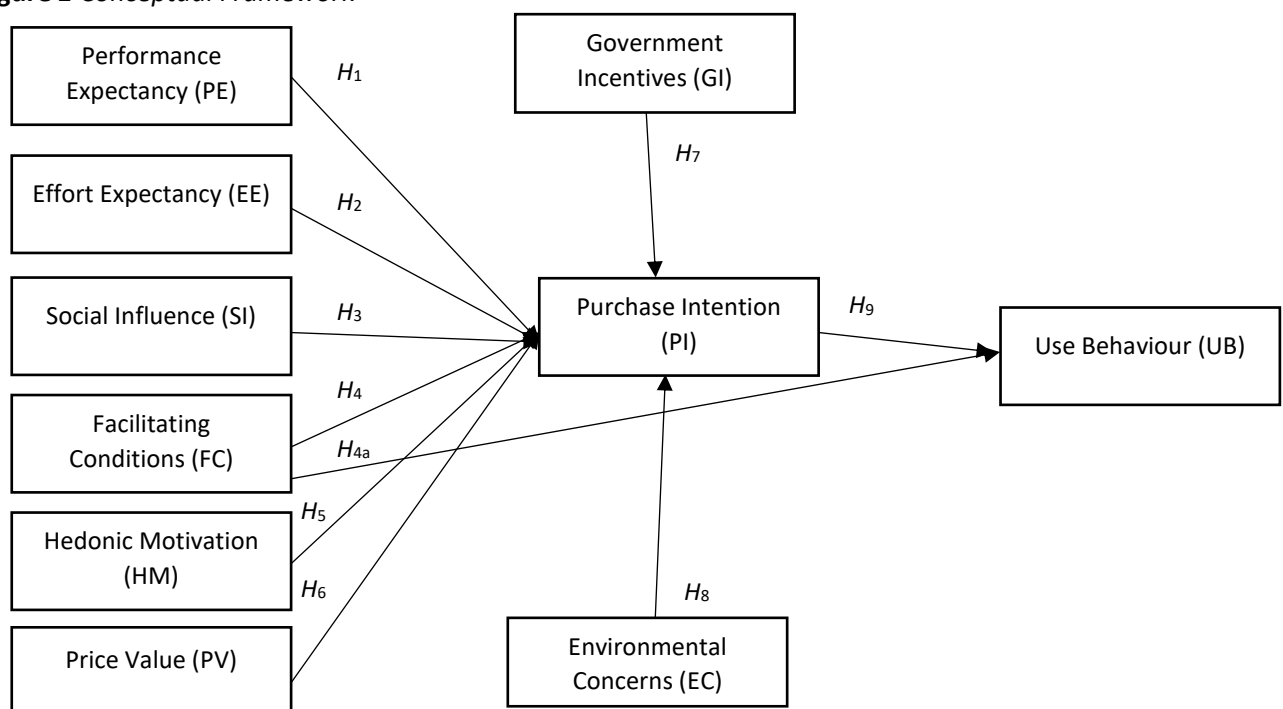
Purchase Intention (PI) and Use Behavior (UB)

Purchase intention represents an individual's likelihood of purchasing an EV, which strongly predicts actual usage behavior. Previous research has established a direct link between purchase intention and subsequent adoption behavior, supporting its relevance in understanding EV market growth (Fishbein & Ajzen, 1975; Ajzen, 1991). A consumer's intention to purchase contributes to the creation of subsequent usage behavior. A study conducted in Beijing showed that consumer intentions to buy EVs were positively affected by attributes such as attitude, perceived behavioral control, cognitive status, product perception, and monetary incentive policies (Huang & Ge, 2019). A study conducted on food delivery applications in Malaysia showed that technology acceptance significantly influenced consumer loyalty (Tiep et al., 2023). Additionally, purchase intention is positively affected by attitude, subjective norms, perceived behavioral control, price value, and environmental self-image (Vafaei-Zadeh et al., 2022).

H₉: BEV purchase intention has a significant positive effect on use behavior.

The study's conceptual framework is shown below in Figure 1.

Figure 1 *Conceptual Framework*



Adapted from Venkatesh, V., Thong, J. Y. L., & Xu, X. (2012)

Methodology

In this study, a hybrid sampling strategy was employed, integrating stratified random sampling to ensure demographic diversity across age, income, education, and vehicle ownership categories. The population was estimated to be more than 3 million smart license holders in Kathmandu (Paudel, 2023). To enhance contextual relevance, purposive selection criteria prioritized respondents who expressed interest in battery electric vehicles (BEVs) and resided in the Kathmandu Valley, where BEV infrastructure is concentrated. This approach balanced statistical representativeness with targeted insights into Nepal's nascent EV adoption landscape.

A quantitative approach was employed within a positivist framework to investigate factors influencing electric vehicle (EV) adoption in Nepal. Guided by a literature review, a conceptual model was developed and tested through hypotheses. Using Yamane's formula (1973) with a 95% confidence level and a $\pm 5\%$ margin of error, the target sample size was set at 400 respondents. The survey data was collected through online media. The study utilized a questionnaire adapted from established BEV adoption scales and was validated through pilot testing ($n = 30$) with participants from Kathmandu to enhance item clarity and internal consistency (Cronbach's $\alpha > .85$).

A rigorous translation protocol—comprising bilingual forward/backward translation and academic review—ensured Nepali contextualization. Partial Least Squares-Structural Equation Modeling (PLS-SEM) analysis was done to confirm robust model fit. The study's final sample of 536 respondents exceeded both Yamane's (1973) calculated minimum ($n = 400$) and PLS-SEM's requirements, which prioritize model complexity and statistical power over population-based formulas. With six exogenous constructs (3–4 indicators each), the 10-times rule suggested a minimum of 60–80 respondents, making the expanded sample statistically robust, enhancing reliability, predictive accuracy ($Q^2 > .15$), and generalizability without violating methodological guidelines (Hair et al., 2017).

Data Analysis

The survey was conducted in Kathmandu, Nepal, with 536 respondents, a slight majority of whom were females (51.5%) and young (aged 23 to 29 years = 37.1%). Occupations varied, with 40.1% being students and 27% working in private organizations. Half of the respondents held a bachelor's degree, and 38.1% earned above Rupees 40,000 monthly. Consumer behavior survey responses showed that more than 50% of individuals used a vehicle daily. Furthermore, it highlighted the factors influencing respondents' decisions to purchase a BEV. Cost savings, including lower fuel and maintenance costs, were the most significant factors, with 282 respondents identifying this as an influence. Environmental impact followed closely, with 272 respondents considering it an important factor. Government incentives, such as tax credits and rebates, were also influential, as noted by 164 respondents.

Before conducting the PLS-SEM analysis, reliability and validity were assessed through Factor Loading, Cronbach's Alpha, Composite Reliability (CR), and Average Variance Extracted (AVE). Cronbach's Alpha measures internal consistency reliability (Cronbach, 1951), where values equal to or greater than .70 are considered acceptable for further analysis. In this study, Cronbach's alpha values ranged from .79 to .90, indicating reliability. Composite Reliability assesses internal consistency reliability in structural equation modeling, with values above .70 deemed acceptable. The CR values in this study ranged from .81 to .91. Convergent validity, evaluated through factor loadings and AVE, showed all values exceeding .50, confirming the validity of the measurement model. The factor loadings for each indicator were examined to assess the strength of the relationship between the indicators and their respective constructs. Most indicators exhibited strong loadings above .70, indicating good convergent validity, with values ranging from .61 to .91. Items with lower loadings, such as SI5 (.61) and PE4 (.62), were still deemed acceptable (Hair et al., 2017). Overall, the factor loadings supported the validity of the measurement model.

Table 1 *Convergent Validity (Factor Loadings, Composite Reliability, and Average Variance Extracted)*

Constructs	Items	Factor Loading	Cronbach's Alpha	Composite Reliability		AVE
				(ρ_A)	(ρ_C)	
Performance Expectancy	PE1	.715	.817	.818	.816	.671
	PE2	.710				
	PE3	.688				
	PE4	.621				
	PE5	.696				
Effort Expectancy	EE1	.804	.869	.871	.867	.568
	EE2	.722				
	EE3	.712				
	EE4	.692				
	EE5	.830				
Social Influence	SI1	.849	.861	.866	.858	.551
	SI2	.778				
	SI3	.755				
	SI4	.695				
	SI5	.612				
Facilitating Conditions	FC1	.748	.830	.833	.831	.596
	FC2	.653				
	FC3	.757				
	FC4	.677				
	FC5	.6810				
Hedonic Motivation	HM1	.912	.897	.906	.899	.749
	HM2	.766				
	HM3	.910				
Price Value	PV1	.722	.795	.811	.802	.576
	PV2	.689				

	PV3	.855				
Environmental Concerns	EC1	.669	.883	.894	.8777	.595
	EC2	.662				
	EC3	.684				
	EC4	.882				
	EC5	.917				
Government Incentives	GI1	.864	.857	.862	.858	.603
	GI2	.817				
	GI3	.884				
Purchase Intention	PI1	.828	.891	.892	.891	.732
	PI2	.739				
	PI3	.819				
	PI4	.715				
Use Behaviour	UB1	.792	.894	.896	.894	.629
	UB2	.737				
	UB3	.823				
	UB4	.844				
	UB5	.764				

Source. Developed by Authors

The Fornell-Larcker criterion was used to analyze the constructs' discriminant validity. The diagonal values in Table 2 represent the method for comparing the square root of the AVE with the correlation for each construct, which should be greater than .50 to ensure the validity of the data (Fornell & Larcker, 1981). All constructs exhibited satisfactory convergent validity, with AVE values ranging from .55 to .75. The off-diagonal values represent the correlations between constructs and demonstrated good discriminant validity according to the Fornell-Larcker criterion.

Table 2 *Fornell-Larcker Criterion: Matrix of Correlation Constructs and the Square Root of AVE*

	PE	EE	SI	FC	HM	PV	EC	PI	GI	UB
PE	.571									
EE	.406	.568								
SI	.490	.449	.551							
FC	.440	.401	.473	.496						

HM	.400	.459	.418	.425	.749					
PV	.462	.417	.386	.427	.434	.576				
EC	.416	.485	.219	.433	.342	.418	.595			
PI	.452	.501	.433	.426	.540	.500	.505	.603		
GI	.4081	.3654	.428	.364	.322	.538	.288	.482	.732	
UB	.478	.463	.507	.495	.462	.422	.374	.571	.386	.629

Note. Square roots of average variance extracted (AVEs) shown on diagonals

Table 3 displays the Coefficient of determination (R^2) and Adjusted R^2 values for Purchase Intention (PI) and Use Behaviour (UB). The results indicate that the model explained approximately 74.32% of the variance in PI, with an adjusted R^2 of .739, suggesting a robust fit. For UB, the model accounted for about 78.05% of the UB variance, supported by an Adjusted R^2 of .780. These findings underscore the model's effectiveness in elucidating factors influencing electric vehicle adoption behaviours among the surveyed population, providing valuable insights into both purchase intentions and subsequent usage behaviour.

Table 3 *Coefficients of Determination for R-Squared*

Construct	Coefficient of Determination (R^2)	Adjusted R^2
PI	.743	.739
UB	.781	.780

Note. PI = Purchase Intention; UB = Use Behaviour

The model fit was assessed using several indices, including the Standardized Root Mean Square Residual (SRMR), Unweighted Least Squares (dULS), the Geodesic Discrepancy (dG), and the Normed Fit Index (NFI) as shown in Table 4. The SRMR values for the saturated and estimated models were .085 and .087, respectively, below the recommended threshold of .10, indicating an acceptable model fit. The NFI values were .922 (saturated) and .919 (estimated), exceeding the .90 benchmark and further supporting a good model fit. The model fit was further evaluated using two distance-based discrepancy measures: the Unweighted Least Squares Discrepancy (dULS) and the Geodesic Discrepancy (dG). These indices assess how well the estimated model reproduces the observed variance-covariance matrix, with lower values indicating better fit (Dijkstra & Henseler, 2015; Henseler et al., 2014). For the saturated model, dULS was 11.114 and dG was 19.374, while for the estimated model, these values were slightly higher at 11.869 and 19.632, respectively. Although no strict cutoffs exist for these indices, the relatively small increases from the saturated to the estimated model suggested that the proposed model maintained a reasonable fit, while being more parsimonious (Henseler et al., 2014).

Table 4 *Model Fit Assessment*

	Saturated Model	Estimated Model
SRMR	.085	.087
d _{ULS}	11.114	11.869
d _G	19.374	19.632
NFI	.922	.919

Note. Standardized Root Mean Square Residual (SRMR), Unweighted Least Squares (d_{ULS}), the Geodesic Discrepancy (d_G), and the Normed Fit Index (NFI).

The latent variable prediction summary from the PLS-SEM analysis assessed the model's predictive power using metrics such as Q²-predict, RMSE (Root Mean Squared Error), and MAE (Mean Absolute Error); the results are shown in Table 5. For Purchase Intention (PI), the Q²-predicted value was .474, with RMSE and MAE values of .730 and .541, respectively. For Use Behavior (UB), the Q²-predicted value was .450, with RMSE and MAE values of .749 and .566. Since both constructs showed positive Q²-predicted values, this indicated that the model had acceptable predictive relevance (Shmueli et al., 2016). Moreover, the RMSE and MAE values were within a reasonable range, supporting the model's ability to generate accurate predictions.

Table 5 *Latent Variable Prediction Summary (PLS-SEM)*

	Q²-Predict	RMSE	MAE
PI	.474	.730	.541
UB	.450	.749	.566

Partial Least Squares-Structural Equation Modeling Analysis

The inner structural model of Partial Least Squares (PLS) was conducted to evaluate the importance of the regression paths and the model's predictive performance. Table 3 below presents beta values (β), *t*-statistics, *p*-values, and the results of hypotheses, as per the work of Chin et al. (2003); these results are also shown in Figures 2 and 3. Upon analyzing the research model, seven hypotheses were found to exhibit statistical significance. Specifically, Effort Expectancy (EE) significantly influenced Purchase Intention (PI) ($\beta = .049$, $t = 3.498$, $p = .001^{**}$), indicating a significant role in the decision to purchase a BEV. Hedonic Motivation (HM) also significantly affected Purchase Intention ($\beta = .273$, $t = 2.026$, $p = .043^{*}$), suggesting that the enjoyment of using electric vehicles is an important factor. Price Value (PV) significantly positively affected Purchase Intention ($\beta = .028$, $t = 6.055$, $p = .000^{**}$), highlighting the importance of cost considerations. Furthermore, Government Incentives (GI) significantly influenced Purchase Intention ($\beta = .216$, $t = 5.408$, $p = .000^{**}$), underscoring the role of supportive regulatory frameworks, along with Facilitating Conditions (FC), which also exhibited a significant impact on Purchase Intention ($\beta = .094$, $t = 4.921$, $p = .000^{***}$). In addition to this, Facilitating Conditions significantly impacted Use Behavior (UB) ($\beta = .140$, $t = 6.364$, $p = .000^{**}$), indicating that external support and resources are essential for the actual use of electric vehicles. The most decisive influence was observed between Purchase Intention and Use Behavior ($\beta = .777$, $t = 19.090$, $p = .000^{**}$), suggesting that intentions are highly likely to translate into behavior.

In contrast, some hypotheses were not supported. Performance Expectancy (PE) did not significantly influence Purchase Intention ($\beta = .202$, $t = .168$, $p = .867$), indicating that perceived performance may not be critical in this context. Social Influence (SI) was also not a significant determinant of Purchase Intention ($\beta = .019$, $t = .296$, $p = .767$), suggesting that peer and social pressure may not strongly affect purchasing electric vehicles. Lastly, Environmental Concerns (EC) did not significantly affect Purchase Intention ($\beta = .250$, $t = 1.572$, $p = .116$), indicating that ecological factors may not have been a primary motivator for purchasing electric vehicles in this study.

Figure 2 Summary of the PLS-SEM Results

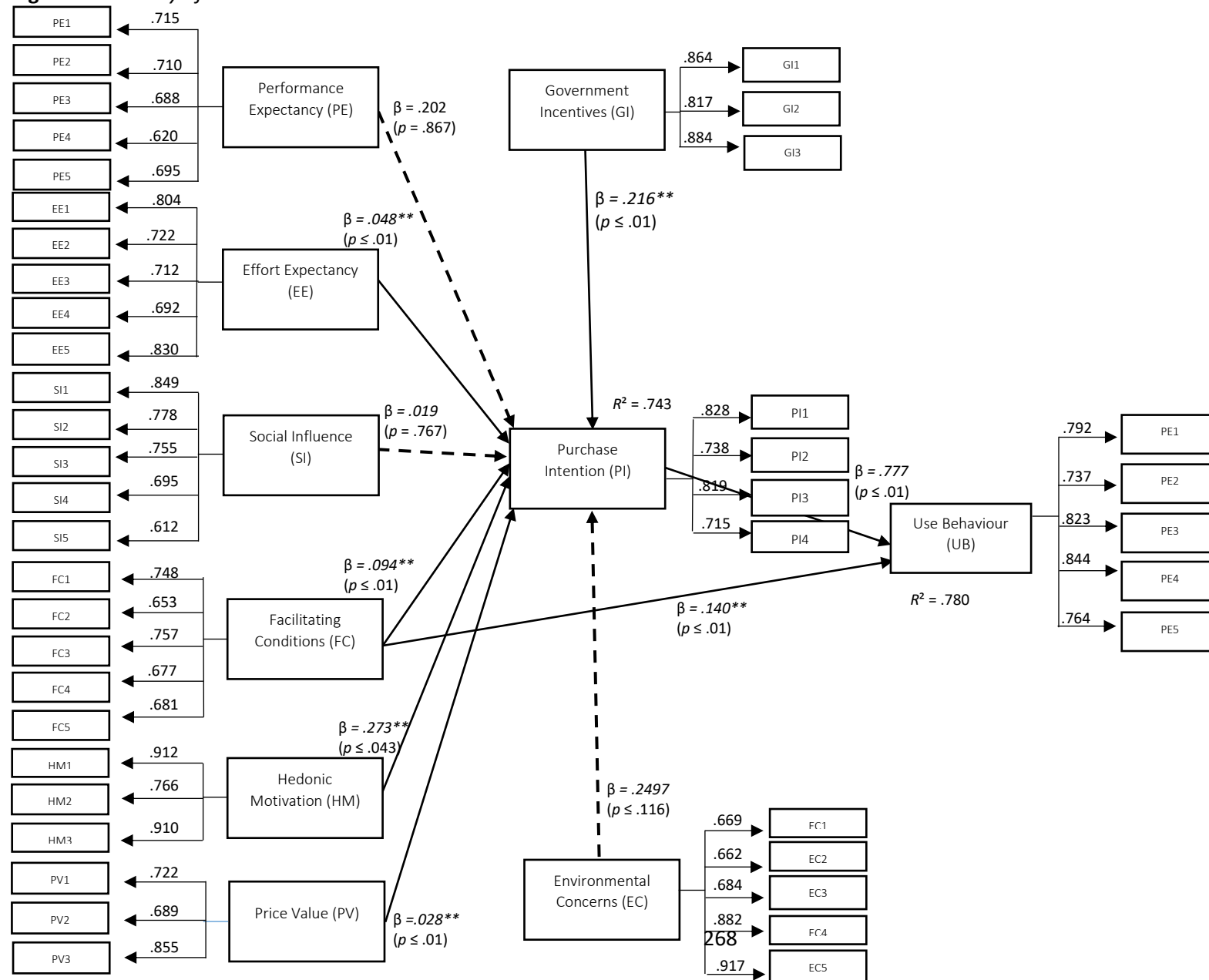
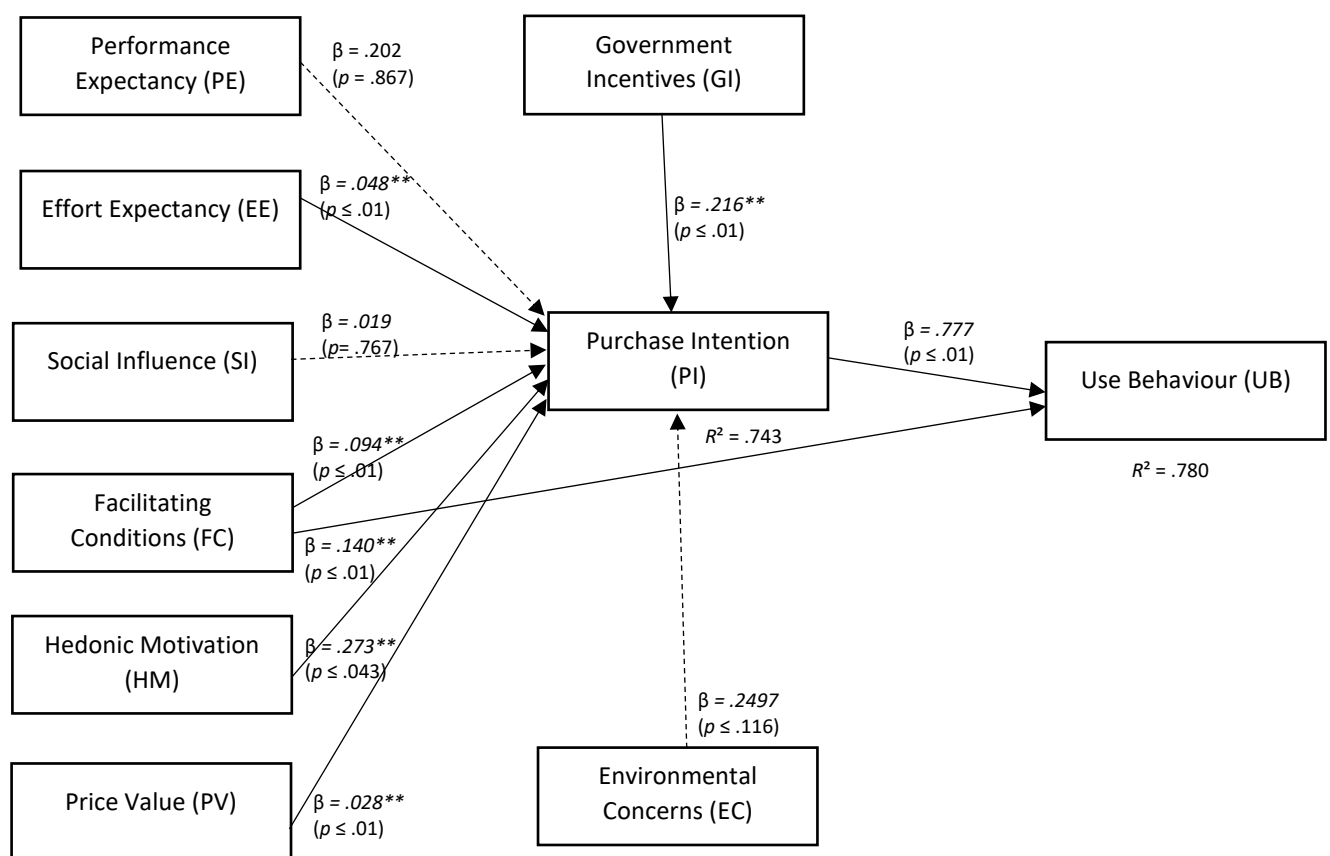


Table 3 Results of Inner Model Testing

Hypothesis	β	t-Values	p-Values	Hypothesis Results
PE -> PI	.202	.168	.867	Rejected
EE -> PI	.049	3.498**	.001	Supported
SI -> PI	.019	.296	.767	Rejected
HM -> PI	.273	2.026*	.043	Supported
PV -> PI	.028	6.055**	.000	Supported
EC -> PI	.250	1.572	.116	Rejected
GI -> PI	.216	5.408**	.000	Supported
FC -> PI	.094	4.921**	.000	Supported
FC -> UB	.140	6.364**	.000	Supported
PI -> UB	.777	19.090**	.000	Supported

Note. ** = p -value $\leq .01$ and * = p -value $\leq .05$.

Figure 3 Partial Least Square – Structural Equation Modeling Results



Discussion

The results of the PLS-SEM analysis show that seven out of the 10 proposed hypotheses were supported. These findings underscore the complex nature of consumer behavior toward BEVs in Nepal and highlight the varying impact of different UTAUT2 constructs.

Effort Expectancy (H_2) significantly affected the purchase intention of BEVs. Multiple studies have revealed that the perceived ease of use of electric vehicles positively impacts purchase intentions. For instance, a recent study reported that effort expectancy had a significant positive impact on the purchasing intention of EVs (Samarasinghe et al., 2024). Similarly, another study found that EE positively influenced travelers' behavioral intentions to use electric car-sharing systems in developing countries, where the perceived ease of use and maintenance of EVs were integrated into daily life

(Tran et al., 2019). These studies indicate that when consumers perceive BEVs as easy to use and maintain, they are more likely to consider purchasing one.

Facilitating Conditions (H_4 and H_{4a}) have shown a significant impact on both purchase intention and use behavior. Research findings in Pakistan revealed a positive relationship between facilitating conditions and individuals' intentions to adopt public cloud technology, underscoring the importance of infrastructural support and regulatory frameworks (Ali et al., 2019). This highlights the role of facilitating conditions in overcoming barriers and enhancing the perceived ease of use and usefulness of new technology. Similarly, facilitating conditions have been shown to positively impact consumers' behavioral intention to purchase electric vehicles (Tu & Yang, 2019).

Hedonic Motivation H_5 significantly impacted the purchase intention of BEVs. A study showed that hedonic motivation positively affected attitudes toward using electric vehicles in Indonesia (Gunawan et al., 2022). Research has also shown that hedonic attitudes positively influence consumers' intentions to adopt hybrid electric cars (Zamil et al., 2023).

Price value H_6 had a significant impact on the purchase intention of BEVs. Research studies have indicated that consumers are willing to pay a premium for EVs within a specific price range (Larson et al., 2014). Financial incentives and reductions in upfront prices are significant factors driving EV adoption (Bjerkan et al., 2016).

Government Incentives H_8 also displayed a significant impact on the purchase intention of BEVs. Studies have shown that financial benefits and policy privileges positively influence BEV purchases (Wang et al., 2017). Similarly, research has found that previous experience with driving BEVs and perception of government incentives significantly influence purchase intentions (Kim et al., 2019).

Purchase intention H_9 significantly impacted the use behavior of BEVs. The intention to purchase reflected consumers' willingness to adopt BEVs, and plays a crucial role in shaping subsequent usage behavior (Huang & Ge, 2019). This study found that attitude, perceived behavioral control, and monetary incentive policies positively influenced consumers' intentions to buy EVs. Similarly, research has shown that purchase intention significantly impacts use behavior (Vafaei-Zadeh et al., 2022).

Contrary to much of the existing literature, this study found that Performance Expectancy (PE) did not significantly influence BEV purchase intention among respondents in Kathmandu, Nepal. Similar to findings by Verkijika (2018) and Abbasi et al. (2021), this outcome may have reflected the profile of the sample—predominantly young adults (37.1% aged 23–29), with a large proportion being students (40.1%) and early-career professionals. For this group, affordability and practicality likely outweighed expectations of performance, especially given their limited exposure to electric vehicles.

Social Influence (SI) was also non-significant, which may be attributed to the low visibility of BEVs in respondents' social environments. Even though more than half drove vehicles daily, BEVs were not yet prevalent in peer groups, limiting normative pressure. This aligned with findings in other developing contexts (e.g., Tran et al., 2019), where social influence was weak due to low market penetration.

While Environmental Concern (EC) was reported as important by 272 respondents, it did not translate into a significant predictor of purchase intention. This suggested a gap between environmental awareness and actual consumer behavior, likely driven by economic priorities. Cost savings, cited by 282 respondents, emerged as the most influential factor, underscoring the financial motivations behind the adoption of BEVs. Given that only 38.1% of respondents earned above Rupees 40,000 per month, price sensitivity may have overridden environmental considerations, consistent with previous research findings (Liu et al., 2015; Thananusak et al., 2017).

In sum, the insignificance of PE, SI, and EC can be better understood within the socio-economic realities of Nepal. BEV adoption is currently driven more by tangible financial benefits and practical considerations than by performance perceptions, peer influence, or environmental values. Policy and marketing efforts should therefore prioritize affordability, government incentives, and infrastructure development, while gradually building public awareness and environmental engagement.

Limitations and Implications

First, this study was limited by reliance on a sample of combustion engine vehicle owners due to the early stage of BEV adoption in Nepal, which restricted the ability to study actual BEV users' purchasing behavior. Future research should include more extensive consumer data with a more representative sample of BEV users. Second, the geographical scope was confined to Kathmandu, limiting the generalizability of the findings. This study could be expanded to other regions in Nepal, which would provide a broader understanding of BEV adoption in Nepal. Lastly, while the study focused on UTAUT2 constructs, it did not explore other potentially influential factors such as brand loyalty, fuel efficiency, etc. Future research should incorporate these factors to provide a more comprehensive view of BEV adoption in Nepal.

Conclusion and Recommendations

This study employed PLS-SEM to investigate the factors influencing the adoption of BEVs in Nepal, guided by the UTAUT2 framework and extended constructs. Effort Expectancy, Facilitating Conditions, Hedonic Motivation, Price Value, and Government Incentives significantly influenced consumers' Purchase Intention. These findings underscore the importance of ease of use, infrastructure availability, driving enjoyment, affordability, and supportive government policies in shaping consumer attitudes toward BEVs.

However, Performance Expectancy and Social Influence were not significant, suggesting that potential buyers in Nepal prioritize practical and experiential aspects over perceived performance or peer influence. Furthermore, Environmental Concerns did not significantly impact Purchase Intention or Usage Behavior, indicating that while sustainability is a global priority, Nepali consumers currently emphasize more immediate and tangible benefits. This suggests a need for awareness campaigns that translate environmental impact into more personally relevant terms for consumers.

This study confirmed a strong positive relationship between Purchase Intention and Usage Behavior, indicating that fostering strong intentions through favorable conditions and incentives is likely to lead to actual adoption. No significant mediators or moderators were identified in the current model, but further research could explore demographic or regional factors as potential influencers.

Based on these findings, policymakers should continue to improve BEV infrastructure and extend financial incentives to lower the adoption barrier. Marketers and manufacturers should design user-friendly and enjoyable BEV experiences to attract potential buyers, and environmental organizations and educators should create targeted campaigns that connect environmental benefits with consumers' personal values and daily lives. These recommendations align directly with the study's objectives and offer actionable insights for stakeholders aiming to accelerate BEV adoption in Nepal.

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Social Media and Elections: Facebook and TikTok's Influence on First-Time Voters' Preferences in Maasin City, Philippines

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Abstract

Aim/Purpose: Given the scarcity of studies that have specifically examined Facebook and TikTok's impact on youth political engagement, this exploration aimed to determine the frequency of use among first-time voters. It also examined their purposes for using Facebook and TikTok, as well as the level of influence these social media platforms have on their voting preferences.

Introduction/Background: In an era of digital campaigns and elections, this study examined the political preferences of first-time voters to address the research gap on the impact of Facebook and TikTok on youth political engagement. Political culture and Facebook/TikTok usage vary widely, underscoring the need for localized research to guide future studies and political communication in the Philippines. Few studies have examined these major social media platforms, especially for younger voters and political material.

This study revealed that many young voters believe that Facebook and TikTok influence their decisions, providing crucial quantitative data on first-time voters' political activity on Facebook and TikTok. Social media platforms educate, engage, and develop communities, and the study describes how material on these platforms has inspired young users to join in political debates and activities. TikTok's creative expression makes political discussions more accessible and engaging for younger viewers, increasing political understanding and mobilization. It also stresses the importance of media literacy programs to protect young people from misinformation. This study fills a research gap in youth engagement through social media and provides actionable insights for political communication techniques to reach young voters. This research is vital in addressing social media concerns and obstacles related to electoral campaigns.

Methodology: Descriptive survey research was used to measure 380 first-time voters' frequency of Facebook and TikTok use, along with the purpose and influence level of such usage on voting preferences. These first-time voters resided in Maasin City, Southern Leyte, Philippines, were registered to vote in automated midterm National and Local Elections, were 18 years old or above, and had active accounts on Facebook and TikTok. They were selected through a snowball sampling technique; identified respondents referred other qualified first-time voters. A structured online questionnaire through Google Forms was developed by reviewing the relevant literature. Five-point Likert-type scales measured the frequency and agreement of respondents with the study's objectives. Cronbach's alpha, computed to verify reliability, was .88 for the fifteen statements, indicating excellent internal consistency. The data were analyzed and interpreted using descriptive statistics such as frequency distributions and mean scores; MANOVA and Tukey post hoc tests were conducted to test the study's hypotheses.

Findings: First-time voters "always" used Facebook and TikTok; Facebook was "always" used as a communication medium, while TikTok was "often" used for this purpose. Both platforms frequently served as channels for social connection, civic involvement, and political participation. Facebook and TikTok were "influential" in the voting preferences of first-time voters. Moreover, evidence revealed statistically significant differences in how frequently Facebook (Wilks' Lambda = .664, $F(380) = 21.23$,

$p < .0005$) and TikTok (Wilks' Lambda = .868, $F(380) = 6.87$, $p < .0005$) were used by first-time voters, the purpose of such usage, and its level of influence on their election preferences. Using Tukey's HSD post hoc test, the results underscored the significant role of more frequent Facebook use in influencing political preferences in elections, highlighting the importance of social media exposure and engagement for aspiring and career politicians.

Contribution to Society: The research empirically substantiated Agenda-Setting, Social Identity, and the Bandwagon Effect theories within contemporary electoral participation, thus enhancing existing knowledge. It showed that first-time voters were especially susceptible to social media's influence, emphasizing the need to understand how these platforms shaped political preferences and motivated new voters. Political campaigns could adapt material for younger audiences on Facebook and TikTok to increase civic engagement, election participation, and possibly lead to better informed and more interested voters. As information sources and political discourse platforms, social media can change young voters' engagement with democracy and behavior.

Recommendations: Since first-time voters are vital to electoral success, politicians seeking reelection or leadership roles should develop Facebook and TikTok tactics. National and municipal governments should collaborate on providing non-partisan voter information through Facebook and TikTok for first-time voters. Students and youth who are no longer in school must be taught to critically evaluate political content online by educational institutions and through community extension services.

Research Limitations: This study was conducted in Maasin City; regional cities and neighboring municipalities may yield responses that reflect their distinct socio-economic conditions, social media usage, and lifestyles. Gathering data via Google Forms may also have affected respondent answers. The survey may change or shift the perspectives of the concepts under study if deepened with qualitative responses. Referral sampling may also produce a biased sample that does not accurately represent the inclusion criteria.

Future Research: Future researchers could investigate the changing influence of Facebook and TikTok on electoral behavior, emphasizing the efficacy of engagement techniques on political campaigns and electoral success, and focusing on gender or specific age groups. Future studies on the long-term impacts of social media on youth political behavior should also be initiated.

Keywords: *Philippine elections, first-time voter preferences, social media*

Introduction

Social media is increasingly shaping global elections, influencing voter behavior and political discourse; the use of platforms like Facebook and TikTok has altered the political activities of countries. Studies have shown that while social media platforms can increase political awareness, they can also be used to spread misinformation, thus weakening electoral trust (Allcott et al., 2024). Social media platforms influence campaign strategy and younger voters as elections approach (Ausat, 2023).

Since 2020, Facebook and TikTok have had a growing impact on worldwide elections. TikTok is a powerful tool for political engagement among younger generations, notably Generation Z. TikTok outperforms other social media platforms in shaping political beliefs and motivating users to participate in online and traditional political activities (Karimi & Fox, 2023). According to Cervi and Marín-Lladó (2021), Spanish political parties have relied on it for unilateral promotion of politicization, and Peruvian candidates exclusively used it for politainment (Cervi et al., 2023). TikTok users organized to produce content on racial justice and climate change during the 2020 U.S. presidential election, demonstrating the platform's ability to combine entertainment and politics (Sugihartono, 2024).

On the other hand, investigations have found that Facebook has struggled to control misleading political adverts, especially during crucial election seasons (Global Witness, 2022; Ortutay, 2024). Political advertising produces emotions which are sometimes commercialized, and may result in fake news on Facebook (Cano-Orón et al., 2021). Since Facebook advertising is widely employed in political

campaigns, modern communication strategies increasingly rely on it, which presents intriguing questions regarding the need for social media disinformation regulation (Cano-Orón et al., 2021). The interaction between these platforms and electoral processes shows that they can change political discourse and engagement worldwide (Dad & Khan, 2023).

Facebook and TikTok have changed Philippine politics and voter behavior, especially during the 2022 presidential election. Facebook, already a major political medium, was used for disinformation efforts. This strategy became popular under former President Rodrigo Duterte and has continued under incumbent President Ferdinand Marcos Jr. Research shows that hired trolls and influencers drive much political communication on social media, fostering misinformation (Arugay, 2022). TikTok, which excels at reaching younger voters, was used to sanitize the Marcos family's history to appeal to users who had not lived under martial law (Pierson, 2022). According to experts, this combination of channels promotes deception, hurting conventional media and making media literacy initiatives harder (Asia Centre, 2022; Ausat, 2023). The 2022 elections showed how social media algorithms can propagate misinformation, influencing public opinion and elections (Arugay, 2022; Quitzon, 2021).

Nevertheless, Facebook and TikTok significantly influence young voters in the Philippines by enhancing political engagement and awareness among Generation (Gen) Z. A study found that 81% of Filipino Gen Zers prefer social media for political discussions, with platforms like TikTok providing quick, engaging content that addresses social issues and motivates political participation (Cadayday et al., 2024). TikTok's format allows for creative expression, enabling users to share their views on political matters in a relatable manner, thereby fostering community engagement (Karimi & Fox, 2023; Ngilangil, 2022). Furthermore, 70% of young voters reported that Facebook influenced their voting decisions, highlighting the platform's role in shaping political attitudes through trusted content and peer interactions (Arugay, 2022). These platforms not only serve as spaces for information dissemination, but also empower young Filipinos to actively participate in the democratic process.

Understanding the influence of Facebook and TikTok on first-time voters is key to understanding youth politics and winning political campaigns. These platforms dominate the digital world and transmit political information, affecting voting preferences. Social media can help first-time voters who lack electoral experience become politically active. As Facebook and TikTok become increasingly incorporated into first-time voters' civic life, evaluating their consequences can indicate how youth participate in democracy. These linkages illuminate the electoral climate and offer ways to educate and engage future generations.

Literature Review

Reviewing literature and studies on Facebook and TikTok's influence on first-time voters' political preferences is essential to understand how these dominant social media platforms shape youth political behavior in the 21st century. Extracting information about Facebook and TikTok is crucial because they serve as primary venues for online election campaigns, offering unique content formats and algorithms that affect political information exposure and engagement among first-time voters, who are a critical demographic for democratic participation. Anchoring this review with theories such as Agenda-Setting, Social Identity, and the Bandwagon Effect provides a robust framework to analyze how these platforms influence voters' perceptions, group affiliations, and the tendency to conform to popular political trends.

Despite growing research on TikTok's political impact globally and Facebook's longstanding role in political communication, there remains a notable gap in studies specifically addressing these dynamics within the Philippine context, where political culture and social media usage patterns may differ significantly, highlighting the need for localized research in this area. This research gap underscores the importance of this study, which reviews existing literature and empirical studies and informs political communication strategies in the Philippines.

Theoretical Underpinnings

The influence of social media on voters' preferences during elections has been the subject of extensive research, leading to the development of several theories that explain this phenomenon. One key theory is the Agenda-Setting Theory, which posits that media outlets, including social media platforms, shape public perception by highlighting specific issues while downplaying others (Neuman et al., 2014; Maxwell & Donald, 1972). This selective exposure can shift voter priorities and preferences as they become more aware of topics emphasized online (Neuman et al., 2014). For instance, a recent study indicated that social media platforms amplify partisan messages, which can significantly alter voter perceptions and encourage alignment with particular political parties or candidates based on the issues that dominate online discussions (Fujiwara et al., 2024).

Social Identity Theory posits that individuals draw a portion of their identity from their affiliations with various groups, including political associations (Hogg, 2016). Social media fosters conditions that enable users to interact with like-minded people, reinforcing their opinions and preferences through echo chambers. This effect may result in heightened polarization, as users predominantly encounter content that corroborates their perspectives, while opposing viewpoints are relegated. Studies indicate that this process reinforces established preferences and can galvanize voters to engage in elections driven by group identity and shared values (Kleinnijenhuis et al., 2019).

Lastly, the Bandwagon Effect Theory describes how individuals are influenced by the perceived popularity of a candidate or idea, often seen in social media trends. Users may feel compelled to conform to this majority view as they see others expressing support for a particular candidate or political position, thereby altering their preferences (Henshel & Johnston, 1987). This effect is particularly pronounced in environments where engagement metrics, such as 'likes' and 'shares', serve as indicators of popularity, creating a feedback loop that can rapidly shift public opinion (Alhaimer, 2023; Carney, 2022).

Collectively, these ideas clarify that social media functions not just as a medium for information distribution, but also actively influences voter preferences through exposure, identity reinforcement, and social influence mechanisms.

Facebook and TikTok as Social Media Platforms

Facebook and TikTok exemplify two divergent paradigms within the social media environment, each possessing distinct advantages and user demographics. As of late 2024, Facebook continues to be the most extensively utilized platform worldwide, with over 3 billion active members (Ali, 2024). Its wide reach across various age demographics renders it an effective instrument for marketers aiming to engage a large audience (Sajid et al., 2024). TikTok has swiftly garnered popularity, boasting almost 1.69 billion users, especially among younger demographics (Goldman, 2024). The algorithm facilitates the dissemination of viral material and fosters creative expression via short-form videos. The elevated engagement level establishes TikTok as a vibrant platform for trendsetting and influencer marketing, attracting marketers that aim to reach younger customers, who prefer interactive and visually stimulating content (Kemp, 2024).

In the Philippines, social media usage is particularly pronounced, with the country ranking fourth worldwide in terms of social media penetration (Kemp, 2024). As of 2024, Filipinos spent an average of nearly three hours daily on social media platforms, significantly higher than the global average (Kemp, 2024). Facebook continues to dominate the landscape, with around 100 million users accessing it regularly (Ali, 2024). At the same time, TikTok has emerged as the fastest-growing platform, gaining over 43 million users aged 18 and above in 2023 alone (Zeng & Kaye, 2022). The rise of social commerce is notable, with platforms like Facebook Marketplace facilitating direct sales to consumers, while TikTok's engaging format enables brands to connect with younger audiences effectively. The strong community-oriented culture in the Philippines drives this engagement, as social media serves not only as a source of entertainment, but also as a vital tool for communication among families and friends, especially those separated by distance due to overseas work opportunities (Kemp, 2024).

Online Campaigns for Elections

Political candidates increasingly leverage Facebook and TikTok to engage voters and shape their campaigns. Facebook remains a dominant force in political advertising, allowing candidates to run targeted ads that reach specific demographics. Meta, the parent company of Facebook, emphasizes transparency and equal opportunity in political advertising, enabling smaller parties to participate in the electoral process. This strategy is complemented by an ads library that allows users to see the political ads being run, which aims to enhance accountability and trust in the platform's political discourse (Locus, 2024). However, the effectiveness of these ads can be undermined by the spread of misinformation, as evidenced by investigations revealing that both Facebook and TikTok have struggled with moderating misleading content in political ads (Ortutay, 2024; Global Witness, 2024).

Conversely, TikTok has emerged as a powerful tool for reaching younger voters. Political efforts using TikTok to target a younger audience through digital activism are crucial (Moir, 2023). The platform's unique format allows for creative and engaging content that can quickly disseminate political messages. Studies indicate that TikTok can significantly influence political attitudes and motivate users to participate in online and traditional political engagement forms (Karimi & Fox, 2023; Chen, 2022). Despite its potential, TikTok has faced criticism for its political content handling; it has banned paid political advertisements, but has still allowed misleading information to circulate through user-generated content (Ortutay, 2024; Zamora-Medina et al., 2023). As TikTok grows in popularity, its role in shaping political narratives and mobilizing young voters will likely expand, making it a critical battleground for future campaigns (Karimi & Fox, 2023).

First-Time Voters of the Twenty-First Century

First-time voters in the 21st century exhibit distinct qualities shaped by their unique social and technological environments. This demographic is characterized by a high level of engagement with social media platforms, which serve as primary sources of political information and community interaction. Platforms like Facebook and TikTok have become instrumental in mobilizing young voters, with a significant percentage relying on these channels for election-related content (Abdu et al., 2017; Alizen et al., 2024; McClain, 2024). Kopti (2023) found that 68% of first-time voters in the 2018 United States elections obtained information from social media, compared to only 23% who relied on traditional methods. This shift highlights a generational preference for digital engagement over conventional media, leading to increased political participation among youth. Furthermore, the accessibility of information on social media has empowered young voters to express their political opinions and engage in civic activities, fostering a culture of activism and informed voting behavior (CIRCLE, 2023; Foster & Markiewicz, 2023).

Social media's influence extends beyond mere information dissemination. Facebook and TikTok actively shape the preferences of young voters. The decentralized nature of news delivery on these platforms allows users to curate their political content, leading to a more personalized and diverse news experience (Foster & Markiewicz, 2023). The online environment enhances political literacy and encourages discussions around critical issues, making politics more relatable to young audiences (Leuci, 2024). Notably, TikTok has emerged as a powerful tool for political engagement, with creative content that resonates with younger users, often driving viral movements and encouraging voter registration campaigns (CIRCLE, 2023). However, this landscape is not without challenges. Concerns about misinformation and the overwhelming volume of political content can lead to fatigue among users. As such, while social media catalyzes increased voter turnout among first-time voters, it also necessitates critical engagement with the information shared within these digital spaces (Leuci, 2024).

Hence, to systematically examine these relationships, this study tested the following hypotheses, which assess whether the frequency of Facebook and TikTok use significantly affected first-time voters' purpose of use and voting preferences.

Hypotheses

H_{01} : No significant differences exist between the frequency of Facebook use by first-time voters and the mean scores of their purpose of use, or Facebook's level of influence on voting preferences.

H_{02} : No significant differences exist between the frequency of TikTok use by first-time voters and the mean scores of their purpose of use, or TikTok's level of influence on their voting preferences.

Methodology

Research Design

Descriptive survey research is crucial in understanding populations and their characteristics, providing valuable insights for decision-making and policy development. In this study, this design was used to measure first-time voters' Facebook and TikTok use, the purpose of such use, and its level of influence on their voting preferences.

Population and Sample

The population and sample consisted of first-time voters aged 18 years or above who resided in Maasin City, Southern Leyte, Eastern Visayas, Philippines. First-time voters may have participated in the 2023 Barangay (village) Elections, but not in the country's upcoming automated midterm National and Local Elections. They had active accounts on Facebook and TikTok. When the inclusion criteria were met, respondents were selected through referral sampling. Respondents identified by the researcher were asked to refer and recruit other first-time voters who met the inclusion criteria, resulting in reaching the target sample size, which was 380.

Research Instrument

A structured online questionnaire through Google Forms was developed by reviewing relevant works of literature. Five-point Likert-type scales measured the frequency and agreement of respondents with the study's objectives. The questionnaire consisted of two parts: first, the use and purpose of Facebook and TikTok among first-time voters, and second, the levels of influence exerted by Facebook and TikTok content on their voting preferences. Cronbach's alpha was computed to verify the instrument's reliability; the score for 15 statements was .88, which reflected excellent internal consistency.

Results

Frequency of Social Media Use

Table 1 displays the use of Facebook and TikTok by first-time voters through a frequency distribution.

Table 1 Facebook and TikTok Use (N = 380)

	Facebook		TikTok	
	<i>f</i>	%	<i>f</i>	%
Always (online)	208	55	223	59
Several times a day	100	26	101	26
Once a day	26	7	30	8
One or two times a week	17	4	23	6
Rarely	29	8	3	1
Total	380	100	380	100

Facebook and TikTok play a significant role in the daily activities of first-time voters. A majority of first-time voters "always" use Facebook and TikTok, as shown in Table 1. A smaller number use both platforms "several times a day". However, the least frequent Facebook use is "one or two times a week", while "rarely" was the least frequent category for TikTok use.

Purpose of Social Media Use

Table 2 shows the purpose of Facebook and TikTok use by first-time voters in terms of means and their interpretations.

Table 2 Purpose of Facebook and TikTok (N = 380)

	Facebook		TikTok	
	<i>Mean</i>	<i>Interpretation</i>	<i>Mean</i>	<i>Interpretation</i>
Communication Medium	4.28	Always	4.03	Often
Social Connection	4.06	Often	3.78	Often
Civic Involvement	3.75	Often	3.77	Often
Political Participation	3.78	Often	3.75	Often
All of the Above	4.11	Often	3.95	Often
Aggregate Mean	4.00	Often	3.86	Often

Legend. Always (4.21–5.00); Often (3.41–4.20); Sometimes (2.61–3.40); Rarely (1.81–2.60); Never (1.00–1.80).

Table 2 reveals that first-time voters expressly agreed that they “always” use Facebook as a communication medium. This can mean they use it to converse with friends and/or reach out to strangers for discussion, inquiry, and the like. Facebook users have exhibited a greater propensity to share, like, and comment on interactive party posts (Koc-Michalska et al., 2021). These findings are crucial for comprehending the mechanisms by which social media campaigns affect voters and election results, as follower responses, especially sharing, enhance the exposure of party communications through indirect or two-step communication flows (Koc-Michalska et al., 2021). Parties can ascertain the elements of a ‘successful’ Facebook campaign and enhance communication reach based on such results (Koc-Michalska et al., 2021).

However, the majority of first-time voters “often” use TikTok as a medium of communication. This shows how TikTok has penetrated the communication landscape, enabling first-time voters to connect effectively with political material, fostering a more politically informed and active youth demographic. Moreover, in contemporary digital politics, identity-related matters and emotional appeal attributes may be vital during electoral campaigns as parties vie for voter attention (Blassnig et al., 2021).

First-time voters “often” employ both platforms for social connection, civic involvement, and political participation. This conveys their purpose of organizing and posting photos, videos, and/or other files in order to boost their personal egos and/or gain emotional support among friends or followers (social connection). Facebook and TikTok help first-time voters invite possible collaborations for civic welfare content or projects, encourage greater participation of online community members (civic involvement), and express political opinions on current trends and issues and/or assert political influence online (political participation). The tailored political content on these platforms enhances political awareness among youth, promotes community engagement, and enables them to connect with peers and articulate their views more freely (Ausat, 2023; Yahaya et al., 2024).

Social Media Influence on Voting Preferences

Table 3 presents the agreement of first-time voters about the levels of influence of Facebook and TikTok on their voting preferences through their coded responses, mean scores, and interpretations.

Facebook and TikTok are “influential” on first-time voters’ preferences, as shown in Table 3. First-time voters agreed that the content of these social media platforms exerted an influence on their political preferences in the context of elections, thus motivating them to favor one candidate over another. Their engagement with social media platforms, trust in news disseminated via social media, political party activity on these platforms, the prevalence of false political news, and optimism toward the current political climate influence political decision-making (Rathi et al., 2021). A solitary ‘Facebook like’ can forecast voting behavior, illustrating the capacity of social media data to anticipate electoral results (Yahaya et al., 2024). TikTok influences, engages, educates, and entertains the young through dialogue, news, and engagement persistently (Karimi & Fox, 2023). As Ausat (2023) claimed, social media, like Facebook and TikTok, facilitate the dissemination of knowledge and the discourse

on subjects that influence society. These platforms influence public opinion and impact the views and choices of individuals. While social media plays a role, other factors (e.g., family, peers, and traditional media) may also contribute to voting preferences.

Table 3 Facebook and TikTok's Level of Influence (N = 380)

Indicators	Facebook		TikTok	
	Mean	Inter.	Mean	Inter.
Its political content is more engaging than traditional news sources.	3.87	Influential	3.88	Influential
My voting preferences have been influenced by the political messages I encountered in it.	4.04	Influential	3.80	Influential
I often rely on its influencers to provide information about political candidates and issues.	3.94	Influential	3.88	Influential
The entertaining nature of its content makes me more interested in political topics.	3.98	Influential	3.77	Influential
It significantly impacts young voters' decisions like me.	3.82	Influential	3.78	Influential
Seeing friends and peers discuss politics in it influences my political opinions.	3.77	Influential	3.67	Influential
It helps me understand the political landscape better than other social media platforms.	3.91	Influential	3.82	Influential
Its political advertisements make me more likely to vote in elections.	3.84	Influential	3.74	Influential
Its algorithm promotes content that aligns with my political beliefs.	3.84	Influential	3.74	Influential
I have changed my mind about a political issue after viewing its content.	3.82	Influential	3.77	Influential
Aggregate Mean	3.88	Influential	3.79	Influential

Legend. Response (Res.): Strongly Agree (5); Agree (4); Slightly Agree (3); Disagree (2); Strongly Disagree (1); Interpretation (Inter.): Highly Influential (4.21–5.00); Influential (3.41–4.20); Somewhat Influential (2.61–3.40); Slightly Influential (1.81–2.60); Not at All Influential (1.00–1.80).

Difference of Means for Frequency of Facebook Use by First-Time Voters, Their Purpose of Use, Its Level of Influence on Their Voting Preferences

Table 4 shows the differences in means of purpose and level of influence on the use of Facebook using a Multivariate Analysis of Variance (MANOVA).

Table 4 Multivariate Tests of Means of Use of Facebook, Purpose, Level of Influence

Effect		Value	F	Hypothesis df	Error df	Sig.
Intercept	Wilks' Lambda	.062	2828.618	2.000	374.000	.000
Facebook	Wilks' Lambda	.664	21.227	8.000	748.000	.000

A One-Way MANOVA test was conducted to determine if there were differences in the frequency of Facebook use among first-time voters, their usage purpose, and its level of influence on their voting preferences. The multivariate tests revealed a significant effect on the frequency of Facebook use on the combined dependent variables (Wilks' Lambda = .664, $F(380) = 21.23$, $p < .0005$). This result means that there were statistically significant differences between the frequency of Facebook use, the purpose of Facebook use, and its level of influence on their voting preferences.

Table 5 *Post Hoc Test for Significant Difference Between Purpose and Influence Level of Facebook*

Dependent Variable	(I) Facebook	(J) Facebook	Mean Difference (I-J)	Std. Error	Sig.
FP_Ms	Rarely	Once or twice a week	-.140	.205	.952
		Once a day	-.724*	.181	.001
		Several times a day	-.990*	.142	.000
		Always	-1.476*	.133	.000
	Once or twice a week	Rarely	.14	.205	.952
		Once a day	-.577*	.209	.048
		Several times a day	-.843*	.176	.000
		Always	-1.328*	.169	.000
	Once a day	Rarely	.724*	.181	.001
		Once or twice a week	.577*	.209	.048
		Several times a day	-.266	.148	.375
		Always	-.752*	.140	.000
	Several times a day	Rarely	.990*	.142	.000
		Once or twice a week	.843*	.177	.000
		Once a day	.266	.148	.375
		Always	-.486*	.082	.000
	Always	Rarely	1.476*	.133	.000
		Once or twice a week	1.328*	.169	.000
		Once a day	.752*	.140	.000
		Several times a day	.486*	.082	.000
FLI_Ms	Rarely	Once or twice a week	-.003	.230	1.000
		Once a day	-.437	.204	.204
		Several times a day	-.533*	.160	.008
		Always	-.906*	.150	.000
	Once or twice a week	Rarely	.003	.230	1.000
		Once a day	-.434	.235	.349
		Several times a day	-.531	.198	.059
		Always	-.903*	.190	.000
	Once a day	Rarely	.437	.204	.204
		Once or twice a week	.434	.235	.349
		Several times a day	-.096	.166	.978
		Always	-.469*	.157	.025
	Several times a day	Rarely	.533*	.159	.008
		Once or twice a week	.531	.198	.059
		Once a day	.096	.166	.978
		Always	-.373*	.092	.001
	Always	Rarely	.906*	.150	.000
		Once or twice a week	.903*	.190	.000
		Once a day	.469*	.157	.025
		Several times a day	.373*	.092	.001

Legend. FP_Ms means Facebook Purpose Means, FLI_Ms means Facebook's Level of Influence Means.

Using Tukey's HSD post hoc test, the frequencies of Facebook usage which had significant differences in the purpose and level of influence of Facebook could be precisely identified. Table 5 above shows that among first-time voters who use Facebook "Always", the usage purpose was statistically significantly different and higher than for the following categories of users: "Rarely" ($p < .0005$), "Once or twice a week" ($p < .0005$), "Once a day" ($p < .0005$) and "Several times a day" ($p < .0005$). The table also shows that among those who use Facebook "Rarely", their usage purpose was statistically different and lower among those who used it "Once a day" ($p = .001$) or "Several times a day" ($p < .0005$), though not for usage "Once or twice a week" ($p = .0952$). The purpose of Facebook use was also significantly different between those who used it "Once or twice a week" or "Once a day" ($p = .048$), and those who used it "Once or twice a week" and "Several times a day" ($p < .0005$).

Moreover, the level of Facebook influence on the voting preferences of first-time voters who use Facebook “Always” was significantly different and higher than those who use it “Rarely” ($p < .0005$), “Once or twice a week” ($p < .0005$), “Once a day” ($p = .025$), or “Several times a day” ($p = .001$). The results also showed a significant difference in the level of Facebook influence between those who use Facebook “Rarely” and “Several times a day” ($p < .008$).

The results inferred that the most significant differences can be found between “Always” and all the other frequencies of Facebook use for the dependent variables: the purpose of Facebook use, and the level of influence of Facebook on voting preferences. These findings underscore the significant role of more frequent Facebook use in developing purposes for Facebook use and influencing political preferences in elections, highlighting the importance of social media exposure and engagement for aspiring and reelection-seeking politicians.

Difference of Means for Frequency of TikTok Use by First-Time Voters, Their Purpose of Use, and Its Level of Influence on Their Voting Preferences

Table 6 shows the difference in means of purpose and level of influence on the use of TikTok using MANOVA through SPSS.

Table 6 *Multivariate Tests of Means of Purpose and Level of Influence to the Use of TikTok*

Effect		Value	F	Hypothesis df	Error df	Sig.
Intercept	Wilks' Lambda	.226	640.173 ^b	2.000	374.000	.000
TikTok	Wilks' Lambda	.868	6.870 ^b	8.000	748.000	.000

A One-Way MANOVA test was conducted to determine if there were differences in the frequency of TikTok use among first-time voters, their usage purpose, and its level of influence on their voting preferences. The multivariate tests revealed a significant effect of the frequency of TikTok use on the combined dependent variables (Wilks' Lambda = .868, $F(380) = 6.87$, $p < .0005$). This outcome means that there were statistically significant differences between the frequency of TikTok use, the purpose of TikTok use, and its level of influence on their voting preferences.

Tukey's HSD post hoc test can specifically identify which frequencies of TikTok usage significantly affected its usage purpose and level of influence. Table 7 shows that the purpose of TikTok use by first-time voters who used TikTok “Always” was statistically significantly different and higher than among the following user categories: “Once or twice a week” ($p < .0005$), “Several times a day” ($p < .003$), “Rarely” ($p < .014$), and “Once a day” ($p < .023$). It also significantly differed between “Once or twice a week” and “Several times a day” ($p = .003$).

Furthermore, the level of TikTok influence on the voting preferences of first-time voters who use TikTok “Once or twice a week” was significantly different and higher than those who use TikTok “Several times a day” ($p < .001$) and “Always” ($p < .0005$).

The results indicated that the most substantial differences existed between “Always” and all other frequencies of TikTok usage for the goal of TikTok engagement. Nevertheless, regarding TikTok's impact on voting preferences, individuals who utilized the platform “Once or twice a week” exhibited the most pronounced variation. These findings highlight how increased TikTok usage may affect the rationales for its use. Nonetheless, the impact on political preferences during elections exhibited minor variations based on TikTok usage frequency. Nevertheless, this underscores the significance of social media visibility and interaction for aspiring and incumbent politicians seeking reelection.

Table 7 *Post Hoc Test for Significant Difference between Purpose and Influence Level of TikTok*

Dependent Variable	(I)TikTok	(J) TikTok	Mean Difference (I-J)	Std. Error	Sig.
TP_Ms	Rarely	Once or twice a week	-.470	.492	.875
		Once a day	-1.013	.486	.228
		Several times a day	-1.137	.470	.112
		Always	-1.483*	.466	.014
	Once or twice a week	Rarely	.470	.492	.875
		Once a day	-.544	.222	.105
		Several times a day	-.667*	.185	.003
		Always	-1.013*	.176	.000
	Once a day	Rarely	1.013	.486	.228
		Once or twice a week	.544	.222	.105
		Several times a day	-.123	.167	.947
		Always	-.469*	.1560	.023
	Several times a day	Rarely	1.137	.470	.112
		Once or twice a week	.667*	.185	.003
		Once a day	.123	.167	.947
		Always	-.346*	.096	.003
	Always	Rarely	1.483*	.467	.014
		Once or twice a week	1.013*	.176	.000
		Once a day	.469*	.156	.023
		Several times a day	.346*	.096	.003
TLI_Ms	Rarely	Once or twice a week	-.023	.495	1.000
		Once a day	-.540	.488	.803
		Several times a day	-.757	.472	.497
		Always	-.916	.468	.290
	Once or twice a week	Rarely	.023	.495	1.000
		Once a day	-.517	.223	.143
		Several times a day	-.737*	.186	.001
		Always	-.893*	.177	.000
	Once a day	Rarely	.540	.488	.803
		Once or twice a week	.517	.223	.143
		Several times a day	-.217	.168	.695
		Always	-.376	.157	.117
	Several times a day	Rarely	.757	.472	.497
		Once or twice a week	.734*	.186	.001
		Once a day	.217	.168	.695
		Always	-.160	.097	.465
	Always	Rarely	.917	.468	.290
		Once or twice a week	.893*	.177	.000
		Once a day	.376	.157	.117
		Several times a day	.160	.097	.465

Legend. TP_Ms means TikTok Purpose Means, TLI_Ms means TikTok's Level of Influence Means.

Discussion

First-time voters acknowledged Facebook and TikTok as influential in shaping their electoral preferences. They affirmed the influence of social media in affecting their political preferences, validating the expanded predictions of theories about Agenda-Setting, Social Identity, and Bandwagon Effect. The results elucidated the prevalent utilization of these platforms as means of communication, social connectivity, civic engagement, and political participation. Notably, Facebook and TikTok exerted statistically significant differences on the purpose and level of influence on first-time voters who used these platforms.

Facebook and TikTok are recognized as significant platforms, and their frequent usage indicates that these social media platforms function not just as information sources, but also as essential arenas for civic engagement and political conversation. This research demonstrated that first-time voters are

especially vulnerable to social media influence, perhaps resulting in a more polarized and engaged electorate. These platforms enable swift distribution of information, frequently in a more accessible format for younger users, so they greatly influence voter mobilization initiatives (Cadayday et al., 2024). First-time voters are not simply passive consumers, but become active participants. This dynamic suggests that social media might effectively engage first-time voters by delivering customized information that is aligned with their values and interests, hence increasing their participation in the democratic process (Kopti, 2023). It also reflects the need to heighten their social media literacy to eliminate their acceptance of misinformation and the spread of disinformation, as Facebook and TikTok have failed to block harmful disinformation, according to Global Witness (2024).

Social media, particularly Facebook and TikTok, play a role in shaping the voting preferences of first-time voters. The statistically significant differences established indicate that the frequency of use on these platforms is not just a matter of engagement, but influences the purposes for which first-time voters utilize these platforms, be it for information dissemination, social interaction, or entertainment. As first-time voters increasingly turn to these platforms, the implications for electoral engagement are profound (Yahaya et al., 2024). Tailored content designed to inform and educate young voters can significantly affect their political perceptions and participation. This implies the importance of Facebook's and TikTok's role for aspiring politicians through their digital political campaigns, though it does not automatically translate to their political success (Chen, 2022). By recognizing these platforms as powerful tools for political communication, candidates and campaigners can develop strategies that effectively engage first-time voters, potentially transforming their interactions into informed voting behaviors that enhance democratic participation. This emphasizes the need for stakeholders in the electoral process to leverage social media effectively to reach and resonate with first-time voters.

Conclusion, Recommendations, and Suggestions for Future Studies

Politicians pursuing reelection and those aspiring to political leadership must devise strategies for utilizing Facebook and TikTok in their campaigns, as first-time voters play a crucial part in their electoral success. Additionally, national and municipal governments should employ Facebook and TikTok to advance non-partisan voter information initiatives for those who will vote for the first time.

Educational institutions should incorporate and enhance social media literacy, instructing students and out-of-school youth through community extension services about how to critically evaluate online political content. Future researchers should investigate the changing influence of Facebook and TikTok on electoral behavior, emphasizing the effects on various demographics, and the efficacy of engagement techniques in political campaigns and electoral success. Up-country cities and municipalities may contribute different perspectives, given their distinct socio-economic conditions and social media use. Another study focusing on either a specific gender or age group could also be conducted. More studies on the long-term impact of social media on youth political behavior may be initiated in the future.

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The Effects of a Smoking Cessation Program for Thai Vocational College Students

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Aim/Purpose: This quasi-experimental research study aimed to determine the impact of a smoking cessation program on vocational college students.

Introduction/Background: Smoking remains one of the biggest public health threats in the world, especially in low- and middle-income countries. In Thailand, the typical age when a person first smokes is between 18 and 22, and smoking becomes habitual by the ages of 19 to 23 after approximately one year of continuous smoking. Many smokers are teenagers or young adults, including vocational college students. Many students in this demographic engage in smoking due to various social, psychological, and environmental factors, increasing their risk of developing long-term health complications. Addressing this issue requires targeted interventions, such as smoking cessation programs that focus on modifying behaviors and reinforcing positive attitudes toward quitting smoking.

Methodology: A purposive sampling method was utilized to select participants who met specific criteria relevant to the study's objectives. The sample consisted of 30 vocational college students who were over 18 years old with at least one year of smoking history, a Fagerström Test for Nicotine Dependence (FTND) score higher than 4.0, and a smoking cessation desire score greater than 3.0. The intervention employed in this study was a structured smoking cessation program developed by nine experts using a Delphi-technique. This 9-week structured program was based on Bandura's self-efficacy theory and the 5A Model created by the Action on Smoking and Health Foundation Thailand. Each week incorporated behavioral and psychological strategies: Week 1: awareness, Week 2: commitment, Week 3: perseverance, Week 4: encouragement, Week 5: self-conquest, Weeks 6 and 8: self-regulation, and Weeks 7 and 9: liberation. The total program took nine weeks to support participants in their efforts to quit smoking.

The program emphasized education about the harmful effects of smoking, skill development for resisting smoking triggers, cognitive-behavioral techniques to modify smoking-related thoughts and behaviors, and peer support mechanisms to enhance motivation. Data collection was conducted over the 9-week period during which participants engaged in various components of the smoking cessation program. The effectiveness of the intervention was evaluated using questionnaires. The instrument was a smoking cessation behavior questionnaire that measured perceived harm of smoking, self-efficacy for smoking cessation, and a smoking behavior assessment. Its content validity was .97, and its reliability, assessed using Cronbach's alpha coefficient, was .88. Two standardized instruments assessed nicotine dependence as measured by FTND scores, along with smoking cessation intention scores. Descriptive statistics and a paired *t*-test were used to analyze the data.

Findings: The study included a total of 30 participants. Most of the sample were male (86.7%), with an average age of 19.17 (\pm .98 years). The average age to first start smoking was 14.57 years (SD 2.16), with 33.3% starting at age 15 years. The participants had been smoking for an average of 4.6 years (SD 2.16). In terms of the reasons for starting smoking, 60% stated it was due to curiosity; 36.7% smoked traditional cigarettes, 33.3% used e-cigarettes, and 26.7% smoked while drinking alcohol as well. In terms of nicotine dependence, 56.7% were at a moderately dependent level. In regards to participant cessation intentions, 23.3% had intention levels from 7 to 10 to cease smoking. There were statistically

significant differences in scores for the perceived harm of smoking, self-efficacy for smoking cessation, FTND scores, smoking cessation intention scores, and smoking behavior assessment scores ($p < .05$).

Contribution/Impact on Society: The results indicated that the smoking cessation program was effective among vocational students, leading to an increased perception of the harm associated with smoking, enhanced self-efficacy, a stronger intention to quit, and greater leadership in encouraging peers to quit. These outcomes support reduced exposure to second-hand smoke and smoking-related diseases. The findings offer practical implications for nursing practice, youth-focused health education, and national tobacco control policies.

Recommendations: Based on the study's outcomes, teachers can use this program in schools for students who want to quit smoking. They can also teach its concepts in health courses to reinforce knowledge about the harmful effects of smoking, and use them as strategies to stop smoking. In hospitals, nurses can use this program to help patients quit smoking, which leads to beneficial treatment and control of non-communicable diseases.

Research Limitations: First, this research was conducted with a small sample group, and the results from one vocational school may not be generalizable to other vocational students. Second, this program was implemented in only nine weeks, so the time may not have been long enough to assess long-term smoking cessation outcomes. As a result of this program, one student was able to quit smoking; if continued for a more extended duration, perhaps more students might have quit smoking. Lastly, external factors such as peer influences or stress levels related to their studies were not controlled, which could have impacted study variables.

Future Research: Conducting research with a larger sample or among other populations, along with long-term follow-up, would provide a clearer picture of the results among participants who quit smoking.

Keywords: *Smoking cessation program, tobacco, vocational college students*

Introduction

Tobacco use is a major global health problem, resulting in over 8 million deaths each year; this includes 1.3 million from second-hand smoke exposure, and high health care costs to treat tobacco-related diseases in low- and middle-income countries (WHO, 2023). The National Statistical Office of Thailand conducted a 2021 Health Behavior Survey which found that 9.9 million people aged 15 and older smoked, with smoking rates among those aged 15-24 fluctuating over time. The typical age of first smoking is between 18 to 22, and smoking becomes habitual by the ages of 19 to 23, after approximately one year of continuous smoking (National Statistical Office, 2021). A study by Seetisan et al. (2023) on factors affecting smoking behavior among vocational college students found that 37.90% first started smoking at 15 years of age. The average duration of smoking was 4.15 years, and the primary reason for starting was curiosity, accounting for 50.48%. Regarding smoking frequency, 38.40% smoked one cigarette or less per day, 26.30% smoked every other day, 26.30% smoked 2–5 cigarettes per day, and 39.20% smoked daily. Based on these research findings, the researchers were interested in helping vocational college students quit smoking.

Smoking has numerous harmful health effects, including short-term impacts such as reduced smell and taste sensitivity, eye irritation, tear production, increased carbon monoxide levels in the lungs and bloodstream, rapid heart rate, high blood pressure, and body odor from cigarettes. Long-term effects include non-communicable diseases (NCDs), which are the leading health issue worldwide and in Thailand, such as cardiovascular disease, stroke, diabetes, chronic obstructive pulmonary disease, lung cancer, and cancers in various parts of the body (Department of Disease Control, 2021). Not only does smoking have a direct health impact on smokers, but secondhand smoke may also harm those around them. Without controlling these risk factors, the incidence of smoking-related diseases will continue to rise, resulting in a significant economic burden due to healthcare costs. It is estimated that over 8

million people will die from smoking-related diseases annually by 2030 (Tobacco Control Research and Knowledge Management Center, 2021). The National Non-Communicable Diseases Prevention and Control Strategy aims to reduce preventable illnesses, deaths, and disability from NCDs through multi-sectoral collaboration, with policies on smoking prevention and cessation to improve public health and achieve high standards of productivity across all age groups (Department of Disease Control, 2021). Following this policy, various government and private sector organizations have implemented projects aimed at reducing or eliminating smoking, and helping smokers to quit the habit.

Studies on smoking cessation behavior have applied various theories to facilitate both internal and external behavioral changes, such as life skills, behavioral change processes, and health care belief systems. Siangphor (2018) describes health care behavior as an individual's process of engaging in self-health activities to promote, prevent, and control illness. These include internal factors: beliefs, knowledge, attitudes, values, and motivation; as well as external factors: the environment, social structure, economy, education, and religion influence smoking cessation. Thus, smoking cessation behavior change should begin by helping individuals recognize the benefits of quitting and the harm of smoking, fostering awareness and a desire for behavioral change. Individuals must also acknowledge their self-efficacy, demonstrating perseverance, goal setting, planning, and consistent action.

Bandura's (1997) Self-Efficacy Theory defines self-efficacy as an individual's judgment of one's ability to manage and perform behaviors to achieve set goals. This belief influences thoughts, emotions, motivations, and guiding behavior. The relationship between cognitive, personal, and environmental factors is central to this theory. Cognitive and personal factors such as expectations, beliefs, perceptions, emotions, and intentions determine the pattern and direction of behavior. Experiences and behavioral patterns reshape cognitive structures in the brain, impacting personal factors. External environmental factors, such as social modeling, guidance, and societal regulations, also shape and motivate behavior (Petchbhum, 2018).

A study by the Tobacco Control Research and Knowledge Management Center (2021) assessed smoking cessation success, revealing that approximately 5% of smokers could quit independently. However, with support, the success rate doubled. With additional interventions, such as counseling, success rates tripled, and combining counseling with medication increased the success rate fivefold. Smoking cessation aids include nicotine replacement therapies (such as gum), behavioral and social therapies to enhance coping skills, and other methods such as herbal remedies and foot reflexology. Those with chronic diseases, who recognize the harm of smoking, are more likely to quit on their own. External support, such as teaching refusal techniques and managing withdrawal symptoms, further enhances success in quitting by building self-confidence and reinforcing the desire to quit.

According to a review of the literature, the factors influencing an individual's decision to quit smoking include the perceived harm of smoking, self-efficacy for smoking cessation, and the severity of nicotine dependence. Pandee et al. (2020) studied the effects of a smoking cessation promotion program on the smoking cessation behavior of Kamphaengphet Rajabhat University students. They found that participants in the intervention group demonstrated greater knowledge about smoking, higher self-efficacy in quitting, and improved nicotine dependence levels compared to their own baselines and the comparison group. These results came from program activities, which included information about the harm of smoking through lectures, discussions, video presentations, along with self-efficacy enhancement, talks with successful models in quitting smoking, sharing, social support, motivation and encouragement, follow-up via telephone, and carbon monoxide measurements to monitor nicotine levels.

These results aligned with research by Raksason et al. (2020), who examined the effectiveness of applying Self-Efficacy Theory and social support in a smoking cessation program for persons with chronic diseases. The study found that after the intervention, participants in the experimental group demonstrated significantly higher average scores in various areas, consistent with Bandura's self-efficacy notions and social support (Bandura, 1977). Specifically, knowledge about the harm of smoking related to chronic diseases was higher after the intervention compared to both before

implementation and the control group. Program activities included educational sessions, giving clear, understandable, and memorable knowledge, and video presentations illustrating the dangers of smoking and smoking-related diseases. For self-efficacy in smoking cessation, the experimental group had higher average scores after the program, and higher scores than the control group. This result was attributed to a variety of activities designed to enhance self-efficacy as follows:

1. Mastery Experience: Participants engaged in challenging scenarios related to quitting smoking, in which they exchanged coping techniques that increased their confidence.
2. Vicarious Experience: Successful former smokers (models) shared their strategies and quitting experiences, enabling participants to learn problem-solving techniques from them.
3. Verbal Persuasion: Participants received motivational encouragement, reassurance that they could quit smoking, and praise for their efforts, even if they had not yet succeeded.
4. Emotional Arousal: Tools such as numerical and color-coded results from carbon monoxide breath tests and videos about smoking's dangers created both awareness and fear of smoking.

The literature review also revealed that self-efficacy in smoking cessation, perceived harm of smoking, smoking cessation intention score, and nicotine dependence severity were crucial factors influencing an individual's behavior change in quitting smoking. This aligns with the research by Seetisan et al. (2023), who studied factors affecting smoking behavior among vocational college students. Their findings revealed that 11.6% had moderate dependence, while 12.1% of students had moderate-to-high nicotine dependence, 5.2% had high dependence, and .9% had very high dependence. Additionally, 34.9% of students were thinking about quitting smoking. Perceived harm from smoking was at a high level ($\bar{x} = 3.81, SD = .91$), self-efficacy in quitting smoking was moderate ($\bar{x} = 3.49, SD = .93$), and attitude towards smoking was high ($\bar{x} = 3.85, SD = 1.05$). The study found that self-efficacy in quitting smoking significantly influenced smoking behavior. When students' self-efficacy increased, their smoking behavior scores decreased. These results led to the development of a smoking cessation program for vocational students, in particular by applying the Self-Efficacy Theory.

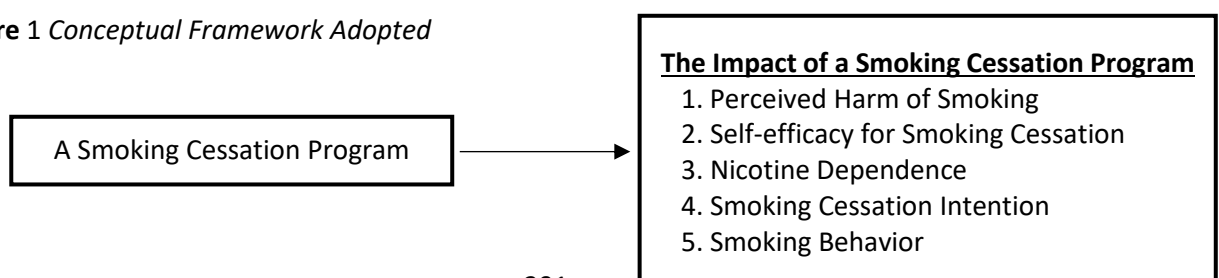
The 5 A's framework is an evidence-based, structured approach widely utilized in clinical settings to promote smoking cessation. It comprises five key steps: Ask, Advise, Assess, Assist, and Arrange. The process begins with systematically asking all patients about their tobacco use to ensure consistent identification. This is followed by advising smokers to quit through clear, personalized, and supportive messages that emphasize the health benefits of cessation. The third step, assessing the individual's readiness to quit, helps tailor the intervention to the patient's level of motivation. For those prepared to make a quit attempt, providers assist by offering practical strategies, behavioral support, and pharmacologic options. The final step, arrange, involves scheduling follow-up encounters to reinforce progress and provide ongoing support. This model, endorsed by the Action on Smoking and Health Foundation Thailand, is recognized for its effectiveness in integrating smoking cessation counseling into routine healthcare practice (Thongphiw et al., 2018).

Based on this study's findings and a comprehensive review of the literature, the researchers developed a structured Smoking Cessation Program specifically designed for overlooked vocational college students and evaluated its effectiveness.

Research Conceptual Framework

In this study, the researchers integrated Bandura's (1977) Self-Efficacy Theory and the 5A Principles from the Action on Smoking and Health Foundation Thailand to develop a smoking cessation program and a survey questionnaire for the research study (Figure 1).

Figure 1 *Conceptual Framework Adopted*



Research Objective

To determine the effectiveness of a smoking cessation program on Thai vocational college students.

Research Hypotheses

1. The smoking cessation program will significantly improve participants' perceived harm of smoking, self-efficacy for smoking cessation, and smoking cessation intention compared to before participating in the program.
2. The smoking cessation program will significantly decrease participants' nicotine dependence and smoking behavior compared to before participating in the program.

Expected Outcomes and Benefits

The smoking cessation program will help students who are smokers quit smoking, be role models for their friends, and reduce second-hand smoke and NCDs. In health care settings, the results will help nurses know how to assist smokers to stop smoking. The study has practical implications for nursing practice, school-based health education, and the national smoking cessation policy, especially in youth-targeted programs.

Research Design and Methodology

Design

A quasi-experimental research approach was designed to study the effectiveness of a smoking cessation program.

Population and Sample

The population chosen consisted of 115 students who were studying in Year 3 of a Vocational Certificate Program or Years 1–2 of a Vocational Diploma Program during the 2021 academic year and met the inclusion criteria.

Kerlinger's (1964) sampling method was used to calculate the sample size. Therefore, 25% of the 115 qualified participants, totalling 30 students, who were studying in Year 3 of a Vocational Certificate Program or Years 1–2 of a Vocational Diploma during the 2021 academic year, were purposively sampled from the group that met the inclusion criteria. The inclusion criteria for participant selection were as follows: (a) smoking history of at least one year, (b) Fagerström Test for Nicotine Dependence (FTND) score greater than 4.0, (c) desire to quit smoking score greater than 3.0, and (d) no illnesses related to smoking during the data collection period.

Research Instruments

Two main instruments were used in the study: A smoking cessation program and a questionnaire.

The smoking cessation program was developed based on Bandura's (1977) Self-Efficacy Theory and the 5A Principles from the Action on Smoking and Health Foundation, Thailand. A Delphi technique was used to develop a consensus approach for a smoking cessation program. Nine experts participated in an evaluation assessing the feasibility and appropriateness of this program. The Delphi process consisted of three rounds:

Round 1: Content Analysis: Experts provided feedback on the design of a smoking cessation program.

Round 2: Expert Evaluation: Experts rated the importance of each activity using a 5-point rating scale; > 4.50: Highly appropriate, 3.50–4.49: Very appropriate, 2.50–3.49: Moderately appropriate, 1.50–2.49: Slightly appropriate, and < 1.50: Least appropriate. Median scores and interquartile ranges (IQR) were calculated; an IQR of ≤ 1.50 indicated a strong consensus among experts regarding the appropriateness of each activity.

Round 3: Consensus Confirmation: Experts reviewed the aggregated responses to confirm the appropriateness of the activities, or adjust their ratings to align with the consensus. This

iterative process ensured that the final smoking cessation program was well-supported by expert opinion.

Based on the synthesized content and recommendations, the researchers developed and implemented a structured smoking cessation program consisting of nine weekly activity sessions. Each session focused on a specific theme aimed at guiding vocational students through the stages of behavioral change:

Week 1–Awareness Initiation: Group activities included discussions on the health risks associated with smoking, sharing of personal smoking experiences, and viewing educational videos highlighting smoking-related diseases to enhance risk perception and awareness.

Week 2–Commitment: Participants viewed videos featuring successful smoking cessation stories, discussed their motivations and intentions to quit, engaged in conversations with former smokers, and received guidance on recognizing smoking triggers and managing cravings.

Week 3–Perseverance: The session involved watching videos on the physical effects of smoking, reflecting on personal reasons for quitting, and having discussions with experienced smokers. Participants identified common barriers to cessation and explored coping strategies for nicotine dependence.

Week 4–Encouragement: A psychologist facilitated this session, offering emotional support and motivation. Participants shared their achievements in reducing cigarette consumption, exchanged strategies for cutting down, and offered praise to peers who had successfully reduced or quit smoking.

Week 5–Self-Conquest: Participants discussed persistent challenges in quitting smoking and received peer and professional support. Information about available cessation resources, such as national quit lines and smoking cessation centers, was provided to support continued efforts.

Weeks 6 and 8 Self-Regulation: Participants selected their preferred methods for smoking cessation and self-management strategies for coping with nicotine cravings.

Weeks 7 and 9 Liberation: Follow-up sessions were conducted to assess progress, reinforce behavioral changes, and provide ongoing encouragement and support post-intervention.

The working hypothesis developed (H_1) was that the smoking cessation program will significantly improve participants' perceived harm of smoking, self-efficacy for smoking cessation, and smoking cessation intention compared to before participating in the program

The survey questionnaire measured the smoking cessation program's impact on perceived harm of smoking, self-efficacy for smoking cessation, nicotine dependence, smoking cessation intention, and smoking behavior.

The working hypothesis (H_2) adopted was that the smoking cessation program would significantly decrease participants' nicotine dependence and smoking behavior compared to before participating in the program.

The test for dependence (FTND) and smoking cessation intention were assessed using standardized tools. By reviewing the literature, the researchers developed survey items to investigate the perceived harm of smoking, self-efficacy for smoking cessation, and smoking behavior, and these were tested for validity and reliability. The test for validity was based on the index of Item Objective Congruence according to the rating scores provided by three experts. The total value that experts gave to each item divided by the number of experts was .97. The questionnaire was pilot tested on 30 vocational students who met the inclusion criteria, but were not part of the sample group. Overall reliability assessed using Cronbach's alpha coefficient was .88: perceived harm of smoking was .91, self-efficacy for smoking cessation was .87, and smoking behavior was .81. This questionnaire was used in the first week before starting the program, and again in Week 9 when following up the results.

Protecting the Rights of Participants

Research ethics approval was obtained from the Institutional Review Board of Asia-Pacific International University (IRB) (AIU 26/2563-RRDC2021-60, April 30, 2021). The rights of the

participants in the study were protected from the preparation phase through to the completion of data collection. The ethical procedures were as follows:

1. Before data collection, the researchers obtained approval from the administrator of the vocational college to conduct a survey and identify the target group.
2. The researchers met with the target group and explained the details of informed consent, including the study's objectives, experimental procedures, expected outcomes, potential risks and benefits, participant criteria, and the rationale for inviting students to participate in the study. Participants were informed of their right to decline or withdraw from the study at any time without affecting the scores of any subjects.
3. The researchers passed out information sheets to provide a complete understanding of the study and requested potential participants to sign them, indicating their willingness to take part in the study.
4. The results have been reported in aggregate to ensure that no individual can be identified. After the study ended, the data was destroyed.

Data Collection

Data were collected by the researchers using self-administered questionnaires completed by the participants at baseline (Week 1) and post-intervention (Week 9).

Data Analysis

General data was analyzed using descriptive statistics. A paired *t*-test was used to compare students' perceived harm from smoking, self-efficacy for smoking cessation, FTND scores, smoking cessation intention scores, and smoking behavior assessment scores ($p \leq .05$).

Results

The total number of vocational college students in the study was 30. Most of them were male (86.7%), with an average age of 19.17 ($\pm .98$) years. Most participants were in their first year of upper vocational education (73.3%), 56.7% of participants were from nuclear families. Their average age to first start smoking was 14.57 (± 2.16) years, with 33.3% starting at age 15 and 23.3% starting at age 14. The average number of years that participants had smoked was 4.6 (± 2.16) years; among this number, 30% had smoked for approximately 5 years.

Regarding the reasons for starting smoking, 60% stated that it was due to curiosity, 20% indicated that it was to relieve stress, and 16.7% cited peer influence. In terms of smoking methods, 36.7% smoked traditional cigarettes and 33.3% used e-cigarettes as well. The reasons for continuing to smoke included 26.7% smoked while drinking alcohol, 23.3% felt unable to quit, and 16.7% followed the behavior of friends. Regarding attempts to quit smoking, 93.3% had tried to quit, with 53.3% attempting to quit through abrupt cessation, and 30% using a gradual reduction method. In terms of nicotine dependence, 56.7% were moderately dependent, 26.7% were highly dependent, 13.3% were moderately dependent with a tendency toward high dependence, and 3.3% were highly dependent. Regarding the intention to cease smoking, 23.3% had an intention level from 7 to 10, 20% had a level of 10, and 13.3% had no intention of quitting smoking at all. Moreover, after follow-up in Week 9, it was found that one student (3.33%) successfully quit smoking.

The smoking cessation program affected participants' perceived harm of smoking, self-efficacy for smoking cessation, and smoking cessation intention scores; the findings are presented in Table 1 below.

The smoking cessation program significantly improved participants' perceived harm of smoking, self-efficacy for smoking cessation, and smoking cessation intention compared to before participating in the program. The details relevant to H_1 are given below.

1. Participants demonstrated a statistically significant increase in their perceived harm of smoking following the intervention. The mean score rose from 3.48 ($SD = .58$) at baseline to 4.58 ($SD = .52$) post-intervention, $t = 12.425$, $p < .05$.

2. Self-efficacy in smoking cessation also showed a significant improvement, with mean scores increasing from 3.13 ($SD = .50$) to 4.24 ($SD = .56$), $t = 10.536$, $p < .05$.
3. Similarly, intention to quit smoking significantly increased, with scores rising from 5.83 ($SD = 3.21$) to 7.40 ($SD = 2.94$), $t = 3.164$, $p < .05$.

Table 1 Comparison of Mean Scores Before and After Participating in Smoking Cessation Program (n=30)

Feature	M	SD	t	p
Score of perceived harm of smoking				
Before participating in the program	348.	58.	12.425	.000
After participating in the program	458.	5.2		
Score of self-efficacy for smoking cessation				
Before participating in the program	313.	50.	10.536	.000
After participating in the program	4.24	56.		
Smoking cessation intention score				
Before participating in the program	5.83	3.21	3.164	.004
After participating in the program	7.40	2.94		

Note. * $p < .05$.

The smoking cessation program also affected participants' FTND scores and smoking behavior assessment scores; the results gathered that are relevant to H_2 are shown below in Table 2.

Table 2 FTND and Smoking Behavior Scores Before and After the Smoking Cessation Program (n = 30)

Feature	M	SD	t	p
FTND score				
Before participating in the program	5.70	218	13.012	.000
After participating in the program	2.13	2.95		
Smoking behavior assessment score				
Before participating in the program	9.40	167	8.197	.000
After participating in the program	6.17	2.99		

Note. * $p < .05$.

1. Nicotine dependence, as measured by the Fagerström Test for Nicotine Dependence (FTND), significantly decreased following the intervention. Participants' mean scores dropped from 5.70 ($SD = 2.18$) at baseline to 2.13 ($SD = 2.95$) post-intervention, $t = 13.012$, $p < .05$.
2. Similarly, smoking behavior assessment scores significantly improved, with mean scores dropping from 9.40 ($SD = 1.67$) before the program to 6.17 ($SD = 2.99$) after completion, reflecting positive behavioral changes, $t = 8.197$, $p < .05$.

Discussion

The comparative analysis revealed that after participating in the smoking cessation program, the vocational students reported significant statistical differences at the .05 level in terms of their awareness of the harmful effects of smoking, self-efficacy in quitting smoking, level of nicotine dependence, intention to cease smoking, and smoking behavior when compared to before the program.

Specifically, the students' awareness of the harms of smoking and self-efficacy in quitting smoking improved after participating in the program. This is because program participants received increased awareness of both the harms of smoking and their own ability to quit, based on the Self-Efficacy Theory (Bandura, 1977). Success stories and experiences were shared by role models who had successfully quit smoking, both in person and through videos. This method has been shown to be effective in enhancing an individual's self-efficacy. Students who believe in their own abilities are less likely to give up easily and will persist in achieving their goals.

In addition, students were provided with manuals prepared by the Thai Health Promotion Foundation on the harm and dangers of smoking, methods to quit smoking, and strategies for dealing with cravings. Individual consultations and follow-up calls were also offered, along with psychological counseling, all of which are methods that gradually build up an individual's self-efficacy. Moreover, the emotional stimulation provided each week during the activities had a positive impact on their belief in their own abilities. The study by Jungsomjatepaisal and Tuaymeerit (2021) showed that motivating students to reduce and quit smoking is one strategy for promoting health and preventing smoking among secondary school students. Thus, it was observed that both the perceived harm of smoking and self-efficacy for smoking cessation improved significantly after the program, as predicted by the research hypothesis. These findings were consistent with a study by Ruamsook et al. (2021), which found that the community health workers who participated in the program had increased knowledge about smoking and showed higher confidence in helping others to quit. Similarly, a study by Sae-han et al. (2020) revealed that an increase in security personnel's self-efficacy led to a reduction in the quantity of their daily smoking.

The intention to quit smoking among vocational students increased after participating in the smoking cessation program. This increase in intention was influenced by the program's goal-setting activities, such as watching videos and having discussions with role models who had successfully quit smoking. It was found that the intention to cease smoking increased after the program, which was aligned with the research hypothesis. This result was consistent with a study by Jantarapas et al. (2021), which found that employees in workplaces showed a statistically significant increase in their intention to cease smoking after participating in a similar program ($p < .01$). Moreover, in a study by Addjanagitti et al. (2022), the results showed that after participating in the program, vocational college students' intention not to smoke was higher than in the comparison group.

Nicotine dependence levels decreased after participating in the program; this reduction was due to the program's variety of activities designed to promote smoking reduction, particularly those that strengthened students' self-efficacy in quitting smoking. Using a variety of activities can help smokers quit smoking (Rungreunghiranya & Kropthong, 2021). When self-efficacy was reinforced effectively, the daily smoking rate decreased, which in turn led to a reduction in nicotine dependence. This finding was consistent with a study by Pandee et al. (2020), which found a significant statistical difference in nicotine levels between the experimental and control groups after the former had participated in a smoking reduction program. This result also aligned with the findings of Napattaradechanon et al. (2023), who found that students participating in a smoking reduction program with a self-efficacy approach showed a significant reduction in nicotine dependence and a decrease in urinary nicotine levels.

The smoking behavior assessment scores of the students showed a reduction in the number of cigarettes and frequency of smoking per day. In the program, successful role models were invited to share their methods and techniques for quitting smoking. Individual counseling, encouragement, motivation, and various techniques for managing cravings were provided. These findings aligned with research by Sae-han et al. (2020) and Jantarapas et al. (2021), which found a reduction in the number of cigarettes smoked per day among participants.

However, some individuals were still unable to quit smoking, despite an increase in their self-efficacy to quit. This was due to peer influence, where students continued to smoke because they were invited to do so by friends, and feared rejection or a lack of acceptance in their social group. This aligns with the findings of Seetisan et al. (2023), which highlighted the influence of peers as an interpersonal factor that contributes to students' continued smoking behavior.

Nonetheless, after the program concluded and a follow-up at Week 9 was conducted, it was found that one student, or 3.33%, successfully quit smoking. This result was consistent with the study by Ruangrith et al. (2023), which found that some students continued to smoke due to peer influence, such as smoking in the restroom after smelling cigarette smoke. However, when the students' families were involved in the process, the success rate of quitting increased to 87% during a one-year follow-

up. This finding also aligned with research by Jantarapas et al. (2021), where 36.56% of employees were able to successfully quit smoking due to motivation and follow-up support.

Implications

According to the results of this study, school administrators and teachers can implement this program in their schools for students who wish to quit smoking, and emphasize the harmful effects of smoking in the health education courses. In health care settings, multidisciplinary health care teams can use this program to assist patients in quitting smoking, which can improve treatment outcomes and help manage non-communicable diseases. These results may be used as data for further research studies so that they can be more specific and their results more generalizable.

Research Limitations

The generalizability of this study was limited by its small sample size from a single vocational school. The nine-week duration may not have captured long-term cessation outcomes, as it may have been influenced by uncontrolled external factors such as peer pressure and academic stress, which could have affected the results.

Conclusion

The smoking cessation program effectively enhanced vocational students' perceived self-efficacy and intention to quit smoking, while reducing nicotine dependence and smoking behavior.

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Investigating Antecedent Factors' Mediating and Moderating Effects on the Pathway between Gamification's Emotional Mechanics and Value Co-Creation Behavior – A Case Study of the Chinese Mobile Banking Industry

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Abstract

Aim/Purpose: Despite the growing significance of mobile banking (M-banking) in the financial industry of emerging economies such as China, market penetration rates have declined due to increased competition from financial technology firms. While existing research has primarily concentrated on M-banking adoption, there is a notable lack of studies examining customers' post-adoption behaviors, particularly regarding Customer Value Co-Creation Behavior (CVCCB) and its psycho-emotive antecedents. Furthermore, the role of Gamification's Emotional Mechanics (GEM) in influencing customer engagement (CE) and CVCCB within the Chinese M-banking context remains unexplored.

Introduction/Background: This research addressed this gap by examining the influence of GEM on CVCCB in the Chinese M-banking sector. Additionally, it investigated the mediating role of CE and the moderating effect of generational differences, using Stimulus-Organism-Response theory and generational theory. This study provides important insights for financial institutions seeking to enhance customer engagement and maintain competitiveness in evolving digital financial landscapes.

Methodology: This study utilized structural equation modeling, path analysis, moderation and mediation analysis, with SPSS and AMOS statistical software. The target population comprised Chinese M-banking users, estimated to exceed 1.01 billion. A total of 550 usable survey responses were collected, surpassing the minimum required sample size of 399. Participants were recruited from a large public university in Shenyang using purposive sampling. Snowballing sampling technique was employed to extend participation to individuals residing in various Chinese provinces, thus enhancing sample representativeness.

The research used an online self-administered questionnaire that incorporated validated measurement scales adapted from existing literature. To ensure the accuracy of translated text, the survey instrument underwent a back-to-back translation process between English and Chinese by bilingual specialists. Statistical analysis commenced with assessments of normality, reliability, validity, common method bias, and multi-collinearity, followed by structural equation modeling, path analysis, and moderation and mediation testing.

Findings: Research findings indicated that customers' affective engagement had a significant influence on CVCCB, which is consistent with earlier studies highlighting the role of affective emotional responses as a critical antecedent of CVCCB. Moreover, results supported the positive effect of GEM on CVCCB, aligning with previous research. Additionally, the study found that affective engagement played a significant mediating role in the relationship between GEM and CVCCB, which was in line with prior studies suggesting that GEM indirectly influences CVCCB through CE.

Furthermore, research highlighted that generational differences significantly moderated the relationship between affective engagement and CVCCB, but did not moderate the relationship between GEM and affective engagement. This finding is consistent with prior research indicating that customers from different generational groups exhibit distinct patterns of CVCCB, while emotional mechanisms in gamification do not differ in impact across generations.

Contribution/Impact on Society: This study contributes to the existing body of knowledge by providing a deeper understanding of antecedents that influence CVCCB. By examining the impact of demographic factors such as gender and age on CVCCB, the research revealed how these variables shape CE in collaborative activities, such as information sharing and seeking. The findings emphasize the importance of understanding the nuances of customer behavior, particularly in the context of digital finance, and how these behaviors impact the effectiveness of M-banking services.

The broader implications of the study's findings extend to both academic research and practical applications in digital finance and M-banking. For researchers, the study provides valuable evidence that contributes to the relatively underexplored literature on customer behavior in digital platforms, particularly within a Chinese context. This research enhances the understanding of several antecedent factors that affect CE in M-banking and their subsequent contributions to the value co-creation process. From a practical standpoint, the identification of key factors influencing customer behavior can help financial institutions design effective strategies and personalized services that cater to diverse customer needs, leading to more effective customer retention and improved service design.

Recommendations: The study suggests that practitioners in mobile banking should tailor their marketing strategies to specific demographic factors, including age, gender, income, and education. Younger customers, who are typically more engaged with innovative features, may respond well to promotions that highlight advanced functionalities, while female customers may prefer more collaborative engagement strategies. It is essential for practitioners to design personalized customer experiences that cater to diverse preferences and enhance communication and collaboration.

Research Limitation: Several limitations were addressed in this research. The sample was primarily drawn from Shenyang, China, which limited the generalizability of the findings to other regions or countries. Additionally, the study relied on self-reported data, which may introduce biases such as social desirability or inaccuracies in self-perception. Furthermore, the cross-sectional design of the study prevented causal inferences, as the data represented only a snapshot in time.

Future Research: Future research should employ longitudinal designs to investigate the causal relationships between customer characteristics and their engagement in CVCCB activities. Expanding the study to encompass diverse cultural and economic contexts would enhance its generalizability. Additionally, investigating the influence of emerging technologies, such as artificial intelligence (AI), and exploring moderating factors, such as trust and security, could provide deeper insights into mobile banking customer behavior. These future research directions would enrich the findings and contribute to the further development of knowledge in this field.

Keywords: *Chinese mobile-banking, gamification emotional mechanics, value co-creation behavior*

Introduction

In the post-pandemic digital boom, the World Health Organization strongly recommended minimizing direct human contact and maintaining social distancing. Thus, customers worldwide have been driven to conduct daily activity and financial transactions by increasingly adopting contactless technology such as M-banking, which are banking services offered on mobile devices such as mobile phones and tablets. M-banking enables users to conduct financial transactions remotely, providing prompt solutions to various user needs and demands through self-service technologies. It also assists banks in expanding service scope, reaching rural customers in distant regions, lowering business expenses, and improving economic performance (Al-Bashayreh et al., 2022).

M-banking's global market size reached \$1.3 billion in 2024, and estimate predict that it will exceed \$4 billion by 2032 (Market Research Future, 2024). Among all countries, China ranks first in the number of M-banking users, already surpassing 970 million (Bankmycell, 2025) since the introduction of the service in 2016. Meanwhile, advances in digital technology have also spawned financial technology firms (Fintechs) and their innovative digital services, such as the third-party payment systems that have developed swiftly. Such systems exceeded \$2,276 billion in market size by

2023, which is equivalent to over 1,300 times the size of M-banking. Similarly, Chinese state-owned banks are also being dominated by leading Chinese Fintechs, such as Alipay and WeChat Pay, who jointly have nearly 2 billion users and a continued high growth rate (Yang et al., 2023), which has led to decline of Chinese M-banking penetration rates (Sina Finance, 2024).

Due to M-banking's important role in the financial industry and the rising competition it faces, M-banking has become a significant research topic. Nonetheless, contemporary M-banking research has primarily focused on exploring service adoption aspects, with inadequate studies examining customers' post-adoption behaviors or the psycho-emotive aspects of service consumption (Dabare et al., 2023). This narrow focus leaves a critical discrepancy in comprehending how users engage with M-banking services during post-adoption in terms of continuous participation, emotive experience, and co-creation behaviors that influence long-run competitiveness. To fill this void, researchers have attempted to inspect several M-banking services' post-adoption behaviors, including continual intention, loyalty, and relationship quality (Dabare et al., 2023). However, no study could be found that probed CVCCB or its psycho-emotive antecedent factors' effects on M-banking services in a Chinese context. This oversight is significant considering the scale and strategic prominence of the Chinese M-banking market, which presents a unique experimental site for emerging service marketing theories such as value co-creation and emotional gamification.

As an innovative marketing practice, value co-creation (VCC) emphasizes the integration of resources during service encounters between companies and customers to create mutual value, fostering loyalty and serenity that spur additional ideas and knowledge sharing (Vargo & Lusch, 2004). As M-banking has reformed the ways in which banking services are offered and consumed in the digital era, customers are increasingly recognized as co-producers of service and value, rather than passive service users. Thus, VCC is imperative for maintaining customer loyalty, improving overall business performance, and surviving among competition (Hijazi, 2022).

Early studies advocated that Customer Engagement (CE) was one antecedent factor of Customer Value Co-creation Behavior (CVCCB), as engagement behaviors often lead to vigorous involvement, collaboration, information sharing, and other value creation behaviors on digital platforms in the form of online content generation, product and service co-design, and reviews and feedback (Czeszejko & Öfverström, 2021). Still, CE's effects on both antecedent and outcome factors of CVCCB in M-banking settings has remained inconclusive (Hijazi, 2022).

Moreover, researchers suggested that another key element to ensuring positive interactive and collaborative experiences in CVCCB is emotion management (Malone et al., 2018). This is because understanding the emotions that customers experience during their participation in service creation is imperative in guiding them through VCC processes (Biercewicz & Wiścicka-Fernando, 2023). However, the mechanisms through which these emotions are experienced, especially those embedded via gamified systems and translated into noticeable value co-creation behaviors, remain understudied both theoretically and practically.

As digital technology has enabled simultaneous collaborations among multiple customers and service providers (Spagnoletti et al., 2015), gamification in mobile applications has become a prevalent marketing practice for companies to interact with customers, creating memorable experiences and mutual value (Babb et al., 2013). Accordingly, investments in gamification worldwide have flourished and are projected to exceed \$32 billion by 2025 (Czeszejko & Öfverström, 2021). However, the underlying effects of gamification's emotional mechanics on customer engagement and CVCCB still remains untapped in the Chinese M-banking context. This reveals a significant theoretical discrepancy, especially considering the commercial scale of gamification investment and significance of emotion-driven engagement in digital environments. Furthermore, researchers have found that generational differences in reactions to gamified features on CE and CVCCB in digital services, due to customers' physical abilities, cognitive functions, unique life experiences, and value beliefs (Zhou et al., 2022). The aging population phenomenon has led to older generations becoming the pillar customer group in the world economy due to their large size and affluence, so their consumption preferences and behavior differences must not be overlooked by policy makers (Alhassan & Adam, 2021).

For the above reasons, the objectives of this research were three-fold: firstly, it attempted to pragmatically investigate Gamification's Emotional Mechanics' (GEM) effects on CVCCB in a Chinese M-banking context, which to the author's knowledge had not been previously examined. Secondly, this research adopted Stimulus-Organism-Response theory and examined the mediation effect of CE imposed on the relationship between GEM and CVCCB in M-banking service. Thirdly, this study also adopted generational theory and scrutinized the moderation effect generational differences played in customers' responses to GEM, engagement behaviors, and CVCCB in the Chinese context.

Several limitations were grappled with in this study, such as using a lower-order CVCCB conceptual construct, a cross-sectional design, and self-reported data from university-affiliated users, which may affect the generalizability of its findings. However, it offers a significant and novel contribution by being among the first to scrutinize the role of GEM in shaping CE and value co-creation behavior within the context of M-banking. The findings can offer applicable insights for both marketing scholars and professionals aiming to augment digital engagement strategies through emotional design and intergenerational customization. By establishing empirical insights in a technologically advanced and dynamic financial environment, the study lays a critical foundation for future research both within China and in other digital service settings.

Literature Review

Customer Value Co-Creation Behavior, Customer Engagement, Gamification's Emotional Mechanics, and Generational Cohorts

The CVCCB concept was derived from service-dominant logic explaining that all parties in service processes can cooperate and share resources, such as information or knowledge, for creating resolutions that meet market demands. Companies need to provide opportunities or foster environments to motivate customers to partake and create joint value, for instance, through methods of adopting innovative technology or products (Grönroos, 2008). The CVCCB concept has been studied using various conjectural and pragmatic frameworks in the literature, including the Dialog, Access, Risk Assessment and Transparency (DART) model, the supplier-customer mapping model, the consumer value co-creation styles model, and so on (Leroy et al., 2013).

In particular, one multidimensional CVCCB framework was developed by Yi and Gong (2013) which aimed to emphasize service users' resource integration activities during service encounters. It is comprised of eight dimensions: information seeking, information sharing, personal interactions, responsible behavior, helping, advocacy, feedback, and tolerance. This model has been applied and validated in various contexts. Thus, this study adopted the CVCCB framework to investigate its application in M-banking. In addition, prior research has suggested that personal interaction was relatively irrelevant to self-serving service provided on human-machine digital platforms (Mostafa, 2020), so CVCCB was conceptualized using seven dimensions, excluding the personal interaction dimension to avoid possible controversy.

Customer Engagement can be described as the psychological status that occurs through collective consumer efforts to integrate resources, where contributing players act with cooperative accountabilities (Van Doorn et al., 2010). CE can be theorized using different constructs: for example, Bowden (2009) conceptualized engagement from three aspects, including emotional, cognitive, and behavioral mechanisms. Van Doorn et al. (2010) proposed using five behavioral components, including valence, modality, impact nature, scope, and objectives, to measure CE. Among various conceptual frameworks, Bowden's (2009) construct consisting of emotional, cognitive, and behavioral dimensions has been widely applied by many early researchers in various settings. Moreover, as scholars have contended that the behavioral aspect of CE was not inherently explicit due to several underlying factors (Hijazi, 2022), this current study excluded it from the original model to assess CE in the Chinese M-banking context.

Gamification's Emotional Mechanics' (GEM) main notions have been fundamentally established by motivational and emotional theories, such as Self-Determination Theory and intrinsic and extrinsic motivation theory. These are relevant to human motivation and the desire to fulfill intrinsic emotional

needs (Seaborn & Fels, 2015). GEM emphasizes the role that emotional arousal plays when gamification is used to engage customers; it can be measured using various frameworks. For instance, Robson et al. (2015) developed the Mechanics-Dynamics–Emotions model to demonstrate how emotions in gamification can be applied to enhance experiences, while Conaway and Garay (2014) suggested using external rewards and internal fun dimensions to conceptualize gamification's emotion aspects. García-Magro et al. (2023) theorized GEM with a three-factor model including utilitarian, social, and hedonic dimensions.

Based on the established motivational theories, emotions can be categorized into two types, where intrinsic emotions arise from within individuals and are driven by subjective experiences and values, while extrinsic emotions stem from exterior influences, such as prizes, penalties, or environmental cues that are tied to events or situations (Deci & Ryan, 1985). Therefore, as a universally accepted GEM model has not been identified in literature, this research adopted an adjusted ad hoc GEM model based on previous studies (García-Magro et al., 2023; Conaway & Garay, 2014). It conceptualized GEM as consisting of both extrinsic and intrinsic motivations to evaluate GEM's effect on CE and CVCCB in a Chinese M-banking service context.

Generational cohort refers to a collection of individuals born during a specific time period who share similar life experiences, beliefs, and attitudes that persist throughout their life course, often resulting in shared behavioral differences among all of them. In the literature, four frequently mentioned generational cohorts are Baby Boomers, Generation X, Generation Y, and Generation Z. Baby Boomers were born approximately between 1946 and 1960. They are considered faithful, dedicated to collective values, and possess excellent communication skills, although they lack knowledge about modern technology (Gardiner et al., 2015). Generation X were born roughly between 1961 and 1980. While growing up with the advent of the Internet and globalization, they are considered discerning and less loyal to brands than earlier generations due to mass marketing schemes and broader selection of market offerings (Gardiner et al., 2015).

Generation Y were born between 1980 and 1995; they are acquisitive and have unique product preferences and tastes that motivate them to pursue high levels of individualism in their purchases. They have higher social awareness, and often stay connected to seek inspiration to fulfill their needs via the Internet (Bolton et al., 2013). Generation Z were born roughly between 1996 and 2010; they are technologically savvy, knowledgeable about social media, seek social recognition and attachment, and thus are easily influenced by peers in their purchasing. As they grew up in uncertain economic and social circumstances, security and privacy are more valued by this generation (West, 2014).

Theoretical Support

In this study, Stimulus-Organism-Response (SOR) theory was adopted to explain the relationships among GEM, CE, and CVCCB. In the late twentieth century, Mehrabian and Russell (1974) proposed the SOR theory, aiming to elucidate the intricate relationships between external environmental stimuli, internal cognitive and emotional conditions, and subsequent behavioral responses.

"Stimulus" refers to the external environmental factors that individuals pinpoint through their physical senses including visual, auditory, and perceptible elements, which serve as the causes to trigger cognitive and emotional processing in minds. "Organism" refers to the inner status of individuals including rational appraisals, emotional responses, and subjective comprehension of the stimuli. "Response" means the exhibited behavioral acts caused by the "Organism" component, ranging from subtle attitudes to manifested behaviors.

In this study, GEM can be viewed as the "Stimulus" that activates a customer's inner rational and emotional processing based on subjective assessments of the extent to which individual motivations were met (Zhu et al., 2020). The cognitive and affective processing in CE can be considered as the "Organism" component as a response to the subjective evaluation of extrinsic and intrinsic motivations in GEM, respectively (Streukens et al., 2019). Subsequently, CE will lead to the "Response", or the manifested volitional reciprocal CVCCB such as information sharing, product design, or self-development (Leclercq et al., 2018).

Generational theory explains that repetitive generational patterns shape social tendencies by viewing time intermittently, highlighting the impact of historical events on generational experiences. The generational archetypes identified in theory often relate to behavioral differences among various age cohorts (Robb, 1998). In this research, customers from each generation cohort frequently share similar experiences, beliefs, and attitudes that inevitably influence their motivation, judgments, and behavioral differences in service consumption (Hansen & Leuty, 2012). For instance, due to their deteriorated physical condition, limited knowledge, and less curiosity about novel technology, older generations such as Baby Boomers and Generation X (Harris et al., 2016) have been reported to be less engaged by digital services. The younger generations, however, were found to be more predisposed to adopt and purchase gamified products and services, which were judged as more valuable and enjoyable (Bittner & Shipper, 2014).

Hypotheses Development

GEM and CVCCB. This study hypothesized that GEM in M-banking positively influences CVCCB in the Chinese context. In the VCC context, CVCCB was primarily driven by external motivation, including anticipated reciprocity and societal acknowledgement, or internal motivations such as amusement and interest (Stock et al., 2015); thus, GEM can be considered as an essential antecedent of CVCCB (Chagas & Aguiar, 2020). For example, García-Magro et al. (2023) found that customers' perceived emotions in gamification positively impacted their CVCCB in service, which was consistent with the results found in another empirical study conducted by Czeszejko and Öfverström (2021), who claimed that gamification and its emotional mechanics significantly improved customers' participation behaviors in the VCC process. Similarly, Cheng (2024) carried out research in Taiwan, and his research findings disclosed consistent results, indicating that customers' perceived inherent emotions in gamification can positively impact related CVCCB during service encounters. Therefore, the researcher posited the following hypotheses.

H₁: GEM in M-banking service in China positively influences CVCCB.

Mediation Role of Customer Engagement (CE). This study also proposed that CE has a mediating effect on the relationship between GEM and CVCCB in mobile banking within the Chinese context. In the VCC context, CE is also often driven by utilitarian incentives such as rewards, or hedonic inspirations including fun, knowledge, or ability development (Stock et al., 2015); thus, GEM is also an antecedent factor of CE (de Oliveira Santini et al., 2020), which can lead to CVCCB (Doğan-Südaş et al., 2023).

For example, by applying SOR theory, Thomas and Baral (2023) suggested that service users' perceived emotions in gamification that significantly affected CE in service, which was in line with the findings of another similar study. Tseng et al. (2021) examined 296 customers of branded application services in Taiwan, and found that intrinsic and extrinsic emotions inherent in gamified services could positively enhance customer's brand engagement. Additionally, Doğan-Südaş et al. (2023) concluded that GEM significantly improved affective response in CE and subsequently led to CVCCB, which was congruent with the results found in another study. De Canio et al. (2021) examined 893 Chinese mobile shopping application users and concluded that gamification features and their induced emotions positively affected customer shopping engagement and post-purchase behaviors. Therefore, based on the above-mentioned study results from the literature, the following hypotheses were proposed.

H₂: GEM in M-banking services in China positively influences CE.

H₃: CE in M-banking service in China positively influences CVCCB.

Moderating Role of Generation Cohorts

Generational cohort differences among customers were hypothesized as having moderating effects on both the relationship between GEM and CE, as well as the one between CE and CVCCB. Study results have shown that GEM had dissimilar effects on customers from different generational

cohorts, with younger generations favoring intrinsic and extrinsic motivations more highly than older generations in gamified market offerings (Bittner and Shipper, 2014). Zhang et al. (2021) found that GEM, including enjoyment, rewards, and social interaction, varied between young and older customer groups. Additionally, Vayghan et al. (2023) conducted pragmatic research by examining 506 customers of a digital application service in the United States, and found that CE and CVCCB varied across different generations due to their dissimilar perceived values regarding the service.

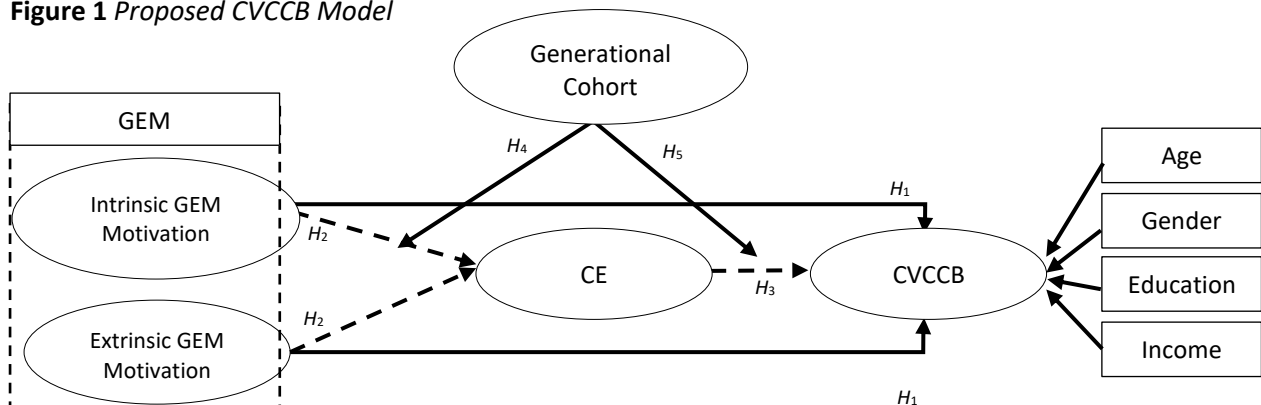
Other studies also found that digital services were more effective in engaging young generations, such as Generations Y and Z, who enjoyed communicating with brands by giving feedback and comments (Moise et al., 2020). Declining physical and cognitive conditions often hindered older customers from interacting and engaging with new technologies (Harris et al., 2016). Therefore, in this research the following hypotheses were suggested.

H_4 : Generational differences moderate the relationship between GEM and CE in Chinese M-banking contexts.

H_5 : Generational differences moderate the relationship between CE and CVCCB in Chinese M-banking contexts.

The proposed CVCCB model that includes all hypotheses is shown below in Figure 1.

Figure 1 Proposed CVCCB Model



Note. Solid line—direct relationship; dashed line—indirect relationship

Methodology

Participants and Data Collection

The target population of this research consisted of Chinese customers with experience using M-banking services, estimated to be over 1.01 billion and distributed across China. As a relatively larger percentage of M-banking users are from new first-tier cities (22%) (Yifan, 2023), the largest new first-tier city in northeastern China (Shenyang city) was selected as the initial sample selection site in this study owing to its equal male/female ratio (.99), high level of economic development (6%), and high level of migrants from other Chinese provinces (22%) (Hongheiku, 2025; Shenyang Statistics Bureau, 2024). Participants born in different provinces were initially engaged utilizing a purposive sampling approach from the local university in Shenyang City with the highest number of currently enrolled students and working staff that totalled more than 50,188. Then a snowball method was applied in the next phase of data collection to request participants to share survey questionnaires with their social contacts who currently resided in other provinces in China to augment data representativeness. To gather a minimum required sample size of 400 for statistical analysis (Yamane, 1973), 500 questionnaires were distributed to students and staff from the chosen university. After conducting a pilot study using 100 collected responses, reliability and validity tests for adopted measurement scales' results were satisfactory, suggesting that a larger scale study was appropriate, and unclear wording of the translated Chinese questionnaires had also been corrected. After receiving approval from the university's management to collect data, university students and staff from different

provinces were engaged and informed about the research objectives. Then, online survey links were provided to them via email or WeChat.

The data collection process lasted three weeks and yielded 550 usable responses from a total of 26 provinces, municipalities, and autonomous regions in China. While this research aimed to achieve geographic diversity through its sampling strategy, the inherent limitations must be recognized. Initially, the recruitment process was confined to university students and staff, which may have led to a bias favoring younger, highly educated, and technologically adept respondents. Although the use of snowball sampling facilitated access to participants from diverse regions, the sample may still have lacked sufficient representation of seniors or less digitally proficient customers. Furthermore, since the survey was conducted online and relied on voluntary participation, it likely excluded customers with limited familiarity with digital survey tools, potentially biasing the findings towards participants who are more active in the digital realm. Future research should consider extending sampling efforts beyond academic settings to include older demographics and individuals from lower-income areas to enhance the generalizability of the results.

Measures and Data Analysis

Research measurement scales and items in this study were adopted from existing literature, which includes the impromptu GEM scale that was adopted from García-Magro et al. (2023) and Conaway and Garay (2014), comprising two dimensions and seven items. The CE scale was developed by Brodie (2014) consisting of two dimensions and six items, and CVCCB scale was adopted from Yi and Gong (2013), including seven dimensions and 24 items. All scale items were measured on a 7-point Likert scale ranging from 1 (*Totally Disagree*) to 7 (*Totally Agree*) for evaluating respondent agreement levels.

Results

Respondents' demographic information is summarized in Table 1, indicating that participants were slightly male dominated (54.9%) and aged between 27 and 58 (50.8%). It can also be observed that most sampled participants had a Bachelor's or higher education background (57.3%), and income level between 6,000 and 10,000 Renminbi (RMB) (41.8%).

Table 1 *Sample Respondents' Profile*

Variable	Category	Frequency	Percent
Gender	Female	248	45.1
	Male	302	54.9
Age	18–26	89	16.2
	27–42	128	23.3
	43–58	151	27.5
	59 or above	182	33.1
Educational Level	Below Bachelor	142	25.8
	Bachelor	185	33.6
	Master	107	19.5
	Doctoral	23	4.2
	Above Doctoral	93	16.9
Monthly Income Level (in RMB)	Below 3,000	44	8.0
	3,000–5,000	204	37.1
	6,000–10,000	230	41.8
	Above 10,000	72	13.1

The statistics analysis began with a normality test, validity and reliability assessment, common method bias test, and multi-collinearity testing, followed by structural equation modeling (SEM), path analysis, moderation, and mediation effects testing using SPSS and AMOS software. The control variables included in this study that may influence CVCCB were participants' gender, age, education, and income levels. For instance, Kennedy et al. (2022) advocated that customers' gender influenced communication disposition, with females preferring collaborating and support seeking in CVCCB. Laukkanen (2016) suggested that younger customers were usually early users of complex and state-of-the-art features in M-banking, which were more likely to engage in CVCCB activities such as information sharing and helping. Additionally, Zhu et al. (2020) suggested that higher education levels were associated with enhanced communication competences such as providing comments and help in CVCCB under an M-banking setting. Mohan and Potnis, 2015 found that high income was usually interrelated with ample economic resources, along with extensive financial knowledge and information, which stimulated customers' enthusiasm towards CVCCB in M-banking.

Normality test results revealed that skewness and kurtosis values for all scale items ranged from .062 to -.896 and from .036 to -1.961, respectively, indicating that the sample data were normally distributed (Hair et al., 2019). The convergent validity test was performed by using measurement items' factor loadings and excluding items with a value lower than the threshold of .50 (see Table 2).

Cronbach's alpha coefficient was also calculated to test scales' reliability, with all outcomes being above the threshold level of .60 (Henseler et al., 2015), meaning the scale's reliability was confirmed (see Table 2). A multi-collinearity test was performed using the variance inflation factor values of all indicator variables, including GEM (1.133) and Affect (1.133), which were both less than the maximum acceptable value of 3.30 (Petter et al., 2007), indicating that the multi-collinearity issue was absent in this study. The common method bias (CMB) test using Harman's one-factor method showed that the most significant loading of a single dimension was 32.63%, which was less than the threshold value (50%), indicating that CMB was also absent in this research.

Table 2 *Convergent Validity and Reliability Testing*

Items	Affect	EE	IE	Cronbach's α		
Affect_1	(.797)			.880		
Affect_2	(.759)					
Affect_3	(.819)					
EE_1		(.810)		.904		
EE_2		(.729)				
EE_3		(.868)				
EE_4		(.877)				
IE_1			(.840)	.891		
IE_2			(.881)			
IE_3			(.914)			
	ISR	RB	FEB	HEP	TOL	
ISR_1	(.772)					.850
ISR_3	(.803)					
ISR_4	(.828)					
RB_1		(.679)				.784
RB_2		(.599)				
RB_3		(.745)				
RB_4		(.828)				
FEB_1			(.726)			.783
FEB_2			(.683)			
FEB_3			(.849)			
HEP_1				(.733)		.808
HEP_2				(.539)		
HEP_3				(.797)		
HEP_4				(.825)		

TOL_1	(.84 4)	.865
TOL_2	(.75 2)	
TOL_3	(.82 1)	

Note. EE: Extrinsic Motivation; IE: Intrinsic Motivation; ISR: Information Sharing; RB: Responsible Behavior; FEB: Feedback; HEP: Helping; TOL: Tolerance.

The Composite Reliability (CR) and Average Variance Extracted (AVE) were at satisfactory levels, although the Customer Engagement (CE) dimension was relatively problematic (Table 3).

Table 3 *Discriminant Validity Testing Original Proposed CVCCB Framework*

	CR	AVE	CE	GEM	CVCCB
CE	.562	.398	.631		
GEM	.581	.421	.946	.649	
CVCCB	.824	.484	.906	.650	.696

Note. CR: Composite Reliability; AVE: Average Variance Extracted; CE: Customer Engagement; GEM: Gamification Emotional Mechanics; CVCCB: Customer's Value Co-Creation Behavior.

The discriminant validity test compared the latent variables' square roots average variance with their correlations, using Heterotrait-Monotrait test ratios (see Table 4). Both showed concern for the Customer Engagement dimension (Henseler et al., 2015), as the square root of AVE for CE construct (.631) was not greater than its correlations with either GEM (.946) or CVCCB constructs (.906).

Table 4 *Heterotrait Monotrait Ratio*

	GEM	CE	CVCCB
GEM	1.00		
CE	.760	1.00	
CVCCB	.668	.921	1.00

After model adjustment by removing second-order indicators with low factor loading (cognitive processing), the validity test results were all satisfactory (see Table 5); thus, the measurement scale's discriminant validity was confirmed.

Table 5 *Discriminant Validity Testing for Modified CVCCB Framework*

	CR	AVE	AFF	GEM	CVCCB
AFF (Affect)	.886	.723	.850		
GEM	.588	.432	.672	.657	
CVCCB	.829	.493	.664	.637	.702

The SEM test outcomes summarized in Table 6 indicated that the proposed research model's fit indices, including Chi-square to degrees of freedom ratio, comparative fit index (CFI), goodness-of-fit Index (GFI), and root mean square error of approximation (RMSEA) were all at satisfactory levels, signifying that the proposed research framework had good model fit (Kline, 2011). Table 6 also revealed that all independent factors had significant effects on dependent variables except for GEM and education, which did not show significant impacts on CVCCB. Thus, Hypothesis 1 was rejected.

Table 6 Regression Weight Estimate

			Estimate	SE	CR	p
AFF	<---	GEM	.896	.119	7.55	***
CVCCB	<---	GEM	.094	.054	1.75	.081
CVCCB	<---	AFF	.239	.041	5.90	***
CVCCB	<---	GENDER	.164	.046	3.55	***
CVCCB	<---	AGE	-.073	.022	-3.32	***
CVCCB	<---	EDUCATION_LEVEL	.018	.017	1.08	.282
CVCCB	<---	INCOME_LEVEL	.201	.032	6.35	***

Note. CVCCB–Customer’s value co-creation behavior; AFF–Affect; GEM–Gamification emotional mechanics. Model fit indices: $\chi^2 = 719.945$ ($p = .000$), $df = 408$, $\chi^2/df = 1.765$, CFI = .965, GFI = .921, NFI = .924, TLI = .960, RMSEA = .037, *** = .001 significance level.

Moreover, the bootstrapping results in Table 7 showed that GEM’s direct effect on CVCCB was insignificant. However, indirect effects were significant, meaning that affective CE had a full mediation effect on the relationship between GEM and CVCCB. Thus, Hypotheses 2 and 3 were supported.

Table 7 Mediating Effect of Affective Customer Engagement

Relationship	Estimate	Bootstrapping		2 Tailed Significance
		Bias-Corrected 95% CI		
Direct Effects		LB	UB	
AFF–GEM	.896	.662	1.19	.001
CVCCB–GEM	.094	-.005	.227	.060
AFF–CVCCB	.239	.143	.343	.001
Indirect Effects				
CVCCB–GEM	.214	.132	.346	.001

Note. AFF: Affect; GEM: Gamification emotional mechanics, CVCCB: Customer’s value co-creation behavior.

The test results in Table 8 indicated that after inputting a centralized interactions factor (GEM_CC*GEN_CC), Model 2 was statistically insignificant. However, Model 4 became significant after adding the interactions term (AFF_CC*GEN_CC), with a 4.6 percent increase in *R*-squared. This has confirmed the generational differences’ various moderating effects on CE and CVCCB. Therefore, Hypothesis 4 was rejected, and Hypothesis 5 was supported.

Table 8 Summary of Hierarchical Regression Analysis

Model	R	R ²	Adjusted R ²	Std. Error of Estimate	Change Statistics		
					R ² Change	F Change	Sig. F Change
1	.343a	.118	.116	1.24	.118	73.0	.000
2	.346b	.120	.116	1.24	.002	1.27	.260
3	.336c	.113	.111	.754	.113	69.8	.000
4	.399d	.159	.156	.735	.046	30.0	.000
a. Predictors: (Constant), GEM_CC			b. Predictors: (Constant), GEM_CC, GEM_CC*GEN_CC				
c. Predictors: (Constant), AFF_CC			d. Predictors: (Constant), AFF_CC, AFF_CC*GEN_CC				

Discussion

Findings of this study confirmed that customers’ affective engagement significantly influenced CVCCB in M-banking service, which was congruent with the findings in related research in the USA regarding mobile application settings, advocating that customers’ affective emotional response was an essential antecedent factor of CVCCB in mobile application service (Doğan-Südaş et al., 2023). Consistent with the results of another study in Spain with 304 participants (García-Magro et al., 2023),

this study provided evidence to support that GEM positively influenced CVCCB in M-banking services, although this effect was moderately significant. Moreover, results from this research also confirmed that customers' affective engagement had a significant mediating effect on the relationship between GEM and CVCCB, which supported the findings of prior studies claiming that GEM had an indirect influence on CVCCB through CE (Doğan-Südaş et al., 2023).

For instance, Cheng (2024) conducted research in a Taiwanese educational setting using 331 participants, and suggested that learners' engagement can be positively affected by gamification and the inherent emotions in Massive Open Online Courses. Furthermore, this study also found that generational differences had a significant moderating effect on the relationship between affective CE and CVCCB, but not on the relationship between affective GEM and CE. These findings were also supported by the results of previous studies, which claimed that customers from various generational groups frequently exhibited dissimilar CVCCB (Moise et al., 2020). However, the emotional mechanisms in gamification did not influence customers from various generation groups differently (Ebermann et al., 2016), as emotive stimuli in gamification were often embedded in fundamental psychosomatic triggers that went beyond generational boundaries, such as human desires for accomplishment, respect, and playfulness. Therefore, the emotional mechanisms within gamification are likely to activate affective CE in ways that are not substantially altered by age-related dissimilarities in values or technology use (Ebermann et al., 2016).

Conclusion and Recommendations

This research extends the body of knowledge on GEM and CVCCB by bridging several gaps in the current literature. Theoretically, it offers pragmatic evidence for confirming the dissimilar impacts of three acknowledged antecedent factors on CVCCB in a proposed conceptual model. It also validated the application of SOR theory in explaining the mediating effects that CE exerted on the relationship between GEM and CVCCB in M-banking service, which had not yet been explored in the literature. Moreover, this study validated the use of generational theory to explain CVCCB differences among various generational cohorts within the Chinese M-Banking context.

This study also contributes practically to policymakers for improving overall business performance. First, owing to GEM's positive impact on both CE and CVCCB, bank management in China should try to incorporate emotional mechanisms when designing gamification features in M-banking; these would include intrinsic motivation (enjoyment, achievement, socialization) and extrinsic motivation (rewards, points, competition) that can direct customers' behavior towards CE and CVCCB in M-banking service. Second, given that generational differences exert a significant moderating impact on CVCCB, Chinese bank management and government should take into account this effect when motivating CVCCB in the M-banking context, because CVCCB differences can be attributed to both customers' physical functions and psycho-emotional factors, such as the perceived GEM in M-banking services. Thus, policymakers at various levels should consider applying generational-friendly approaches, such as age-friendly interfaces and personalized information, to customize the precise customer needs for each generational cohort, thereby encouraging CVCCB.

Limitations and Suggestions for Future Studies

Although this study presents several significant implications, it also had a few limitations that need to be addressed in future studies. First, the findings of this study were based on the analysis of a rather limited size of Chinese M-banking users recruited in this cross-sectional research, which means that the generalization of these results to a larger scale is rather limited. Second, adopting a survey questionnaire as the research tool cannot avoid introducing various bias during research process. Third, this research theorized CVCCB with lower-order dimensional constructs, which may have neglected subtle differences between CVCCB's sub-dimensions when using higher order constructs to conceptualize this notion, as proposed in other studies. Fourth, as this study was cross-sectional in nature, the underlying relationships among variables require further validation through longitudinal studies owing to the dynamic environment in the Chinese finance industry. Lastly, in order to develop

an improved and robust CVCCB framework, future studies should consider introducing more relevant antecedent factors of CVCCB and demographic variables to the proposed framework in this study.

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Effects of a Child Development Package: Children Aged 30–35 Months at Daycare Programs in Phnom Penh, Cambodia

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Abstract

Aim/Purpose: This research study investigated the effect of daycare programs on improving developmental outcomes for children aged 30–35 months in Phnom Penh, Cambodia, highlighting the critical importance of Early Childhood Care and Development (ECCD) and the significant role of daycare centers in stimulating physical and health, cognitive, language, and social-emotional development. This paper examines how daycare programs can improve ECCD outcomes in Phnom Penh, Cambodia. It highlights the importance of structured interventions, such as the Child Development Package (CDP) and Parenting Education Program (PEP), in addressing the developmental needs of children from urban settings, where access to quality education and care is limited.

Introduction/Background: Early Childhood Care and Development is essential for health, well-being, and lifelong learning for children. The first 1,000 days are critical for brain development, with proper nutrition, healthcare, and stimulation being vital. In Cambodia, most young children are cared for by relatives, particularly grandmothers, who often lack adequate ECCD knowledge. Despite government efforts through national policies, implementation is uneven, especially in urban areas like Phnom Penh, where demand for quality daycare exceeds supply. The lack of proper daycare programs leaves many children without essential early learning opportunities, hindering their development. Daycare centers provide care and also serve as critical environments for early learning and development.

For working women, access to quality daycare is essential, as it allows them to pursue employment opportunities without compromising their children's safety and developmental needs. Women's active participation in the workforce supports the Cambodian government's goals by contributing to economic growth, enhancing GDP through entrepreneurship, reducing poverty by increasing household income, promoting education and skill development, advancing gender equality and empowerment, improving health outcomes for families, and fostering social stability and community development through advocacy for better childcare options.

Methodology: To explore these dynamics, a mixed-methods approach was employed in this study to investigate the effects of daycare programs on developmental outcomes for children aged 30–35 months in Phnom Penh, Cambodia. Utilizing a quasi-experimental design, the research involved a sample of 60 children, divided into an experimental group of 30 participants who received the CDP and a control group of 30 children who received no intervention.

Quantitative data were collected using the Child's Early Learning Assessment Tool, which assessed four domains of child development, including physical and health, cognitive, language, and social-emotional development. Pre-test assessments established a baseline for comparison, followed by post-tests to evaluate changes resulting from the intervention.

Complementing this quantitative approach, qualitative data were gathered through thematic analysis of interviews with 21 respondents, including seven caregivers/teachers, seven caregivers caring for children at home, and seven caregivers with children in daycare, along with observational notes that provided insights into children's engagement and social interactions. Data analysis involved Analysis of Covariance to compare post-test scores between groups while controlling for pre-test

scores, thus assessing the true effect of the CDP. This methodology facilitated a thorough examination of the daycare program's effectiveness, providing valuable insights into the role of structured early childhood interventions in enhancing developmental outcomes.

Findings: Significant improvements in the experimental group were found across all developmental domains. Specifically, physical and health development showed significant differences ($F(1, 56) = 28.891, p < .05$), with a large effect size (Partial $\eta^2 = .340$). Cognitive development also demonstrated significant gains ($F(1, 56) = 75.958, p < .05$, Partial $\eta^2 = .576$), while language development showed positive trends, although not statistically significant ($F(1, 56) = 1.497, p > .05$). Social-emotional development showed significant improvements ($F(1, 56) = 23.600, p < .05$, Partial $\eta^2 = .296$).

The interviews with teachers, caregivers, and parents revealed significant positive impacts of the CDP and PEP on child development. Caregivers reported notable improvements in children's physical, cognitive, language, and social-emotional skills. Parents involved in the PEP adopted more positive parenting techniques, such as gentle discipline and engaging in educational activities, leading to enhanced child behavior and self-esteem. In contrast, parents without PEP support relied on punitive measures. Overall, the findings emphasized the effect of structured early childhood interventions in fostering child development and improving parenting practices in Cambodia.

Contribution/Impact on Society: This paper contributes to the body of knowledge by providing empirical evidence of the effect of structured daycare programs in enhancing child development in a Cambodian context. The findings underscore the necessity of investing in ECCD to foster holistic development, thereby supporting Goal 4 of the Sustainable Development Goals, as well as the National Policy and National Action Plan on ECCD in Cambodia.

Recommendations: Considering the findings, the study recommends that policymakers and practitioners prioritize the establishment and funding of quality daycare centers that implement evidence-based programs like the CDP. Additionally, training for caregivers, teachers, and parents should be enhanced to ensure effective delivery of ECCD.

Research Limitation: The study's limitations include a relatively small sample size and a focus on a specific urban area, which may affect the generalizability of the findings. The reliance on self-reported data from caregivers, teachers, and parents may also have introduced bias.

Future Research: Future research should explore the long-term impacts of daycare interventions on child development and academic success. Studies could investigate the scalability of the CDP in rural areas and its integration with national education policies to enhance ECCD across diverse contexts.

Keywords: *Early childhood care and development, child development package*

Introduction

Early Childhood Care and Development (ECCD) is of critical importance during the period that lays the foundation for health, well-being, and lifelong learning for children (Black et al., 2017). The first few years of life are characterized by rapid brain development, with neural connections forming at an astounding rate of 1 million per second (Siegel, 2020). Given this rapid development, investments in ECCD provide significant benefits not only for children, but also for governments, private sectors, communities, parents, and caregivers (UNICEF, 2023; WHO, 2018). Key interventions during the first 1,000 days of life, such as proper nutrition, healthcare, and stimulation, are essential for developing stronger brains, which in turn support future academic success and overall development (Hurley et al., 2016). Thus, high-quality ECCD programs play a crucial role in fostering children's physical, cognitive, language, and socio-emotional skills, which enhance their full potential (World Bank, 2019).

In Cambodia, the landscape of ECCD presents unique challenges. Children are primarily cared for by relatives such as mothers and grandmothers, with 72% of households relying on grandparents as caregivers (World Bank, 2024). However, the knowledge and practices of caregivers remain questionable. Studies have indicated that grandmothers who take on the role of caregivers score

lower in knowledge, attitudes, and practices related to ECCD compared to primary caregivers (Save the Children, 2022). This gap in caregiver understanding, coupled with an unsatisfactory home environment, poses significant challenges to children's development during the critical first 1,000 days (UNICEF, 2021; World Bank, 2020).

Recognizing these challenges, the Royal Government of Cambodia has made notable efforts to improve the situation through national policies and guidelines, such as the National Policy on ECCD and the National Action Plan on ECCD (2022–2026) (MoEYS, 2010; MoEYS, 2022). But implementation remains uneven, particularly in urban areas like Phnom Penh, where urbanization, rapid economic growth, and increasing female workforce participation are transforming traditional family structures (Ackerman, 2021). In Phnom Penh, demand for daycare programs has surged due to these societal shifts and growing awareness of the importance of ECCD. Yet, the supply and quality of such programs have not kept pace with demand, leaving a significant gap in ECCD services (Chea & Wongchai, 2022).

While global evidence has underscored the benefits of structured early childhood interventions (Britto et al., 2017; Engle et al., 2011), research on their effectiveness in Cambodia remains limited. The unique cultural, social, and economic context of Cambodia necessitates targeted studies to inform policy and practice. As Burchinal et al. (2016) emphasized, the impact of early childhood interventions varies significantly based on cultural and implementation factors. This study seeks to address this gap by examining the effects of a structured CDP implemented in Phnom Penh daycare centers. The CDP is a comprehensive, culturally adapted intervention designed to enhance multiple domains of child development, including physical and health, cognitive, language, and socio-emotional competency. By comparing children in daycare centers implementing the CDP with those in home settings, this study aims to evaluate the potential impact of structured interventions in Cambodia's unique context.

Despite the recognized importance of ECCD, Cambodia faces significant challenges in providing equitable access to quality early childhood services. High rates of malnutrition, inadequate early learning opportunities, and gaps in caregiver knowledge hinder child development, particularly in low- and middle-income households. While the government has introduced policies to improve ECCD, implementation challenges persist, especially in urban areas like Phnom Penh, where demand for daycare services exceeds supply. Furthermore, research on the effectiveness of structured early childhood interventions in Cambodia's specific cultural and socioeconomic context is limited. This study addresses these gaps by investigating the impact of a structured Child Development Package (CDP) in daycare centers, comparing developmental outcomes with those of children in home settings. The aim is to improve ECCD services and contribute to a global understanding of early childhood interventions in diverse settings. Specifically, this study seeks to enhance childcare quality in Cambodia by evaluating the short-term and long-term impacts of the CDP, integrating parenting education, and strengthening ECCD policies through comprehensive training and community involvement.

Literature Review

Role of Daycare in Early Childhood and Development: Opportunities and Challenges

Daycare refers to care and education at centers for children aged 3 months to 5 years, offering a mix of care, education, and recreational activities such as running, drawing, and imaginative play (Council of Ministers, 2024). In contrast, home care is delivered by parents, relatives, or nursing assistants (Dwiyatna, 2020). Daycare centers play a crucial role in enhancing children's physical, cognitive, and social-emotional development (WHO, 2018). They create stimulating environments where children improve their numeracy, literacy, self-control, self-esteem, and communication skills, preparing them for preschool (Shonkoff et al., 2012). Additionally, daycare programs can help reduce inequality in developing societies (Engle et al., 2011; Heckman, 2006).

However, such programs have been neglected in Cambodia since the 1990s, despite their emphasis during the 1980s socialist regime. A 2007 report indicated that approximately 102 public childcare centers existed in the 1980s, but these were closed in the early 1990s, resulting in a lack of support for public daycare in government programs. Reliable data on daycare centers in Cambodia is

scarce, with only 25 identified, mainly serving factory workers and private sector employees (CCR CSR & PE&D, 2020). The coverage of formal daycare center services for children below three years remains very low; there is no official curriculum, and activities are either developed by centers or drawn from other countries (World Bank, 2024). The absence of a suitable curriculum for daycare complicates the situation, as most caregivers receive training solely from their management teams (OECD, 2017).

Examining the quality of early educational interventions is essential, as research shows that high-quality programs significantly enhance child development (Yoshikawa & Kabay, 2015). Quality includes structural aspects, such as class size and caregiver qualifications, and process quality that pertains to caregiver interactions. For instance, Morgan (2019) found that children in high-quality preschool programs exhibited better academic performance and social skills later in life. This underscores the need for improved daycare standards in Cambodia, as children from quality programs are less likely to require special education services and more likely to graduate from high school (Barnett, 2011).

Many studies have compared the early learning outcomes of children in daycare centers and home care. According to de Mattos Amaro et al. (2020), assessments revealed high percentages of abnormal results in child development, particularly among home-cared children (40.47%) compared to those in daycare (37.35%). But statistical tests showed no significant differences across various developmental domains (de Mattos Amaro et al., 2015). Similarly, in the first assessment, 53.3% of home-cared children differed from those in daycare (38.8%), and by the second assessment, 44.4% of home-cared children faced social disruptions. Despite these findings, motor and speech skills improved significantly over six months, with no developmental differences noted between the two groups (Dwiyatna et al., 2020). Overall, while children benefited from childcare in both the short- and long-term, especially in language and social development, studies have indicated that those in childcare centers exhibit improved self-confidence, along with social and cognitive skills. By contrast, children in the control group experienced fewer positive outcomes when compared with the treatment group. Those in the treatment group committed fewer crimes and earned more pay later in life (Morgan, 2019).

Theoretical Framework for Creating the CDP and Child's Early Learning Assessment Tool (CELAT)

The Childhood Development Package (CDP) and Child's Early Learning Assessment Tool (CELAT) are designed to promote holistic development in early childhood, specifically in physical and health, cognitive, language, and social-emotional domains. Grounded in established theories, these tools aim to enhance ECCD through a comprehensive framework. By employing an integrated approach, interventions can be designed that simultaneously address various developmental aspects, leading to more effective outcomes for children (Bagnato, 2007).

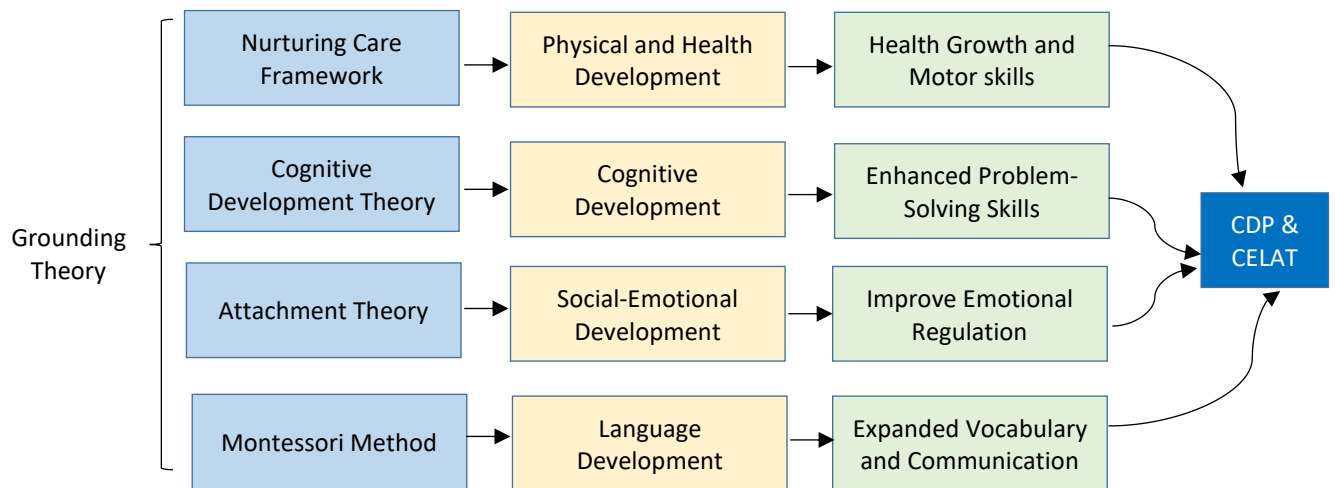
One of the key areas of focus within the framework is physical and health development. The CDP emphasizes the importance of good health and adequate nutrition as outlined in the Nurturing Care Framework. This framework highlights that optimal child development requires a supportive environment that fosters physical well-being (Britto et al., 2017; WHO, 2018). To this end, the CDP incorporates structured activities aimed at improving motor skills and promoting healthy growth, ensuring that children gain the necessary nourishment for their development (WHO, 2018).

Building upon this foundation of physical and health development, the framework also addresses cognitive development, drawing on Jean Piaget's cognitive development theory, which states that children learn actively through exploration and interaction with their environment (McLeod, 2018). The CDP includes hands-on, engaging activities that stimulate curiosity and problem-solving skills, allowing children to build knowledge through experiential learning (MoEYS, 2022). Additionally, the Montessori Method complements this cognitive growth by providing individualized learning experiences tailored to each child's developmental level (Saha, 2023).

In addition to cognitive skills, the language development domain is significantly influenced by attachment theory, which emphasizes the role of secure relationships in language acquisition (Vidrine-Isbell, 2017). The CDP fosters responsive interactions between caregivers and children, encouraging rich conversations and storytelling that enhance vocabulary and communication skills (Vidrine-Isbell, 2017). By creating a linguistically rich environment, the CDP supports children in developing strong language abilities, which are crucial for their overall development.

Moreover, the social-emotional development of children is nurtured through both attachment theory and the Montessori Method. Secure attachments formed with caregivers are essential for emotional well-being and influence children's ability to regulate their emotions (Knitzer, 2002). The CDP emphasizes building these secure relationships, helping children develop trust and emotional security, while also promoting social skills through group activities that encourage cooperation and empathy (Yulidar & Sari, 2024). These theories and their relation to the CDP and CELAT are shown below in Figure 1.

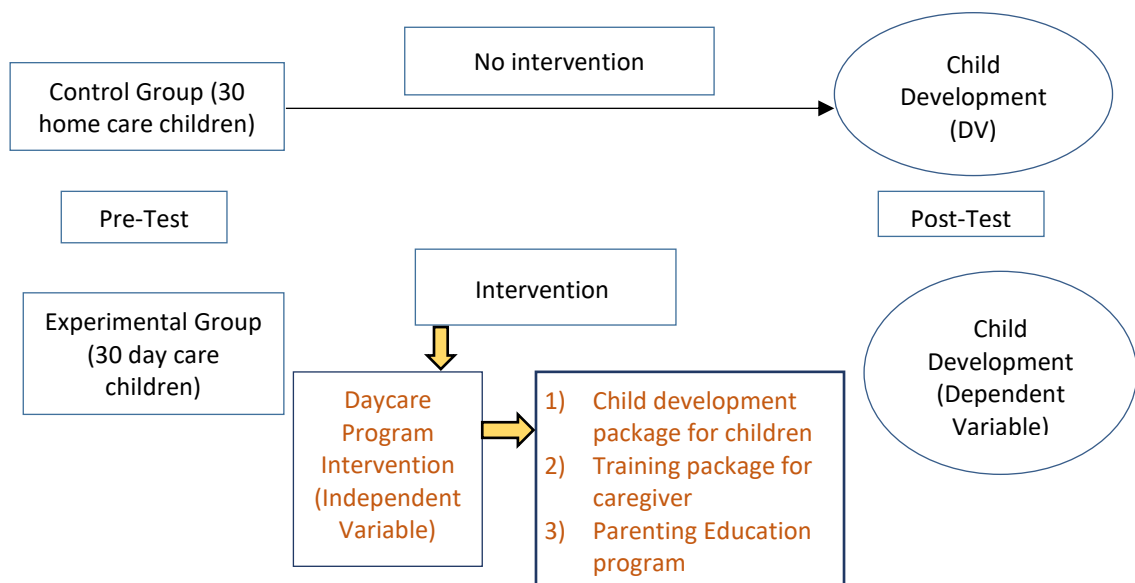
Figure 1 *Simplified Grounding Theories and Connections in CDP and CELAT*



Methodology

This study employed a mixed-methods approach with a quasi-experimental design, involving 60 children from seven daycare centers and 30 homes in Phnom Penh. Participants were divided into an experimental group (EG) ($N=30$) receiving a CDP, and a control group (CG) ($N=30$) with no intervention. Over four months, the EG participated in structured activities, while the CG did not. Quantitative data were collected using the CELAT, measuring various developmental domains. Data analysis included Analysis of Covariance (ANCOVA) to assess the CDP's effect, complemented by thematic qualitative analysis of caregiver and teacher interviews to explore children's engagement and interactions. The process that was followed in conducting the research study is shown below in Figure 2.

Figure 2 *Summary of the Process of the Research Study*



The Child's Early Learning Assessment Tool (CELAT) was adapted from the learning standards and parenting education program of the Ministry of Education, Youth and Sport (MoEYS), as well as from the Caregiver-Reported Early Development Instruments (Save the Children, 2017), the Cambodian Milestone Assessment Tool, (Ngoun et al., 2020), and the International Development and Early Learning Assessment tool (Save the Children, 2019). To ensure effectiveness, the CELAT was validated by experts in ECCD and piloted to confirm its validity and reliability (Tavakol & Dennick, 2011).

In terms of content measurement, the CELAT measured four developmental components. The physical and health component consisted of 10 items, measuring fine and gross motor skills and awareness of nutrition (MoEYS, 2018). The cognitive component covered 9 items, measuring logical thinking, quantity, measurement, and comparison (MoEYS, 2018). The language component consisted of 6 items, measuring vocabulary, communication, and listening comprehension (Indrayani, 2016). The social-emotional component consisted of 5 items, measuring children's awareness of their feelings and social interactions (Denham, 2003). Each item was scored on a 4-point Likert scale, where 1 indicated "Does not meet expectations", 2 "Meets expectations", 3 "Often exceeds expectations", and 4 "Always exceeds expectations". The sampling was purposively selected based on children aged 30 to 35 months who were part of daycare programs or home care)Brysbaert, 2019(.

To ensure the content validity of the CELAT, a technical committee assessed this tool. The committee members rated the quality of the 30 items across the four domains using a 4-point Likert scale. The evaluation process included item examination (Beck, 2020), criteria review, and material assessment. The evaluation results were calculated into means and compared against established criteria to determine item quality. Items scoring higher than 2.01 were retained, while those scoring lower were modified.

The reliability was measured using Cronbach's Alpha (Cronbach, 1951). A Cronbach's Alpha of .70 is generally considered acceptable, while values above .80 indicate good reliability, and a value of .90 suggests excellent reliability (Tavakol & Dennick, 2011).

The overall Cronbach's alpha of the physical and health component with 10 items was .848, indicating a good level of internal consistency among the items in the scale. Similarly, the cognitive component with nine items yielded an overall Cronbach's alpha of .931, indicating that the scale was highly reliable. The language component with six items had an overall Cronbach's Alpha of .829, while the social-emotional component with five items had an overall Cronbach's Alpha of .885, both indicating good internal consistency among the items in the scale.

In addition to the CELAT, the researcher observed daily activities of both children and caregivers in the daycare centers. This observation focused on child engagement in activities, implementation fidelity of the CDP, teacher-child interactions, peer interactions, and use of learning materials.

To facilitate the data collection process, the researcher trained 11 assessors and caregivers over a 5-day training course covering ECCD concepts, as well as the usage of the CDP and CELAT. The quantitative method involved assessing 30 children in the Experimental Group who received interventions over four months, compared to 30 children in the Control Group who did not receive intervention, with both groups assessed before and after using CDP.

Quantitative data was analyzed using a statistical software package, focusing on descriptive statistics and One-Way Analysis of Covariance (ANCOVA) to examine differences between the experimental and control groups while controlling for pre-test scores. Effect sizes were calculated using partial eta squared (η^2). The qualitative data were transcribed and thematically analyzed, providing insights from interviews that enriched the quantitative findings and highlighted participants' experiences, thus offering a comprehensive view of intervention impacts.

Findings/Results

Physical and Health Development

This component assessed 10 core competencies of children to determine the effect of the CDP. It focused on individual children's motor skills (both gross and fine motor) and their knowledge of the health and safety environment.

The descriptive statistics presented in Table 1 highlight a marked improvement in the post-test scores for the EG, which increased from a mean of 1.25 to 2.89, while the CG showed only a slight increase from 1.28 to 1.34. This stark contrast underscored the effectiveness of the CDP in promoting physical and health development among the children who participated in the intervention. Moreover, previous research emphasized that high-quality early educational interventions can lead to significant improvements in various developmental domains, including physical health (Lovison et al., 2021).

Table 1 Pre-Test and Post-Test Descriptive Statistics for Component #1: Physical and Health Development

Variable/Group	N	Pre-Test		Post-Test	
		M	SD	M	SD
Control	30	1.28	.21	1.34	.17
Experimental	30	1.25	.26	2.89	.30

The ANCOVA results for the CDP's effect on physical and health components are given in Table 2. The results indicated significant differences between the EG and the CG regarding post-test physical and health outcomes, $F(1, 56) = 28.891$, $p < .05$, Partial $\eta^2 = .340$. These effect sizes were very large, $F(1, 56) = .822$, $p < .05$, Partial $\eta^2 = .014$.

Table 2 ANCOVA Results for the CDP's Effect on Physical and Health Development

Source	df	MS	F	p	Partial η^2
Correct model	3	12.062	200.673	.000	.915
Intercept	1	6.175	102.736	.000	.647
Group*Pre-Physical & Health	1	.49	.822	.369	.014
Group	1	1.737	28.891	.000	.340
Pre-Physical & Health	1	.265	4.414	.040	.073
Error	56	.60			

Note. $p < .05$; $R^2 = .915$, Adjusted $R^2 = .910$.

Furthermore, the ANCOVA results suggested that the pre-test scores had no significant influence on the post-test outcomes, reinforcing that the improvements observed in the EG were not merely a function of initial competency levels. This finding aligns with the work of Jeong et al. (2021), who posited that effective interventions can produce meaningful changes in child development outcomes independent of baseline characteristics. The absence of a significant covariate effect reinforced the notion that the CDP was the primary driver of the observed improvements in the EG.

In addition to the statistical findings, qualitative data from caregivers and teachers strongly supported the ANCOVA results (de Mattos Amaro et al., 2015). All caregivers (100%) in the EG reported noticeable improvements in their children's gross and fine motor skills (Corsi et al., 2016). Teachers observed enhanced coordination during activities such as dancing, jumping, and ball-throwing. One teacher noted, "The structured physical activities have made a remarkable difference in children's movement confidence and control" (Cliff et al., 2009; Hands & Martin, 2003). These findings align with previous research highlighting the importance of structured physical activity in early childhood programs (Denboba et al., 2019).

Cognitive Development

Transitioning from physical and health development, the next component was cognitive development, focusing on nine core competencies, including classifying, making connections between objects, and understanding numbers, shapes, size, and colors.

Table 3 presents the descriptive statistics for the pre-test and post-test scores of cognitive development for both the CG and the EG. In the pre-test phase, the CG had a mean score of 1.33 ($SD = .75$), while the EG had a higher mean score of 1.73 ($SD = 1.07$). This initial difference suggested that the EG entered the study with a stronger baseline in cognitive development compared to the CG.

In the post-test assessment, however, the cognitive scores for the CG decreased to a mean of 1.03 ($SD = .06$), indicating a decline in cognitive development, while the EG indicated a significant increase in mean score to 2.34 ($SD = .39$). This contrast in post-test scores highlights the effectiveness of the CDP in enhancing cognitive development among children in the EG.

Table 3 Pre-Test and Post-Test Descriptive Statistics for Component #2: Cognitive Development

Variable/Group	N	Pre-Test		Post-Test	
		M	SD	M	SD
Control	30	1.33	.75	1.03	.06
Experimental	30	1.73	1.07	2.34	.39

The ANCOVA results for the CDP's effect on cognitive development is presented in Table 4, revealing significant differences between the EG and the CG, $F(1, 56) = 75.958$, $p < .05$, Partial $\eta^2 = .576$. This effect size is large, suggesting that the CDP had a meaningful impact on cognitive development outcomes.

Table 4 ANCOVA Results for the CDP's Effect on Cognitive Development

Source	df	MS	F	p	Partial η^2
Correct model	3	8.645	102.235	.000	.846
Intercept	1	43.106	509.792	.000	.901
Group*Pre-cognitive	1	.001	.011	.918	.000
Group	1	6.423	75.958	.000	.576
Pre-cognitive	1	.001	.011	.918	.000
Error	56	.60			

Note. $p < .05$; $R^2 = .846$, Adjusted $R^2 = .837$.

The covariate (pre-test cognitive development) had no significant influence on the post-test, $F(1, 56) = .011$, $p < .05$, Partial $\eta^2 = .000$, showing that the competencies of the children in both groups before the intervention were similar. The improvement in the children's cognitive ability in the EG can be attributed to the intervention implemented at the daycare center through using the CDP, rather than the effects of the pre-test.

The statistical findings from caregivers and teachers revealed that 90.47% of caregivers reported significant improvements in their children's cognitive abilities (Dwiyatna et al., 2020). Specific areas of improvement included number recognition, understanding of basic mathematical concepts, problem-solving skills, and spatial awareness (Pico et al., 2023). These findings supported existing literature on the effectiveness of structured cognitive activities in early childhood settings (Burchinal et al., 2016).

Language Development

Following cognitive development, the assessment team evaluated language development, focusing on six core competencies related to speaking, communication, sentence creation, and understanding questions.

The results are shown in Table 5, revealing that while both groups had similar baseline levels of language development in the pre-test, the post-test scores illustrated a stark contrast. The CG's mean score increased only slightly from 1.17 to 1.46, while the EG experienced a dramatic rise from 1.15 to 3.03. This significant improvement in the EG underscored the efficacy of the CDP in fostering language skills through structured activities designed to enhance language development.

Table 5 Pre-Test and Post-Test Descriptive Statistics for Component #3: Language Development

Variable/Group	N	Pre-Test		Post-Test	
		M	SD	M	SD
Control	30	1.17	.16	1.46	.22
Experimental	30	1.15	.11	3.03	.43

Table 6 summarizes ANCOVA results for the CDP's effect on language development.

Table 6 ANCOVA Results for the CDP's Effect on Language Development

Source	df	MS	F	p	Partial η^2
Correct model	3	13.247	120.419	.000	.866
Intercept	1	1.233	11.212	.001	.167
Group*Pre-language	1	.099	.900	.347	.016
Group	1	.165	1.497	.226	.026
Pre-language	1	.802	7.288	.009	.115
Error	56	.110			

Note. $p < .05$; $R^2 = .866$ (Adjusted $R^2 = .859$)

The analysis revealed that there were no significant differences between the EG and the CG, $F(1, 56) = 1.497$, $p > .05$, Partial $\eta^2 = .026$. Although the effect size was moderate, it indicated that the CDP had a notable impact on language development outcomes. The ANCOVA analysis indicated that the pre-test scores had no significant influence on the post-test outcomes, as evidenced by the non-significant interaction effect between group and pre-language scores. $F(1, 56)$, $p > .05$, Partial $\eta^2 = .016$. This finding suggested that the improvements observed in the EG were primarily due to the intervention rather than pre-existing language abilities. This is consistent with research highlighting the effectiveness of early childhood interventions in promoting language skills, independent of initial competency levels (Robert & Kaiser, 2015).

However, findings from caregivers and teachers painted a more nuanced picture. Approximately 84% of caregivers and teachers reported observable improvements in children's communication skills, vocabulary, and willingness to engage in verbal interactions. This discrepancy between quantitative and qualitative findings suggests the need for more sensitive language assessment tools in the Cambodian context (Rahman, 2017).

While language development showed positive trends, the difference between groups did not reach statistical significance ($F(1, 56) = 1.497$, $p > .05$, Partial $\eta^2 = .026$) (de Mattos Amaro, 2015). The experimental group's mean scores increased from 1.65 ($SD = .48$) to 1.89 ($SD = .52$), compared to the control group's change from 1.63 ($SD = .47$) to 1.71 ($SD = .49$) (Dwiyatna et al., 2020).

Social-Emotional Development

In terms of social-emotional development, the assessment team evaluated five core competencies, focusing on children's ability to identify emotions, communicate with others, trust, and practice ethics in daily life.

As shown in Table 7, both CG and EG began with comparable levels of social-emotional development, with the CG having a mean score of 1.15 ($SD = .15$) and the EG at 1.16 ($SD = .20$) during the pre-test. In the post-test assessment, the CG's mean score increased to 1.69 ($SD = .39$), reflecting a notable improvement. In comparison, the EG demonstrated an even more significant rise in mean score to 3.29 ($SD = .29$). This substantial difference in post-test scores means that the CDP was effective in enhancing social-emotional development in the EG.

Table 7 Pre-Test and Post-Test Descriptive Statistics for Component #4: Social Emotional Development

Variable/Group	N	Pre-Test		Post-Test	
		M	SD	M	SD
Control	30	1.15	.15	1.69	.39
Experimental	30	1.16	.20	3.29	.29

The ANCOVA results for the CDP's effect on social-emotional development are detailed in Table 8.

Table 8 ANCOVA Results for the CDP's Effect on Social-Emotional Development

Source	df	MS	F	p	Partial η^2
Correct model	3	13.057	115.933	.000	.861
Intercept	1	4.744	42.126	.000	.429
Group*Pre-social emotional	1	.529	4.693	.035	.077
Group	1	2.658	23.600	.000	.296
Pre-social emotional	1	.456	4.046	.049	.067
Error	56	.113			

Note. $p < .05$; $R^2 = .861$, Adjusted R^2 Squared = .854.

The analysis reveals significant differences between EG and CG regarding post-test social-emotional development scores, $F(1, 56) = 23.600$, $p < .05$, Partial $\eta^2 = .296$. This effect size was large, highlighting the substantial impact of the CDP on social-emotional development outcomes. The covariate (pre-test social-emotional development) had no significant influence on the post-test, $F(1, 56) = 4.693$, $p > .05$, or Partial $\eta^2 = .077$, showing that the children's competencies in both groups before the intervention were similar. The improvement in the children's language ability in the EG can be attributed to the intervention implemented at the daycare center through the use of the CDP, rather than the effects of the pre-test.

The findings from caregivers and teachers strongly supported the ANCOVA results, with 83.67% of caregivers observing improvements in their children's emotional regulation, peer interactions, and social confidence (Lehrer et al., 2015). Teachers reported enhanced classroom cooperation and reduced separation anxiety (Martikainen et al., 2024). These results align with global evidence on the importance of nurturing care in promoting social-emotional development (Britto et al., 2017).

Increase of CDP's Effect through Parenting Education Program

Building on the positive outcome of the CDP, interviews with 14 parents (seven whose children attended daycare and seven who provided home care) indicated significant differences in parenting practices that were influenced by the Parenting Education Program (PEP). Parents whose children participated in the daycare program that included the PEP exhibited eight key themes derived from MoEYS (2022) on Nurturing Care. These parents reported utilizing more positive parenting techniques, such as gentle education, explaining the rationale behind rules, and refraining from using physical or verbal violence (Dishion et al., 2008). In contrast, parents who did not receive any intervention were more likely to practice punishment or physical and emotional violence, including hitting, cursing, and scolding (Gershoff, 2002).

Furthermore, parents who participated in the PEP demonstrated a greater understanding of developmentally appropriate activities. They actively created play materials, purchased educational games, and dedicated time to interactive activities with their children, such as reading, drawing, and singing (Grindal et al., 2016). In contrast, parents without access to the PEP expressed uncertainty about effective child-rearing strategies and struggled to articulate activities that could foster their children's development (Butler et al., 2020). Notably, parents of children in daycare observed positive

behavioral changes, including improved manners, increased self-sufficiency, and enhanced self-esteem in their children (Grindal et al., 2016).

Discussion

CDP Effects on the Physical and Health Component

The results indicated significant improvements in the physical and health development of children in the EG, as evidenced by higher post-test scores compared to the CG. ANCOVA analysis confirmed these differences, suggesting that the CDP effectively enhanced physical competencies in children aged 30–35 months, consistent with prior research showing that high-quality early educational interventions lead to substantial improvements in physical and mental health (Lovison et al., 2021). Moreover, caregivers and teachers reported that children exhibited various positive changes in motor skills, aligning with findings that daycare programs enhance motor development (Dwiyatna et al., 2020).

CDP Effects on the Cognitive Component

Building on the improvements seen in the physical and health component, cognitive development results also showed significant gains in the EG, despite starting with a stronger baseline. The ANCOVA results indicated that the CDP positively impacted cognitive outcomes, with no significant influence from pre-test scores, suggesting that the observed improvements were due to the intervention. This aligns with research highlighting the importance of enriched learning environments for cognitive skill development (Burchinal et al., 2016). In addition to this finding, many meta-analyses have shown that participation in a quality program can enhance cognitive outcomes (Morgan, 2019). Caregivers noted that most children improved their counting and understanding of shapes and colors, although some still struggled with identifying quantities, reflecting the developmental limitations noted in earlier studies (Wynn, 1990; Sarama & Clements, 2009).

CDP Effects on the Language Component

In addition to cognitive gains, the CDP's influence extended to language development, where the EG showed a notable increase in post-test scores. Although ANCOVA did not reveal significant differences among the groups, the substantial improvement in the EG supports findings that early interventions enhance language abilities (Roberts & Kaiser, 2015). Caregivers and teachers reported that a majority of children demonstrated improved communication skills, which aligns with literature emphasizing the role of quality daycare programs in fostering language development (McCarty, 2024). These findings underscore the importance of investing in ECE programs that prioritize language development to prepare children for primary school.

CDP Effects on the Social-Emotional Component

The findings related to social-emotional development corroborate existing literature that underscores the significance of early interventions in fostering these skills. Research has indicated that social-emotional development is crucial for children's future success in school and life, influencing their ability to form relationships and manage emotions (Rafiyya et al., 2024). Caregivers reported that many children in the CDP could identify their feelings and communicate effectively with peers, further supporting the assertion that the CDP was an effective intervention for enhancing social-emotional development.

Increasing CDP's Effect Through Parenting Education Program

Finally, the findings highlighted the critical role of the PEP in shaping effective parenting practices and enhancing child development outcomes. Parents who participated in the PEP reported a shift towards more nurturing and constructive methods of child-rearing, which aligns with existing literature highlighting the positive impact of such programs on parenting behaviors (Dishion et al., 2008). This connection emphasized the benefits for children's overall development.

Conclusion

This study provides strong evidence for the effects of structured early childhood interventions in Cambodia, particularly through the implementation of a Child Development Package (CDP) combined with a Parenting Education Program. The experimental group, whose children received this package, demonstrated significant improvements across multiple developmental domains: physical and health, cognitive, language, and social-emotional development. In particular, children aged 30–35 months revealed improvement in the four components of child development.

These findings emphasized the necessity of investing in Early Childhood Care and Development (ECCD) as a means of promoting lifelong health and well-being. By prioritizing parenting education alongside accessible daycare services, the CDP enhances its overall effectiveness and sustainability, ensuring that children receive the comprehensive support needed for optimal development. The results of this study have significant implications for ECCD policy and practice in Cambodia and similar contexts, demonstrating the feasibility and impact of structured interventions, even in resource-limited settings.

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The Role of Financial Health in Predicting Long-Term Performance in Selected Industries in Thailand

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Abstract

Aim/Purpose: In this study, the relationship between financial health and long-term performance was investigated across four key Thai industries, including Agribusiness, Automotive, Petrochemicals, and Tourism and Leisure. The research identified which sectors were financially strong or at risk and explored the impact of firm size and industry type on performance. This information is crucial for business leaders, investors, and policymakers when making decisions.

Introduction/Background: Thailand's economy has faced a recent slowdown; the COVID-19 pandemic made things even tougher, especially for industries like Tourism and Leisure. Service and manufacturing firms are vital to national economic development, but both have struggled with profitability amidst global disruption. While much existing research has relied on short-term financial ratios to assess firm performance, a notable gap remains in emerging economies such as Thailand regarding the use of comprehensive financial health indicators. This study utilized the Altman Z-score, a robust measure of long-term financial stability, to predict long-term performance among Thai firms. Furthermore, it addressed the underexplored roles of firm size and industry type, contributing new insights into long-term financial sustainability in emerging markets.

Methodology: The quantitative study utilized the data from 57 companies listed on the Stock Exchange of Thailand (SET), which included 10 firms from the Agribusiness sector, 19 from Automotive, 14 from Petrochemicals, and 15 from Tourism and Leisure from the years 2021 to 2024. To measure financial health, Altman's Z-score was used to predict bankruptcy and assess an industry's solvency risk. Long-term performance was evaluated through key financial metrics, which included Earnings per Share (EPS), Net Profit Margin (NPM), Return on Assets (ROA), and Return on Equity (ROE). Relationships between financial health and performance were examined using Pearson's correlation coefficient and fixed-effects regression analysis, while controlling variables such as firm size, year, and industry-specific effects.

Findings: The findings revealed several important insights. Firstly, the Z-scores exhibited significant positive relationships with performance indicators such as EPS, NPM, ROA, and ROE. These results revealed that financially stable firms tended to perform better in the long run. Secondly, the firm size analysis showed that larger firms demonstrated stronger performance in EPS, ROA, and ROE, but firm size did not significantly affect NPM. This showed that profitability margins are more dependent on operational efficiency than scale alone. Thirdly, the industry analysis revealed that the Tourism and Leisure sector was hit hardest by the pandemic; it demonstrated a strong recovery with higher ROA and ROE once recovery began. However, almost all companies in this sector (96.67%) are still in financial trouble, which is a big concern. Agribusiness exhibited the lowest company risk, which demonstrated stable demand, efficient cost management, and effective performance in the industry. The Automotive and Petrochemical sectors showed moderate financial stability, with some firms facing liquidity challenges, but generally maintaining steady performance. In conclusion, the research findings highlighted the different degrees of financial resilience across industries, emphasizing the need for tailored risk management strategies.

Contribution/Impact on Society: This study makes several important key contributions because it shows how firms with good financial health can remain strong for a long time. It also provides industry-specific information about financial risks and how businesses recover. Thus helping business leaders, investors, and policymakers make smart decisions. The size of a company matters in terms of its performance, but this can change depending on how it is measured. Finally, the research findings can assist investors in finding strong companies in new markets.

Recommendations: Based on these findings, several recommendations are proposed for businesses, policymakers, and investors. For businesses, firms with high risk, such as those in Tourism and Leisure, should prioritize financial health by optimizing liquidity, reducing debt burdens, and improving operational efficiency. Policymakers should implement targeted support mechanisms such as liquidity assistance for Tourism & Leisure, and tax incentives for Agribusiness to encourage efficiency. Additionally, regulatory frameworks that promote financial transparency and robust risk management practices should be established, particularly in volatile industries. Investors should incorporate Z-scores and firm size as screening criteria when evaluating long-term investment opportunities in Thai investments. They should also diversify their portfolios to mitigate risk, for example, by balancing investments in sectors like Agribusiness and Automotive.

Research Limitations: This study was limited to publicly listed companies in four industries and excluded private enterprises, which may have shown different financial behaviors. Additionally, the use of only accounting-based performance measures (EPS, NPM, ROA, ROE) may not capture market-based dimensions of performance. Lastly, the study covered a period that was heavily influenced by the COVID-19 pandemic, which may have skewed the findings.

Future Research: Future research studies could include more industries, private firms, or firms from other ASEAN countries. Including additional control variables (such as leverage, innovation, investment, or corporate governance) may also enhance explanatory power and uncover deeper insights into the determinants of financial performance.

Keywords: *Financial health, long-term performance, Altman Z-scores, industry analysis*

Introduction

Over the last four decades, Thailand has made remarkable progress in social and economic development, moving from a low-income to an upper middle-income country in less than a generation (World Bank, 2024b). However, growth has slowed in recent years, with productivity stagnating and private investment dropping to 16.9% of GDP by 2019. In addition, the pandemic caused a 6.1% contraction in 2020, worsening structural issues (World Bank, 2024b). The World Bank report also mentions that this decline was sharper than during the 2008 financial crisis. Tourism, which is key to growth in Thailand, was expected to return to 90% of pre-pandemic levels by mid-2025 (World Bank, 2024b). Despite this, the nation faces many challenges in maintaining sustainable growth and financial stability. Those include an aging population, rising healthcare costs, and natural disasters that threaten long-term growth and fiscal sustainability (World Bank, 2024a; World Bank, 2024b). Addressing these multifaceted issues is a crucial dilemma for Thailand to maintain its development path and ensure future prosperity (International Monetary Fund, 2024).

This broader economic slowdown, combined with external shocks like the COVID-19 pandemic and global supply chain disruptions, has exposed significant vulnerabilities at the firm level. Many Thai companies have faced declining profits, raising concerns about their overall financial stability. Thai multinational companies whose core businesses focus on hospitality, restaurant, and lifestyle brands encountered severe liquidity issues during the pandemic due to a sharp drop in revenue (Minor International, 2020). Similarly, Toyota Thailand has struggled with production delays from global semiconductor shortages, which have led to lower output and higher product costs, despite being a major car manufacturing company and using high-quality supply chain management practices (Bangkok Post, 2021; Setboonsarng, 2021). In addition, the Charoen Pokphand Group, one of the

largest Thai agribusiness conglomerates, took on significant debt to finance its aggressive expansion, which has resulted in concerns about its long-term financial stability (Charoen Pokphand Group, 2020).

What has caused these issues, and how can such risks be prevented? These questions, among others, sparked the interest of the researchers to pursue this topic. To address these concerns, the financial health and long-term performance of four key industries in Thailand was investigated, namely the Agribusiness, Automotive, Petrochemicals, and Tourism and Leisure sectors. By analyzing financial data of companies from each of the four sectors, the researchers explored the underlying patterns, risks, and resilience of the Thai industrial landscape. More precisely, the study sought to investigate the following issues:

- To investigate relationships between financial health and long-term performance in key Thai sectors, including Agribusiness, Automotive, Petrochemicals, and Tourism and Leisure.
- To examine which of these four industries are financially healthy.
- To examine which of these four industries are at risk.
- To examine if company size and industry type influence long-term financial performance.

Literature Review

Financial Health

Understanding and assessing financial health is crucial for businesses seeking long-term success, especially in uncertain and competitive environments. Financial health refers to a company's ability to maintain profitability, manage its debt effectively, and meet its financial obligations. A financially healthy business is more likely to thrive and maintain its operations within a competitive market (Nagy & Valaskov, 2023). To evaluate financial health, one of the most widely recognized tools is the Altman Z-score model, introduced by Edward I. Altman in 1968. This model serves as a probabilistic indicator of whether a firm is likely to go bankrupt in the next few years by using the key financial ratios from its income statement and statement of financial position.

Many researchers worldwide have worked out predictions of financial health using the Altman Z-score model. For instance, a study by Tung and Phung (2019) in Vietnam looked at the financial health, specifically the risk of bankruptcy, for 180 small and medium-sized businesses in Sóc Trăng Province. They used the Altman Z-score model, along with information from companies' financial reports. Their findings showed that both financial data and non-financial factors were instrumental in determining whether a business was likely to fail (Tung & Phung, 2019). Similarly, Nandini et al. (2018) conducted a study in India focusing on ITI Ltd., a specific company. They evaluated its financial condition over a period of 22 years using the Altman Z-score model and also looked at its profitability using standard ratios for 5 years. By comparing the Z-score results and its profitability analysis, they examined the company's financial health. Their findings suggested that the company lacked an awareness of its worsening financial situation, and increasing debt eventually led to its failure (Nandini et al., 2018).

In Indonesia, a study by Kharisma et al. (2025) of PT Chandra Asri Pacific TBK, a petrochemical company, assessed its potential for financial distress between 2019 and 2023. Their analysis specifically used the Altman Z-score applicable to non-manufacturing and emerging markets. The results indicated that the firm was not experiencing general financial distress during this period, with Z-scores consistently above the 2.60 threshold. Lestari et al. (2021) also examined financial distress in Indonesia's tourism, hospitality, and restaurant subsectors from 2015 to 2019, applying models including the Altman Z-score to assess the financial health of companies in these combined sectors. These studies provide insights into how the Z-score may be used for tourism-related industries in an emerging market context, which is relevant for studies in similar regions like Thailand.

Other sector-specific applications have included agriculture and the automotive sector. Oyinlola et al. (2025) investigated the applicability of Altman Z-score models, including the original Z and the Z'' versions, for predicting the survival of listed agricultural companies in Nigeria, an emerging market in Africa. Their study indicated that Altman's Z-score models were effective tools for assessing financial health and predicting the likelihood of distress among these firms. Furthermore, Bunker et al. (2024) studied the automotive sector in India, comparing the predictive power of four financial distress

models including the Altman Z-score model. Their study analyzed data from 10 Indian automotive firms from 2013 to 2023 to assess the likelihood of financial distress. Their findings showed that the Altman Z-score was an effective model for predicting financial distress in the Indian automotive industry.

Building on these insights, the present study employed the Altman Z-score to evaluate financial health and risk across four critical industries in Thailand: Agriculture, Automotive, Petrochemicals, and Tourism and Leisure. Specifically, it aimed to determine which of these industries demonstrated the strongest level of financial stability, and which might be the most vulnerable to financial distress.

Long-Term Performance

While financial health focuses on a company's ability to remain solvent and avoid distress, assessing long-term performance requires a broader view that captures how well a company delivers value over time. Financial performance identifies how well a company generates revenues and manages its assets, liabilities, and the financial interests of its stockholders and stakeholders (Kenton, 2024). Researchers have worked out predictions of long-term performance using financial ratios.

Earnings per share (EPS) represent the share of a company's profits that is allocated to each outstanding share, and it serves as an important gauge of performance. Islam et al. (2014) argued that long-term EPS trends are indicative of profit sustainability and shareholder value. Likewise, Mao (2023) showed that EPS has implications for firm valuation and share pricing.

Net Profit Margin (NPM), another profitability metric, compares net income to total sales, and reflects a company's cost efficiency within a specific time frame (Sutrisno, 2013). Royda (2019) and Nariswari and Nugraha (2020) observed that NPM had no significant impact on company profit growth.

Return on Assets (ROA) is a profitability ratio that measures how efficiently a company utilizes its assets to generate profits. A study by Hagel and Brown, (2013) used ROA trends to understand long-term performance. However, the study also highlighted the limitations of using a single metric to measure long-term performance and indicated that ROA should not be analyzed in isolation. Their study suggested that ROA should be considered alongside other financial ratios, qualitative factors, and industry benchmarks to understand firms' long-term performance. Damodaran (2006) and Penman (2013) similarly emphasized that high ROA signals operational efficiency and sound management, as it reflects a company's ability to generate profits on its asset base. It is also known that ROA is effective in measuring all of an enterprise's operational processes, from production to marketing activities (Tutcu et al., 2024).

Another key indicator is Return on Equity (ROE), which evaluates how effectively a company uses shareholders' equity to generate profits. The use of ROE as a measure of corporate financial performance was examined in a South African study, including its application in assessing long-term value creation for shareholders (De Wet & Du Toit, 2007). The results suggested that analyzing ROE trends over time can provide valuable insights into a company's long-term profitability and efficiency in utilizing shareholders' equity. However, the results also highlighted the limitations of ROE and consider it as part of a broader analysis of long-term financial health. A study by Brigham and Ehrhardt (2017) emphasized that high ROE shows that firms generate high returns by using their equity effectively, which is attractive to investors. At the same time, ROE can also be used to assess the effectiveness of a firm's financial strategies and capital structure. The literature also shows that ROE reflects competitiveness and a firm's sustainable growth rate (Tutcu et al., 2024).

In light of these perspectives, in this study EPS, NPM, ROA, and ROE were utilized to assess the long-term financial performance of four key industries in Thailand: Agribusiness, Automotive, Petrochemicals, Tourism and Leisure. These metrics provide a multidimensional view of how each sector performs over time, helping to identify which industry is most financially resilient.

Related Research That Uses Financial Health to Predict Long-Term Performance

Building upon the discussion of financial ratios and their role in assessing long-term performance, several studies have employed correlation analysis to explore these relationships in different contexts.

For instance, a study on Thai banking firms investigated the relationship between various financial ratios and total stock returns (Sharma & Luciani, 2023). This research is particularly relevant as it utilized correlation analysis to examine the associations between financial ratios (such as those related to profitability, such as ROA and ROE) and market-based outcomes representing long-term value. The findings indicated significant correlations between financial ratios and performance measures. Despite its banking sector focus, this study's use of correlation analysis to link financial indicators with long-term performance provides a local example and highlights the need for such analysis in other Thai industries such as agribusiness, automotive, petrochemicals, tourism and leisure.

Another study, Crăciun et al. (2021) used correlation analysis to study the relationship between company financial indicators and sustainable development indicators. Utilizing both correlation analysis and panel data regression, the study explored the influence of financial metrics on sustainable development indicators in companies listed on the Bucharest Stock Exchange. However, the results of this study showed no strong or statistically significant linear relationships between their financial performance and their sustainable development indicators.

Additionally, a systematic review by Seretidou et al. (2025) looked at studies comparing traditional financial ratios (like ROA and ROE) with cash flow ratios for predicting performance and risk. This review confirmed the use of various research methods, including correlation analysis, to evaluate how well these ratios predict future performance and financial health. This review is relevant because it showed that financial ratios are commonly used to predict future performance and financial health, and it validated the use of correlation analysis for examining these relationships.

Based on these studies, and to explore the connection between financial health and long-term performance in the Thai industrial context, the following hypotheses were used in this study.

Null Hypothesis (H_0): There is no significant positive relationship between the financial health of companies in the Agribusiness, Automotive, Petrochemicals, and Tourism and Leisure sectors in Thailand and their long-term performance.

Alternative Hypothesis (H_1): There is a significant positive relationship between the financial health of companies in the Agribusiness, Automotive, Petrochemicals, and Tourism and Leisure sectors in Thailand and their long-term performance.

Company Size and Industry Type Influence Long-Term Performance

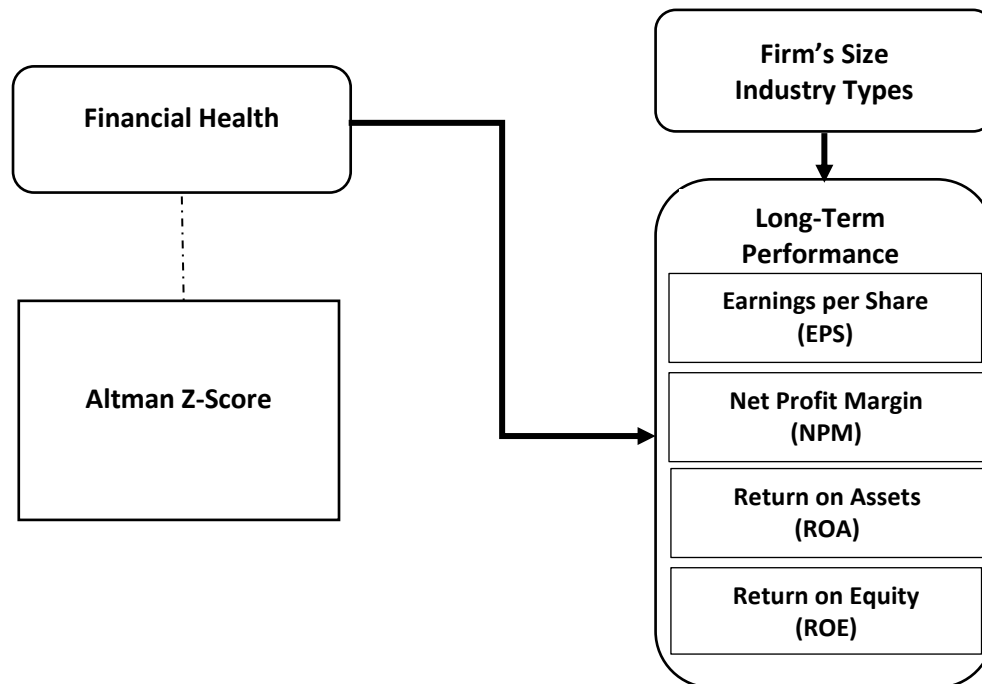
Beyond financial health and performance indicators, company-specific characteristics such as firm size and industry type also play a critical role in shaping long-term performance. The relationships between company characteristics such as size, industry type, and long-term performance can be complicated. Several studies have explored size and industry type factors to evaluate a company's ability to achieve sustained success. Larger, well-established firms often display significant market power, allowing them to influence pricing, negotiate better terms with suppliers, and dominate distribution channels. The studies of Porter (1980) indicate that strong brand recognition is an important factor for customer loyalty and competitive advantage, supporting long-term performance. Along with the study of Siahann et al. (2014), it highlights that larger companies may attract more investor attention due to their perceived stability. On the other hand, a study by Hartoyo et al. (2023) found that company size had no effect or even a negative effect on company value, with investors potentially viewing very large companies as less efficient in supervising the firm.

Industry type is also an important factor that influences long-term performance. Porter (1980) mentioned the Five Forces Framework as a foundational concept emphasizing how industry structure, including barriers to entry, buyer and supplier power, threat of substitutes, and intensity of rivalry, influence firms. These factors are considered attractive and can add to the potential for profitability and robust long-term performance. Additionally, the sustained performance of firms is often linked to their ability to adapt and maintain a sustainable competitive advantage within their specific industry context (Martynov & Shafti, 2016).

Research Framework

The research framework is shown below in Figure 1.

Figure 1 Research Framework



Research Methodology

Research Design and Sampling

In this study, a quantitative research approach was employed using secondary data sourced from the Stock Exchange of Thailand (SET). The population of this study included 921 publicly traded companies listed on the SET. To align with the research objectives and enhance representativeness, the study focused on four key industries: Agriculture and Food, Automotive, Petrochemicals and Chemicals, and Tourism and Leisure. These sectors were selected based on their relevance to the research purpose and to ensure comprehensive industry coverage. The final sample consists of 57 companies, distributed as follows: 10 Agribusiness, 19 Automotive, 14 Petrochemicals, and 15 Tourism and Leisure. The data that was collected covered a four year-period from 2021 to 2024.

Data Collection

Data for this study (financial statements) were primarily collected from the SET and individual firm websites. Only firms with non-missing values for key variables were included in the final analysis.

Research Models and Variables Measurement

To assess the determinants of a firm's long-term performance and examine whether firm size and industry type influence performance outcomes, the following fixed effects regression model was used:

$$Y_{it} = \beta_0 + \beta_1 ZScore_{it} + \beta_2 Size_{it} + \delta_t YearFixedEffects + \gamma_j IndustryFixedEffects + \epsilon_{it}$$

Where:

Y_{it} is the financial performance indicator of firm i in year t , represented in separate models by Earnings Per Share (EPS), Net Profit Margin (NPM), Return on Assets (ROA), or Return on Equity (ROE).

$ZScore_{it}$ is Altman's Z-score.

$Size_{it}$ represents the size of the firm.

δ_t is a set of year fixed effects, included to control for time-specific shocks and macroeconomic trends that could affect all firms.

γ_j is a set of industry fixed effects, accounting for structural differences across industries.

ϵ_{it} is the error term.

The models were estimated separately for each dependent variable as below:

Model 1: $EPS_{it} = \beta_0 + \beta_1 ZScore_{it} + \beta_2 Size_{it} + \delta_t YearFixedEffects + \gamma_j IndustryFixedEffects + \varepsilon_{it}$

Model 2: $NPM_{it} = \beta_0 + \beta_1 ZScore_{it} + \beta_2 Size_{it} + \delta_t YearFixedEffects + \gamma_j IndustryFixedEffects + \varepsilon_{it}$

Model 3: $ROA_{it} = \beta_0 + \beta_1 ZScore_{it} + \beta_2 Size_{it} + \delta_t YearFixedEffects + \gamma_j IndustryFixedEffects + \varepsilon_{it}$

Model 4: $ROE_{it} = \beta_0 + \beta_1 ZScore_{it} + \beta_2 Size_{it} + \delta_t YearFixedEffects + \gamma_j IndustryFixedEffects + \varepsilon_{it}$

Definitions and measurement parameters for each variable are shown below in Table 1.

Table 1 Variables: Definitions and Measurement

Variables	Abbreviations	Definitions	Measurement
Earnings per Share	EPS	Reflects the earnings attributable to each outstanding ordinary share.	Net income / No. of shares outstanding
Net Profit Margin	NPM	Shows the amount of income generated from sales revenues earned.	Net income / Total revenue
Return on Assets	ROA	Indicates how efficiently a firm utilizes its assets to generate profit.	Net income / Total assets
Return on Equity	ROE	Measures the profit generated from the invested capital.	Net income / Shareholders' equity
Financial health indicator	Z-Score	A bankruptcy risk indicator combining financial ratios into a single metric.	Composite score from Altman's Z-score formula
Firm size	Size	Used to control the scale of the firm's operations.	Natural log of total sales
Industry category (categorical)	Industry Fixed Effects	Categorical classification based on the firm's industry sector.	Dummy-coded variables for industry groups
Year-specific controls	Year Fixed Effects	Controls for year-over-year variation such as macroeconomic changes.	Dummy-coded for 2020, 2021, and 2022 (2019 base)

Financial health was evaluated using the Altman Z-Score, adapted for non-manufacturing and private firms. The Z-Score formula was applied as follows:

$$Z = 1.2X_1 + 1.4X_2 + 3.3X_3 + .6X_4 + 1.0X_5$$

Where:

X_1 = Working Capital / Total Assets

X_2 = Retained Earnings / Total Assets

X_3 = EBIT / Total Assets

X_4 = Market Value of Equity / Book Value of Total Liabilities

X_5 = Sales / Total Assets

Z-Score interpretations follow standard benchmarks:

$Z < 1.8$: Distressed Zone

$1.8 < Z < 3.0$: Gray Zone

$Z > 3.0$: Safe Zone (financially healthy)

Data Analysis

Altman Z-Scores for all firms were calculated using Microsoft Excel. Firms and industries were ranked accordingly based on their Z-Scores. To examine the relationship between financial health and long-term financial performance, statistical analyses were conducted using SPSS software. This included correlation analysis and fixed-effects panel regression models, incorporating year and industry fixed effects to control for unobserved heterogeneity across time and sectors.

Findings

Descriptive Statistics

In Table 2 below, descriptive statistics for the study's variables are shown.

Table 2 Descriptive Statistics

Variables	Minimum	Maximum	Mean	Std. Deviation
EPS	-41.11	22.93	.99	4.60
NPM (%)	-267.06	338.93	.08	37.18
ROA (%)	-29.29	37.65	5.26	7.62
ROE (%)	-216.73	37.41	2.75	21.45
Z-Score	-2.07	7.03	1.80	1.33
Size	1.41	5.84	3.55	.73

These descriptive statistics provide an overview of the distribution and variation of key variables in the dataset. ROE had a wide range from -216.73% to 37.41%, with an average of 2.75% and a high standard deviation of 21.45%. This suggested that while some firms were highly profitable, others experienced large losses. ROA was more stable, with a mean of 5.26% and a standard deviation of 7.62%. This result indicated a more stable performance compared to ROE. The average Altman Z-Score was 1.80, with values ranging from -2.07 to 7.03, which showed that some firms were financially distressed while others were in a stronger position. EPS also showed high variability, with a minimum of -41.11 and a maximum of 22.93, averaging .99 with a standard deviation of 4.60, which meant that some firms faced large losses per share, while others generated positive earnings. NPM showed the highest variation, ranging from -267.06% to 338.93%, with a mean close to zero (.08%) and a standard deviation of 37.18%. This reflected significant differences in profit efficiency among firms. Firm size, which was measured in logarithmic form, ranged from 1.41 to 5.84 with an average of 3.55 and a relatively low standard deviation of .73. This showed that the firms in the sample were mostly mid-sized with moderate variation.

Correlation Analysis

The results of correlation analysis are shown below in Table 3.

Table 3 Pearson's Correlation Coefficients

	ROE	ROA	Z-Score	EPS	NPM	Size
ROE	1					
ROA	.670**	1				
ZScore	.549**	.722**	1			
EPS	.224**	.307**	.190**	1		
NPM	.359**	.377**	.251**	.260**	1	
Size	.173**	.218**	.136*	.209**	.116	1

Note. * 2-tailed correlation significant at the .05 level, ** significant at the .01 level.

The Pearson correlation results reveal several significant relationships among the variables. EPS and NPM were positively correlated ($r = .260, p < .01$), which showed that firms with higher earnings per share also tended to have better profit margins. Firm size was significant, but weakly, correlated with most variables, particularly with EPS ($r = .209, p < .01$) and ROA ($r = .218, p < .01$), which meant that larger firms may have slight advantages in profitability and financial stability. Overall, the correlation matrix indicated meaningful relationships among key financial performance indicators.

ROA was strongly correlated with the Z-Score ($r = .722, p < .01$), which indicated that more financially stable firms generally achieved better returns on assets. ROA also had significant positive correlations with EPS ($r = .307, p < .01$), NPM ($r = .377, p < .01$) and size ($r = .218, p < .01$). The Z-Score,

as a measure of financial health, was significantly associated with all other variables, although the correlations with EPS, NPM, and size were modest.

ROE was strongly and positively correlated with ROA ($r = .670, p < .01$) and moderately correlated with the Altman Z-Score ($r = .549, p < .01$). This result suggested that firms with higher profitability on assets and stronger financial health tended to also have higher equity returns. ROE also showed weaker but significant positive correlations with EPS ($r = .224, p < .01$), NPM ($r = .359, p < .01$), and firm size ($r = .173, p < .01$).

Regression Analysis

Regression analysis was employed to examine linear relationships between financial health and long-term performance. This analysis aimed to identify the direction, strength, and significance of these relationships. To control for time-specific effects, year dummy variables were included in the model. Specifically, Year 2 Dummy, Year 3 Dummy, and Year 4 Dummy represented the years 2022, 2023, and 2024, respectively, while the year 2021 served as a reference point (coded as 0). These dummy variables helped account for unobserved year-specific influences on long-term performance.

Industry dummy variables were also included to capture the effects of sectoral differences on long-term performance. Firms were categorized into four industry sectors: (1) Automotive (reference group), (2) Agriculture and Food, (3) Petrochemicals and Chemicals, and (4) Tourism and Leisure. Industry 2 Dummy represented firms in the Agriculture and Food sector, Industry 3 Dummy corresponded to the Petrochemicals and Chemicals sector, and Industry 4 Dummy denoted firms in the Tourism and Leisure sector. By using the Automotive sector as the base category, the coefficients for each industry dummy reflected the difference in long-term performance (EPS, NPM, ROA, and ROE) relative to firms in the Automotive group. This approach provided a clearer understanding of how financial health, time trends, and industry context influence firm profitability and marketability.

Table 4 presents the determinants of Earnings per Share using multiple regression analysis.

Table 4 *Model 1: Multiple Regression Analysis Predicting Earnings Per Share (EPS)*

Variables	Coeff. (B)	SE	t	Sig.
(Constant)	-4.258	1.692	-2.516	.013
Z Score	.563	.266	2.117	.035
Size	1.214	.423	2.872	.004
Year 2 Dummy	.665	.840	.792	.429
Year 3 Dummy	1.046	.841	1.243	.215
Year 4 Dummy	.491	.840	.585	.559
Industry Type 2 Dummy	-1.547	.894	-1.730	.085
Industry Type 3 Dummy	-.628	.799	-.786	.432
Industry Type 4 Dummy	-.757	.881	-.859	.391
$R = .300, R^2 = .090, \text{Adjusted } R^2 = .057, F = 2.705^{**}$				

Note. DV = EPS; **Significant at 1% level.

This model achieved statistical significance overall ($F = 2.705, p < .01$), although it explained a relatively modest portion of the variation in EPS, with an R^2 of .090 and an adjusted R^2 of .057. This suggested that while the predictors included offer some explanatory power, other factors may also contribute meaningfully to EPS outcomes. Both Z-Score ($B = .563, p = .035$) and firm size ($B = 1.214, p = .004$) emerged as significant positive predictors of EPS. This indicated that firms with strong financial health and large size tended to report higher earnings per share.

The year dummy variables were not statistically significant. This implied that EPS performance remained relatively stable across the observed time period. Likewise, the industry dummy variables did not show significant differences in EPS compared to the reference group (Automotive sector).

Though Industry type 2 Dummy approached marginal significance ($p = .085$), its negative coefficient suggested that firms in this sector may exhibit slightly lower EPS.

Model 2 estimated the effect of Net Profit Margin (NPM) on firm financial health by utilizing a multiple regression approach; please see Table 5.

Table 5 Model 2: Multiple Regression Analysis Predicting Net Profit Margin (NPM)

Variables	Coeff. (B)	SE	t	Sig.
(Constant)	-29.593	13.556	-2.183	.030
Z Score	6.007	2.131	2.819	.005
Size	3.593	3.385	1.061	.290
Year 2 Dummy	9.897	6.729	1.471	.143
Year 3 Dummy	13.450	6.738	1.996	.047
Year 4 Dummy	17.099	6.726	2.542	.012
Industry Type 2 Dummy	-6.074	7.162	-.848	.397
Industry Type 3 Dummy	-2.742	6.401	-.428	.669
Industry Type 4 Dummy	-8.607	7.058	-1.220	.224
$R = .327, R^2 = .107, \text{Adjusted } R^2 = .074, F = 3.276^{**}$				

Note. DV = NPM; **Significant at 1% level.

The model was statistically significant ($F = 3.276, p < .01$), but with a relatively low explanatory power ($R^2 = .107, \text{Adjusted } R^2 = .074$). This indicated that approximately 7.4% of the variance in NPM was explained by the variables included in the model. This suggested that profit margins may be more sensitive to other unobserved factors. The Z-Score exhibited a significant and positive effect on NPM ($B = 6.007, p = .005$), which reinforces the idea that financially healthier firms tend to achieve better profitability. Firm size, on the other hand, did not show a significant impact ($B = 3.593, p = .290$). This result showed that larger firms did not necessarily have an advantage in profit margins over smaller firms within this sample.

The coefficients for Year 3 Dummy (2023) and Year 4 Dummy (2024) were both positive and statistically significant ($B = 13.450, p = .047$; $B = 17.099, p = .012$, respectively). This outcome indicated that average net profit margins were higher in these years compared to 2021. Year 2 Dummy (2022) showed a positive but statistically insignificant effect. Regarding sectoral effects, none of the industry dummies were statistically significant. This implied that sector affiliation did not substantially differentiate firms' NPM from the reference group (Automotive sector).

Table 6 presents the impact of financial health on Return on Assets using multiple regression.

Table 6 Model 3: Multiple Regression Analysis Predicting Return on Assets (ROA)

Variables	Coeff. (B)	SE	t	Sig.
(Constant)	-9.489	1.922	-4.937	.000
Z- Score	4.606	.302	15.243	.000
Size	1.560	.480	3.251	.001
Year 2 Dummy	-.971	.954	-1.017	.310
Year 3 Dummy	-.044	.955	-.046	.963
Year 4 Dummy	1.717	.954	1.801	.073
Industry Type 2 Dummy	-.910	1.015	-.896	.371
Industry Type 3 Dummy	.617	.907	.680	.497
Industry Type 4 Dummy	2.813	1.001	2.811	.005
$R = .757, R^2 = .573, \text{Adjusted } R^2 = .557, F = 36.712^{**}$				

Note. DV = ROA; **Significant at 1% level.

Model 3 yielded a statistically significant fit ($F = 36.712, p < .01$). With an R^2 of .573 and an adjusted R^2 of .557, the results showed that approximately 57% of the variation in ROA was explained by financial health. The Z-Score demonstrated a significant influence ($B = 4.606, p < .001$), which indicated that firms with higher financial health tended to achieve better asset returns. Firm size was also positively and significantly associated with ROA ($B = 1.560, p = .001$). This suggested that larger firms may benefit from stronger asset utilization.

Regarding the time fixed effects, none of the year effects were statistically significant at conventional levels, although the Year 4 Dummy approached significance ($B = 1.717, p = .073$). This meant that there was a modest improvement in ROA during 2024 relative to the base year (2021). Regarding industry-specific effects, Industry type 4 Dummy (representing the Tourism sector) showed a significant and positive association with ROA ($B = 2.813, p = .005$). This suggested that firms in this sector outperformed those in the Automotive sector (used as the reference category). By contrast, firms in the Agriculture and Food sector (Industry type 2 Dummy) and the Petrochemicals and Chemicals sector (Industry type 3 Dummy) did not exhibit statistically significant differences in ROA compared to the base group.

Table 7 presents the impact of financial health on Return on Equity using multiple regression.

Table 7 Model 4: Multiple Regression Analysis Predicting Return on Equity (ROE)

Variables	Coeff. (B)	SE	t	Sign.
(Constant)	-34.403	6.376	-5.396	.000
Z-Score	10.663	1.002	10.637	.000
Size	4.266	1.592	2.680	.008
Year 2 Dummy	.865	3.165	.273	.785
Year 3 Dummy	4.055	3.169	1.279	.202
Year 4 Dummy	6.818	3.164	2.155	.032
Industry Type 2 Dummy	-13.490	3.369	-4.005	.000
Industry Type 3 Dummy	1.602	3.011	.532	.595
Industry Type 4 Dummy	6.981	3.320	2.103	.037
$R = .637, R^2 = .406, \text{Adjusted } R^2 = .385, F = 18.735^{**}$				

Note. DV = ROE; **Significant at 1% level.

The regression analysis for Model 4, which examines the determinants of ROE, revealed several statistically significant predictors. The model explained approximately 40.6% of the variance in ROE ($R^2 = .406, \text{Adjusted } R^2 = .385$) and was statistically significant overall ($F = 18.735, p < .01$). The Z-Score, a measure of financial stability, was positively and significantly associated with ROE ($B = 10.663, p < .001$). This result indicated that firms with stronger financial health tended to achieve higher returns on equity. Firm size also showed a positive and significant effect ($B = 4.266, p < .01$), which suggested that larger firms may benefit from economies of scale or stronger market positions that enhance profitability.

Regarding time effects, Year 2 and Year 3 dummy variables were not statistically significant. This implied that there was no meaningful difference in ROE compared to the base year (Year 1). However, the Year 4 Dummy was significant and positive ($B = 6.818, p = .032$), which meant that firms had higher ROE in the fourth year relative to the base year, possibly reflecting broader economic or sectoral improvements.

For industry-specific effects, Industry Type 2 Dummy (with Industry 1 as the base group) was negative and highly significant ($B = -13.490, p < .001$). This means that firms in Industry 2 tended to have significantly lower ROE than those in Industry 1. Industry Type 3 Dummy was not significant, indicating no notable difference from the base industry. However, Industry Type 4 Dummy was positively associated with ROE ($B = 6.981, p = .037$). This implied that firms in Industry 4 generally

achieved higher ROE than those in the reference industry. These results highlighted the importance of both firm-specific financial indicators and industry context in explaining variations in ROE.

Altman Z-Score Analysis

The Altman Z-scores for all selected firms were analyzed using Microsoft Excel; the results are presented in Table 8. The appropriate financial data inputs for each company were utilized, such as working capital, retained earnings, earnings before interest and taxes (EBIT), market value of equity, and total assets. Along with Z-score calculation, firms were ranked individually based on their Z-score values to assess their relative financial health and risk of bankruptcy. Moreover, an industry-level ranking was performed by aggregating and analyzing the Z-scores within each industry sector to identify comparative financial stability trends.

Table 8 *Altman Z-Score Analysis of Industry Financial Health*

	Z < 1.80	1.80 < Z < 3.0	Z > 3.0
Agribusiness	31.82%	38.64%	29.55%
Automotive	34.21%	43.42%	22.37%
Petrochemicals & Chemicals	42.86%	37.50%	19.64%
Tourism & Leisure	96.67%	3.33%	.00%

The data in Table 8 shows significant variation in financial health indicators across industries based on Altman Z-Score classifications that pertained to this study. The tourism and leisure sector was in the weakest financial position, with 96.67% of firms falling into the high-risk ($Z < 1.80$) category and 0% in the safe zone ($Z > 3.0$), reflecting the severe and prolonged impact of the pandemic on this industry during the study period. On the other hand, the agribusiness sector was the most financially resilient, with the lowest percentage of high-risk firms (31.82%) and the highest share of firms in the safe zone (29.55%). This highlighted its stability and the strong demand for essential goods in this industry. The automotive industry showed a moderate risk profile, with the largest share of companies (43.42%) in the medium-risk category and 22.37% in the safe zone. The petrochemicals and chemicals sector had a relatively balanced distribution but still had a high proportion (42.86%) of financially distressed firms. This distribution was likely due to volatility in global oil prices. Overall, the analysis suggested that while agribusiness demonstrated a financially healthier position compared to the other industries, tourism remained the riskiest, while the automotive and petrochemical industries faced moderate financial challenges.

Discussion

Implications of Findings

This study examined the relationships between financial health, firm size, industry type, and long-term financial performance among publicly listed companies in Thailand across four key industries from 2021 to 2024. The findings highlight several important implications.

First, the results confirmed the strong and consistent influence of financial health, measured by the Altman Z-score, on all four dimensions of long-term firm performance: EPS, NPM, ROA, and ROE. This aligns with previous studies which have found that financially healthier firms are more likely to deliver higher returns and earnings (Altman, 1968). Notably, the Z-score remained a significant predictor in all models, which supported its utility as a comprehensive indicator of firm stability and profitability potential.

Second, firm size had a positive and significant effect on EPS, ROA, and ROE, but not on NPM. This suggests that larger firms may benefit from economies of scale or operational efficiencies that improve returns and earnings per share. However, these advantages may not translate directly into profit margins, which could be more affected by cost structure or pricing strategies. These findings

were consistent with prior research suggesting that size can moderate performance, but it is not a universal determinant (Serrasqueiro & Nunes, 2008).

The time (year) dummy variables revealed that financial performance (particularly NPM and ROE) improved in 2024 relative to 2021. This may have reflected macroeconomic recovery following global or regional economic disruptions from the COVID-19 pandemic. The significance of year effects for NPM and ROE, but not for EPS or ROA, indicated that not all performance measures respond equally to external economic conditions.

With regard to industry effects, only a few sectoral differences were found. For example, firms in the Tourism sector showed higher ROA and ROE than those in the Automotive sector, while the Agriculture and Food sector had significantly lower ROE and marginally lower EPS. These findings indicated that structural and sectoral characteristics can influence profitability, though their effects may be less consistent than firm-level financial metrics. This contrasted with some earlier studies suggesting stronger industry-level differences (Rumelt, 1991). This implied that within-industry factors or firm-level strategies may play a more critical role in performance outcomes.

Practical Implications

The study provides several managerial and policy implications. The consistent positive impact of the Z-score on all financial performance indicators (EPS, NPM, ROA, ROE) suggested that maintaining strong financial health should be a strategic priority. This involves managing financial health to minimize the risk of financial distress. Managers in firms with lower Z-scores should consider strengthening internal controls, improving operational efficiency, and reducing excessive debt to enhance overall performance. Firms in the Agriculture and Food sector should be cautious, as they were associated with significantly lower ROE and marginally lower EPS compared to those in the Automotive sector. This may have indicated structural challenges in this sector, such as cost volatility or lower pricing power, and calls for targeted efficiency improvements or product innovation.

Conversely, firms in the Tourism sector showed better ROA and ROE, possibly due to post-pandemic recovery. Managers in this sector should continue to leverage demand rebounds by investing in quality service and digital transformation. Additionally, investors and analysts may use the Z-score and firm size as reliable indicators when screening investment projects. Firms with strong Z-scores and moderate-to-large size tend to deliver superior financial returns and earnings. For policymakers and regulators, the findings highlight the need to support the development of financial monitoring tools that emphasize predictive indicators like the Z-score. Regulators may consider requiring periodic disclosure of such metrics, particularly in sectors more prone to financial instability.

Conclusion

This study assessed the effects of financial health, firm size, time trends, and industry sectors on long-term financial performance among selected Thai listed companies during 2021–2024. The results consistently showed that Altman's Z-score was a significant predictor of all four financial performance indicators (EPS, NPM, ROA, ROE). This demonstrated the importance of financial stability in driving firm success. Firm size was also a relevant factor, although its effect was not uniform across all models.

Year and industry dummy variables helped control for temporal and sectoral differences. While some year effects (especially in 2024) were statistically significant, industry effects were more limited, with notable differences observed in only a few sectors. These findings suggested that firm-specific factors, especially financial health, exerted greater influence on performance than sector affiliation or macro-level conditions.

Limitations and Further Studies

Since this study was limited to publicly listed companies in four industries, its generalizability is limited. Additionally, the use of only accounting-based performance measures may not have captured market-based dimensions of performance. Future research could extend the sample to include more industries, private firms, or firms from other ASEAN countries. Including additional control variables

(such as leverage, innovation, investment, or corporate governance) may also enhance explanatory power and uncover deeper insights into the determinants of financial performance.

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Impact of Consumption Experience on Purchasing Decisions of Blind Box Services in China: The Mediation of Consumer Needs

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Abstract

Aim/Purpose: This paper investigated the impact of consumption experience on the purchasing decisions of blind box services in China. Blind boxes, which contain random products unknown to consumers until purchase, have become a significant trend, particularly among Generation Z. The study aimed to explore how the consumption experience of blind boxes influences consumer needs (both material and spiritual), and how these needs, in turn, affect purchasing decisions. The research sought to fill a gap in the literature by examining the mediating role of consumer needs in the relationship between consumption experience and the purchasing decision.

Introduction/Background: The blind box phenomenon, originating from Japan, has gained immense popularity in China, especially among younger consumers who value novelty, surprise, and emotional engagement. This paper addresses the lack of research on how the consumption experience of blind boxes influences purchasing decision, examining this topic through the lens of consumer needs. By focusing on both material and spiritual needs, the study provides insights into the psychological mechanisms driving blind box consumption.

Methodology: The study employed a quantitative research design, using a self-administered online survey to collect data from 518 Chinese consumers with prior experience purchasing blind boxes. The survey was distributed through popular blind box communities on platforms like WeChat and QQ. Structural Equation Modeling was used to analyze the data, with constructs measured using a 5-point Likert scale. The study tested hypotheses related to the impact of consumption experience on material and spiritual needs, and how these needs influenced purchasing decisions. Mediation analysis was conducted using the bootstrap method to examine the role of consumer needs in the relationship between consumption experience and purchasing decisions.

Findings: 1. The blind box consumption experience positively influenced both material and spiritual needs. 2. Both material and spiritual needs significantly impacted purchasing decisions. 3. Consumer needs (material and spiritual) mediated the relationship between consumption experience and purchasing decisions. 4. The study confirmed that a satisfying blind box experience enhanced consumers' willingness to purchase, driven by the fulfillment of both material and emotional desires.

Contribution/Impact on Society: Many scholars have focused on analyzing the blind box economic market and marketing models (Lin, 2024). However, there has been a relative lack of research into the psychological mechanisms behind blind box consumption, with only a few studies exploring the influence of social support, emotional motivation, and customer experience on blind box purchase decisions. Moreover, even fewer have studied Means-End Chain Theory to blind box consumption.

This study provides deeper insight into the relationship between consumption experience, customer needs, and purchasing decisions. These empirical findings contribute to the growing body of literature on consumption experience and purchase behavior, particularly in the new context of blind boxes. Additionally, it provides empirical evidence that the consumption experience of blind boxes not only satisfies material needs, but also fulfills spiritual and emotional desires, which are crucial for driving purchasing decisions. The findings offer valuable insights for businesses in the blind

box industry, helping them design marketing strategies that cater to both the functional and emotional needs of consumers. Additionally, the study highlights the importance of emotional design and quality control in enhancing consumer satisfaction and loyalty.

Recommendations: This study advances the understanding of blind box consumption by highlighting the role of consumer needs in mediating the relationship between consumption experiences and purchasing decisions. It provides practical implications for businesses aiming to capitalize on the growing blind box trend, while offering a foundation for future research in this emerging area of consumer behavior. Recommendations are as follows: 1. Businesses should focus on improving the quality and design of blind box products to meet consumers' material needs. 2. Companies should incorporate emotional and cultural elements into their products to address consumers' spiritual needs. 3. Marketing strategies should emphasize the surprise and novelty aspects of blind boxes to enhance the consumption experience. 4. Future research should explore the long-term effects of blind box consumption on consumer loyalty and brand engagement.

Research Limitations: This study had several limitations. 1. The study's sample was limited to consumers with prior blind box purchase experience, excluding those who had not engaged in blind box consumption. 2. The age distribution of respondents was skewed, with the majority being under 30 years old, which may limit the generalizability of the findings. 3. The study relied on self-reported data, which may have introduced bias. 4. The research focused solely on the Chinese market, and so findings may not be applicable to other cultural contexts.

Future Research: 1. Future studies should explore the reasons why some consumers avoid blind box purchases, providing insights into potential barriers to adoption. 2. Research should include a more balanced age distribution to better understand how blind box consumption behavior varies across different age groups. 3. Additional moderating variables, such as consumer product knowledge or the purpose behind consumption, could be incorporated to enhance the model's explanatory power. 4. Longitudinal studies could be conducted to assess the long-term impact of blind box consumption on consumer behavior and brand loyalty.

Keywords: *Blind box, consumption experience, consumer needs, purchasing decisions*

Introduction

The widespread adoption of the Internet and the accelerating trend of globalization have gradually dismantled traditionally rigid consumer boundaries. In modern society, characterized by flexibility and the pursuit of instant gratification, conventional consumer preferences and habits have been disrupted. The new generation of consumers, having grown up in a favorable economic and technological environment, exhibits significantly different consumption behaviors compared to previous generations. Rather than focusing solely on fulfilling basic physiological needs, their spending is primarily directed toward leisure and entertainment, emphasizing subjective well-being and joyful experiences. These individuals, valuing personal expression, demonstrate highly diverse preferences and unique styles, prioritizing immersive experiences and intense sensory stimulation while holding strong expectations for the fulfillment of higher-order psychological and spiritual needs (China Daily, 2024). Currently, Generation Z has emerged as a dominant consumer force, exhibiting a strong preference for subcultural consumption, including virtual idols, blind boxes, designer toys, and online games (Gao & Chen, 2022). In response to this shift, some companies have integrated their products into the "blind box" model, extending its application beyond traditional collectibles to items such as stationery, clothing, airfare, and books. The blind box phenomenon resonates deeply with younger consumers, as it intertwines elements of excitement, unpredictability, and the thrill of surprise, contributing to a rapid expansion of the "blind box economy" (Hu, 2024).

The concept of a blind box refers to a small container that contains a variety of anime, movie, or TV-themed products, often including intellectual property (IP) dolls, all of which share similar external packaging and appearance. The defining characteristic of a blind box is its randomness; consumers are

unable to know the specific product inside until the box is opened, which adds an element of surprise. Originating in Japan, the blind box concept can be traced back to the Fukubukuro tradition, which dates back to the Meiji period. This concept served as a promotional tool designed to enhance the consumption experience by adding an element of unpredictability. In this context, the Fukubukuro's value often exceeded or matched its price, which contrasts with the modern "blind box" model that incorporates different consumption logic. Whether in online or offline settings, blind box consumption has established a novel consumer behavior pattern among younger generations (Li et al., 2023). In the first half of 2021, blind box toy sales on the Tmall platform grew by 62.5%, making it the fastest-growing product category. According to market research by Statista (2022), the Chinese blind box market has expanded rapidly, growing from 10.8 billion Yuan in 2017 to 34.5 billion Yuan in 2021. The market is projected to reach 110 billion Yuan by 2026.

From a business perspective, companies must cater to the unique preferences of young consumers—who crave fun, novelty, and distinctiveness—if they wish to remain relevant. As a result, many companies are launching targeted marketing campaigns and forming partnerships with blind box brands. For example, companies such as KFC, Holliday, Casio, and Bubble Mate have collaborated on co-branded products, while Tongcheng Travel has integrated blind boxes into their service offerings by launching air ticket blind boxes to diversify their portfolio. In today's experience-driven economy, consumers increasingly value the experiential aspect of consumption over the service itself. Thus, businesses that focus on enhancing consumer experiences are more likely to attract customers and gain a competitive edge.

Blind boxes, as a new trend in toys, feature various beautifully crafted surprises hidden inside an exquisitely designed exterior, making the process of blind selection full of excitement and uncertainty. This aligns with Generation Z's consumer desire for pleasure and instant gratification. The excitement surrounding the unboxing experience also leaves a lasting impression on consumers, encouraging them to share their experiences with others (Zhang & Zhang, 2022). In addition to addressing the functional requirements of the product, the blind box consumption experience incorporates the unknown, which heightens curiosity and meets emotional needs, thereby increasing consumers' willingness to purchase them.

However, a review of existing literature reveals that there are relatively few studies on the novelty of blind boxes, most of which focus on two main areas. First, some research has examined the business model of blind boxes, particularly marketing strategies and product functionalities (Zhang et al., 2022). Second, there has been a significant focus on consumer psychology in blind box consumption (Zhang & Zhang, 2022; Woo & Ramkumar, 2018). Few studies have explored the consumer experience specifically in the context of blind boxes. Furthermore, few studies have investigated how material and emotional needs serve as mediating variables between consumption experiences and purchasing decisions, and fewer studies have studied the Means-End Chain Theory and blind box consumption. Understanding this mechanism is essential in identifying what drives repeated purchases and brand loyalty in the blind box economy. Therefore, this study aimed to investigate how the consumer experience of blind box products influences purchasing decisions, and whether material and emotional needs mediate the relationship between these two factors. These research findings may assist the retail industry in innovating marketing strategies and strengthening core competitiveness.

The objectives of the research were narrowed to ensure actionable goals by clearly outlining the analytical techniques used as follows:

1. To study whether the consumption experience affects consumers' purchasing decisions.
2. To test whether material and emotional needs mediate the relationship between consumption experience and consumers' purchasing decisions.

Literature Review

Means-End Chain Theory

Means-End Chain Theory (Gutman, 1982) explains how product attributes (means) are linked to consequences (benefits) and ultimately to personal values (ends). It posits a hierarchical connection

“Attributes → Consequences (Benefits) → Values”. In the context of blind box consumption, the blind box experience (a product attribute) leads to satisfaction of both material and spiritual needs (benefits), which in turn motivate the purchasing decision (value-driven outcome). Therefore, based on the Means-End Chain Theory, this study constructed its theoretical framework and variable relationships.

Blind Box Consumption Experience and Customer Purchasing Decision

The emergence of the blind box concept can be traced back to the Japanese Fukubukuro consumption model, which is a byproduct of the growth of the experiential economy. Blind box consumption refers to an experience in which the consumer is unable to specify the exact type or function of the product before making a purchase, and only learns about the item after receiving the goods. From a consumption perspective, the blind box experience satisfies customers' curiosity and offers an exploratory emotional experience throughout the entire process. From the viewpoint of emotional experience design, blind boxes are a quintessential product designed to fulfill the emotional needs of consumers, providing an engaging and enjoyable experience.

As a result, consumers are often drawn to products that offer the blind box experience, seeking to enhance their sensory and emotional engagement with the purchase. Yan and Wu (2021) empirically demonstrated a significant positive relationship between the blind box consumption experience and customer purchase behavior. Similarly, Chen (2022) concluded that the blind box experience aligns with emotional design principles, which encourage customers to enjoy a fashionable and joyful consumption experience. From psychological and economic perspectives, Zhang and Zhang (2022) found that the emotional design of blind boxes addresses the emotional needs of contemporary consumers, fostering customer loyalty and dependence on the consumption experience, thereby driving purchase behavior. Drawing from these theories, it can be argued that the blind box consumption experience not only stimulates curiosity, but also ignites customers' interest in shopping, ultimately exerting a positive influence on their purchasing decisions. In summary, the following hypothesis is proposed:

H_1 : Blind box consumption experience positively influences customers' purchasing decisions.

Blind Box Consumption Experience and Consumer Needs

From the perspective of the traditional retail industry, consumer demand is typically categorized into two types: material demand, driven by a product's basic functionality, and spiritual demand, which is influenced by emotional design. In the context of the rapid development of the digital economy, consumer demands have become increasingly complex, with heightened expectations for diverse product attributes. These evolving demands have spurred continuous innovation in consumption scenarios and purchasing modes. Based on the synthesis of these perspectives, this study categorized consumer needs into two dimensions: material needs and spiritual needs, and examined the relationship between the blind box consumption experience and these consumer needs.

Guevarra and Howell (2015), in their exploration of the factors influencing consumption experience and consumer demand, proposed that there exists an inherent connection between the blind box consumption experience and consumer needs. Deng (2023) suggested that the museum blind box aligns with innovative concepts in creative products within the context of the "blind box boom," effectively addressing the spiritual needs of the public. Zhu (2023) further emphasized that the blind box consumption experience is a result of the combined influence of cultural embeddedness and emotional needs among young urban consumers. As consumers deepen their engagement with the blind box experience, their emotional needs are further amplified.

Building upon this literature, the blind box consumption experience can establish a connection between consumers' real and virtual emotions, effectively catering to their emotional needs, thereby driving purchasing decisions. Furthermore, as the blind box consumption experience intensifies, it significantly satisfies both material and spiritual needs, stimulating purchase behavior from multiple dimensions. Combined with the above theories, the following hypotheses are proposed:

H_{2a} : Blind Box consumption experience positively affects material needs.

H_{2b} : Blind box consumption experience positively affects spiritual needs.

Consumer Needs and Customer Purchasing Decisions

Material needs serve as the fundamental basis for consumers to initiate shopping trends and is a prerequisite for the formation of purchasing decisions. When consumers align the functional attributes of a product with its practical application, material demand is created. A higher level of material demand typically results in an increased willingness to purchase, thereby driving purchasing decisions. Teixeira et al. (2024) defined consumer purchase behavior as encompassing all activities related to the purchase, use, and disposal of goods and services, including the emotional, mental, and behavioral responses that precede or follow these activities. This suggests that the material aspects of a product, such as quality and functionality, are integral to consumer decision-making processes. Liao (2023) concluded that consumers make online purchasing decisions based on the intrinsic demand for the product itself, and as material needs grow, the rate of purchase behavior significantly increases. Virgiawan et al. (2024) highlighted that, within the context of the rising trend of quality consumption, consumers' heightened demand for product quality effectively stimulates purchasing decisions. Based on the above description, the following hypothesis is proposed:

H_{3a} : Material needs positively influences customers' purchasing decision.

Lin (2024) analyzed both the external characteristics and internal perceptions of the blind box consumption experience among Generation Z, using their preferences for blind box consumption as the entry point. Lin suggested that the blind box consumption experience of Generation Z primarily stems from the internal perception of spiritual needs, and that satisfying these spiritual needs is a key driver of their purchasing decisions. Furthermore, when choosing a product, consumers not only consider its functional attributes, but also its spiritual characteristics. If a product meets the potential spiritual needs of consumers, it is likely to influence their purchasing decisions. Similarly, Chen et al. (2022) observed that, amid the blind box craze, teenage consumers have created a new consumption scenario that triggers spiritual needs, exchanging blind boxes, which further promotes purchasing decisions. It can be inferred that the satisfaction of spiritual needs is crucial for enhancing consumer purchasing decisions. Accordingly, the following hypothesis is proposed:

H_{3b} : Spiritual needs positively influence customers' purchasing decision.

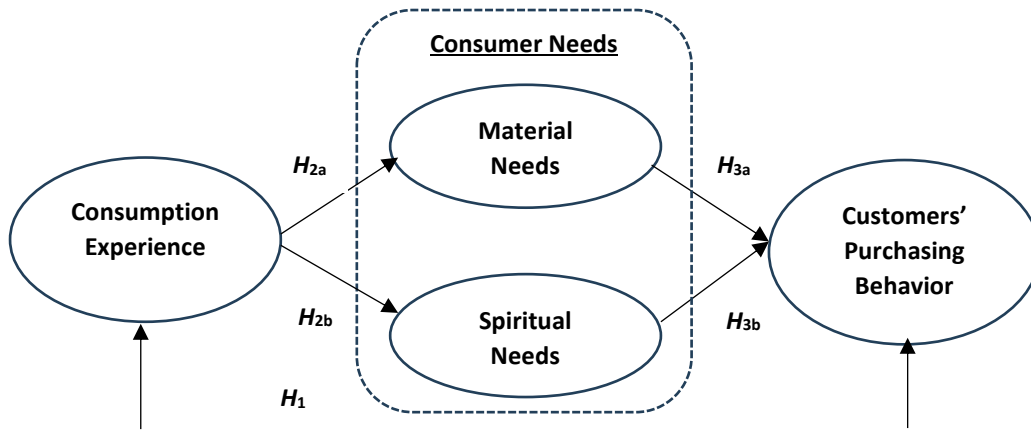
The Mediating Role of Consumer Needs

Research on the relationship between blind box consumption experience and customer purchase behavior has been conducted extensively, with most studies focusing on its direct impact. However, little attention has been given to the intermediary role played by consumer needs in this dynamic. The blind box consumption experience model is fundamentally rooted in the diverse shopping needs of customers. By deepening their emotional engagement with unknown products, it drives purchasing decisions. Furthermore, as this consumption model permeates through various channels and methods, it stimulates customers' material, spiritual, and latent needs, thereby enhancing purchasing efficiency. In the realm of experiential consumption, blind box consumption heightens customers' shopping experiences, leveraging personalization, enjoyment, and curiosity-driven marketing strategies. This, in turn, aligns closely with their multifaceted emotional needs, ultimately driving purchasing decisions. Based on the above description, the following hypothesis is proposed:

H_4 : Consumer needs play a mediating role in the process of blind box consumption experience influencing customers' purchasing decisions.

The study's conceptual framework is shown below in Figure 1.

Figure 1 *Conceptual Framework*



Methodology

Sample and Data Collection

Data were collected in China in April 2025 through a self-administered online survey. As the study focused on the role of experience in blind box consumption, all participants were required to have prior experience purchasing blind boxes. Hence, the population of this study comprises Chinese consumers with prior experience in blind box purchasing. The questionnaire was distributed in popular blind box communities, including the Blind Box Exchange WeChat group, the Blind Box Player QQ group, the Douban POP MART group, and other related Chinese blind box communities, which have large numbers of participants. To ensure that all respondents had experience with blind box consumption, a screening question was included: "Do you have experience purchasing blind boxes?" Only those who selected "Yes" were able to proceed with the remaining questions.

Initially, we invited individuals with blind box purchasing experience to complete the online questionnaire using their mobile phones. We then asked respondents to share the survey link in their WeChat Moments and encourage their qualified friends to participate. Because the exact population size was unknown due to the dispersed and community-based nature of blind box consumption, the sample size was calculated using Cochran's formula, with a confidence level of 95% and an error term of 5% (Cochran, 1977), resulting in a required sample size of 385. Through a snowball sampling procedure, a total of 550 questionnaires were collected. After discarding invalid responses due to inconsistencies or unanswered questions, 518 valid responses were retained.

Instrument and Measures

The questionnaire was designed based on the study's framework to capture insights into each of the key constructs under investigation (Table 1).

Table 1 *Measurement Item*

Variable	Measurement	Source
Consumption Experience (CE)	The blind box purchase provided me with a fun and enjoyable experience.	Pine & Gilmore (1998)
	I felt absorbed and immersed when engaging with blind box products.	
	I gained new insights or knowledge through the blind box experience.	
	The visual design and presentation of blind boxes were aesthetically pleasing.	
Material Needs (MN)	I consider blind boxes valuable because of the physical items they contain.	Richins & Dawson (1992)
	Owning blind box products gives me a sense of satisfaction.	
	I feel better when I own more blind box items.	

Spiritual Needs (SN)	Blind box purchases help me express my personality or interests. I buy blind boxes because they bring me emotional satisfaction. Blind box items often carry symbolic meaning that resonates with me.	Richins et al. (2004)
Purchasing Decisions (PD)	I intend to continue purchasing blind box products in the future. I often choose blind boxes over other similar products. I am likely to recommend blind box products to others. I am willing to spend more to obtain blind box items I like.	Zeithaml (1988)

To ensure the reliability of the survey, questions were drawn from multiple studies that addressed each of the study's major constructs. Responses were measured using a 5-point Likert scale, where 1 = *Strongly Disagree* and 5 = *Strongly Agree*. The consumption experience scale, developed by Pine and Gilmore (1998), comprised four items. Three items adapted from Richins and Dawson (1992) were used to assess material needs, and three items adapted from Richins et al. (2004), were employed to assess spiritual needs. Finally, a four-item scale developed by Zeithaml (1988) was used to evaluate purchasing decisions.

Data Analysis

To ensure the reliability, validity, and compatibility of the variables with the core assumptions of analysis of covariance, several tests were conducted prior to evaluating the hypotheses. Data analysis was performed using SPSS 25 and AMOS 28. AMOS, a software program for testing theoretical models that utilizes covariance-based structural equation modeling (SEM). It is particularly effective for examining complex interactions between latent variables.

Results

Descriptive Analysis

Among these 518 valid respondents, 28.96% of the sample was male and 71.04% was female. The majority of respondents (57.14%) were between the ages of 18 and 25. Educationally, 52.90% of the participants were undergraduate or junior college students. Approximately 48.26% of respondents reported a monthly income of over 5,000 Yuan. Regarding occupational distribution, 35.91% of respondents were students, while 41.51% were employed in enterprises and institutions.

The Measurement Model

We analyzed and interpreted the model in two stages. In the first stage, we assessed the measurement model, and in the second stage, we tested the proposed hypotheses of the structural model. Prior to conducting the SEM analysis, we evaluated content, convergent and discriminant validity, reliability, and model fit indices. The Index of Item-Objective Congruence (IOC) test was used to assess the content validity of measurement items by asking experts to rate how well each item matches the intended construct. Typically, each item is rated by 3 experts using a scale which is +1, 0 and -1. An IOC value $\geq .50$ is generally considered acceptable. All items in this study had IOC scores $\geq .67$, indicating acceptable to excellent content validity. In addition, according to Hair et al. (2010), the minimum thresholds for Cronbach's alpha, composite reliability (CR), and average variance extracted (AVE) are .70, .70, and .50, respectively. Furthermore, factor loadings should exceed .60 (Bagozzi & Yi, 1988). As shown in Table 2, all indicators exceeded the recommended thresholds, confirming the convergent validity of the measurement model.

Table 2 *Results of Validity and Reliability Analysis*

Construct	Items	Factor Loadings	CR	AVE	Alpha
Consumption Experience (CE)	CE1	.816	.897	.686	.898
	CE2	.839			
	CE3	.817			
	CE4	.841			
Material Needs (MN)	MN1	.852	.881	.712	.882
	MN2	.844			
	MN3	.836			
Spiritual Needs (SN)	SN1	.866	.902	.754	.902
	SN2	.872			
	SN3	.867			
Purchasing Decision (PD)	PD1	.846	.911	.719	.913
	PD2	.853			
	PD3	.849			
	PD4	.844			

Moreover, as presented in Table 3, the square roots of AVE were significantly greater than the diagonal correlations, confirming the discriminant validity of the model at the level of the research constructs (Fornell & Larcker, 1981).

Table 3 *Discriminant Validity*

	AVE	CE	MN	SN	PD
CE	.686	.828			
MN	.712	.463	.844		
SN	.754	.489	.355	.868	
PD	.719	.534	.513	.426	.848

The Structural Model

After assessing the measurement model, the hypotheses were estimated. The goodness-of-fit indices indicate that the proposed model statistically fits the data well ($\chi^2 = 317.212$, $\chi^2/df = 1.179$, GFI = .941, AGFI = .929, NFI = .963, CFI = .994, IFI = .994, TLI = .993, and RMSEA = .021). All the fit indices met the recommended criteria for a good fit, as suggested by Browne and Cudeck (1993).

Hypothesis Testing

The results of the structural model analysis are presented in Table 4.

Table 4 *Results of Hypothesis Testing*

Hypothesis	Path	β	Unstd.	SE	CR	p	Result
H_1	CE→PD	.358	.381	.057	6.732	***	Accepted
H_{2a}	CE→MN	.344	.374	.058	6.450	***	Accepted
H_{2b}	CE→SN	.249	.255	.052	4.933	***	Accepted
H_{3a}	MN→PD	.310	.310	.051	6.056	***	Accepted
H_{3b}	SN→PD	.362	.392	.051	7.674	***	Accepted

Note. * $p < .05$; ** $p < .01$; *** $p < .001$.

As shown in the table, consumption has a significantly positive effect on consumer purchasing decision for blind boxes ($\beta = .358$, $p < .001$), thus supporting H_1 . Furthermore, consumption also significantly positively affects both material needs ($\beta = .344$, $p < .001$) and spiritual needs ($\beta = .249$, $p < .001$), supporting H_{2a} and H_{2b} . Additionally, both material needs ($\beta = .310$, $p < .001$) and spiritual needs ($\beta = .362$, $p < .001$) significantly positively affected consumer purchasing decision, thereby supporting H_{3a} and H_{3b} . In summary, all hypotheses were supported by the data.

Mediation Testing

The bootstrap method, developed for nonparametric resampling tests, was employed to examine the mediating role of consumer needs (Preacher & Hayes, 2008). When conducting the mediating effect test using the bootstrap method, the basic work of using the confidence interval (CI) is indispensable (Preacher & Hayes, 2008). The CI for the indirect effect is constructed by repeatedly resampling the data and calculating the indirect effect for each resample. If the CI does not contain zero, the indirect effect is considered significant (Preacher & Hayes, 2008). A total of 5,000 bootstrapping procedures were conducted. As shown in Table 5, the mediation analysis revealed that the confidence interval for the path from blind box consumption experience to material needs to customer purchasing decision did not contain 0, with a range of [.217, .409]. This indicated that material needs mediated the relationship between blind box consumption experience and customer purchasing decision, thus supporting H_{4a} . Similarly, the confidence interval for the path from blind box consumption experience to spiritual needs to customer purchasing decision did not include 0, with a range of .113 to .245. This suggested that spiritual needs also played a mediating role in the influence of blind box consumption experience on customer purchasing decision, thereby supporting H_{4b} .

Table 5 Analysis of Mediating Effect

Paths	Effect	Bootstrap 95% CI		Result
		Lower	Upper	
H_{4a} : CE \rightarrow MN \rightarrow PD	.241	.217	.409	Supported
H_{4b} : CE \rightarrow SN \rightarrow PD	.325	.113	.245	Supported

Discussion

Based on the Means-End Chain Theory, this study investigated the path differences in how blind box consumption experiences influenced customers' purchasing decision. The findings from empirical research are summarized as follows:

First, the results demonstrated that the blind box consumption experience positively influenced customer purchasing decision. Consumers who had a more favorable experience with blind boxes were more likely to engage in purchasing decisions. This aligns with the findings of Yan and Wu (2021) and Chen (2022). Second, a significant positive relationship was found between consumption experience and material needs, indicating that enhancing the blind box consumption experience increased consumers' material needs for these products. A more satisfying consumption experience led to higher material demands for blind box products, such as quality, appearance, and packaging. This result is consistent with the studies by Deng (2023) and Zhu (2023).

Furthermore, the study confirmed that blind box consumption experience also fulfills consumers' spiritual needs. Extended exposure to the same emotional stimuli can lead to fatigue and satiation. Blind boxes, with their element of surprise, provide a novel experience, fulfilling customers' spiritual need for adventure. This aligns with Virgiawan et al. (2024). The study explicitly distinguished between material and spiritual needs, whereas previous researchers might have lumped them together, or only emphasized one aspect (usually material needs). This dual-focus on material and spiritual needs presents a more holistic understanding of consumer behavior than past studies, which may have only focused on material attributes like product quality or aesthetic value.

Additionally, the research reveals that consumers' material needs positively influenced their purchasing decision. The higher the material needs, the greater the likelihood of making a purchase. This supports the findings of Lin (2024). Moreover, the study demonstrated that consumers' spiritual needs also positively affected purchasing decisions. The attractive external appearance of the blind box grabs consumers' attention and satisfies their aesthetic desires. Furthermore, the unique "unpredictable and hidden models" gameplay generates suspense and stimulates strong emotional experiences, which in turn drive purchasing decisions. The more blind boxes satisfy these spiritual needs, the more likely consumers are to make a purchase. This conclusion is consistent with the findings of Chen et al. (2022).

Finally, the study found that the blind box consumption experience influenced customers' purchasing decision positively, with both material and spiritual needs playing a significant mediating role. While earlier studies have shown direct relationships between consumption experience and purchasing behavior, this study innovatively introduced the mediating role of consumer needs. By demonstrating how material and spiritual needs mediate the effect of the blind box consumption experience on purchase decisions, the study offers a deeper understanding of why and how consumers engage in blind box purchases. This is a more dynamic approach compared to previous studies, which treated consumption experiences and purchase decisions as direct relationships.

In conclusion, the blind box consumption experience is rooted in the diverse shopping needs of consumers, who through the purchase experience, deepen their emotional connection to the unknown aspects of the product, thereby driving their purchasing decisions.

Conclusion and Implications

This study investigated the path differences in how blind box consumption experiences influence customers' purchasing decision through their needs. The results indicated that the blind box consumption experience positively affected customer needs, and that both material and spiritual needs promote customer purchasing decisions. Furthermore, both material and spiritual needs play positive mediating roles in the relationship between blind box consumption experience and customer purchasing decisions.

Upon reviewing the existing literature on blind box consumption, many scholars have focused on analyzing the blind box economic market and marketing models (Lin, 2024). However, there is a relative lack of research into the psychological mechanisms behind blind box consumption, with only a few studies exploring the influence of social support, emotional motivation, and customer experience on blind box purchase decisions (Yan & Wu, 2021). This study, however, provides deeper insight into the relationship between consumption experience, customer needs, and purchasing decision. It highlights that customer needs play a mediating role between consumption experience and purchasing decision in the context of blind boxes. These empirical findings contribute to the growing body of literature on consumption experience and purchase behavior, particularly in the new context of blind boxes.

Moreover, the study uniquely applied the Means-End Chain (MEC) Theory to understand how blind box consumption experiences influence customer purchasing decisions. MEC theory helps trace the chain of effects from the product attributes (blind box experience) to consumer values (material and spiritual needs), and ultimately to purchasing behavior. This application of MEC theory to blind box consumption is a novel approach, given that prior studies on MEC generally focused on traditional retail products or services. The study emphasizes that consumers are not only buying a physical product, but also seeking a deeper emotional experience (spiritual need), thus aligning the theory with the context of experiential consumption.

Additionally, the study offers several management implications for businesses in the current market environment. First, companies must strengthen quality control of blind boxes to meet customers' material needs. Suppliers should collaborate with retailers to standardize production processes, continuously optimize manufacturing procedures, and implement quality verification methods to ensure product quality. Whenever possible, manufacturers can invite retailers to conduct on-site inspections, allowing for rigorous supervision of production and quality control processes. The use of new media to promote brands and increase customer recognition can help address customers' material needs. Moreover, businesses should emphasize emotional design to enhance customers' perception of their spiritual needs. Beyond meeting the basic functional attributes and application scenarios of products, suppliers should focus on the cultural and emotional value of the products, incorporating diversified designs and packaging to address customers' spiritual needs.

Retailers can incorporate cultural elements into their brand marketing, enriching the customer experience and enhancing their perception of the product's spiritual value. Furthermore, retailers can invite their target audience to participate in blind box packaging design, ensuring the product aligns

with customers' emotional experiences. This strategy can increase customer engagement and, in turn, drive purchasing decisions. In summary, while past studies have looked at blind box consumption from the perspective of the product itself, this study introduces the idea that the social context and online communities also play a significant role in shaping the consumer's emotional and psychological experience with the product. This insight is critical in the digital age, where virtual communities contribute to shaping purchase behaviors.

Limitation and Recommendations for Future Research

This study had several limitations that should be addressed in future research. First, this study used a questionnaire survey method to collect data, where consumers without prior blind box purchase experience were excluded from answering most of the questions. While this approach allowed the study to focus on consumers with experience, it overlooked the reasons why some individuals do not engage in blind box consumption. Understanding the factors behind the reluctance to purchase blind boxes could provide valuable insights for enterprises and help tailor marketing strategies. Future studies could include more questions aimed at exploring these reasons in greater detail.

Second, the age distribution of the sample was not balanced, as the majority of respondents were under 30 years old, with only a small number of participants being over 30. This imbalance in the age distribution may have skewed the results, as consumer behavior across different age groups can vary significantly. Future research should aim to expand the age range of the sample to ensure a more balanced representation across different age groups, thereby enhancing the findings' generalizability of the findings.

Finally, while the study highlights the importance of blind box consumption experience and consumer needs in influencing purchase behavior, future research could explore additional moderating variables, such as consumer product knowledge or the specific purpose behind consumption. Incorporating these factors into the model could improve its explanatory power and provide deeper insights into the factors that drive consumer behavior in the context of blind box consumption.

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Purchase Intention Determinants for Social Networking Sites During the Post-Pandemic Period: A Structural Equation Modeling Approach

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Abstract

Aim/Purpose: Social networking sites (SNS) have become essential platforms not only for socializing, but also for conducting business operations such as buying and selling. Therefore, it is important to examine the factors that influence customers' intention to purchase on these platforms. In the post-pandemic period, advancements in technology and the increasing use of social networking sites have led to a surge in shopping on social media platforms. This research study aimed to investigate the determinants of the intention to purchase products and services on SNS during the post-pandemic period. Social media has become an indispensable technology in daily life, with Facebook emerging as a dominant platform for exploring, comparing, buying, and selling products and services anytime, anywhere.

Introduction/Background: The emergence of social media technology has changed the ways and methods of conducting business, most notably during the COVID-19 pandemic. Social media technology supports a new environment and functions that businesses can use to grow and interact with their customers regularly without having a physical location or direct contact. Social media platforms have emerged as popular channels for online shopping, magnifying interactions between online sellers and buyers. They provide businesses with a new avenue to showcase, present, and sell their products and services, so understanding social media marketing has become crucial. There are about 54 million people in Myanmar, and 41.5 million of them are Internet users. Almost all Internet users also use social media platforms, and notably, 14.5 million of them are active on the Facebook platform. Social commerce is a new form of e-commerce that takes place on social media platforms, facilitating social activities like communication, contribution, interaction, and sharing throughout the buying and selling process.

Methodology: A deductive, cross-sectional, quantitative research method was employed in this study, involving 332 Facebook users from Myanmar. A non-probability convenience sampling method was employed, and a survey questionnaire was created using a Google Form to save time and costs; this was an effective way to gather data from a large number of respondents. A 5-point Likert scale was used to measure all construct variables except for the demographic variables. Structural equation modeling was used to analyze the collected data, and data analysis was performed in AMOS software.

Findings: All the constructs were examined using confirmatory factor analysis for validity and reliability. The Average Variance Extracted and Composite Reliability values for each construct demonstrated how effectively the indicators converged to represent the underlying constructs. According to the hypotheses testing results, two hypotheses (H_3 , H_5) were accepted, while three hypotheses (H_1 , H_2 , H_4) were rejected. Therefore, among the five determinants (Social Influence, Word-of-Mouth, Perceived Ease of Use, Trust, and Perceived Enjoyment), only two (Perceived Ease of Use and Perceived Enjoyment) were statistically significant for the intention to purchase products and services on social networking sites.

Contribution/Impact on Society: Enjoyment was more important than Ease of Use for social media users when shopping online. Social Influence and Word-of-Mouth did not effectively encourage social media users to make purchases on social networking sites. In addition, Trust was not necessary, especially for users with online shopping experience. Sellers on SNS platforms should recognize that customers favor buying products and services on these platforms because of their ease of use and adaptability. These platforms help users discover the products and services that they may need, and customers find the purchasing process straightforward to learn. Online retailers should develop a simple and transparent purchasing process, making product details, price comparisons, order placement, payment options, and shipping methods easily accessible and user-friendly. This study's findings indicate that Perceived Enjoyment influenced purchase intention more than Perceived Ease of Use. Therefore, e-retailers should prioritize creating engaging and enjoyable content rather than focusing solely on simplifying the purchasing process.

Recommendations: This research study should be replicated on other social networking sites, such as TikTok, X (formerly known as Twitter), and Instagram, with additional factors and a larger sample size. Conducting similar research in different regions, cultures, and circumstances is also recommended. Moreover, this study was carried out solely in Myanmar, indicating that the research model used may not be applicable to other countries, as online shopping behaviors may vary considerably across different social media platforms.

Research Limitations: A primary limitation of this study was its focus on only five factors as antecedents of the intention to purchase products and services through SNS platforms. This study excluded other potential constructs that may influence purchasing intentions. Furthermore, all respondents were Facebook users with previous online shopping experience, which may not reflect the behavior of users on other SNS platforms. Although the sample of Facebook users was relevant given their prevalence in Myanmar's social media scene, the findings were limited by concerns about representativeness.

Future Research: The current research model could be extended with additional constructs, and a longitudinal study could be conducted since users' behavior changes over time. Similar research studies should be conducted in other contexts such as mobile commerce, e-commerce, and online commerce.

Keywords: *Online purchase intention, social networking sites, Myanmar*

Introduction

During the post-pandemic period, advancements in technology and the growing popularity of social networking sites (SNS) have made online shopping a widely practiced activity on these platforms. Social media technology has become an integral part of everyday life, with Facebook—one of the top social media platforms—enabling users to search for, compare, buy, and sell products and services at any time and from any location (Elshaer et al., 2024). SNS have emerged as popular platforms for online shopping, enhancing communication between online sellers and customers. Social media offers businesses new channels to showcase, present, and sell their products and services, making it essential to understand social media marketing.

The rise of social commerce has been driven by the emergence of social media, advancements in software and hardware technology, and unavoidable circumstances like the COVID-19 pandemic (Tun, 2021). According to Dang et al. (2023), one of the key factors in the growth of social commerce has been customers' willingness to share information and experiences. Increased communication among users on SNS leads to more information exchange and the expansion of these platforms. Additionally, social media users are motivated to engage in social commerce by buying, selling, recommending, finding, and sharing specific products or services (Lorenzo-Romero et al., 2011). Therefore, for online businesses on SNS platforms, understanding communication factors is crucial, as these significantly influence SNS user behavior (Taemkongka et al., 2022).

Gathering information about products or services is a primary reason for using SNS platforms today. Among these platforms, TikTok, a short video app with one billion users, has become popular not only for entertainment, but also for obtaining product information (Tun, 2022). Many online shop owners use TikTok to attempt to influence customer buying behavior. However, Facebook and Instagram remain the most prominent SNS platforms among social media users (Tun, 2021). Instagram, initially pioneering photo-sharing, now has 2 billion users. Nevertheless, Facebook remains the largest SNS, with 3.07 billion users (Statista, 2025).

Literature Review

The utilization of SNS for business activities is known as social commerce. Social commerce can be understood as a subset of electronic commerce that utilizes SNS platforms to foster customer-focused activities, such as creating online communities, sharing experiences, and posting reviews, all aimed at promoting and selling products and services (Ramirez-Correa, et al., 2023). With the increasing popularity of SNS, social commerce has been widely adopted in many countries, including Myanmar, especially during the post-pandemic period. Myanmar has a population of 54 million, with 41.5 million people having Internet access, almost all of whom use social media. Among these, 14.5 million people are Facebook users, with 45.5% being female and 54.5% being male (Kemp, 2023). Given Myanmar's rapid increase in social media usage, social commerce presents substantial opportunities for businesses to market and sell their products and services.

SNS users can easily access information via their social media communities and share their previous experiences or suggestions in real-time with their social circles. Besides, the interactions of customers on SNS generate valuable ideas for developing new products and services (Avakiat & Roopsuwankun, 2021). A growing number of businesses are utilizing social networking sites as marketplaces, leveraging them not only to sell products and services, but also for promotion, brand development, customer engagement, and recruiting employees or connecting with business partners (Ferdiansyah & Nugroho, 2023). As a result, the escalating acceptance of SNS has led to several cycles of evolution, both electronic and social, giving rise to a distinct structure of e-commerce known as social commerce or S-Commerce (Al-Alawi et al., 2020).

Andijani and Kang (2022) noted that social media platforms offer effective tools for collaboration and communication among businesses, customers, and suppliers, fostering innovation that leads to higher sales, lower costs, and expanded customer bases. The increasing number of SNS users has boosted the growth of social commerce, notably on major SNS platforms like Facebook and X (formerly Twitter). Similarly, Tun (2022) noted that social commerce is a new type of e-commerce that operates on social media platforms, enabling social activities such as communication, contributions, interaction, and sharing during the buying and selling procedures. Based on the above literature, the following research questions emerged.

- Research Question 1. What are the determinants of intention to purchase on SNS platforms?
- Research Question 2. How can the business sell their products and services effectively on SNS?
- Research Question 3. What factors contribute to successfully conducting business on SNS?

Theoretical Background

The Theory of Reasoned Action (TRA), developed by Fishbein and Ajzen (1975), is a psychological model designed to explain how people form intentions to perform specific behaviors. According to TRA, individuals' intentions to act in definite ways are the main predictors of their actual behavior. These intentions reflect their readiness to engage in the behavior, and are considered the immediate precursors to action. TRA suggests that a person's behavior is mainly determined by the intention to carry out a particular behavior, which is shaped by two main factors: one's attitude toward the behavior, and perceived social pressure, or subjective norm. The theory emphasizes "Attitudes Toward the Behavior", which are an individual's negative or positive assessments of performing the behavior, depending on beliefs about the behavior's outcomes, and the importance that is attached

to these outcomes. "Subjective Norms" refer to perceived social pressures to either engage in or refrain from a behavior, influenced by what an individual believes others who are significant to them regard as the behavior.

Although TRA ignored the concept of behavioral control, later models such as the Theory of Planned Behavior (TPB) included it. TPB was created by Ajzen in 1985, building upon TRA constructs by adding perceived behavioral control (PBC) to the existing components of attitudes and subjective norms. This offered a more complete framework for understanding how beliefs and attitudes influence behavior. TPB seeks to clarify how individual behavior is influenced by intentions and the perceived level of control over executing a behavior. Behavioral control involves the perceived ease or difficulty of accomplishing the behavior, considering factors such as available resources and potential obstacles. TPB is widely used across various domains, including health, marketing, organizational behavior, and psychology, to analyze factors such as consumer purchase intentions, health behaviors, and employee performance (Ajzen, 1991).

Building upon the TPB and TRA, the Technology Acceptance Model (TAM) was developed by Davis (1989) to model users' acceptance of information technologies or systems. Davis then extended this model to present general beliefs about information system acceptance, as well as intention to apprehend user behavior across various end-user computing technologies and populations. The TAM model also incorporated two key factors—Perceived Usefulness (PU) and Perceived Ease of Use (PEOU)—into a final version developed by Davis and Venkatesh (1996). This version posited that both PU and PEOU directly influence behavioral intention, thus eliminating the need for an attitude factor. While TAM has been validated many times as a good predictor of behavioral intention, it explicitly excludes any social variables.

In this study, Word-of-Mouth (WOM) refers to casual communication, such as spoken or oral reports among non-commercial individuals about products or services via email, phone calls, instant messaging, or other communication methods (Tun, 2021). WOM involves intentionally invented messages to attract and allure individuals socially (Al-Haddad et al., 2022). In the context of social commerce, WOM encompasses customers-contributed-content on SNS, including suggestions, referrals, rankings, and evaluations associated with products or services (Chandara et al., 2023). Additionally, WOM is an appropriate construct for examining social interactions among customers in S-Commerce environments (Zulqarnain et al., 2023).

Tun (2021) noted that Enjoyment (EJ) is a key factor that motivates users to make online purchases. Users are likely to experience enjoyment when they connect with peers who share similar opinions and interests on social networking sites, which can drive them to engage in commercial activities through social media (Tun, 2022). Additionally, enjoyment was proposed as an additional belief factor in the extended TAM and has been crucial in predicting behavioral intention (BI) toward adopting new technology (Zulqarnain et al., 2023).

Dang et al. (2023) defined Trust (TR) as a belief in the trustworthiness of participants in an online setting. Several prior studies (Tun, 2021) have established that trust is a crucial component in online environments. Andijani and Kang (2022) examined online shopping using TAM, incorporating the trust construct. Behavioral Intention to purchase a product or service is a necessary step in completing an online transaction (Rao et al., 2021). Tun (2022) described purchase intention as the degree of preparation and willingness of customers to engage in a transaction with the seller.

Hypotheses and Research Model Development

According to Lim et al. (2022), individuals with strong social interactions tend to engage in more verbal communication compared to those with weaker interactions. Social influencers, who are integral to social circles, act as mavens, sharing current information about products, services, price comparisons, and reliable vendors (Andijani & Kang, 2022). Al-Alawi et al.'s (2020) research also confirmed that social influence plays a significant role in shaping purchase intentions. Therefore, the following hypothesis is proposed:

H_1 : Social Influence has a significant positive effect on purchase intention.

During the purchasing process, customers seek advice and recommendations from others to minimize risks and learn how to make informed purchasing decisions (Bernard et al., 2020). They prefer obtaining information through verbal communication, especially when facing challenges in high-risk purchase situations (Chetioui et al., 2021). Customers believe that verbal communication helps them avoid potential mistakes and correct errors (Al-Haddad et al., 2022). Consequently, word-of-mouth (WOM) is posited as a direct social behavior that influences customers' purchasing decisions on Facebook.

H₂: Word-of-Mouth has a significant positive effect on purchase intention.

An earlier study by Chandara et al. (2023) found that the ease of using social networking sites enhanced customers' positive impressions, leading to purchase decisions. Customers were more inclined to make purchases on Facebook if they found the shopping experience easy and the purchasing procedures simple (Tun, 2022). Additionally, features such as ease of navigation, straightforward purchasing processes, and a clear structure assisted online vendors on Facebook in facilitating customers' purchase decisions (Tun, 2021). Therefore, the following hypothesis is proposed:

H₃: Perceived Ease of Use has a significant positive effect on purchase intention.

In the realm of social networking sites (SNS), building trust among customers is crucial for motivating and prompting them to make purchases, leading to increased sales (Andijani & Kang, 2022). Additionally, trust fosters an enjoyable and comfortable online environment, enhancing the enjoyment of SNS (Rao et al., 2021). Therefore, trust is a key prerequisite for S-Commerce success. The empirical study by Tun (2022) confirmed that trust significantly influenced customers' decisions to shop on Facebook. Consequently, the following hypothesis is proposed:

H₄: Trust has a significant positive effect on behavioral intention.

Perceived enjoyment, a hedonic factor, is crucial for online shopping, as it ensures that customers can enjoy the process of searching for and purchasing products or services (Andijani & Kang, 2022). Therefore, online retailers on Facebook should emphasize this hedonic aspect when selling their products or services. Zulqarnain et al. (2023) argued that feelings of pleasure, joy, and delight influence customers' behavior, motivating them to shop online. Hence, the following hypothesis has been developed:

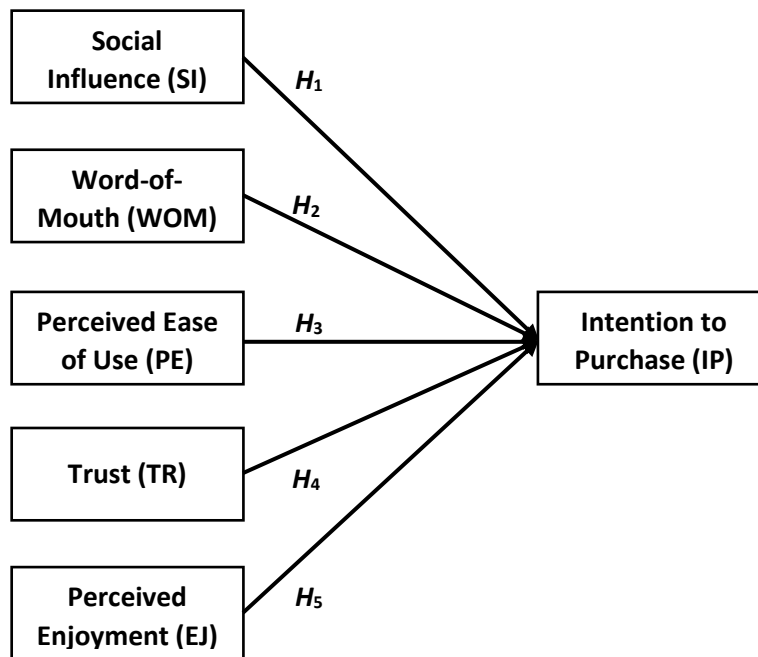
H₅: Perceived Enjoyment has a significant positive effect on purchase intention.

Based on the theoretical background, literature review, and hypotheses presented below in Table 1, this study's research model (shown in Figure 1) incorporates Social Influence (SI), Word-of-Mouth (WOM), Perceived Ease of Use (PE), Trust (TR), and Perceived Enjoyment (PJ) to examine their links to Intention to Purchase (IP).

Table 1 *Hypotheses With Literature Support*

Hypotheses	Effects	Literature Support
<i>H₁</i>	SI → IP	Al-Alawi et al. (2020)
<i>H₂</i>	WOM → IP	Chandara, Pongpaibool, and Norng (2023)
<i>H₃</i>	PE → IP	Lorenzo-Romero et al. (2011)
<i>H₄</i>	TR → IP	Dang et al. (2023)
<i>H₅</i>	PJ → IP	Saprikis et al. (2018)

Figure 1 *Proposed Research Model*



Research Method

In this study, a deductive cross-sectional quantitative research method was employed to explore the significance of various determinants, utilizing validated research instruments (Table 1) to ensure construct validity and reliability. A survey questionnaire was used for its time and cost efficiency in quickly gathering extensive data from a large number of participants (Neuman, 2006). A self-administered structured questionnaire was designed using a Google Form to measure the constructs in the proposed research model (Figure 1) and to collect demographic information from respondents. A 5-point Likert scale was used to measure all construct indicators. The survey form was distributed via prominent SNS channels in Myanmar, such as Facebook, resulting in 332 valid responses. The collected data was analyzed using the Structural Equation Modeling (SEM) procedure with AMOS software. The SEM technique is highly adaptable for handling constructs, even when dealing with small sample sizes. Additionally, SEM can examine the relationships between observed and dependent constructs while minimizing measurement errors (Kline, 2011).

Data Analysis Results

Profile of Respondents

Table 1 presents a demographic breakdown of the sample based on gender, age, occupation, and educational level. In terms of gender, the population consisted of 35.2% males (117 individuals) and 64.8% females (215 individuals). Age-wise, the largest group fell within the 21–25 years range, representing 34.6% (115 individuals), followed by the 18–20 years range at 20.5% (68 individuals), while smaller proportions were seen in older age brackets, such as those 41 years and older (14.5%, 48 individuals). Regarding occupation, 39.5% (131 individuals) worked in the private sector, 30.4% (101 individuals) in the public sector, and 30.1% (100 individuals) were unemployed. In terms of education, 27.1% (90 individuals) held a bachelor's degree, 25.6% (85 individuals) had completed high school, 25.0% (83 individuals) held a master's degree, 12.3% (41 individuals) had a PhD, and 9.9% (33 individuals) possessed a diploma. This data provides insight into the distribution of gender, age, employment, and educational qualifications within the sample.

Table 1 *Demographic Profile of Respondents*

Demographic Profile (N = 332)		Frequency	Percentage
Gender	Male	117	35.2
	Female	215	64.8
Age	18–20 years	68	20.5
	21–25 years	115	34.6
	26–30 years	52	15.7
	31–35 years	27	8.1
	36–40 years	22	6.6
	=/> 41 years	48	14.5
Occupation	Private sector	131	39.5
	Public sector	101	30.4
	Unemployed	100	30.1
Education	High School	85	25.6
	Diploma	37	11.1
	Bachelor Degree	100	30.1
	Master Degree	83	25.1
	PhD	27	8.1

Convergent Validity

The convergent validity table (Table 2) assessed the validity and reliability of the indicators used to measure various constructs in the measurement model.

Table 2 *Analysis Results of Convergent Validity*

Indicators	Estimate	AVE	CR
SI4	.904	.682	.859
SI3	.973		
SI2	.532		
WOM4	.770	.730	.915
WOM3	.868		
WOM2	.915		
WOM1	.859		
PE4	.896	.644	.874
PE3	.968		
PE2	.718		
PE1	.566		
TR4	.737	.608	.861
TR3	.790		
TR2	.860		
TR1	.726		
PJ4	.896	.691	.899
PJ3	.822		
PJ2	.803		
PJ1	.800		
IP4	.763	.649	.881
IP3	.864		
IP2	.833		
IP1	.758		

Each construct's Average Variance Extracted (AVE) and Composite Reliability (CR) values indicated how well the indicators converged to reflect the underlying constructs (Fornell & Larcker, 1981). Social Influence (SI) had a CR of .859 and an AVE of .682, suggesting a good level of reliability and validity. Word-of-Mouth (WOM) performed exceptionally well, with a CR of .915 and an AVE of .730, indicating strong convergent validity across its indicators. Similarly, Perceived Ease of Use (PE), Trust (TR), Perceived Enjoyment (PJ), and Intention to Purchase (IP) all showed satisfactory CR and AVE values, with the highest being PJ at .899. These results demonstrated that the indicators effectively captured the constructs they were intended to measure, reinforcing the robustness of the measurement model (Hair et al., 2010). Therefore, Table 2 highlights the reliability of the indicators in representing their respective constructs, thus supporting the study's overall validity.

Discriminant Validity

Table 3 presents the correlation coefficients and the square root of the Average Variance Extracted (AVE) values for each construct, highlighting their discriminant validity. The diagonal values represent the square root of AVE for each construct, indicating the extent to which each construct captures its own variance (Cohen et al., 2003). Social Influence (SI) had a value of .826, suggesting it effectively measured its intended construct. The correlations between constructs are shown in the off-diagonal elements; WOM correlates with SI at .151 and has its own square root of AVE at .854. The moderate correlations between constructs, such as WOM and Perceived Ease of Use (PE) at .518, and the stronger correlations between Trust (TR) and Perceived Enjoyment (PJ) at .534, indicated some overlap in constructs, yet the square root of AVE values remained higher than these correlations, confirming good discriminant validity. Therefore, Table 3 illustrates that while the constructs were related, they remained distinct, supporting the integrity of the measurement model (Kline, 2011).

Table 3 Analysis Result of Discriminant Validity

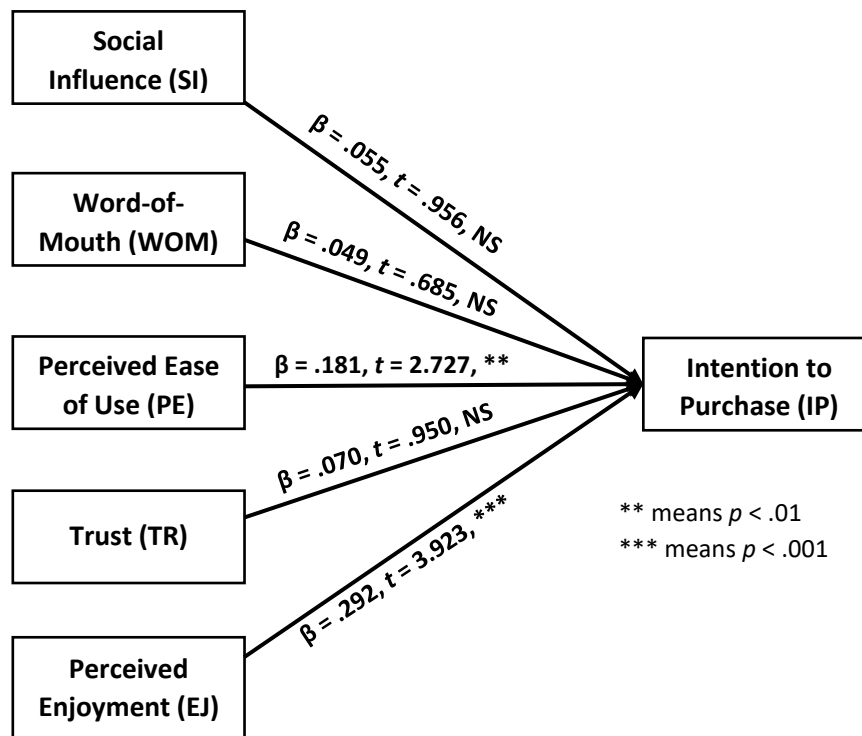
Constructs	SI	WOM	PE	TR	PJ	IP
SI	.826					
WOM	.151	.854				
PE	.098	.518	.802			
TR	.302	.430	.389	.780		
PJ	.289	.475	.378	.534	.831	
IP	.185	.319	.349	.334	.436	.806

Hypotheses Testing

The hypotheses testing results (Table 4) provide insights into the relationships between various constructs and Intention to Purchase (IP). Among the tested hypotheses, H_1 (SI \rightarrow IP), H_2 (WOM \rightarrow IP), and H_4 (TR \rightarrow IP) were all rejected, indicating that these factors did not have a significant effect on IP, as evidenced by their respective p -values (.339, .493, and .342) exceeding the threshold of .05. In contrast, H_3 (PE \rightarrow IP) was supported, showing a significant positive effect with a β value of .181 and a p -value of .006, which highlighted the importance of Ease of Use in influencing purchase intentions. Additionally, H_5 (PJ \rightarrow IP) was also supported, demonstrating a strong positive effect with a β of .292 and a highly significant p -value of .000. These findings suggested that while Perceived Ease of Use and Perceived Enjoyment played critical roles in shaping purchase intentions, Social Influence, Word-of-Mouth, and Trust did not significantly contribute to this outcome in the current study. All of the above hypotheses testing results are also presented in Figure 2.

Table 4 Hypotheses Testing Results

Hypotheses	Effects	β	t-Value	p-Value	Results
H_1	SI \rightarrow IP	.055	.956	.339	Rejected
H_2	WOM \rightarrow IP	.049	.685	.493	Rejected
H_3	PE \rightarrow IP	.181	2.727	.006	Supported
H_4	TR \rightarrow IP	.070	.950	.342	Rejected
H_5	PJ \rightarrow IP	.292	3.923	.000	Supported

Figure 2 Research Model with Analysis Results

Model Fit Indices

The model fit indices table (Table 5) evaluated the overall fit of the research model (Figure 2), providing a comprehensive view of its adequacy in representing the data. The Chi-square to degrees of freedom ratio (χ^2/df) was 2.720, indicating a "Good Fit," suggesting that the model aligned well with the observed data. The Goodness of Fit Index (GFI) showed a value of .869, which was classified as a "Good Fit," implying that while the model fit reasonably well, there may be room for improvement. The Adjusted Goodness of Fit Index (AGFI) was at .831, categorized as a "Good Fit," reinforcing the model's adequacy. The Comparative Fit Index (CFI) presented a strong value of .928, also denoted as a "Good Fit," indicating that the model explained the variance in the data effectively compared to a null model. Lastly, the Root Mean Square Error of Approximation (RMSEA) was reported at .072, which fell within the acceptable range for a "Good Fit." In conclusion, these indices suggested that the research model demonstrated a satisfactory fit with the collected data. In addition, R^2 of endogenous variable (IP) was estimated .239.

Table 5 *Analysis Results of Model Fit Indices*

Model Fit Indices	Recommended	Research Model	Result
χ^2/df	< 3.00	2.720	Good Fit
GFI	> .85	.869	Good Fit
AGFI	> .80	.831	Good Fit
CFI	> .90	.928	Good Fit
RMSEA	< .08	.072	Good Fit

Discussion

This study confirmed that Perceived Ease of Use and Perceived Enjoyment significantly influenced the intention to purchase products and services on SNS platforms, aligning with the findings of previous studies (Chandara et al., 2023; Saprikis et al., 2018), therefore answering Research Question 1. Vendors on SNS platforms should consider that customers prefer purchasing products and services on these platforms due to their convenience and flexibility. SNS platforms need to support and assist users in finding desired products and services, so that customers perceive the process of learning how to make purchases on SNS as easy. As a result, online sellers are encouraged to boost their sales, engage with customers, and promote their products or services by utilizing SNS as a primary sales channel (Supotthamjaree & Srinaruewan, 2021), therefore answering Research Question 2.

Many customers choose SNS platforms to purchase products and services because they find shopping on these platforms enjoyable, describing it as fun, entertaining, and exciting. To attract more customers, online vendors are encouraged to create engaging and interactive content, such as live videos and interactive activities (Avakiat & Roopsuwankun, 2021). When customers enjoy shopping on SNS platforms, they are more likely to make repeat purchases. Customers, particularly those in Myanmar, tend to prefer purchasing products and services in the simplest and easiest way possible, therefore answering Research Question 3.

This study also revealed that Myanmar customers were more likely to make a purchase if the process was simple and convenient. Therefore, e-retailers should design a straightforward and clear purchasing process, ensuring that product information, price comparisons, order placement, payment methods, and shipping options are all easy to access and use (Hanaysha, 2018). According to the findings of this study, Perceived Enjoyment has a greater impact than Perceived Ease of Use on Purchase Intention. Therefore, online retailers should focus more on creating enjoyable content rather than solely prioritizing the ease of purchasing (Gupta et al., 2019).

According to these findings, sellers should prioritize excitement and amusement, as enjoyment and pleasure are key factors in attracting customers in Myanmar. As a result, online retailers should implement engaging entertainment programs on their social media platforms, such as online contests, entertainment videos, live streaming, and informative content (Bokhari et al., 2021). Additionally, online sellers should consider offering discount coupons, loyalty points, or entertainment-based marketing strategies to enhance the enjoyment factor and attract more shoppers (Indrawan et al., 2022; Yasmin & Khanam, 2022).

This study revealed that the Social Influence factor was not a determinant of the intention to purchase products and services on SNS platforms in Myanmar. Customers generally did not base their purchase decisions on the opinions of their social peers. These findings indicated that other people's views and thoughts had an insignificant effect on customers' decisions to buy products and services on SNS platforms. These results aligned with the empirical study by Shin and Hancer (2016), who found that social pressure did not have a direct impact on purchase intention, contrary to the TPB. This suggests that the original TPB may not be entirely applicable in all contexts, and researchers should therefore exercise caution and consider the specific characteristics of their study subjects when applying the TPB framework.

In this study, Word-of-Mouth (WOM) had an insignificant effect on purchase intention, aligning with the findings of Tun (2022). In that study, WOM was considered a positive recommendation, but

was not directly critical to purchasing decisions. Although online retailers should manage online marketing programs, comments and feedback from other customers do not significantly influence purchasing decisions. Interestingly, Trust is also not a significant factor in the intention to purchase products or services. This finding was consistent with a prior study by Ikhlaash and Linda (2024), who concluded that trust was not the primary factor influencing purchase intention. Instead the primary factor is previous shopping experience, particularly on online platforms.

Limitations and Recommendations

One of the main limitations of this study was its focus on only five factors as antecedents of the intention to purchase products and services through SNS platforms, excluding other potential constructs that may influence purchasing intentions. Additionally, all respondents were Facebook users with prior online shopping experience, which may not be representative of users across different SNS platforms. Given that Facebook is the leading SNS in Myanmar, data were collected solely from this platform. While the sample of Facebook users was appropriate due to their dominance in Myanmar's social media landscape, the findings are limited by concerns about representativeness.

Users of other major SNS platforms, such as X, Instagram, and TikTok were not included in this study, presenting another limitation. Furthermore, mobile and e-commerce websites have different features and procedures, which may result in varying purchasing behaviors among customers. Since the participants of this study had prior experience purchasing products or services through Facebook, the results may not accurately reflect the experiences of potential first-time SNS users. Lastly, this research was conducted exclusively in Myanmar, suggesting that the research model employed may not be applicable to other countries, as online shopping behaviors can differ significantly across various cultures and regions.

Conclusion

The present study found that perceived ease of use significantly influences Myanmar customers' intentions to purchase products and services on SNS platforms due to their comfort and flexibility. This finding aligns with other research studies, suggesting that SNS platforms' user-friendly landscape motivates purchases. Perceived enjoyment also plays an important role, since when customers find the shopping experience engaging and fun, this encourages repeat purchases. Online vendors are encouraged to create interactive content, such as live videos, and to offer discounts to enhance customer enjoyment.

Furthermore, the study revealed that social influence and word-of-mouth have statistically insignificant impacts on purchase intentions, indicating that Myanmar customers do not rely on others' opinions when buying products and services on SNS platforms. Moreover, trust is not a significant factor for repeat buyers, as prior transaction experience reduces the need for trust in future purchases. Ultimately, vendors should focus more on creating enjoyable experiences than on simplifying the purchasing process.

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- 1.1. Manuscripts should be no less than 10 and no more than 15 pages in length.
- 1.2. Manuscripts should be written in correct and standard academic English.
- 1.3. Manuscripts should be single-spaced.
- 1.4. Manuscripts should use Calibri font size 11.
- 1.5. Manuscripts should contain minimal formatting (bold and italics commands are acceptable).
- 1.6. Manuscripts should not contain editorial controls of any kind.
- 1.7. Manuscripts should also contain a 800–900-word abstract of the article. Provide at least three keywords, but do not exceed seven.

2. Suggested Referencing Format

- 2.1. In order to maintain a consistent look for *Human Behavior, Development and Society*, use of the American Psychological Association (APA) publication guidelines is mandatory. For details, please see the APA Publication Manual (7th edition).
- 2.2. *HBDS* follows the APA guidelines for endnotes (preferred), in-text citations and references.
- 2.3. Referencing Samples: Please refer to <http://www.apastyle.org/> for questions about referencing, and serialization in the APA format.

3. Submissions Procedure

- 3.1. Manuscripts submitted to *HBDS* must not have been previously published elsewhere or under review for publication in other journals.
- 3.2. Manuscripts must adhere to the journal guidelines; failure to comply with these may result in the rejection of a submission.
- 3.3. Manuscripts must be submitted through the ThaiJo online submission system at <https://so01.tci-thaijo.org/index.php/hbds>; look for the *HBDS* web page.
- 3.4. Manuscripts should be submitted by no later than December 31 for the April issue, April 30 for the August issue, and August 31 for the December issue. Nonetheless, even if a submission is received before the stated dates, and is accepted, the journal's Administrative Board reserves the right to decide on the publication date.

4. Review Process

- 4.1. Manuscripts will be checked for originality and prescreened by the editorial staff to see if their structure, content, and formatting comply with journal standards.
- 4.2. Manuscripts will undergo a double-blind review process conducted by at least 2 qualified independent peer reviewers who are external to authors' institutions, and knowledgeable in a relevant academic field. This process typically takes from 4–6 weeks, depending on peer reviewer response times.
- 4.3. Authors will be informed of reviewers' comments as soon as they are available.
- 4.4. Authors will be given up to 1 month to revise their papers (should that be necessary) and should return the revised version by the 1st of February/June/October (or earlier).

5. Numbers in APA Style

- 5.1 In general, round decimals to two places with the exception of *p*-values (three decimal places is the limit— $p < .01$ or $.001$). Percentages are expressed as whole numbers or to one decimal place.
- 5.2 Rounding rules: If the final number is 5 or more, add one to the last decimal place to be kept (1.565 becomes 1.57). If the number is less than 5, write the number with the required decimal places (2.344 becomes 2.34).
- 5.3 When a statistical expression cannot exceed the value of 1, then the number reported is NOT preceded by a zero (e.g., with *p*-values— $p < .01$, also applies to correlations, Cronbach's alpha).
- 5.4 Large numbers—use commas between groups of three digits in most figures of 1,000 or more.

5.5 Further information can be gained by consulting. James Cook University, Singapore. (n.d.). Numbers in APA. See https://www.jcu.edu.sg/__data/assets/pdf_file/0009/680085/Numbers-in-APA.pdf; Guadagno, R. (2010). Writing up your results – Guidelines based on APA style. Retrieved from https://ich.vscht.cz/~svozil/lectures/vscht/2015_2016/sad/APA_style2.pdf

6. Recommended Verb Tenses for APA Style Articles (p. 118)

Paper Section	Recommended Tense	Example
Literature review (or whenever discussing other researchers' work)	Past Present perfect	Quinn (2020) presented Since then, many investigators have used
Method Description of procedure	Past Present perfect	Participants completed a survey Others have used similar methods
Reporting results	Past	Results were nonsignificant Scores increased Hypotheses were supported
Discuss implications of results	Present	The results indicate
Presentation of conclusions, limitations, future directions, etc.	Present	We conclude Limitations of the study are

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