SUSTAINABLE TOURISM COMPETENCIES THROUGH DIGITAL MARKETING EDUCATION: EVIDENCE FROM INDONESIA AND THAILAND

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Abstract:

Background: Digitalisation and sustainability are reshaping tourism and higher education in ASEAN; however, evidence linking university digital marketing education to sustainable tourism competencies remains limited, particularly in cross-country contexts.
Purpose: This study examines how digital marketing education, experiential learning, and technology acceptance shape human capital development and sustainable tourism competencies, tests the mediating role of human capital, and compares Indonesia and Thailand.
Design/methodology/approach: A sequential explanatory mixed-methods design was used. Survey data were collected from 300 students and lecturers enrolled in tourism and marketing programs (Indonesia n=150; Thailand n=150) and analysed using PLS-SEM, including mediation and multi-group tests. Follow-up interviews and focus groups were thematically analysed to explain quantitative patterns.
Findings/Results: Digital marketing education and experiential learning significantly enhance human capital development, which strongly predicts sustainable tourism competencies. The association between digital marketing education and competencies is modest. Technology acceptance directly and strongly predicts competencies but shows a negligible relationship with human capital. Experiential learning's direct link to competencies is weak or negative; however, its indirect contribution through human capital is positive. Mediation through human capital is supported for digital marketing education, partially for experiential learning, and not for technology acceptance. Multi-group analysis indicates a larger experiential learning effect on competencies in Thailand.
Conclusion: Sustainable competencies improve when digital marketing education and scaffolded experiential learning strengthen human capital, and when technology adoption aligns with sustainability-oriented pedagogy.
Originality/value (State of the art): The study advances an integrated Human Capital–Experiential Learning–TAM/TPACK perspective and offers actionable guidance for ASEAN curriculum harmonisation aimed at strengthening sustainability-oriented digital marketing competencies. Future research should test the model longitudinally and evaluate measurement invariance and institutional readiness.

Keywords: ASEAN, digital marketing education, human capital development, sustainable tourism competencies, technology acceptance

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INTRODUCTION

The rapid evolution of digital marketing is reshaping tourism and higher education and has become integral to how destinations are promoted and future professionals are trained. This shift is most visible in the digital tourism era, where travellers demand instant information and immersive, platform-mediated experiences. In tourism education, digital marketing is therefore not merely a technical skill set; it is a capability-building mechanism that helps learners translate market sensing, value communication, and stakeholder engagement into employability-relevant capabilities. Consequently, universities are under growing pressure to cultivate graduates with digital marketing competencies that enhance their employability in the tourism sector (K. Guo et al., 2021). At the same time, the importance of sustainable tourism is especially salient across ASEAN, with Indonesia and Thailand recognised as leading destinations (Husein, 2023). In this context, proficiency in digital marketing and sustainability is crucial for building a resilient and competitive workforce (Zou et al., 2024).

Embedding sustainability-oriented competencies within curricula is therefore crucial, as institutions must respond to shifting market needs (Sharpley, 2020). However, universities face persistent challenges in aligning technology, pedagogy, and content, as articulated by the TPACK framework. The urgency of human capital development is equally apparent: upgrading the tourism workforce's knowledge and skills remains vital to regional competitiveness in a globalised economy (Zhang et al., 2020). Critically, educational inputs do not automatically translate into competencies; they first accumulate as transferable knowledge, skills, and adaptive capacities—i.e., human capital—that subsequently enable sustainability-oriented performance. By institutionalising such competencies, universities can support student development and broader sustainable tourism outcomes (Sharpley, 2020).

Despite widespread recognition of the need to connect digital marketing education with sustainable tourism competencies, the higher education literature has paid limited attention to this integration. Much prior work focuses on business practice while underemphasizing the formative role of educational design in shaping sustainability-relevant capabilities (Zhang et al., 2020). Moreover, tourism education has rarely applied integrative models that synthesise Human Capital Theory, Experiential Learning Theory, the Technology Acceptance Model (TAM), and TPACK (Wu et al., 2021; Zheng et al., 2021). Comparative insights across ASEAN are also limited, particularly regarding Indonesia and Thailand, which present distinct educational contexts. The scarcity of mixed-methods investigations further narrows understanding, even though such designs are well-suited to explaining how digital marketing education can foster sustainable competencies (Yachin & İoannides, 2020; Zheng et al., 2021). Accordingly, this study offers both empirical validation and contextual generalisation by testing an integrated framework in two ASEAN settings, while also refining theory by specifying when digital marketing education, experiential learning, and technology acceptance translate into sustainable competencies through human capital.

This study addresses these gaps by examining how digital marketing education, technology acceptance, and experiential learning interact to build human capital and, in turn, sustainable tourism competencies. It examines whether human capital development mediates these relationships and whether significant differences exist between Indonesia and Thailand. The study addresses the following questions: Does Digital Marketing Education (DME) positively influence Human Capital Development (HCD)? Does Technology Acceptance (TA) enhance HCD? Does Experiential Learning (EL) strengthen HCD? Does HCD improve Sustainable Tourism Competencies (STC) and mediate the effects of DME, TA, and EL on STC? Finally, do these relationships differ across the two countries? Consistent with the theoretical logic, we expect positive effects of DME, EL, and TA on HCD and/or STC, a positive effect of HCD on STC, and a positive mediating role of HCD in transmitting the influence of educational and technology-related inputs to sustainable competencies.

Accordingly, the study examines the effects of DME, TA, and EL on HCD, assesses HCD's influence on STC, tests HCD's mediating role, and conducts a cross-national comparison. This study offers two main contributions. Theoretically, it advances Human Capital Theory, Experiential Learning Theory, TAM, TPACK, and the Sustainable Competence Framework by integrating them within tourism education. This integration highlights human capital as a mechanism linking pedagogical design and technology-related

factors to sustainability-oriented competency development, and it identifies cross-country contingencies that matter for ASEAN higher education. In practice, it provides guidance on curriculum design and policy across ASEAN, supporting regional collaboration to strengthen digital marketing education and sustainable tourism development.

METHODS

Primary data were collected from students and lecturers in tourism/marketing programs at higher education institutions in Indonesia and Thailand. The quantitative dataset comprises 300 completed surveys, drawn using purposive sampling to ensure respondents had direct exposure to digital marketing education in the tourism sector across both national contexts (Indonesia n=150; Thailand n=150). Participants were recruited from tourism and marketing-related modules that explicitly included digital marketing content and assessment, ensuring substantive exposure to the focal learning approach. Qualitative data consist of interview and FGD transcripts from a sub-sample of participants selected to represent variation in role (student/lecturer), program orientation, and perceived learning intensity. All latent constructs were adapted from established studies in tourism and higher education and measured on a five-point Likert scale. To enhance replicability, the questionnaire included a standardised construct dictionary specifying the item count, source references, and adaptation decisions for each scale.

A sequential, explanatory, mixed-methods approach was employed. First, a structured questionnaire measured Digital Marketing Education, Technology Acceptance, Experiential Learning, Human Capital Development, and Sustainable Tourism Competencies. Data were collected using a uniform administration protocol in both countries through programme-based distribution and monitored online submission to minimise duplicate responses and missing data. Second, semi-structured interviews and FGDs elicited richer accounts of curricular practices, technology use, and learning experiences in both countries. Interview/FGD prompts were aligned with the quantitative constructs (DME, TA, EL, HCD, STC) to facilitate clearer links between statistical results and explanatory mechanisms.

Quantitatively, PLS-SEM using SmartPLS was employed to assess the measurement and structural models, mediation, predictive relevance, and cross-country differences through multi-group analysis. Reliability and validity were examined with Cronbach's alpha, Composite Reliability, AVE, and Fornell–Larcker/HTMT criteria (Hair et al., 2024). Significance testing used nonparametric bootstrapping (5,000 subsamples; two-tailed; 95% confidence intervals), with mediation was assessed via bootstrapped indirect effects and the direct–indirect pattern used to infer partial versus complete mediation. Prior to multi-group analysis, measurement invariance was assessed using the MICOM procedure to ensure that cross-country comparisons reflected substantive differences rather than measurement artefacts. Predictive relevance was evaluated using Q^2 and PLSpredict, and model fit was evaluated using SRMR as a descriptive index alongside predictive diagnostics. Qualitative data were thematically analysed (NVivo) to explain mechanisms behind the statistical patterns; rigour was ensured through credibility, transferability, dependability, triangulation, peer debriefing, and member checking (Fu et al., 2023). Coding followed a hybrid approach: deductive codes mapped to the five constructs, while inductive sub-themes captured contextual features (e.g., scaffolding quality, industry partnership intensity, platform availability) that could explain cross-country differences.

Grounded in Human Capital Theory and integrating Experiential Learning, TAM/UTAUT, TPACK, and the Sustainable Competence perspective (Abubakari, 2021; Agustina et al., 2020; Wu et al., 2021), we advance the following hypotheses. H1: Digital marketing education enhances human capital development by strengthening market-relevant knowledge and skills (Abdullah et al., 2022; Demir et al., 2022; Ridho et al., 2024; Zou et al., 2024). H2: Technology acceptance improves human capital by enabling efficient, technology-supported learning (Cheng & Guo, 2021; Q. Guo et al., 2022; Yang et al., 2020). H3: Experiential learning enhances human capital through authentic projects, reflective practice, and applied problem-solving (Albrecht et al., 2021; Buckley, 2022; Chau & Ren, 2024; Ha & Park, 2020). H4: Human capital development enhances sustainable tourism competencies by converting knowledge and skills into sustainability-oriented capabilities (Abubakari, 2021; Wu et al., 2021; Yachin & İoannides, 2020). Consistent with a mediation logic, we expect human capital to transmit

the effects of digital marketing education, technology acceptance, and experiential learning to sustainable competencies (H5–H7) (Abdalla et al., 2022; Buckley, 2022; Gannon et al., 2020). Finally, acknowledging contextual contingencies and pedagogical–institutional readiness highlighted in TPACK and regional studies, these relationships may differ between Indonesia and Thailand (H8) (Agustina et al., 2020; K. Guo et al., 2021; Husein, 2023). Given the study's cross-sectional design, these hypotheses are interpreted as directional associations rather than causal claims.

Figure 1 models Digital Marketing Education, Experiential Learning, and Technology Acceptance as antecedents of Human Capital Development, which in turn enhances Sustainable Tourism Competencies. Direct links from the three antecedents to the competencies are retained to distinguish between partial and complete mediation. Multi-Group Analysis tests whether these relationships vary between Indonesia and Thailand (and across generational cohorts), reflecting differences in pedagogy, institutional readiness, and technology integration. The qualitative phase is positioned to explain why certain direct effects may be modest or negative (e.g., experiential learning without scaffolding), and why cross-country differences may emerge in how learning inputs are converted into competencies.

RESULTS

Descriptive Statistics and Respondent Profile

This section presents the respondent profile underlying the analysis. The gender distribution is relatively balanced (54.0% female; 46.0% male), indicating equitable representation. The age structure is youthful, with 58.0% in the 18–24 age range, 32.0% in the 25–34 age range, and 10.0% in the 35+ age range, which is typical in higher education contexts. Educational attainment spans 70.0% undergraduates and 30.0% postgraduates. Country participation is even (50.0% Indonesia; 50.0% Thailand), enabling cross-country comparisons. Disciplinary backgrounds are diverse, with tourism (40.0%), marketing/business (36.7%), and hospitality (23.3%) being the most prevalent, mirroring the study's focus. Roles are predominantly student (80.0%) with 20.0% academic staff, ensuring pedagogic perspectives. Respondents also reported substantial digital experience, with 44.0% reporting 1–3 years, 34.0% reporting 4–6 years, and 22.0% reporting more than six years.

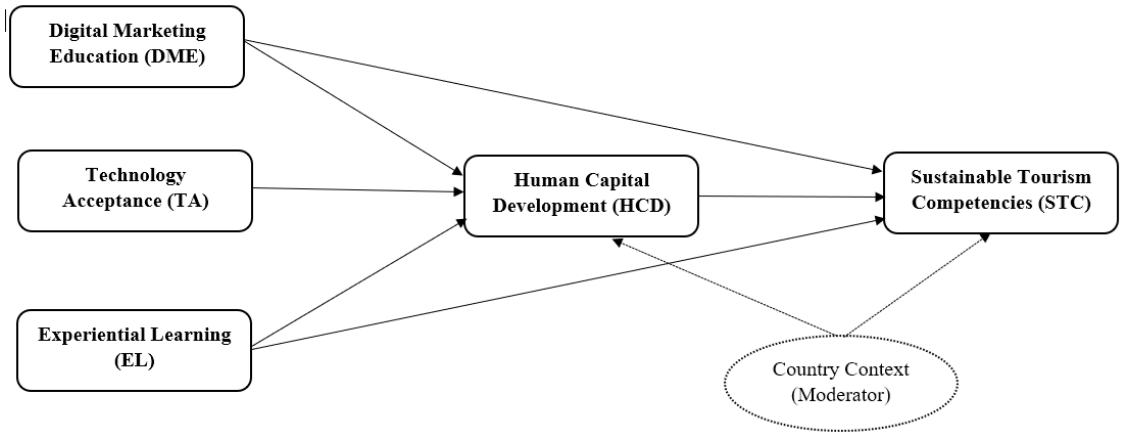

Figure 1. Conceptual framework showing human capital development as the mediator linking digital marketing education, experiential learning, and technology acceptance to sustainable tourism

Measurement Model Evaluation

Table 1 summarises the evaluation of the reflective measurement model, covering indicator reliability, internal consistency, convergent validity, and multicollinearity diagnostics. All indicators load strongly on their respective constructs (ranging from 0.714 to 0.930) and exceed the 0.70 benchmark (Hair et al., 2019), thereby indicating adequate indicator reliability. Cronbach's alpha and composite reliability also exceed the recommended cut-offs ($\alpha > 0.87$; $CR > 0.91$), indicating robust internal consistency. Convergent validity is supported by average variance extracted (AVE) values ranging from 0.673 to 0.806, well above the 0.50 threshold, indicating that the latent constructs explain substantial variance in their indicators. Variance Inflation Factor values range from 2.84 to 4.75, which is below the conventional limit of 5.0, indicating negligible multicollinearity. Overall, the measurement model is sound, supporting subsequent structural analysis among DME, TA, EL, HCD, and STC.

Table 1. Measurement model evaluation (outer model): indicator loadings, reliability (α, CR), convergent validity (AVE), and multicollinearity (VIF)

Construct / Item	Loadings	Alpha	CR	AVE	VIF
Digital Marketing Education (DME)		0.950	0.960	0.799	3.90
DME1	0.920				
DME2	0.912				
DME3	0.920				
DME4	0.858				
DME5	0.853				
DME6	0.899				
Technology Acceptance (TA)		0.877	0.911	0.673	4.19
TA1	0.714				
TA2	0.865				
TA3	0.839				
TA4	0.840				
Experiential Learning (EL)		0.943	0.955	0.779	4.75
EL1	0.918				
EL2	0.917				
EL3	0.906				
EL4	0.918				
EL5	0.867				
EL6	0.759				
Human Capital Development (HCD)		0.950	0.961	0.806	3.52
HCD1	0.734				
HCD2	0.930				
HCD3	0.927				
HCD4	0.930				
HCD5	0.927				
HCD6	0.924				
Sustainable Tourism Competencies (STC)		0.924	0.939	0.689	2.84
STC1	0.753				
STC2	0.763				
STC3	0.863				
STC4	0.866				
STC5	0.847				
STC6	0.862				
STC7	0.847				

Tables 2 and 3 report discriminant validity using the Fornell–Larcker criterion and the HTMT ratio. In Table 2, the square roots of AVE (0.894–0.898) lie on the diagonal and exceed all corresponding inter-construct correlations. For example, the square root AVE for Digital Marketing Education (0.894) is greater than its correlations with Experiential Learning (0.606), Human Capital Development (0.605), Sustainable Tourism Competencies (0.693), and Technology Acceptance (0.711), confirming empirical distinctiveness. Table 3 corroborates this finding via HTMT, with all ratios below the conservative 0.85 benchmark (Henseler et al., 2016); notably, the EL–STC ratio equals 0.843, and the TA–HCD ratio equals 0.837. Collectively, these results demonstrate that the latent constructs are statistically and conceptually separable, providing a sound basis for subsequent structural analyses. Hence, the measurement model demonstrates discriminant validity.

Table 4 evaluates the structural model using effect size (f^2), determination (R^2), and predictive relevance (Q^2). The f^2 statistics indicate that Digital Marketing Education (0.117) and Experiential Learning (0.045) make small to moderate contributions to Human Capital Development (HCD) and Sustainable Tourism Competencies (STC). In contrast, Technology Acceptance exhibits a negligible effect size despite statistical significance. R^2 indicates substantial explanatory power: HCD reaches 0.734 and STC 0.786. Q^2 values above zero 0.357 confirm predictive relevance for HCD and 0.526 for STC attesting to robust out-of-sample prediction. Overall, the model displays strong explanatory and predictive performance and reliability.

Table 2. Discriminant validity (Fornell–Larcker criterion) among constructs

Variable	1	3	4	5
Digital Marketing Education (DME)	0.894			
Experiential Learning (EL)	0.606			
Human Capital Development (HCD)	0.605	0.898		
Sustainable Tourism Competencies (STC)	0.693	0.797	0.830	
Technology Acceptance (TA)	0.711	0.612	0.759	0.820

Table 3. HTMT matrix for discriminant validity

Variable	1	3	4	5
Digital Marketing Education (DME)				
Experiential Learning (EL)	0.635			
Human Capital Development (HCD)	0.636			
Sustainable Tourism Competencies (STC)	0.739	0.843		
Technology Acceptance (TA)	0.776	0.670	0.837	

Table 4. Effect size (f^2), coefficient of determination (R^2), and predictive relevance (Q^2) for HCD and STC

Variable	f^2		R^2	Q^2
	3	4		
Digital Marketing Education (DME)	0.117	0.025		
Experiential Learning (EL)	0.045	0.118		
Human Capital Development (HCD)		0.734	0.458	0.357
Sustainable Tourism Competencies (STC)			0.786	0.526
Technology Acceptance (TA)	0.001	0.347		

Hypotheses Testing Results

Figure 2 summarises the hypothesis-testing results, depicting the structural paths and their significance for the complete sample (N=300). Consistent with Table 5 (Complete column), Digital Marketing Education (DME) significantly influences Human Capital Development (HCD) (β = 0.359), underscoring its role in building market-relevant knowledge and skills; however, its direct effect on Sustainable Tourism Competencies (STC) is modest (β = 0.303). Experiential Learning (EL) significantly enhances HCD (β = 0.335) but shows a negative, non-significant association with STC (β = –0.167), suggesting that its effect is more plausibly transmitted through HCD. Technology Acceptance (TA) does not affect HCD (β = 0.061) but strongly predicts STC (β = 0.691). Finally, HCD significantly drives STC (β = 0.538), reinforcing its mediating centrality.

Table 5 summarises the direct-effects tests for the complete sample and the Indonesia–Thailand subgroups. Three findings emerge: First, Digital Marketing Education (DME) consistently strengthens Human Capital Development (HCD) across the complete sample and both countries (β=0.359; β=0.352; β=0.384; all p<0.01). Its direct influence on Sustainable Tourism Competencies (STC) is modest but significant in all models (complete: β=0.303, p=0.000; Indonesia: β=0.281, p=0.007; Thailand: β=0.276, p=0.002), suggesting that DME contributes to STC both directly and through HCD rather than only via the indirect channel. Second, Experiential Learning (EL) consistently enhances HCD (complete: β=0.335, p=0.001; Indonesia: β=0.486, p=0.001; Thailand: β=0.334, p=0.029) but shows a negative, non-significant association with STC in the complete and Indonesian samples and a non-significant effect in Thailand (p>0.05), implying that EL's benefits for STC are more likely transmitted via HCD and may depend on scaffolding quality. Third, HCD is a strong, highly significant driver of STC throughout (β = 0.538–0.579; p = 0.000), confirming its central bridging role. Finally, Technology Acceptance (TA) fails to predict HCD (p>0.05) but strongly predicts STC in both countries (β=0.582–0.829; p=0.000).

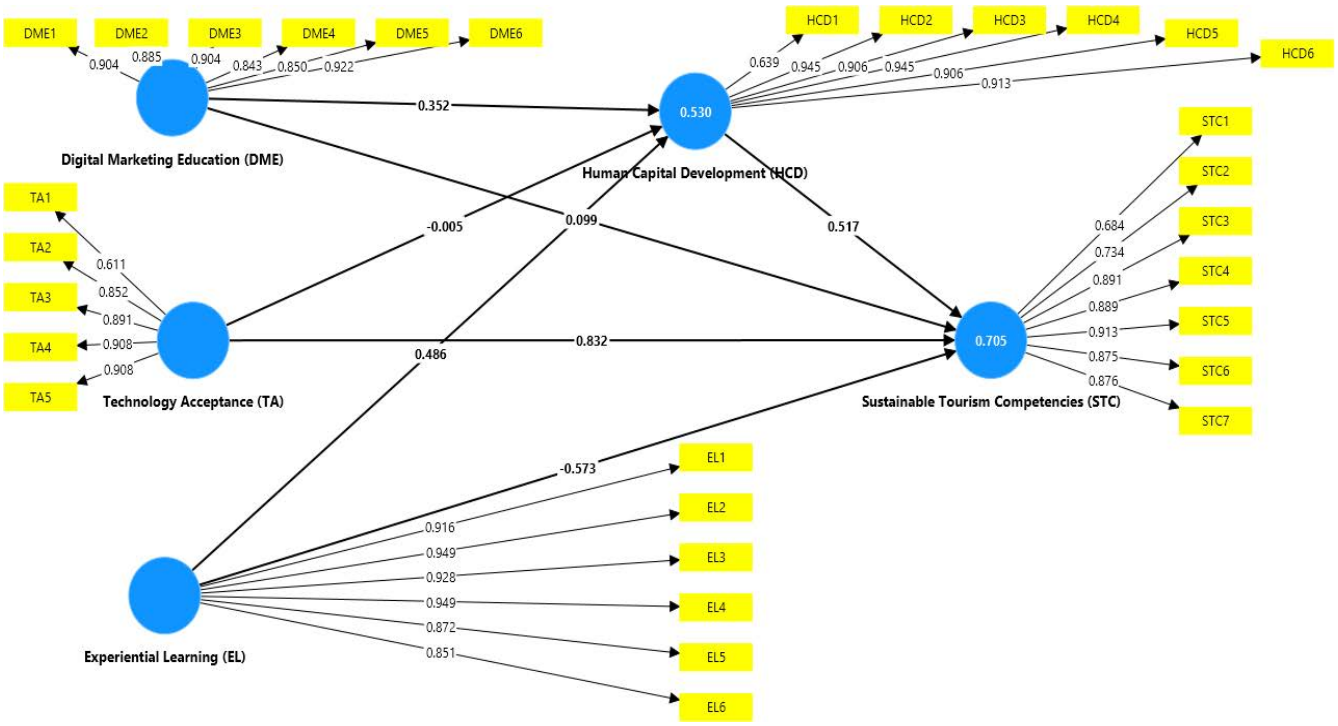

Figure 2. Structural model and path coefficients for the full sample (PLS-SEM)

Table 5. Summary of direct effects testing (β, t, p) for the full sample and for Indonesia and Thailand

Hypothesis	Path	Complete (β, p-value, Result)	Indonesia (β, p-value, Result)	Thailand (β, p-value, Result)
H1	DME → HCD	0.359, p=0.000, Supported	0.352, p=0.003, Supported	0.384, p=0.002, Supported
H2	TA → HCD	0.061, p=0.593, Not Supported	-0.005, p=0.977, Not Supported	0.001, p=0.992, Not Supported
H3	EL → HCD	0.335, p=0.001, Supported	0.486, p=0.001, Supported	0.334, p=0.029, Supported
H4	HCD → STC	0.538, p=0.000, Supported	0.517, p=0.000, Supported	0.579, p=0.000, Supported
H5	DME → STC	0.303, p=0.000, Supported	0.281, p=0.007, Supported	0.276, p=0.002, Supported
H6	TA → STC	0.691, p=0.000, Supported	0.829, p=0.000, Supported	0.582, p=0.000, Supported
H7	EL → STC	-0.167, p=0.077, Not Supported	-0.322, p=0.101, Not Supported	0.022, p=0.856, Not Supported

Note: Human Capital Development (HCD) between Digital Marketing Education (DME), Technology Acceptance (TA), Experiential Learning (EL), and Sustainable Tourism Competencies (STC)

Table 6 summarises the results of the indirect effects testing, clarifying the mediating role of Human Capital Development (HCD) between Digital Marketing Education (DME), Technology Acceptance (TA), Experiential Learning (EL), and Sustainable Tourism Competencies (STC). H5 is consistently supported: DME improves STC via HCD across the entire sample, including Indonesia and Thailand. H6 is not supported in any group, indicating that TA influences STC directly rather than through HCD. H7 receives partial support: EL affects STC via HCD in the complete model and Indonesia, but not in Thailand. Collectively, these results position HCD as a conduit for DME and EL, but not TA.

Table 7 presents the Multi-Group Analysis (MGA) comparing Indonesia and Thailand, examining whether structural paths differ across these contexts. Overall, cross-country differences are largely non-significant: DME → HCD (p=0.835), DME → STC (p=0.568), EL → HCD (p=0.473), HCD → STC (p=0.525), TA → HCD (p=0.976), and TA → STC (p=0.254) show statistical equivalence, indicating stable effects of digital education, technology acceptance, and human capital across both samples. One exception emerges: EL → STC differs significantly (difference = 0.401, p = 0.041), revealing a more substantial positive impact in Thailand. This pattern suggests that contextualised experiential pedagogies may translate into sustainable competencies in Thailand than in Indonesia.

Qualitative Findings (Explanatory Phase)

The explanatory qualitative phase contextualised the quantitative patterns by interviewing academic staff, tourism practitioners, and students in Indonesia and Thailand. Participants agreed that digital marketing education enhances technical literacy and creative capacity, bolstering confidence in applying tourism competencies. However, its direct influence on sustainability appeared modest unless reinforced through practice and mentoring. Experiential learning was described as formative for dispositions and adaptability, but its benefits depended on reflection and scaffolding. Technology acceptance emerged as an enabling condition particularly in Thailand though alignment with sustainability values was uneven. Human capital development surfaced as a conduit linking education, learning, and technology to sustainable competencies. Thematic summary of interview findings: themes, supporting indicators, and representative quotations in Table 8.

The findings show that digital marketing education, experiential learning, and technology acceptance shape human capital development and sustainable tourism competencies through distinct capability-building mechanisms rather than a single linear route. In line with Human Capital Theory, the association between digital marketing education and human capital development supports the view that curriculum-based investments in digital literacy accumulate into transferable skills and adaptive capacity, thereby improving graduates' readiness for a fast-changing tourism labour market (Demir et al., 2022; Zou et al., 2024). The comparatively modest direct DME–competency link suggests that classroom exposure alone may not be sufficient to produce sustainability-ready performance; instead, DME is most effective when it is translated into "usable" human capital through assessments, practice routines, and feedback loops that convert knowledge into application.

This pattern aligns with the broader argument that educational design becomes consequential when it produces durable capability stocks rather than episodic learning experiences (Abdullah et al., 2022). By contrast, the direct effect of digital marketing education on sustainable competencies is comparatively modest in the structural model (see Table 6; Figure 2), with its contribution operating primarily through human capital consistent with the mediating logic proposed by experiential and human capital perspectives (Buckley, 2022, see Table 7).

Experiential learning strengthens human capital development, yet its direct relationship with sustainable competencies is weak or negative, which is theoretically meaningful. A plausible explanation is that experiential activities can become task-completion exercises when they are not scaffolded through structured reflection, mentoring, and explicit sustainability criteria. Without guided reflection, students may prioritise short-term campaign metrics (reach, clicks, conversions) and adopt instrumental practices that do not generalise into sustainability-oriented judgement and stakeholder sensitivity. In such settings, "experience" increases know-how (human capital) but does not automatically produce sustainable competence, because sustainability requires integrative reasoning, ethical trade-offs, and systems thinking. Accordingly, the results support the view that experiential learning yields sustainability gains when institutions provide reflective cycles (plan–act–reflect–iterate), aligned rubrics, and supervision that connect digital marketing tasks to sustainability outcomes (Albrecht et al., 2021; Chau & Ren, 2024).

Technology acceptance shows a weak association with human capital but strongly predicts sustainable competencies, highlighting a different pathway: readiness and willingness to use technology can enable immediate adoption of sustainability-relevant practices (e.g., monitoring, responsible messaging, transparency cues, and audience feedback), even when deeper skill accumulation is still developing. This pattern is consistent with TAM/UTAUT logic in which perceived usefulness and ease of use shape behavioural uptake, which may translate into competency enactment in technology-intensive contexts (Cheng & Guo, 2021; Yang et al., 2020; see Table 5 and Figure 2). However, the weak TA–HCD link suggests that adoption alone does not guarantee structured learning; institutions may need deliberate pedagogy to turn frequent tool use into skill deepening.

Table 6. Summary of indirect effects via HCD on STC for the pathways from DME to STC, from TA to STC, and from EL to STC

Hypothesis	Path	Complete (β, p-value, Result)	Indonesia (β, p-value, Result)	Thailand (β, p-value, Result)
H5	DME → HCD → STC	0.193, p = 0.000, Supported	0.182, p = 0.003, Supported	0.223, p = 0.001, Supported
H6	TA → HCD → STC	0.033, p = 0.592, Not Supported	-0.003, p = 0.976, Not Supported	0.001, p = 0.992, Not Supported
H7	EL → HCD → STC	0.180, p = 0.003, Supported	0.251, p = 0.003, Supported	0.194, p = 0.072, Not Supported

Note: Human Capital Development (HCD) between Digital Marketing Education (DME), Technology Acceptance (TA), Experiential Learning (EL), and Sustainable Tourism Competencies (STC)

Table 7. Multi-group analysis of structural path differences between Indonesia and Thailand

Hypothesis	Path	Difference (TH–ID)	p-value (MGA)	Supported
H8a	DME → HCD	0.032	0.835	No
H8b	DME → STC	-0.046	0.568	No
H8c	EL → HCD	-0.151	0.473	No
H8d	EL → STC	0.401	0.041	Yes
H8e	HCD → STC	0.062	0.525	No
H8f	TA → HCD	0.007	0.976	No
H8g	TA → STC	-0.250	0.254	No

Note: Human Capital Development (HCD) between Digital Marketing Education (DME), Technology Acceptance (TA), Experiential Learning (EL), and Sustainable Tourism Competencies (STC)

Table 8. Thematic summary of interview findings: themes, supporting indicators, and representative quotations

Theme	Key Insights	Representative Statement (Interview Excerpts)
Digital Marketing Education (DME)	Improves technical and creative skills, but the impact on sustainability depends on practice and mentoring.	"Learning digital marketing gives us strong technical skills, but without projects or mentoring, it is hard to link it to sustainable practices." (Student, Indonesia)
Experiential Learning (EL)	Builds adaptability and professional attitudes, yet effectiveness relies on reflection and institutional support.	"Internships are useful, but unless we reflect and discuss our experiences, they do not always translate into long-term competencies." (Lecturer, Thailand)
Technology Acceptance (TA)	Students are open to adopting new tools, but integration with sustainability values remains a challenge.	"Digital platforms are easy to adopt, but the issue is how to align them with human-centred and sustainable approaches." (Practitioner, Thailand)
Human Capital Development (HCD)	Acts as a bridge between education, learning, and competencies, enhancing long-term employability.	"What truly matters is how education and technology build our human capital for future careers in tourism." (Academic staff, Indonesia)
Cross-country Context	Differences arise from institutional capacity, cultural emphasis, and resource availability between Indonesia and Thailand.	"In Thailand, technology is integrated earlier, while in Indonesia, the focus is more on building foundational knowledge." (Lecturer, Thailand)

Cross-country analysis reveals that the impact of experiential learning on sustainable competencies is more pronounced in Thailand, as indicated by the multi-group test (Table 7). Although country-specific estimates remain modest, this suggests that institutional and cultural contingencies are at play (Husein, 2023). Overall, the study refines integrated Human Capital–Experiential Learning–TAM/TPACK accounts by specifying that sustainability competencies improve when (i) digital marketing education is competency-based, (ii) experiential learning is scaffolded, and (iii) technology adoption is aligned with sustainability-oriented pedagogy.

Managerial Implications

Universities should embed sustainability outcomes across digital marketing curricula, mapping module learning outcomes to STC. Universities should prioritise scaffolded experiential learning with mandated reflection and sustainability rubrics (plan–act–reflect–iterate) via live projects, internships, and incubator clinics co-supervised by industry. Guarantee equitable access to analytics, SEO/SEM, social listening, and automation platforms, with micro-credentials evidencing tool mastery. Invest in staff development for data-informed pedagogy and reflective assessment. Establish programme dashboards to track HCD/STC attainment and benchmark across cohorts. Strategies should be tailored by context: in Thailand, scale high-quality experiential placements; in Indonesia, strengthen mentoring, reflection protocols, and placement governance. Policymakers should co-fund shared edtech infrastructure and incentivise university–industry sustainability projects.

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

This study suggests that re-engineering digital marketing curricula and experiential pedagogies is pivotal for building human capital and, through it, sustainable tourism competencies. Across Indonesia and Thailand, digital marketing education consistently strengthens human capital and also contributes to sustainable tourism competencies. At the same time, technology acceptance is strongly associated with competencies but remains weakly related to human capital. Experiential learning primarily operates through human capital, implying that practice-based activities are most effective when they are scaffolded to convert experience into durable capabilities. Compared with prior tourism education research, which often emphasizes practice relevance but under specifies-mechanisms, the findings show that "what works" depends on how curricular inputs are translated into human capital before competencies are realised.

Recommendations

The study advances an integrated Human Capital–Experiential Learning–TAM/TPACK account by evidencing human capital's mediating centrality and clarifying boundary conditions under which experiential learning and technology adoption translate into sustainability-oriented competencies. Novelty: It provides a comparative ASEAN perspective tests (Indonesia–Thailand) that jointly models education, experience, and technology within a single competency-formation framework. Cross-country analysis indicates that Thailand derives relatively greater direct benefits from experiential learning, underscoring the importance of institutional scaffolding and contextual design.

Universities should embed sustainability outcomes into digital marketing curricula, align assessment with sustainable competence rubrics, and institutionalise scaffolded experiential learning (mentoring, reflection cycles, and industry co-supervision). At the ASEAN level, the results support curriculum harmonisation through sustainability-aligned micro-credentials and shared edtech infrastructure that reduces capability gaps across institutions. Because the study is cross-sectional and relies on self-reports, the results should be interpreted as directional associations rather than causal effects. Future research should test the model longitudinally, evaluate measurement invariance across broader ASEAN samples, and connect competency gains to employability and workplace performance outcomes.

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