

Digital capabilities and sustainable performance of community-based tourism (CBT) homestay operators in Sabah: The mediating roles of innovation capability and community participation

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ABSTRACT

This study examines how digital capabilities influence the sustainable performance of Community-Based Tourism (CBT) homestay operators in Sabah. The model positions social media usage as a key digital capability, with innovation capability and community participation tested as mediators and digital leadership as a moderator. Although digitalisation has become an important enabler of tourism competitiveness, limited empirical research has examined digital technology adoption among CBT homestay operators in Sabah. Guided by the Resource-Based View (RBV), this study employed a quantitative cross-sectional survey of registered CBT homestay operators. Of 350 questionnaires distributed, 309 were returned and 286 usable responses were analysed using Partial Least Squares Structural Equation Modelling (PLS-SEM). Findings show that social media usage significantly enhances innovation capability and sustainable performance, while innovation capability significantly improves sustainable performance. Community participation, the two mediation effects and the moderating effect of digital leadership are not supported. The study extends RBV by demonstrating that digital and innovation-related resources can strengthen sustainability outcomes in rural tourism enterprises. Practically, the findings highlight the need for CBT operators, policymakers and tourism authorities to strengthen social media use, innovation support and targeted digital capacity-building in Sabah.

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1. INTRODUCTION

Tourism has increasingly been positioned as an instrument for inclusive development because it can generate income, strengthen cultural exchange and support environmental stewardship when managed responsibly. Within this broad agenda, Community-Based Tourism (CBT) has become an important model for rural destinations because it emphasizes local ownership, collective decision-making and the equitable distribution of tourism benefits. CBT is particularly relevant for communities that possess rich natural and cultural assets but remain exposed to structural constraints such as limited market access, weak infrastructure, uneven digital readiness and dependence on intermediaries (Asker et al., 2010; Dangi & Petrick, 2021).

Malaysia has promoted CBT through homestay programmes that allow visitors to experience village life, local food, traditional practices and host-family interaction. These programmes contribute to rural income generation and cultural preservation while providing tourists with authentic community experiences (Jamaluddin et al., 2012; Kunjuraman, 2019; Mapjabil & Che Ismail, 2012). In Sabah, the homestay sector is especially significant because the state combines ethnic diversity, distinctive rural landscapes and major nature-based attractions. Nevertheless, CBT operators in Sabah face increasing pressure to remain competitive and sustainable in a digitally transformed tourism market, especially as tourists increasingly rely on online reviews, social media content and digital communication before making travel decisions.

Recent figures from the Sabah Tourism Board show that Sabah CBT generated RM6.67 million in income in 2023, but income declined slightly to RM6.53 million from January to November 2024, while tourist arrivals decreased from 302,154 to 269,154 (Sabah Tourism Board, 2025). These trends indicate that sustainability cannot be assumed even when CBT initiatives are institutionally supported. Digitalisation may help operators overcome market constraints by improving visibility, communication, feedback collection, tourist engagement and service innovation. However, the way digital capabilities shape sustainable CBT performance remains underexplored, particularly among rural homestay operators in Sabah.

This study addresses three related gaps. First, although CBT and Malaysian homestay programmes are widely discussed as mechanisms for rural development, cultural preservation and community empowerment (Jamaluddin et al., 2012; Kunjuraman, 2019; Mapjabil & Che Ismail, 2012), digital tourism research still tends to emphasise hotels, travel platforms, destination marketing and broader hospitality enterprises (Gursoy & Saayman, 2023; Sigala, 2020, 2022). Consequently, limited empirical evidence explains how rural CBT homestay operators in Sabah use digital capabilities to sustain community-based tourism performance. Second, prior studies show that social media can support communication, destination visibility, customer engagement, knowledge sharing and service innovation (Kaplan & Haenlein, 2010; Kietzmann et al., 2011; Sigala, 2022; Zada et al., 2025), but less attention has been given to the mechanisms through which social media usage becomes an organisational capability that supports innovation capability, community participation and sustainability outcomes. Third, RBV explains performance through resources and capabilities that are valuable and effectively deployed (Wernerfelt, 1984; Barney, 1991), while recent capability-based work further argues that resources generate value when they are combined, renewed and adapted to environmental change (Borah et al., 2022; Teece, 2010). However, RBV remains less developed in community-based tourism enterprises, where strategic resources are not only firm-owned assets but also relational, cultural and community-embedded capabilities.

The novelty of this study therefore lies in the Sabah CBT context, the integration of social media usage, innovation capability, community participation and digital leadership, and the application of RBV to rural community-based tourism enterprises. Accordingly, the study examines the relationships between social media usage, digital leadership, innovation capability, community participation and sustainable performance among CBT homestay operators in Sabah. Guided by RBV, the study treats social media usage as a digital capability, innovation capability as a transformation capability, community participation as a relational social capability and digital leadership as an enabling managerial capability. The research contributes by explaining which resources generate measurable sustainability outcomes and which resources require stronger governance and capacity-building before they can produce performance benefits.

2. LITERATURE REVIEW

2.1 Community-Based Tourism and homestay programmes

CBT is commonly understood as a tourism model in which local communities participate directly in planning, managing and benefiting from tourism activities. Its distinguishing feature lies not merely in the location of tourism activities but in the degree of local control, benefit-sharing and social empowerment embedded in tourism governance (Asker et al., 2010; Giampiccoli & Saayman, 2017). CBT is therefore closely aligned with sustainable tourism because it seeks to balance economic viability, sociocultural protection and environmental responsibility.

Homestay programmes represent one of the most visible CBT products in Malaysia. Instead of functioning only as accommodation businesses, homestays provide immersive cultural experiences through host-family interaction, participation in daily activities, traditional food, local crafts and rural community events. Prior studies describe homestay programmes as mechanisms for rural development, cultural preservation and local entrepreneurship when operators receive sufficient training, institutional support and market access (Jamaluddin et al., 2012; Kontogeorgopoulos et al., 2015; Walter et al., 2018).

In the Malaysian context, the Ministry of Tourism, Arts and Culture Malaysia have supported the development of homestays as part of rural tourism policy. The Ministry of Tourism, Arts and Culture Malaysia (2023) reports 441 registered homestay operators in Sabah, indicating the significance of this sector for state-level rural tourism development. However, homestay operators frequently encounter difficulties associated with marketing, service quality, business management and digital readiness (Abdullah et al., 2013; Othman & Buang, 2021). These challenges justify a closer examination of digital capabilities as potential resources for strengthening sustainable performance.

2.2 Resource-Based View as theoretical foundation

The RBV argues that organizations can achieve superior performance when they possess and effectively deploy strategic resources that are valuable, rare, difficult to imitate and properly organized (Barney, 1991; Wernerfelt, 1984). Although RBV was initially applied to firms, it is also useful for understanding community-based enterprises because CBT organizations depend on tangible and intangible resources such as local knowledge, cultural capital, social networks, leadership and technological capability. More recent capability-based discussions emphasize that resources generate value only when they are deployed, combined and renewed in response to environmental change (Borah et al., 2022; Teece, 2010). This

perspective is important for CBT because digital tools alone do not create sustainable performance unless operators have the capability to convert digital information into market access, innovation, community value and operational improvement.

In this study, social media usage is viewed as a digital resource that enables operators to gather information, communicate with tourists and promote tourism experiences. Digital leadership reflects the capability to mobilize technological tools, guide digital change and organize collective learning. Innovation capability represents the ability to transform ideas and knowledge into improved products, services and processes. Community participation is conceptualized as a relational and social resource because local involvement generates legitimacy, trust, cultural authenticity and shared responsibility. Together, these resources may contribute to sustainable performance by enhancing economic, social, cultural and environmental outcomes in CBT. However, RBV also implies that the mere possession of resources is insufficient; resources must be strategically organized and embedded in local governance structures to create sustained value.

2.3 Social media usage in CBT

Social media platforms enable users to create, exchange and interact with content through Web 2.0 technologies (Kaplan & Haenlein, 2010; Kietzmann et al., 2011). In tourism, these platforms are important because tourists frequently search, compare, review and share destination experiences online. For small tourism enterprises, social media offers low-cost marketing opportunities, customer feedback channels and knowledge-sharing spaces that may otherwise be unavailable through conventional promotional mechanisms (Gursoy & Saayman, 2023; Sigala, 2020, 2022). However, prior studies also show that the performance benefits of social media depend on strategic use, content quality, responsiveness and the ability to learn from digital interactions rather than on platform presence alone.

For CBT homestay operators, social media can perform several functions. It can increase destination visibility, communicate cultural narratives, support digital storytelling, promote new tourism packages and facilitate communication before, during and after visits. Social media also exposes operators to tourist preferences and competitor practices, which may stimulate product and service improvement. Hence, social media usage is expected to strengthen both innovation capability and sustainable performance when operators use it strategically (Zada et al., 2025).

2.4 Digital leadership

Digital leadership refers to the ability to combine leadership competencies with digital competencies to guide organizational members toward technology-enabled goals. Within tourism, digital leadership is not confined to the adoption of hardware or software; it includes developing a digital vision, reducing resistance to technology, promoting ethical technology use, encouraging learning among stakeholders and translating digital information into strategic decisions (Buhalis & Sinarta, 2019; Mihardjo et al., 2019). As digital transformation reshapes tourism and hospitality, leadership becomes an important capability because operators must coordinate people, processes and technology rather than merely introduce digital platforms.

In CBT settings, leadership is often distributed and community-oriented rather than purely hierarchical. Effective digital leadership may strengthen the effect of social media usage on innovation capability because leaders can encourage operators to analyse visitor feedback, experiment with new packages, standardize

online communication and convert digital learning into service improvements. It may also strengthen the effect of social media usage on community participation by using digital channels for consultation, collaborative storytelling and coordination among homestay members. The moderating role of digital leadership is therefore theoretically grounded in RBV: leadership acts as an organizing capability that determines whether a digital resource is converted into innovation and participation outcomes.

2.5 Innovation capability

Innovation capability is the capacity to develop, adopt and implement new ideas, services, processes and business models that improve organizational performance (Calantone et al., 2002; Lawson & Samson, 2001). In tourism, innovation may appear as new cultural experiences, improved booking processes, digital promotion, eco-friendly operations or redesigned visitor activities (Hjalager, 2010). Because tourism markets are dynamic, innovation capability helps operators adapt to changing tourist expectations and competitive pressures (Freije et al., 2021; Saunila & Ukko, 2012). From an RBV and dynamic capability perspective, innovation capability is not merely an outcome of creativity; it is a strategic capability that enables operators to reconfigure resources and create value in changing environments (Teece, 2010).

Within CBT homestays, innovation capability is especially important because operators often have limited financial and technological resources. Incremental innovation, such as improving storytelling, packaging community activities, using online feedback and adapting local products for niche markets, may improve sustainability without requiring large capital investment. Based on RBV, innovation capability becomes a strategic capability when it transforms digital information into distinctive tourism value.

2.6 Community participation

Community participation refers to the involvement of local residents in tourism planning, decision-making, implementation and benefit-sharing (Arnstein, 1969; Tosun, 2000). Participation is central to CBT because tourism development that excludes local voices may weaken cultural authenticity, reduce community support and create conflict. Participatory tourism approaches emphasize that communities should not only supply labour or cultural products but also influence the direction, scale and distribution of tourism development (Murphy, 1985; Pretty, 1995).

In CBT, participation may enhance sustainability by strengthening ownership, accountability, social cohesion and conservation practices. When community members are involved in planning and management, tourism activities are more likely to reflect local values and protect community resources (Giampiccoli & Saayman, 2017; Qin et al., 2021). However, participation does not automatically emerge from technology use. Digital platforms must be intentionally designed as spaces for consultation, collaborative content creation and shared decision-making if they are to strengthen community involvement.

2.7 Sustainable performance of CBT

Sustainable performance refers to the ability of tourism organizations or communities to achieve long-term economic, social, cultural and environmental outcomes. Consistent with the triple bottom line perspective, sustainability requires tourism enterprises to generate benefits while minimizing harm to the natural environment, local culture and host community well-being (Elkington, 1997; Fennell et al., 2022).

For CBT, sustainable performance includes income generation, employment creation, community well-being, cultural preservation, responsible environmental practices and reinvestment in community development. These dimensions are interdependent. Economic benefits are necessary for operational continuity, but social legitimacy and environmental protection are equally important because CBT relies on community trust and local resources as the foundation of the tourism experience (Zeng et al., 2024).

2.8 Conceptual framework

Figure 1 presents the proposed conceptual framework. Social media usage is positioned as the focal digital capability that directly influences innovation capability, community participation and sustainable performance. Innovation capability and community participation are modelled as mediating mechanisms, while digital leadership is modelled as a moderating capability that strengthens the conversion of social media usage into innovation and participation outcomes. The framework operationalizes RBV by linking digital, innovation, leadership and social resources to sustainable CBT performance.

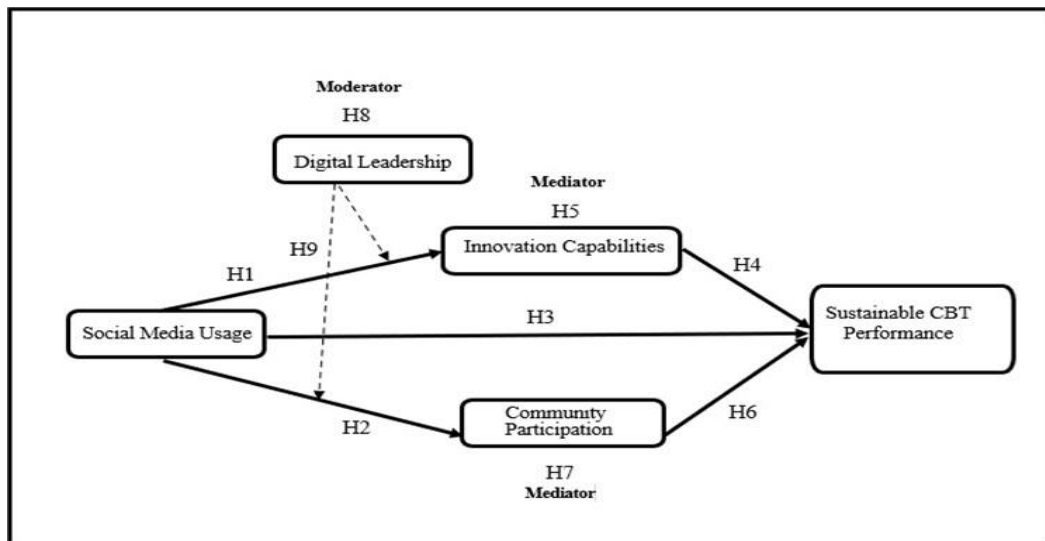


Figure 1. Conceptual framework of the study

2.9 Hypothesis development

Social media usage may strengthen innovation capability because digital platforms expose operators to tourist feedback, market trends, peer practices and creative destination content. These information flows support learning and experimentation, enabling CBT operators to improve products and services. In RBV terms, social media becomes valuable when operators use it as market intelligence rather than as a passive promotional channel. Prior tourism research suggests that social media supports customer engagement and service innovation, but its benefits are stronger when operators actively interpret online feedback and translate it into improved visitor experiences (Sigala, 2022; Zada et al., 2025). Therefore, social media usage is expected to enhance innovation capability (H1).

Social media may also support community participation by creating communication spaces for residents, operators and stakeholders; however, participatory outcomes are likely to depend on whether these platforms are used for consultation and shared decision-making rather than for one-way marketing. This provides the basis for H2. Social media usage is also expected to improve sustainable performance because it can increase visibility, reduce promotional costs, communicate sustainability values and support direct interaction with tourists, which is particularly important for rural operators with limited access to conventional marketing channels (H3).

Innovation capability is expected to improve sustainable performance because innovative operators can adapt offerings, enhance visitor experiences and develop more efficient and sustainable practices. In CBT, innovation can include digital booking practices, eco-cultural activities, improved storytelling, collaborative packages and better management of tourist feedback. Such innovations can strengthen economic viability while supporting social, cultural and environmental objectives (H4). Community participation is expected to influence sustainable performance because local involvement can strengthen ownership, legitimacy, cultural authenticity and benefit-sharing; however, prior literature also cautions that participation may be constrained by power imbalance, limited time, weak governance or uneven benefit distribution (Tosun, 2000). This mixed evidence provides the basis for testing H5 rather than assuming that participation automatically improves performance.

Innovation capability may mediate the relationship between social media usage and sustainable performance because social media information must be converted into product, service and process improvements before it produces sustainable value (H6). Community participation may also mediate the relationship if digital communication mobilizes residents and strengthens shared tourism governance (H7). Finally, digital leadership may moderate the effects of social media usage on innovation capability and community participation because leaders can organize digital learning, reduce resistance and coordinate collective action (H8 and H9).

Table 1. Hypotheses of the study

Hypothesis	Statement
H1	Social media usage has a significant positive influence on innovation capability.
H2	Social media usage has a significant positive influence on community participation.
H3	Social media usage has a significant positive influence on sustainable performance of CBT.
H4	Innovation capability has a significant positive influence on sustainable performance of CBT.
H5	Community participation has a significant positive influence on sustainable performance of CBT.
H6	Innovation capability mediates the relationship between social media usage and sustainable performance of CBT.
H7	Community participation mediates the relationship between social media usage and sustainable performance of CBT.
H8	Digital leadership moderates the relationship between social media usage and innovation capability.
H9	Digital leadership moderates the relationship between social media usage and community participation.

3. METHODOLOGY

This study employed quantitative cross-sectional survey design. A deductive approach was adopted because the study tested hypothesized relationships derived from RBV and prior digital tourism literature. The population comprised registered CBT homestay operators in Sabah, Malaysia. Based on Ministry of Tourism,

Arts and Culture Malaysia (2023), the sampling frame consisted of 441 registered operators, and purposive sampling was applied to reach respondents with direct knowledge of homestay operations.

Data were collected using a structured online questionnaire distributed across Sabah during October–November 2025. G*Power 3.1.9.7 was used to estimate the minimum sample size using a priori power analysis for linear multiple regression with a medium effect size ($f^2 = 0.15$), $\alpha = 0.05$, statistical power = 0.95 and four predictors (Faul et al., 2007, 2009). The minimum required sample size was 129 respondents. From 441 registered CBT homestay operators, the survey was distributed to 350 reachable operators; 309 questionnaires were returned and 286 usable responses were retained after data screening. The usable sample therefore exceeded the minimum requirement and was adequate for PLS-SEM analysis.

The questionnaire measured five main constructs using a five-point Likert scale ranging from strongly disagree to strongly agree. The instrument comprised 9 initial items for social media usage adapted from Zada et al. (2025), 6 items for digital leadership adapted from Mihardjo et al. (2019), 5 items for innovation capability adapted from Munir et al. (2025), 5 items for community participation adapted from Murphy (1985), and 9 items for sustainable performance adapted from Fennell et al. (2022) and Zeng et al. (2024). During final measurement model assessment, SMU1 was removed because its loading was below the recommended threshold; the remaining indicators were retained for structural model testing.

Content validity was strengthened through scale adaptation, expert review and contextual refinement. The adapted items were reviewed for clarity, construct relevance, wording suitability, English–Malay conceptual equivalence and appropriateness for Sabah CBT homestay operators. Feedback from academic and practitioner reviewers was incorporated before the main survey. A pilot test involving 30 participants was conducted to assess administration feasibility, Google Form completion, item clarity, screening questions, response pattern quality and the suitability of the adapted measurement items. Minor wording, layout and instruction refinements were made, but no construct was removed. Ethical safeguards included voluntary participation, confidentiality, reporting of aggregate results only, and eligibility screening so that respondents were adult CBT homestay operators, coordinators or authorized representatives.

Data were analysed using Partial Least Squares Structural Equation Modelling (PLS-SEM) with SmartPLS version 4.0. The analysis followed a two-stage procedure in which the measurement model was first assessed for indicator reliability, internal consistency reliability, convergent validity and discriminant validity, followed by structural model assessment for path significance, effect size, coefficient of determination, collinearity, mediation and moderation (Hair et al., 2017). Significance testing was conducted using SmartPLS bootstrapping with bias-corrected confidence intervals. Because all hypotheses were directional, statistical significance was interpreted using one-tailed p-values at $\alpha = 0.05$; this clarifies why H1 ($t = 1.747$, $p = 0.040$) and H4 ($t = 1.735$, $p = 0.041$) are reported as significant. Common method bias was addressed through procedural remedies, Harman's single-factor test, marker-variable items and collinearity diagnostics.

4. FINDINGS

The response profile indicates that the sample represented CBT homestay operators from various districts in Sabah, including major tourism areas and smaller rural communities. The demographic data show representation across age, education and district categories, with the largest age groups comprising respondents aged 30-40 years and 40-50 years. Educational backgrounds were also diverse, with a substantial share reporting diploma, bachelor's degree or other forms of education. District participation was geographically dispersed, with higher representation from Kundasang, Kota Belud, Papar, Kota Kinabalu and Ranau.

Table 2. Respondents' demographic characteristics

Characteristic	Category	Frequency (n)	Percentage (%)
Age	15-20 years	6	5.9
	20-30 years	21	20.8
	30-40 years	28	27.7
	40-50 years	30	29.7
	50-60 years	11	10.9
	60-70 years	3	3.0
Education	Diploma	25	25.5
	Bachelor's degree	22	22.4
	Master's degree	9	9.2
	Doctorate	9	9.2
	Others	33	33.7
District	Kundasang	17	18.1
	Kota Belud	10	10.6
	Papar	10	10.6
	Kota Kinabalu	9	9.6
	Ranau	9	9.6
	Tuaran	7	7.4
	Sandakan	6	6.4
	Tambunan	4	4.3
	Tenom	4	4.3
	Other districts	18	19.1

The measurement model demonstrated satisfactory reliability and validity. Cronbach's alpha values ranged from 0.917 to 0.941, composite reliability values ranged from 0.932 to 0.953, and average variance extracted values ranged from 0.605 to 0.801. Although SMU1 was removed due to insufficient loading, the retained indicators satisfied the recommended reliability and validity requirements. HTMT values were below the 0.90 threshold, indicating acceptable discriminant validity. Table 3 summarizes the measurement model results. The direct path coefficient results are presented in Table 4. Three direct relationships were supported, namely social media usage to innovation capability, social media usage to sustainable performance, and innovation capability to sustainable performance.

Table 3. Measurement model reliability and convergent validity

Construct (items retained)	Cronbach's alpha	Composite reliability	AVE
Community Participation (5)	0.941	0.953	0.801
Digital Leadership (6)	0.933	0.948	0.751
Innovation Capability (5)	0.917	0.938	0.752
Social Media Usage (8 of 9; SMU1 removed)	0.939	0.950	0.703

Sustainable Performance (9)	0.917	0.932	0.605
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Table 4. Direct effects and hypothesis testing

Hypothesis	Path	Beta	S.E.	t-value	p-value	LLCI	ULCI	Decision
H1	SMU -> IC	0.428	0.245	1.747	0.040	0.085	0.864	Supported
H2	SMU -> CP	-0.185	0.403	0.458	0.323	-1.137	0.272	Not supported
H3	SMU -> SP	0.421	0.160	2.635	0.004	0.095	0.626	Supported
H4	IC -> SP	0.262	0.151	1.735	0.041	0.065	0.555	Supported
H5	CP -> SP	0.049	0.085	0.577	0.282	-0.129	0.160	Not supported

The structural model results show that social media usage significantly influenced innovation capability (Beta = 0.428, $p = 0.040$), supporting H1. Social media usage also had a significant positive effect on sustainable performance (Beta = 0.421, $p = 0.004$), supporting H3. However, social media usage did not significantly influence community participation (Beta = -0.185, $p = 0.323$), so H2 was not supported. Innovation capability significantly influenced sustainable performance (Beta = 0.262, $p = 0.041$), supporting H4. In contrast, community participation did not significantly influence sustainable performance (Beta = 0.049, $p = 0.282$), so H5 was not supported.

The coefficient of determination values showed substantial explained variance for innovation capability ($R^2 = 0.580$), moderate explained variance for sustainable performance ($R^2 = 0.407$), and weak explained variance for community participation ($R^2 = 0.020$). VIF values ranged from 1.002 to 1.900, confirming that multicollinearity was not a concern.

Common method bias was examined because all variables were measured using a single survey instrument. Procedural remedies included pre-testing the questionnaire, simplifying complex wording, avoiding double-barrelled questions, emphasizing respondents' own experience and assuring confidentiality. The thesis also reports the use of Harman's single-factor test and marker-variable items, while the structural model VIF values ranged from 1.002 to 1.900, below the conservative 3.3 threshold. These procedures and diagnostics suggest that common method bias was unlikely to threaten the interpretation of the model.

Table 5. Mediation and moderation effects

Hypothesis	Path	Beta	S.E.	t-value	p-value	Decision
H6	SMU -> IC -> SP	0.112	0.104	1.077	0.281	Not supported
H7	SMU -> CP -> SP	-0.009	0.046	0.197	0.843	Not supported
H8	DL x SMU -> IC	0.195	0.124	1.573	0.058	Not supported
H9	DL x SMU -> CP	-0.154	0.183	0.843	0.200	Not supported

Note: Decisions are based on one-tailed p-values at $\alpha = 0.05$ because all hypotheses were directional.

The mediation results show that innovation capability did not mediate the relationship between social media usage and sustainable performance (Beta = 0.112, $p = 0.281$), and community participation also did not mediate this relationship (Beta = -0.009, $p = 0.843$). Therefore, H6 and H7 were not supported.

The moderation results further indicate that digital leadership did not significantly moderate the relationship between social media usage and innovation capability ($\text{Beta} = 0.195$, $p = 0.058$) or the relationship between social media usage and community participation ($\text{Beta} = -0.154$, $p = 0.200$). Hence, H8 and H9 were not supported. The non-significant mediation and moderation results suggest that social media usage influences sustainable performance more directly than through the tested capability and participation pathways in this sample.

5. DISCUSSION

The findings indicate that social media usage is a key digital capability for CBT homestay operators in Sabah. Its significant effect on innovation capability suggests that social media provides operators with access to market information, tourist feedback, competitor practices and creative service ideas. This finding is consistent with tourism digitalisation studies showing that social media can support learning, co-creation and service improvement when operators actively interpret online interactions (Sigala, 2022; Zada et al., 2025). It also supports the RBV argument that digital resources become valuable when they are used to generate learning and adaptive capability. For rural operators with limited access to formal market intelligence, social media can function as a practical knowledge resource that supports service improvement and product innovation.

The significant direct relationship between social media usage and sustainable performance further shows that digital engagement can help CBT operators improve sustainability outcomes. Social media may strengthen performance by expanding promotional reach, communicating cultural and environmental values, improving customer interaction and attracting visitors directly. This result is consistent with recent arguments that digital transformation can enhance tourism competitiveness, but it extends prior work by demonstrating this effect in the rural CBT homestay context in Sabah (Gursoy & Saayman, 2023). The Sabah context is important because many operators are located in rural areas where conventional marketing channels are costly or limited.

Innovation capability also contributes positively to sustainable performance. This finding suggests that CBT operators who can adapt, develop new tourism products and improve their operating practices are better positioned to sustain their businesses economically, socially and environmentally. In the homestay context, innovation does not necessarily require radical technological change; it may include repackaging local experiences, improving service quality, developing eco-cultural activities and responding creatively to tourist expectations. This result is consistent with RBV and dynamic capability arguments that performance depends not only on available resources but also on the ability to renew and reconfigure them in response to changing markets (Borah et al., 2022; Teece, 2010).

However, social media usage did not significantly influence community participation. This result implies that digital communication alone is insufficient to mobilize deeper community involvement. CBT participation is shaped by trust, local leadership, shared benefits, time availability, power relations and governance structures. The unsupported result may differ from studies that emphasize digital participation because homestay operators may use social media mainly for promotion and customer communication rather than for local consultation, co-planning or shared decision-making. Unless social media is intentionally used

as a participatory governance tool, it may remain mainly a marketing channel rather than a community empowerment mechanism.

The non-significant mediation effects indicate that the pathway from social media usage to sustainable performance is more direct than indirect in this sample. Although social media strengthens innovation capability and innovation capability improves sustainable performance, the indirect effect may be weak because operators may still lack the resources, time or institutional support needed to fully convert digital learning into systematic innovation outcomes. Similarly, the non-significant moderation effects suggest that digital leadership may not yet be sufficiently institutionalized among Sabah CBT operators to strengthen the effects of social media on innovation or community participation. Leadership in CBT contexts is often informal and collective; therefore, digital leadership may require capacity-building, clearer governance roles and stronger digital confidence before it can operate as a powerful moderating capability.

Theoretically, this study extends RBV by demonstrating that social media usage and innovation capability are strategically relevant resources for sustainable CBT performance. The study contributes by applying RBV beyond conventional firm settings and showing how digital, innovation, social and leadership resources operate in community-based tourism enterprises. At the same time, the unsupported mediation and moderation paths show that not all digital or social resources automatically translate into sustainability outcomes. The findings therefore support a context-sensitive interpretation of RBV in community-based enterprises, where digital resources must be supported by organizational readiness, participatory structures and local capacity.

Practically, the findings suggest that CBT operators should use social media beyond basic promotion. Operators can analyse tourist feedback, track destination trends, co-create content with visitors and community members, and develop digital storytelling around local culture and sustainability practices. Tourism authorities and policymakers should provide targeted training in social media marketing, digital analytics, sustainable product innovation, online reputation management and community-based content creation. Programmes should also strengthen digital leadership by training homestay coordinators and community representatives to guide digital planning, coordinate content quality and encourage inclusive participation. Policy support should include rural connectivity, shared digital marketing platforms, mentoring schemes and monitoring indicators that link digital capability-building with economic, social, cultural and environmental outcomes.

6. CONCLUSION

This study examined how social media usage, digital leadership, innovation capability and community participation influence the sustainable performance of CBT homestay operators in Sabah. The results show that social media usage significantly enhances both innovation capability and sustainable performance, while innovation capability also contributes significantly to sustainable performance. However, community participation, mediation effects and digital leadership moderation effects were not supported. These findings indicate that the study's novelty lies in integrating digital, innovation, leadership and social capabilities within an RBV framework and testing the model in the under-researched context of Sabah CBT homestay operators.

The theoretical contribution of the study is its extension of RBV to rural community-based tourism enterprises. The findings show that accessible digital resources such as social media can become valuable when used for learning, market engagement and innovation, but social and leadership resources require stronger organization before they can produce measurable performance outcomes. Managerially, the study indicates that CBT operators should treat social media as a strategic learning and innovation tool rather than as a passive promotional channel. Policy-wise, the findings suggest that government agencies and tourism authorities should combine digital skills training with innovation mentoring, rural connectivity support, participatory governance mechanisms and monitoring indicators that capture economic, social, cultural and environmental outcomes.

The study also has limitations. First, it used a cross-sectional survey design, which limits the ability to establish temporal causal relationships. Second, the data were self-reported by CBT homestay operators, so the findings may be influenced by respondent perception and common method variance despite the procedural and statistical remedies applied. Third, the sample was limited to registered CBT homestay operators in Sabah, which may restrict generalizability to unregistered operators, other Malaysian states or international CBT destinations. Fourth, the study relied on perceptual indicators of sustainable performance rather than objective administrative or financial performance data.

Future research may extend this model using longitudinal data, objective performance indicators, mixed methods and comparative samples from other Malaysian states or international CBT destinations. Qualitative interviews or case studies could also explain why community participation and digital leadership did not function as significant mechanisms in this sample. Overall, the findings indicate that digital engagement is important for CBT sustainability, but its benefits are not automatic. For Sabah's CBT homestay sector, sustainable digital transformation should therefore combine social media capability, innovation training, digital leadership development and structured community involvement.

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8. CONFLICT OF INTEREST STATEMENT

The authors declare that this research was conducted in the absence of any self-benefits, commercial, or financial conflicts and declare no conflicting interests with the funding organization.

9. AUTHORS' CONTRIBUTIONS

JP Masundang: Conceptualization, methodology, formal analysis, investigation, data curation, and writing-original draft. **Imelda Gisip:** Supervision, conceptualization, validation, and writing-review and editing. **Cynthia Dawayan:** Supervision, validation, and writing-review and editing.

10. DECLARATION OF GENERATIVE AI IN THE WRITING PROCESS

During the preparation of this work, the author(s) used OpenAI ChatGPT to assist with language refinement, organization of thesis material into journal manuscript format, and formatting review. After using this tool/service, the author(s) reviewed and edited the content as needed and take full responsibility for the content of the publication

11. DATA AVAILABILITY/SUPPLEMENTARY MATERIALS

The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

12. ETHICS STATEMENT

This study involved survey responses from CBT homestay operators. Participation was voluntary, and confidentiality and anonymity were observed during data collection and analysis. No animal subjects were involved.

13. REFERENCES

- Abdullah, H., Wahab, S., Shahibi, M. S., Malim, M. R., & Ali, J. (2013). Model Integrasi Indeks Utama Prestasi (MIIUPA-KPIAs) Agensi Payung Industri Homestay Melayu Malaysia. *Jurnal Pemikiran dan Kepimpinan Melayu (IMPAK)*, 53-71.
- Arnstein, S. R. (1969). A ladder of citizen participation. *Journal of the American Institute of Planners*, 35(4), 216-224. <https://doi.org/10.1080/01944366908977225>
- Asker, S., Boronyak, L., Carrard, N., & Paddon, M. (2010). *Effective community-based tourism: A best practice manual*. Sustainable Tourism Cooperative Research Centre.
- Barney, J. (1991). Firm resources and sustained competitive advantage. *Journal of Management*, 17(1), 99-120. <https://doi.org/10.1177/014920639101700108>
- Borah, S. B., Malik, A., Sharmeen, F., & Paul, J. (2022). Resources and capabilities for value creation, competitive advantage, and innovation: A review and research agenda. *Journal of Business Research*, 145, 50-68. <https://doi.org/10.1016/j.jbusres.2022.02.010>
- Buhalis, D., & Sinarta, Y. (2019). Real-time co-creation and nowness service: Lessons from tourism and hospitality. *Journal of Travel & Tourism Marketing*, 36(5), 563-582. <https://doi.org/10.1080/10548408.2019.1592059>
- Calantone, R. J., Cavusgil, S. T., & Zhao, Y. (2002). Learning orientation, firm innovation capability, and firm performance. *Industrial Marketing Management*, 31(6), 515-24. [https://doi.org/10.1016/S0019-8501\(01\)00203-6](https://doi.org/10.1016/S0019-8501(01)00203-6)
- Dangi, T. B., & Petrick, J. F. (2021). Enhancing the role of tourism governance to improve collaborative participation, responsiveness, representation, and inclusion for sustainable community-based tourism: A case study. *International Journal of Tourism Cities*, 7, 1029-1048.
- Elkington, J. (1997). *Cannibals with forks: The triple bottom line of 21st century business*. Capstone Publishing.

- Faul, F., Erdfelder, E., Lang, A.-G., & Buchner, A. (2007). G*Power 3: A flexible statistical power analysis program for the social, behavioral, and biomedical sciences. *Behavior Research Methods*, 39, 175-191.
- Faul, F., Erdfelder, E., Buchner, A., & Lang, A.-G. (2009). Statistical power analyses using G*Power 3.1: Tests for correlation and regression analyses. *Behavior Research Methods*, 41, 1149-1160.
- Fennell, D. A., Garrod, B., & Gao, Z. (2022). Tourism ethics and sustainable performance: Reframing responsibility in the post-pandemic era. *Journal of Sustainable Tourism*, 30(8), 1650-1668. <https://doi.org/10.1080/09669582.2021.1992667>
- Freije, A. M., Rodriguez, A., & Gonzalez, T. F. (2021). Innovation capabilities and firm performance: The role of innovation intensity and absorptive capacity. *European Journal of Innovation Management*, 24(5), 1413-1434. <https://doi.org/10.1108/EJIM-04-2020-0148>
- Giampiccoli, A., & Saayman, M. (2017). Community-based tourism development model and community participation. *African Journal of Hospitality, Tourism and Leisure*, 6(1), 1-18.
- Gursoy, D., & Saayman, M. (2023). Perceived impacts of digital transformation on the tourism and hospitality industry: A global perspective. *Tourism Management Perspectives*, 45, 101080. <https://doi.org/10.1016/j.tmp.2023.101080>
- Hair, J. F., Matthews, L. M., Matthews, R. L., & Sarstedt, M. (2017). PLS-SEM or CB-SEM: Updated guidelines on which method to use. *International Journal of Multivariate Data Analysis*, 1(2), 107-123.
- Hjalager, A. M. (2010). A review of innovation research in tourism. *Tourism Management*, 31(1), 1-12. <https://doi.org/10.1016/j.tourman.2009.08.012>
- Jamaluddin, M., Othman, N., & Awang, A. R. (2012). Community based homestay programme: A personal experience. *Procedia - Social and Behavioral Sciences*, 42, 451-459.
- Kaplan, A. M., & Haenlein, M. (2010). Users of the world, unite! The challenges and opportunities of social media. *Business Horizons*, 53(1), 59-68. <https://doi.org/10.1016/j.bushor.2009.09.003>
- Kietzmann, J. H., Hermkens, K., McCarthy, I. P., & Silvestre, B. S. (2011). Social media? Get serious! Understanding the functional building blocks of social media. *Business Horizons*, 54(3), 241-251. <https://doi.org/10.1016/j.bushor.2011.01.005>
- Kontogeorgopoulos, N., Churyen, A., & Duangsaeng, V. (2015). Homestay tourism and the commercialization of the rural home in Thailand. *Asia Pacific Journal of Tourism Research*, 20(1), 29-50. <https://doi.org/10.1080/10941665.2013.852119>
- Kunjuraman, V. (2019). Kajian terhadap syarat dan fenomena semasa dalam pembangunan program homestay di Malaysia. *Geografia-Malaysian Journal of Society and Space*, 15(1), 84-97. <https://doi.org/10.17576/geo-2019-1501-07>
- Lawson, B., & Samson, D. (2001). Developing innovation capability in organisations: A dynamic capabilities approach. *International Journal of Innovation Management*, 5(3), 377-400. <https://doi.org/10.1142/S1363919601000427>
- Mapjabil, J., & Che Ismail, A. (2012). Homestay programme and rural community development in Malaysia: An overview. In J. Mapjabil & A. Che Ismail (Eds.), *Tourism and community development: Asian practices* (pp. 135-146). Penerbit Universiti Kebangsaan Malaysia.
- Mihardjo, L. W. W., Sasmoko, Alamsjah, F., & Elidjen. (2019). Digital transformation: Digital leadership role in developing business model innovation mediated by co-creation strategy for telecommunication incumbent firms. *IntechOpen*.

- Ministry of Tourism, Arts and Culture Malaysia. (2023). Report on community-based tourism initiatives in Malaysia.
- Munir, T., Jamal, R. M. A., Watts, S., & Macawile, R. M. C. (2025). Green competitiveness determinants: Dynamic innovative capabilities in hotel-tourism industry. *Anatolia*. <https://doi.org/10.1080/13032917.2025.2458846>
- Murphy, P. E. (1985). *Tourism: A community approach*. Methuen.
- Othman, N. K., & Buang, N. A. (2021). Kualiti perkhidmatan dan kepuasan pelanggan homestay menggunakan Model Servqual. *Advanced International Journal of Business, Entrepreneurship and SMEs*, 3(7), 59-74.
- Pretty, J. N. (1995). Participatory learning for sustainable agriculture. *World Development*, 23(8), 1247-1263. [https://doi.org/10.1016/0305-750X\(95\)00046-F](https://doi.org/10.1016/0305-750X(95)00046-F)
- Qin, X., Wall, G., & Liu, X. (2021). Community participation and social capital in tourism planning and development: A case from rural China. *Sustainability*, 13(4), 2280. <https://doi.org/10.3390/su13042280>
- Sabah Tourism Board. (2025). Statistic report on community-based tourism in Sabah [Unpublished report].
- Saunila, M., & Ukko, J. (2012). A conceptual framework for the measurement of innovation capability and its effects. *Baltic Journal of Management*, 7(4), 355-375. <https://doi.org/10.1108/17465261211272139>
- Sigala, M. (2020). Tourism and COVID-19: Impacts and implications for advancing and resetting industry and research. *Journal of Business Research*, 117, 312-321. <https://doi.org/10.1016/j.jbusres.2020.06.015>
- Sigala, M. (2022). Social media and the future of the hospitality and tourism industry: Perspectives from developing countries. *Tourism Management Perspectives*, 41, 100927. <https://doi.org/10.1016/j.tmp.2021.100927>
- Teece, D. J. (2010). Business models, business strategy and innovation. *Long Range Planning*, 43(2-3), 172-194. <https://doi.org/10.1016/j.lrp.2009.07.003>
- Tosun, C. (2000). Limits to community participation in the tourism development process in developing countries. *Tourism Management*, 21(6), 613-633. [https://doi.org/10.1016/S0261-5177\(00\)00009-1](https://doi.org/10.1016/S0261-5177(00)00009-1)
- Walter, P., Regmi, K. D., & Khanal, P. R. (2018). Host learning in community-based ecotourism in Nepal: The case of Sirubari and Ghalegaun homestays. *Tourism Management Perspectives*, 26, 49-58.
- Wernerfelt, B. (1984). A resource-based view of the firm. *Strategic Management Journal*, 5(2), 171-180. <https://doi.org/10.1002/smj.4250050207>
- Zada, M., Erkol Bayram, G., Contreras-Barraza, N., Kaptangil, K., & Aylan, S. (2025). Integrating social media-driven service innovation and sustainable leadership: Advancing sustainable practices in tourism and hospitality. *Sustainability*, 17(2), 399. <https://doi.org/10.3390/su17020399>
- Zeng, H., Zhang, Y., Li, J., & Morrison, A. M. (2024). Sustainable performance in community-based tourism: Integrating environmental, social, and economic perspectives. *Sustainability*, 16(1), 347. <https://doi.org/10.3390/su16010347>



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