INTERNATIONAL JOURNAL OF MULTIDISCIPLINARY RESEARCH AND ANALYSIS

ISSN(print): 2643-9840, ISSN(online): 2643-9875

Volume 09 Issue 02 February 2026

DOI: 10.47191/ijmra/v9-i2-52, Impact Factor: 8.266

Page No. 867-883

Causal Relationship between Development Communication, Social Capital, Digital Capability, and Community-Based Tourism

Retor Aquinaldo Wirabuanaputera Kaligis[1], Helpris Estaswara[2], Gati Dwi Yuliana[3], Sudarto[4], Inayah Nurfadilah[5]

[1,2,3,4,5] Faculty of Communication Science, Universitas Pancasila, Jakarta, Indonesia

ABSTRACT: The development of tourism villages in Indonesia faces structural challenges in the form of limited digitalization, weak integration of the creative economy, and suboptimal participatory development communication. This study aims to analyze efforts to develop digital-based Community-Based Tourism (CBT) through the causal relationship between development communication, social capital, and digital capability in three tourism villages in Bogor Regency, Indonesia. This study used a quantitative approach with a survey design with 86 respondents consisting of rural micro-entrepreneurs who are also tourism village actors. Data analysis was conducted using path analysis to test direct, indirect (mediation), and moderating effects. The results show that development communication has a significant effect on digital-based CBT and digital capability. Digital capability has been shown to have a strong influence on strengthening digital-based CBT and acts as a mediator in the relationship between development communication and CBT. In addition, social capital moderates the relationship between development communication and digital capability, between digital capability and digital-based CBT, and between development communication and digital-based CBT. These findings confirm that the success of digital-based CBT is determined not only by technological capacity, but also by the quality of development communication and the strength of local community social capital.

KEYWORDS: development communication; digital capability; social capital; community-based tourism; rural tourism

I. INTRODUCTION

Tourism villages are one of the government's strategies to empower local communities through sustainable tourism. The tourism sector plays an active role in encouraging community participation in the development process, and within the context of tourism development, every activity undertaken must have an impact, both positive and negative (Lubis, 2023). Since the COVID-19 pandemic, the Indonesian government has designated tourism villages as the spearhead of tourism development to boost economic growth, public welfare, preserve nature, and advance culture. The development of tourism villages also serves as a form of accelerating integrated village development (Ekon.go.id., 2021); (Krisnawati, 2021).

The Ministry of Tourism defined a tourist village as a village with unique potential and tourist attractions, including natural, cultural, and man-made/creative works (Kementerian Pariwisata, 2019). As of October 2024, there were 6,026 tourist villages in Indonesia (Candra, 2024). However, the existence of tourist villages does not guarantee significant improvements in the welfare and empowerment of local communities.

Various studies showed that residents often struggle to access economic benefits due to limited human resource capacity, access to capital, and digital skills, resulting in competitiveness with newcomer businesses (Manurung & Rahmayani, 2022; Lazuardina & Ghassani, 2023). This study examines efforts to develop tourism villages in Tamansari District, Bogor Regency, a buffer zone for the Jakarta Metropolitan City. There are three tourism villages there: Tamansari Village, Pasir Eurih Village, and Sukajadi Village. With tourist attractions such as lakes, waterfalls, Siliwangi heritage sites, temples, and arts, all three have natural, cultural, and economic potential.

Research findings from researchers in the Tamansari District, Bogor Regency, over three years (2022-2024) indicated that issues with digital media utilization, digital culture, and a lack of external networks make it difficult for them to enter the digital economy ecosystem (Kaligis et al., 2024). Local rural micro-entrepreneurs' systems have also not been optimally adapted to support digital marketing communications (Kaligis, 2025). Without digital promotion, tourism villages, along with their products and various traditional Sundanese crafts, remain less well-known to the wider community. The presence of local micro-

entrepreneurs and tourism village activities in the Tamansari District also does not fully support each other.

Community empowerment and digital transformation have become a major focus in tourism development, including rural tourism. A study by (Lapuz, 2023) emphasized that local community empowerment is a key factor in driving digital transformation in rural tourism, where technology is used not only for promotion but also to strengthen community involvement in destination planning (local community empowerment). These findings suggest that digitalization can expand the role of communities in the overall tourism development process, including economic, social, and political aspects.

The development of community participation and empowerment in tourism can be viewed from the perspective of Community-based Tourism (CBT) (Giampiccoli & Saayman, 2018). CBT can be defined as the transformation of community-based tourism through digital technologies that enhance community participation, destination visibility, and sustainable management (Iqbal et al., 2022, Primananda et al., 2022, Zolfani et al., 2015, Novianty et al., 2025). CBT emphasizes the importance of social capital and governance that pays special attention to local residents, ensures the positive impact of tourism on communities, preserves natural and cultural heritage, and does not create social disparities (Rocca & Zielinski, 2022). Government development communication can only create synergy if it involves inclusive participation, allows communities to voice their needs, and invites them to contribute to the decision-making process (Chowdhury & Gow, 2024).

In Indonesia, studies on tourism development from a CBT perspective have begun to be widely conducted, including in Ubud, Bali (Girindra et al., 2023); Trenggalek Regency (Anggraeni & Rahmawati, 2021); Tangerang City (Sarudin, 2023); and Langkat Regency, North Sumatra (Manurung & Rahmayani, 2022). However, most CBT research in Indonesia focused on descriptive aspects of governance, community participation, and economic impact (Anggraeni & Rahmawati, 2021; Girindra et al., 2023; Manurung & Rahmayani, 2022). Furthermore, recent literature confirmed that rural tourism transformation is increasingly determined by the digital capability of local communities and their ability to integrate digital technologies into sustainable tourism practices (Rocca & Zielinski, 2022)

There are three major gaps in the existing literature. First, CBT research in Indonesia generally does not position digital capability as a causal mechanism but rather as a supporting factor or external context. However, recent studies have shown that digital capability is a dynamic capability that determines the adaptive capacity and sustainability of community-based tourism destinations (Kim & Jin, 2024, Wang et al., 2024).

Second, development communication studies are still predominantly positioned normatively as a process of policy socialization or information delivery, without empirical examination of how development communication works through intermediary variables in promoting the success of CBT digitalization. The causal relationship between development communication and CBT, particularly through community digital capability, is still relatively rarely tested quantitatively.

Third, although social capital is recognized as an important foundation for CBT, most studies have not examined its role as a moderating variable that strengthens or weakens the influence of development communication and digital capability on CBT. Recent literature emphasized that the strength of trust, social networks, and norms of civic engagement determine the successful adoption of digital technologies in rural communities (Neira et al., 2019, Rocca & Zielinski, 2022). The purpose of this study is to analyze efforts to develop digital-based CBT through the causal relationship between government development communication, social capital as the community's internal potential, and digital capability in three tourism villages in Tamansari District, Bogor Regency.

II. LITERATURE REVIEW

A. Correlation between Development Communication, Digital Capability, and the digitalization of CBT

Development communication plays a strategic role in encouraging community participation, building collective awareness, and strengthening local capacity in the development process. In the context of CBT, development communication functions not only as a means of conveying policy information but also as a dialogic process that enables local communities to participate in the planning, management, and evaluation of tourism activities (Chowdhury & Gow, 2024). CBT emphasizes that the control and benefits of tourism rest with local communities; the effectiveness of digital-based CBT depends heavily on the quality of inclusive and participatory development communication. Therefore, this study hypothesizes:

H1: *Development communication has a significant impact on Digital-Based CBT*

Digital capability creates business opportunities and increases market competitiveness, which can be viewed through two components. First, *digital literacy*, which encompasses the ability to understand and utilize digital information and technology. Second, *digital fluency*, which encompasses the ability to apply, innovate, and adapt digital tools, platforms, and strategies. (Kim & Jin, 2024). Digital capability is dynamic and essential for developing innovative products, services, and processes (Wang et al., 2024), making it essential for tourism village actors.

Causal Relationship between Development Communication, Social Capital, Digital Capability, and Community-Based Tourism

The development of digital capability in rural communities is inseparable from a systematic and sustainable development communication process. Through this process, the government and stakeholders can transfer knowledge, build digital literacy, and encourage the adoption of digital technologies contextually tailored to local community needs. In the context of tourism villages, development communication serves as a social learning mechanism that accelerates the improvement of digital literacy and fluency among tourism village actors. Therefore, the following hypothesis is formulated:

H2: *Development communication has a significant impact on digital capability.*

Digital capability enables tourism village actors to increase destination visibility, expand market reach, and integrate tourism activities with the digital-based creative economy. Digital literacy and fluency facilitate the use of social media, digital platforms, and information technology for promotion, reservations, and sustainable destination management. Therefore, digital capability are a crucial prerequisite for strengthening CBT. Based on these arguments, the following hypothesis is proposed:

H3: *Digital capability has a significant impact on Digital-Based CBT.*

Development communication does not necessarily have a direct impact on strengthening the digitalization of CBT without the support of community digital capability. Digital capability acts as an intervening mechanism that translates development messages, programs, and policies into digital-based tourism practices. In other words, development communication enhances CBT by upgrading the digital capability of local actors. Therefore, the following hypothesis is formulated:

H4: *Digital capability mediates the relationship between development communication and Digital-Based CBT.*

B. Social Capital as a Moderating Variable

According to Neira et al. (2019) social capital can be viewed across three dimensions: trust, social networks, and norms of civic engagement. Trust is a key element of social capital for sharing fundamental values, creating connections between people, enhancing cooperation, and efficiencies in transactions, both economic and social. Social networks are a form of tangible social interaction for both individuals within the network and external parties, such as informal volunteering and organizational membership. Norms of civic engagement refer to civic participation in social institutions to channel aspirations and achieve well-being. In Tamansari District, Bogor Regency, social capital is developed by local micro-entrepreneurs to support each other by building trust, social networks, and norms of civic engagement. However, efforts to develop social capital as an internal community potential for empowerment have not yet been aligned with local government policies (Kaligis et al., 2024).

Research by Vongvisitsin et al. (2024) explain how social capital can function as both a driving force and a barrier in the development of community-based tourism. This depends on the dynamics of social networks within the community. That study shows that, in addition to positive factors such as cooperation, social capital can also give rise to conflict or competition if not managed properly. These findings provide a theoretical basis for the use of social capital, not only as a factor of community participation but also as a potentially dualistic network structure in CBT development.

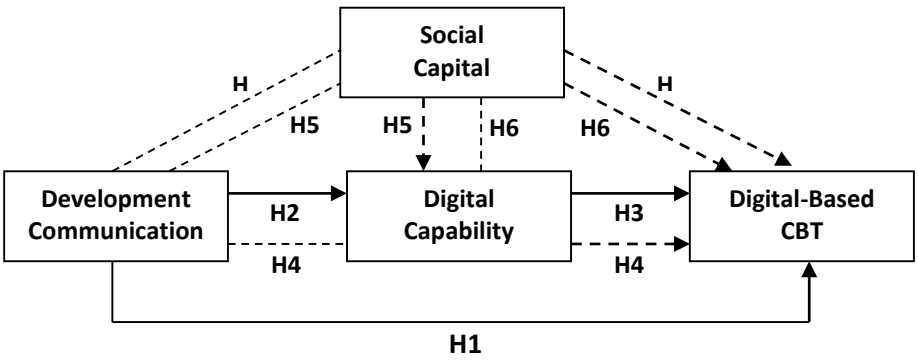


Figure 1. Conceptual Model

Based on Figure 1, social capital strengthens the effectiveness of development communication and digital capability. In communities with strong social capital, digital learning occurs more quickly due to trust and collaboration among members. Social capital also strengthens the impact of digital capability on CBT through networking and collective participation.

Therefore, three moderation hypotheses are proposed:

H5: *Social capital moderates the relationship between development communication and digital capability.*

H6: *Social capital moderates the relationship between digital capability and Digital-Based CBT.*

H7: *Social capital moderates the relationship between development communication and Digital-Based CBT.*

The novelty of this research lies in the development and testing of an integrated causal model linking development communication, digital capability, social capital, and digital-based CBT within a single empirical framework. Specifically, this research offers three novel contributions. First, it positions digital capability as a key mediator explaining how development communication translates into digital-based CBT practices.

Second, this study examines social capital as a moderating variable, thus enriching our understanding of the role of social context in strengthening the digital transformation of rural tourism. Third, this study provides empirical evidence from the context of rural tourism villages in Indonesia, which remains relatively underrepresented in the international literature on the digitalization of CBT. Thus, this study not only fills a gap in the literature but also shifts the study of development communication from a normative approach to a causal-empirical one in the context of community-based sustainable tourism.

III. METHOD

A. Research Design and Sampling

This study employed a quantitative approach with an explanatory survey design to test causal relationships between variables. The data collection technique employed cluster sampling, providing equal opportunity to creative entrepreneurs directly involved in tourism activities in Tamansari, Pasir Eurih, and Sukajadi Villages. The 86 respondents were deemed adequate for path analysis based on the minimum sample size rule for multivariate regression, which is 10–15 respondents per latent variable (Hair et al., 2020). Furthermore, this sample size also met the statistical power principle for detecting moderate to strong effects in causal models. Then, the research objective is theory refinement rather than population-level generalization.

B. Measurement and Data Analysis

This research instrument used a four-point Likert scale questionnaire, namely Strongly Disagree (1), Disagree (2), Agree (3), and Strongly Agree (4). Validity testing was conducted using Pearson Correlation, while reliability was measured using Cronbach's Alpha with a threshold value ≥ 0.70 to assess stability and internal consistency (Hair et al., 2020). This study used the path coefficient to examine the causal relationship between development communication, social capital, digital capability, and digital-based CBT. Path analysis data processing used multiple linear regression analysis in SPSS to test direct, mediation, and moderation effects.

C. Evaluation of Measurement Models

Table 1. Validity and Reliability

No	Variable	Validity	Realibility
1	Communication Development	Valid	0.970
2	Digital Capability	Valid	0.963
3	Social Capital	Valid	0.975
4	Digital-Based CBT	Valid	0.971

Validity = all indicators loadings are significant, $p < 0.001$

Based on Table 1, the results of the measurement model evaluation indicate excellent instrument quality. All constructs—development communication, digital capability, social capital, and digital-based CBT—had Cronbach's alpha values between 0.963 and 0.975, far exceeding the recommended threshold of 0.70. This value indicates very high internal consistency and strong instrument reliability.

Validity testing also showed that all indicators had statistically significant loadings ($p < 0.001$), indicating convergent validity. Therefore, the research instrument is deemed capable of accurately representing the latent constructs, allowing the results of the structural analysis to be interpreted with a high degree of confidence.

IV. RESULTS AND DISCUSSION

A. Results

i. Respondents Profile

The respondent profile revealed several structural characteristics that are important for understanding the empirical

findings of this study (see Appendix Table A1). The predominance of female respondents (60.5%) reflected the reality of micro-enterprises and rural tourism activities in Indonesia, where women play a central role in home-based businesses, local culinary arts, and culture-based creative products. Women are key actors in CBT and rural entrepreneurship.

In terms of generational characteristics, respondents were dominated by Generation Y (34.9%) and Generation X (30.2%), followed by Generation Z (29.1%). This composition indicated a relatively high potential for digital adoption but also indicated a digital skills gap across generations. Recent studies on tourism digitalization confirmed that younger age groups tend to be more adaptable to social media and digital platforms, but are often hampered by limited access to devices and training in rural areas.

The majority of respondents had a high school education (57%), with a relatively limited proportion having higher education. This situation directly impacts variations in digital capability, particularly the gap between basic digital literacy and advanced digital fluency. In terms of digital infrastructure, almost all respondents owned smartphones (97.7%), but laptop ownership (32.6%) and personal computers (17.4%) remained low. This pattern confirms the mobile-first but capability-limited phenomenon, as discussed in several literatures on the rural digital divide. Smartphones enable access to social media, but are not yet sufficient to support more complex digital activities such as professional content management, online reservation systems, and data-driven marketing.

The majority of their income as creative tourism entrepreneurs was less than Rp 2 million per month. This amount was less than half of the 2026 Bogor Regency regional minimum wage of Rp 5.16 million per month, or US$306.26 (US$1 = Rp 16,909, exchange rate on January 19, 2026). This means that income from the tourism sector is still insufficient to cover daily living expenses. Therefore, in addition to those still attending school/college and being housewives, some respondents also have other jobs and businesses.

ii. Descriptive Results of Development Communication: Strong Normatively, Moderate Transformatively

The descriptive results of development communication showed relatively high and consistent mean values across all dimensions (3.03–3.10), with low to moderate standard deviations (see Table 2 and Appendix Table B1). This pattern indicates that respondents have a fairly positive and homogeneous perception of development communication practices implemented by local governments. Policy transparency, cross-sector collaboration, and two-way communication are normatively perceived by tourism village actors and micro-entrepreneurs.

The policy transparency dimension for tourism villages had a mean value ranging from 3.03 to 3.10 with a relatively low SD (0.74 to 0.82), indicating positive and relatively homogeneous perceptions regarding access to information and local government responsiveness. The cross-sector collaboration dimension also showed a consistent mean of 3.09–3.10 (SD ±0.71–0.74), indicating that respondents perceive a drive for cooperation, although its implementation is not yet fully optimal. Meanwhile, the two-way communication strategy had a mean of 3.05–3.09 (SD ±0.68–0.76), which indicated that the government's dialogue forum and use of social media were already running, but still require strengthening of intensity and inclusiveness.

Table 2: Descriptive Results of Development Communication

No.	Dimension	Indicator	Mean	SD
1	Policy transparency of Tourist Village	DC1-1	3.10	0.797
		DC1-2	3.05	0.796
		DC1-3	3.09	0.821
		DC1-4	3.03	0.743
2	Cross-sector collaboration	DC2-1	3.10	0.720
		DC2-2	3.10	0.720
		DC2-3	3.10	0.736
		DC2-4	3.09	0.713
3	Strategy of two-way communication	DC3-1	3.07	0.764
		DC3-2	3.09	0.680
		DC3-3	3.05	0.701
		DC3-4	3.08	0.690

Source: Authors' own work (2025 data collection)

However, the absence of a very high mean score (>3.30) indicated that development communication remains at the procedural adequacy level, having not yet reached transformational depth. This meant that the local government was present as a

communicator but had not yet fully functioned as a facilitator of collective learning. This was reflected in indicators of community involvement in digital tourism village policies and the use of social media as a discussion forum, which remain within the mean range of around 3.05–3.08.

Theoretically, these findings confirmed the critique in contemporary development communication literature that development communication often stops at information disclosure, but fails to fully build communities' reflective capacity and bargaining power in decision-making (Chowdhury & Gow, 2024). In the context of digital-based CBT, this explained why development communication has a significant impact, but still requires digital capability as a mediating variable to produce a substantive impact.

iii. Descriptive Results of Social Capital: Strong Social Base but Not Yet Fully Institutionalized

Social capital emerged as the variable with the highest mean value and the lowest standard deviation compared to the other variables. The dimensions of trust, social networks, and civic engagement norms all ranged in the mean range of 3.12–3.28 (Table 3 and Appendix Table B2). This pattern indicates that social cohesion in the three tourism villages is relatively strong and stable, and serves as a key internal capital for CBT development.

The civic engagement norms dimension showed the highest mean value, particularly for the indicators of deliberation, fairness, and willingness to improve the quality of digital products and technology. This finding indicates a collective ethos that supports CBT principles, particularly an orientation toward togetherness and sustainability. However, the indicator of trust in local government was relatively lower than that of trust among rural micro-entrepreneurs, indicating an institutional distance between communities and state actors.

Table 3: Descriptive Results of Social Capital

No.	Dimension	Indicator	Mean	SD
1	Trust	SC1-1	3.20	0.629
		SC1-2	3.22	0.621
		SC1-3	3.21	0.671
		SC1-4	3.12	0.640
		SC1-5	3.21	0.596
2	Social networks	SC2-1	3.13	0.610
		SC2-2	3.17	0.636
		SC2-3	3.14	0.617
		SC2-4	3.12	0.562
		SC2-5	3.28	0.587
3	Norms of civic engagement	SC3-1	3.27	0.602
		SC3-2	3.19	0.564
		SC3-3	3.27	0.622
		SC3-4	3.24	0.631
		SC3-5	3.26	0.578

Source: Authors' own work (2025 data collection)

From a social capital theory perspective, this condition reflects the dominance of bonding social capital over bridging and linking social capital. Horizontal networks among citizens are strong, but vertical networks with the government and external actors are not yet fully optimized. This finding explains why social capital plays a strong role as a moderating variable: it strengthens causal relationships when digitalization and development communication processes are able to embed themselves within existing social structures.

iv. Descriptive Results of Digital Capability: Literacy is Relatively Good, Fluency is Still Limited

Digital capability exhibits an interesting and complex pattern. The digital literacy dimension has a relatively high mean (3.01–3.30) with a low standard deviation, particularly for indicators such as the use of social media for promotion and understanding digital information (Table 4 dan Appendix Table B3). This reflects the successful adoption of basic digital technology among tourism village actors, which aligns with the mobile-first digital adoption phenomenon in rural areas.

However, indicators related to data management, software use for business activities, and digital platform integration

have lower means and higher standard deviations. This pattern suggests that digital literacy has not yet fully developed into digital managerial capabilities. Meanwhile, the digital fluency dimension shows a mean of 3.07–3.21 (SD ±0.49–0.65), indicating that digital adaptability and innovation capabilities have developed, but are not yet fully distributed among tourism village actors.

Table 4: Descriptive Results of Digital Capability

No.	Dimension	Indicator	Mean	SD
1	Digital literacy	DCap1-1	3.24	0.484
		DCap1-2	3.24	0.459
		DCap1-3	3.30	0.487
		DCap1-4	3.13	0.590
		DCap1-5	3.12	0.622
		DCap1-6	3.27	0.518
		DCap1-7	3.01	0.677
		DCap1-8	3.15	0.543
2	Digital fluency	DCap2-1	3.14	0.557
		DCap2-2	3.21	0.488
		DCap2-3	3.12	0.541
		DCap2-4	3.12	0.562
		DCap2-5	3.20	0.527
		DCap2-6	3.20	0.505
		DCap2-7	3.09	0.566
		DCap2-8	3.07	0.647

Source: Authors' own work (2025 data collection)

Theoretically, these findings strengthen the argument that digital capability are tiered (capability ladder). Digital literacy enables access, but only digital fluency enables the transformation of CBT practices. This explains why digital capability has the strongest influence and acts as the primary mediator in this study's causal model.

v. Descriptive Results of Digital-Based CBT: Participatory But Not Fully Inclusive

Descriptive findings from Digital-Based CBT indicate that community participation, destination visibility, and sustainable management are high, but unevenly distributed. The dimension of community participation through digital technology showed the highest mean score for the coordination and collaboration aspect. Meanwhile, the indicator for the involvement of vulnerable groups had the lowest mean (2.97). (Table 5 and Appendix Table B4)

This pattern indicates that digitalization of CBT tends to strengthen the participation of groups that are already relatively active, but has not yet fully reached marginalized groups. This is consistent with literature criticism that digital tourism risks reinforcing selective inclusion if not balanced by affirmative policies.

Table 5: Descriptive Results of Digital-Based CBT

No.	Dimensi	Indikator	Mean	SD
1	Community participation through digital technology	CBT1-1	3.23	0.524
		CBT1-2	3.21	0.488
		CBT1-3	2.97	0.659
		CBT1-4	3.14	0.577
		CBT1-5	3.22	0.470
2	Destination visibility through digital technology	CBT2-1	3.10	0.575
		CBT2-2	3.15	0.584
		CBT2-3	3.24	0.530
		CBT2-4	3.24	0.484
		CBT2-5	3.21	0.576
3	Sustainable management through digital technology	CBT3-1	3.00	0.669
		CBT3-2	3.00	0.703
		CBT3-3	3.10	0.651
		CBT3-4	3.16	0.550
		CBT3-5	3.29	0.506

Source: Authors' own work (2025 data collection)

In the destination visibility dimension, the indicators for increased visits and cultural promotion had high mean scores, indicating the effectiveness of digital media as a branding tool. However, the sustainable management dimension showed more moderate scores, particularly for the formal digital systems for finance and conservation. These findings indicate that CBT digitalization remains stronger in the external aspect (promotion) than in the internal aspect (governance).

vi. Structural Model Analysis and Hypothesis Testing

Table 6. Hypothesis Testing – Direct and Indirect Effect

No	Hypothesis	Path Coefficients	Decision
Direct Effect			
1	ComDev → CBT	0.619***	Supported
2	ComDev → Digital Cap.	0.510***	Supported
3	Digital Capability → CBT	0.838***	Supported
Indirect Effect			
4	ComDev → Digital Cap → CBT	0.428***	Supported
5	ComDev → SC → Digital Cap	0.433***	Supported
6	Digital Cap → SC → CBT	0.337***	Supported
7	ComDev → SC → CBT	0.537***	Supported

*p < 0.05; **p < 0.01; ***p < 0.001

ComDev = Communication Development

Digital Cap = Digital Capability

SC = Social Capital

CBT = Community-Based Tourism

A structural model analysis was conducted to test the seven proposed research hypotheses. Hypothesis testing was based on the path coefficient (β) and the significance level (p-value). A summary of the hypothesis testing results is presented in Table X, while substantive explanations are presented as follows:

H1 states that development communication has a positive effect on Digital-Based CBT

The analysis results indicate that development communication has a positive and significant effect on Digital-Based CBT (β = 0.619; p < 0.001). Thus, H1 is accepted. This finding indicates that the more effective development communication conducted by the government and stakeholders, the stronger the digital-based CBT practices that develop at the community level. When development communication is transparent, collaborative, and dialogical, local communities become not merely beneficiaries but

also active actors in tourism management. However, the magnitude of this effect indicates that development communication acts as a structural foundation, not the sole factor determining digital-based CBT transformation.

H2 states that development communication has a positive effect on digital capability.

The test results show a positive and significant effect of development communication on digital capability ($\beta = 0.510$; $p < 0.001$), thus H2 is accepted. This indicates that the development communication process, through training, mentoring, and dialogue, is a primary mechanism in building the digital capacity of tourism village communities. Theoretically, this finding reinforces the view that development communication functions as a collective learning mechanism that enables knowledge transfer and the development of digital skills at the community level.

H3 states that digital capability has a positive effect on digital-based CBT

The analysis results show that digital capability has the strongest positive effect on digital-based CBT ($\beta = 0.838$; $p < 0.001$). Therefore, H3 is accepted. These findings confirm that the success of digital-based CBT is largely determined by local actors' ability to integrate digital technology into tourism and creative economy practices, not simply by technology access. Digital capability had the strongest influence on digital-based CBT, making it a key variable in the structural model. The large coefficient indicates that variations in digital-based CBT success are explained more by differences in digital capability than by variations in development communication only.

H4 states that digital capability mediates the effect of development communication on digital-based CBT.

The results of the indirect effect test indicate that digital capability significantly mediates the relationship between development communication and digital-based CBT ($\beta = 0.428$; $p < 0.001$). Therefore, H4 is accepted. This finding indicates that development communication only has a substantive impact on digital-based CBT when it is successfully translated into applicable digital capability at the community level. This mediation finding has important theoretical implications, as it suggests that development communication does not operate linearly, but rather through transformational mechanisms.

H5 states that social capital moderates the effect of development communication on digital capability.

The results of the moderation effect test indicate that social capital strengthens the relationship between development communication and digital capability ($\beta = 0.433$; $p < 0.001$). Therefore, H5 is accepted. This means that digital learning and adoption processes occur more effectively in communities with strong levels of trust and social networks.

Social capital also strengthened the relationship between digital capability and digital-based CBT ($\beta = 0.337$; $p < 0.001$), indicating that digital capability generates greater digital-based CBT impact when supported by collaboration and collective norms.

H6 states that social capital moderates the effect of digital capability on digital-based CBT

The analysis shows that the effect of digital capability on digital-based CBT is stronger when moderated by social capital ($\beta = 0.337$; $p < 0.001$). Thus, H6 is accepted. This finding indicates that the impact of digital capability on digital-based CBT is not individualistic but rather depends heavily on collaborative structures and collective norms within the community.

H7 states that social capital moderates the effect of development communication on digital-based CBT

The test results show that social capital significantly strengthens the effect of development communication on digital-based CBT ($\beta = 0.537$; $p < 0.001$), thus H7 is accepted. This finding confirms that development communication only produces optimal impact in a social context supported by trust, networks, and collective participation.

Its impact is highly dependent on the structure of relationships within the community. In communities with strong social capital, development communication can expand participation and the distribution of digital-based CBT benefits. Conversely, without social capital, development communication risks being relegated to mere policy formalities.

Overall, the results of the structural model analysis indicate that digital-based CBT is the result of an interdependent causal chain. Development communication builds frameworks and legitimacy, digital capability drives practice transformation, and social capital determines the intensity and sustainability of its impact. The results of the moderation effect test also indicated that social capital strengthened all key relationships in the model. The coherence between the structural and descriptive findings strengthens the

validity of this research model as an explanatory framework for understanding rural tourism village development in the digital era.

B. Discussion

i. Shifting the Position of Development Communication: From a Normative Instrument to a Structural Determinant of CBT

Most CBT studies, particularly in developing country contexts, still position development communication as a normative instrument—merely a means of policy dissemination or a medium for delivering government programs to local communities. This study provides empirical evidence that this approach oversimplifies the role of development communication. The research findings show that development communication has a direct and significant influence on CBT, indicating that it functions as a determinant structural variable in community-based tourism development.

In the context of digital-based CBT, development communication not only shapes community understanding of village tourism policies but also builds the institutional framework that determines who is involved, how decisions are made, and the extent to which communities have control over the tourism process. This finding extends the argument of Chowdhury and Gow (2024) by demonstrating that development communication acts as an institutional enabler that shapes the collective capacity of village communities to participate meaningfully in the digital tourism economy.

Thus, this study challenges the implicit assumption in many CBT studies that community participation will grow naturally when economic opportunities are available. When communities are involved in planning and decision-making processes, a sense of ownership of tourism villages increases, enabling CBT principles such as local control, equitable distribution of benefits, and cultural preservation to be realized. Conversely, this study's findings suggest that without dialogic, participatory, and sustainable development communication, digital opportunities can potentially be reduced to exclusive practices that benefit only certain actors within the community.

ii. Digital Capability: From "Promotional Tool" to Transformational Mechanism for CBT

One of the most important contributions of this research is the affirmation of digital capability as a key causal mechanism in the development of digital-based CBT. Previous studies tended to view digital technology in rural tourism as a destination promotion tool or alternative marketing channel. The findings of this study go beyond this perspective by demonstrating that digital capability has the strongest influence on digital-based CBT, even surpassing the direct influence of development communication.

These results reinforce the dynamic capability theory approach, which emphasizes that excellence in a dynamic environment is determined by actors' ability to adapt, innovate, and transform resources (Kim & Jin, 2024, Wang et al., 2024). In the context of rural tourism, digital capability encompasses not only basic digital literacy but also digital fluency that enables local actors to integrate technology into destination management, content creation, tourist relationship management, and strengthen the creative economy.

Furthermore, the mediation findings indicate that development communication does not automatically strengthen digital-based CBT. Its impact only becomes significant when development communication is successfully translated into practical improvements in community digital capability. In other words, policy dissemination without technical training and digital mentoring is insufficient to drive digital-based CBT transformation.

This provides a theoretical explanation for why many digitalization programs in tourism villages fail to achieve sustainable impact: communication and policy interventions stop at the symbolic level, without transforming the actual capacity of local actors. Therefore, this study positions digital capability as a transmission belt connecting policy structures with digital-based CBT practices on the ground. This perspective enriches the literature on digital-based CBT, which has been fragmented between technology studies and community empowerment studies.

iii. Social Capital and Digitalization: Rejecting Technocratic Logic in CBT

The findings regarding the moderating role of social capital provide a significant theoretical contribution by demonstrating that digital transformation in CBT cannot be understood solely through technocratic logic. Social capital—reflected in trust, social networks, and norms of civic engagement—consistently strengthens the relationship between development communication, digital capability, and digital-based CBT.

These results align with those of Neira et al. (2019) and Rocca & Zielinski (2022). However, this study goes further, demonstrating that social capital functions not only as a social prerequisite but also as a contextual amplifier for the digital transformation process. In communities with high levels of trust, technology adoption is faster, the risk of failure is reduced, and digital learning becomes more collective.

Conversely, these findings also imply that developing digital infrastructure without strengthening social capital has the

potential to create distortions in digital-based CBT, such as the dominance of local elites, the exclusion of small actors, and the weakening of principles of distributive justice. Thus, this study criticizes policy approaches that focus too much on "technological readiness" without considering the social readiness of village communities.

iv. Theoretical Synthesis: Digital-Based CBT as a Socio-Technological Process

Conceptually, the results of this study indicate that digital-based CBT is a socio-technological process, not simply a technological transformation or a stand-alone social empowerment initiative. Development communication shapes the structure and direction, digital capability translates that structure into practice, and social capital determines the intensity and sustainability of its impact.

The causal model proposed in this study offers a new analytical lens for understanding the failures and successes of digital tourism villages. Tourism villages do not fail due to a lack of natural or cultural potential, but rather due to a breakdown in the causal chain between development communication, digital capability, and social capital. This perspective expands the CBT literature by providing a more integrative and contextual explanatory framework.

v. Contribution to International Literature

This research's primary contribution to the international literature lies in its ability to bridge three domains that have previously developed separately: development communication, digital capability, and digital-based CBT. Using a causal-empirical approach, this research expands the study of development communication from a normative approach to an explanatory framework, and enriches the digital-based CBT literature with the perspectives of dynamic capabilities and social capital theory. Therefore, the findings of this research are relevant not only to the Indonesian context but also to other developing countries facing similar challenges in developing community-based tourism in the digital age.

V. CONCLUSIONS

This study concludes that the development of digital-based CBT is a causal process formed by the synergy between development communication, digital capability, and social capital. Development communication serves as a structural driver, digital capability as the primary transformation mechanism, and social capital as a contextual reinforcer that enhances the effectiveness of the relationships between variables. These findings emphasize that the success of tourism villages is not solely determined by technology, but by the quality of communication and the strength of social relations in the local community. Practically, the development of tourism villages is not sufficient with infrastructure and technology alone; it must be accompanied by a participatory development communication strategy, strengthening digital capability, and strengthening local community social networks.

This study contributes to theory development by proposing and validating a digital-based causal model of digital-based CBT that integrates development communication, digital capability, and social capital within a single explanatory framework. Unlike previous CBT studies that were descriptive or normative in nature, this study demonstrates that development communication functions as a structural determinant, digital capability as a transformational mechanism (dynamic capability), and social capital as a contextual reinforcer of causal relationships. Thus, this study expands the development communication literature from a normative approach to a causal-empirical approach, and enriches digital-based CBT studies with a socio-technological perspective that explains how and why digital transformation can strengthen or weaken community-based tourism in rural contexts.

REFERENCES

1) Anggraeni, I. A., & Rahmawati, F. (2021). Pariwisata Berbasis Masyarakat (Community Based Tourism) di Hutan Mangrove Pancer Cengkrong, Trenggalek. *Jurnal Planoearth*, *6*(1), 56–61. https://journal.ummat.ac.id/index.php/JPE/article/view/5529
2) Candra, H. N. (2024, October 23). *Inilah 10 Provinsi dengan Jumlah Desa Wisata Terbanyak Oktober 2024*. https://data.goodstats.id/statistic/inilah-10-provinsi-dengan-jumlah-desa-wisata-terbayak-oktober-2024-CKDs6
3) Chowdhury, A., & Gow, G. A. (2024). Introduction. In *Digital Communication for Agricultural and Rural Development* (pp. 1–13). Routledge. https://doi.org/https://doi.org/10.4324/9781003282075-1
4) Ekon.go.id. (2021, December 8). *Pembangunan kepariwisataan melalui pengembangan desa wisata untuk meningkatkan pertumbuhan ekonomi*.

5) Girindra, I. A. G., Muluk, M. R. K., & Sentanu, I. G. E. P. S. (2023). Pengembangan pariwisata dalam perspektif Community Based Tourism di kawasan pariwisata Ubud. *Jurnal Adminstrasi Publik (JAP)*, *6*(5), 265–273. https://administrasipublik.studentjournal.ub.ac.id/index.php/jap/article/view/1722
6) Iqbal, A., Ramachandran, S., Siow, M. L., Subramaniam, T., & Afandi, S. H. M. (2022). Meaningful community participation for effective development of sustainable tourism: Bibliometric analysis towards a quintuple helix model. *Journal of Outdoor Recreation and Tourism*, *39: 100523*. https://doi.org/https://doi.org/10.1016/j.jort.2022.100523
7) Kaligis, R. A. W. (2025). Analisa Pendekatan Sistem Terhadap Tingkat Adopsi Inovasi Marketplace Pelaku Usaha Mikro Perdesaan. *CoverAge: Journal of Strategic Communication*, *15*(2). https://journal.univpancasila.ac.id/index.php/coverage
8) Kaligis, R. A. W., Pratiwi, A., & Darmaputra, R. (2024). Utilization of social capital in organizational communication of rural micro-entrepreneurs to enter the digital ecosystem. *Proceeding of The 3rd ASPIKOM International Communication Conference (AICCON) Grounding Communications for Sustainable Development Towards the Digital 5.0 Era*, 588–599. https://journal.rc-communication.com/index.php/AICCON/article/view/158
9) Kementerian Pariwisata. (2019). *Buku Pedoman Desa Wisata*. Deputi Bidang Pengembangan Industri dan Kelembagaan Kementerian Pariwisata.
10) Kim, J., & Jin, W. (2024). Impact of digital capabilities on entrepreneurial performance in SMEs. *Journal of Innovation & Knowledge*, *9: 100609*. https://doi.org/https://doi.org/10.1016/j.jik.2024.100609
11) Krisnawati, I. (2021). Program pengembangan desa wisata sebagai wujud kebijakan pemerintah dalam rangka pemulihan ekonomi pasca covid dan implementasinya . *Transparansi: Jurnal Ilmiah Ilmu Administrasi*, *4*(2), 211–221. https://doi.org/https://doi.org/10.31334/transparansi.v4i2.1974
12) Lapuz, M. C. M. (2023). The role of local community empowerment in the digital transformation of rural tourism development in the Philippines. *Technology in Society*, *74: 102308*. https://doi.org/https://doi.org/10.1016/j.techsoc.2023.102308
13) Lazuardina, A., & Ghassani, S. A. (2023). Dampak pariwisata terhadap kehidupan masyarakat lokal di kawasan wisata (Desa Ciburial Kabupaten Bandung). *Warta Pariwisata*, *21*(2), 42–47.
14) Lubis, R. F. (2023). Dampak Pengembangan Desa Wisata Terhadap Peningkatan Sosial dan Ekonomi Masyarakat di Desa Melati II Kecamatan Perbaungan. . *Journal Economic and Strategy*, *4*(2), 108–118.
15) Manurung, S. S., & Rahmayani, A. (2022). Pengelolaan Pariwisata Berbasis Masyarakat (Community Based Tourism) di Objek Wisata Tangkahan. *TOBA (Journal of Tourism, Hospitality and Destination)*, *1*(3), 141–147. https://doi.org/https://doi.org/10.55123/toba.v1i3.845
16) Neira, I., Ie-Calderon, M. L., Portela, M., & Perez-Trujillo, M. (2019). Social capital dimensions and subjective well-being: a quantile approach. *Journal of Happiness Studies*, *20*, 2551–2579. https://doi.org/10.1007/s10902-018-0028-6
17) Novianty, E., Rahmanita, M., & Nurbaeti. (2025). The Influence of Community Participation in Sustainable Tourism Management at Local Destinations: A Bibliometric Analysis. *Journal of Public Representative and Society Provision*, *5*(1), 192–203. https://doi.org/https://doi.org/10.55885/jprsp.v5i1.523
18) Primananda, P. G. B. N., Yasa, N. N. K., Sukaatmadja, I. P. G., & Setiawan, P. Y. (2022). Destination Image Development in Tourism: Literature Review. *International Journal of Research and Innovation in Social Science (IJRISS)*, *6*(7), 198–202. https://doi.org/https://doi.org/10.47772/IJRISS.2022.6713
19) Rocca, L. H. D., & Zielinski, S. (2022). Community-based tourism, social capital, and governance of post-conflict rural tourism destinations: the case of Minca, Sierra Nevada de Santa Marta, Colombia. *Tourism Management Perspectives*, *43: 100985*. https://doi.org/10.1016/j.tmp.2022.100985
20) Sarudin, R. (2023). Pengembangan Pariwisata Berbasis Masyarakat di Kampung Saungkuriang Kota Tangerang. *Jurnal Manajemen Perhotelan Dan Pariwisata*, *6*(1), 220–228. https://doi.org/https://doi.org/10.23887/jmpp.v6i1.57709
21) Vongvisitsin, T. B., Huang, W. J., & King, B. (2024). Urban community-based tourism development: A networked social capital model. *Annals of Tourism Research*, *106: 103759*. https://doi.org/https://doi.org/10.1016/j.annals.2024.103759
22) Wang, G., Niu, Y., Mansor, Z. D., Leong, Y. C., & Yan, Z. (2024). Unlocking digital potential: Exploring the drivers of employee dynamic capability on employee digital performance in Chinese SMEs-moderation effect of competitive climate. *Heliyon*, *10*(4), e25583. https://doi.org/https://doi.org/10.1016/j.heliyon.2024.e25583
23) Zolfani, S. H., Sedaghat, M., Maknoon, R., & Zavadskas, E. K. (2015). Sustainable tourism: a comprehensive literature review on frameworks and applications. *Economic Research-Ekonomska Istraživanja*, *28*(1), 1–30. https://doi.org/https://doi.org/10.1080/1331677X.2014.995895

Appendix:

A. Respondent Profile

Table A1. Respondents Profile (*N*= 86)

Profile	Percentage (%)
Sex	
Male	39.5
Female	60.5
Generation	
Baby Boomer (before 1965)	
Gen X (1965-1980)	5.8
Gen Y (1981-1994)	30.2
Gen Z (1995-2004)	34.9
	29.1
Education	
Basic School	
Junior High School	9.3
Senior High School	14.0
Diploma	57.0
Bachelor	4.1
	15.1
Income per month as micro-entrepreneurs of creative/tourism	
Less than IDR 500,000 a month	
IDR 500,000 to less than IDR 1 million a month	
IDR 1 million to less than IDR 2 million a month	20.9
IDR 2 million to less than 3 million a month	25.6
IDR 3 million to less than IDR 4 million a month	26.7
IDR 4 million to less than IDR 5 million a month	15.1
IDR 5 million or more a month	5.8
	3.5
Employment	2.3
College Student	
Don't work	
Housewife	2.3
Freelancer	2.3
Employee	17.4
Business owner	16.3
	17.5
Residential Village	44.2
Sukajadi Village	
Tamansari Village	
Pasir Eurih	
	10.5
Ownership of communication/ information tools:	53.5
Smartphone: Yes	36.0
No	
	97.7
Laptop : Yes	2.3
No	
	32.6
	67.4
Computer: Yes	

No	17.4
Frequency of social media use	82.6
Never	
Rarely	
Often	24.4
	39.5
	36.0

Source: Authors' own work (2025 data collection)

B. Variable Operationalization

Table B1. Variable Operationalization of Development Communication

No.	Dimension	Indicator
1	Policy transparency of Tourist Village (DC1)	Policies are easily accessible (DC1-1) The public has access to clear information (DC1-2) Community involvement in digital tourism village policies (DC1-3) Local governments are responsive to community input (DC1-4)
2	Cross-sector collaboration (DC2)	Local governments encourage cross-sectoral collaboration (DC2-1) Cross-sectoral collaboration improves community capacity (DC2-2) Cross-sectoral collaboration prioritizes local communities (DC2-3) Citizens actively utilize cross-sectoral collaboration (DC2-4)
3	Strategy of two-way communication (DC3)	There is an active forum for local government-resident deliberation (DC3-1). Village tourism actors/micro-enterprises are represented through the forum (DC3-2). Local governments use social media for two-way communication with residents (DC3-3). Village tourism actors/micro-enterprises are represented in discussions with local governments on social media (DC3-4).

Source: Authors' own work (2025 data collection)

Table B2. Variable Operationalization of Social Capital

No.	Dimension	Indicator
1	Trust (SC1)	Village tourism actors/micro-enterprises build mutual trust (SC1-1) Village tourism actors/micro-enterprises trust each other regardless of background (SC1-2) Village tourism actors/micro-enterprises trust each other to collaborate (SC1-3). Local governments can be trusted to develop tourism villages for the benefit of residents (SC1-4). Village tourism actors/micro-enterprises build shared hopes for digital-based tourism villages (SC1-5).
2	Social networks (SC2)	Village tourism actors/micro-enterprises have close contacts who support them in their digital tourism village development (SC2-1). Village tourism actors/micro-enterprises collaborate with other community members to develop digital tourism villages (SC2-2). Village tourism actors/micro-enterprises collaborate with local governments to develop digital tourism villages (SC2-3). Village tourism actors/micro-enterprises collaborate with external parties (private sector, travel agents, NGOs, etc.) to develop digital tourism villages (SC2-4). Village tourism actors/micro-enterprises utilize digital technology to expand their collaborative networks (SC2-5).
3	Norms of civic engagement (SC3)	Village tourism actors/micro-enterprises have shared values (SC3-1). Village tourism actors/micro-enterprises uphold a sense of fairness, including in profit sharing (SC3-2). Village tourism actors/micro-enterprises prioritize deliberation and consensus (SC3-3). Village tourism actors/micro-enterprises have a strong desire to improve the quality of their services/products (SC3-4). Village tourism actors/micro-enterprises continuously improve their digital technology capability (SC3-5).

Source: Authors' own work (2025 data collection)

Table B3. Variable Operationalization of Digital Capability

No.	Dimension	Indicator
1	Digital literacy (DCap1)	Able to search for and understand information via the internet (DCap1-1) Able to distinguish between trustworthy and untrustworthy digital information sources (DCap1-2) Using social media to promote tourism village services/products (DCap1-3) Understanding how digital platforms (such as marketplaces, tourism apps, websites, etc.) work (DCap1-4) Able to manage customer/visitor data using digital tools (Excel, Google Forms, etc.) (DCap1-5) Understanding the importance of data security and privacy in digital activities (DCap1-6) Using software for business activities (accounting software, Google Workspace, etc.) (DCap1-7) Always keeping up with digital technology developments relevant to digital villages (DCap1-8)
2	Digital fluency (DCap2)	Able to apply digital technology for business efficiency (DCap2-1) Able to adapt marketing strategies to emerging digital trends (DCap2-2) Able to use various digital platforms (social media, marketplaces, tourism apps, etc.) in an integrated manner (DCap2-3) Frequently tries new digital tools or applications to increase the appeal of products/services (DCap2-4) Able to innovate by creating creative digital content (videos, photos, promotional articles, etc.) (DCap2-5) Able to quickly adapt to technological changes in developing tourism villages (DCap2-6) Able to solve problems using digital technology (DCap2-7). Able to teach/guide other group members in using digital devices (DCap2-8).

Source: Authors' own work (2025 data collection)

Table B4. Variable Operationalization of Digital-Based CBT

No.	Dimensi	Indikator
1	Community participation through digital technology (CBT1)	Villager involvement in tourism management through digital media (CBT1-1). Digital technology helps communities express their ideas and aspirations about tourism villages (CBT1-2). Digital training and mentoring involve residents, including vulnerable groups (women, the elderly, or people with disabilities) (CBT1-3). The use of digital tourism village platforms to coordinate joint activities (CBT1-4). Digital technology strengthens a sense of community among residents (CBT1-5).
2	Destination visibility through digital technology (CBT2)	Digital platforms for tourist villages actively showcase local uniqueness (local culture and nature, etc.) (CBT2-1). Much of the digital content for tourist villages is created by local communities (CBT2-2). The existence of digital platforms increases tourist visits (CBT2-3). Digital promotion encourages tourists to appreciate and preserve local culture and the environment (CBT2-4). Digital information management provides economic benefits to local residents (CBT2-5).
3	Sustainable management through digital technology (CBT3)	Tourism villages have digital systems for transparently recording and reporting finances and income (CBT3-1). Tourism villages employ digital technology for monitoring cleanliness, environmental conservation, and tourism waste management (CBT3-2). Village digital media disseminates information about nature and cultural conservation activities (CBT3-3). The use of digital technology in tourism villages helps reduce economic inequality among tourism actors (CBT3-4). Digital technology supports local innovation (micro enterprise products, culinary arts, crafts, etc.) that is sustainable and environmentally friendly (CBT3-5).

Source: Authors' own work (2025 data collection)

There is an Open Access article, distributed under the term of the Creative Commons Attribution – Non Commercial 4.0 International (CC BY-NC 4.0) (https://creativecommons.org/licenses/by-nc/4.0/), which permits remixing, adapting and building upon the work for non-commercial use, provided the original work is properly cited.