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INVESTIGATING THE RELATIONSHIP BETWEEN SOCIAL CAPITAL, KNOWLEDGE MANAGEMENT, AND EFFICIENCY OF GEOTOURISM SITE MANAGEMENT: A CASE STUDY OF A NATIONAL PARK IN NORTHEASTERN THAILAND

Dultadej SANVISES [1], Kanokkarn KAEWNUCH [1*]

[1] National Institute of Development Administration (NIDA), Graduate School of Tourism Management (GSTM), Bangkok, Thailand; 6511731019@stu.nida.ac.th (D.S.); kanokkarn.k@nida.ac.th (K.K.)

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Abstract: Managing geotourism site in national park presents several challenges that must be addressed to ensure the preservation of its unique geological resources and the sustainability of its tourism activities. Mitigating the impact of tourism on these fragile resources remains a critical concern. Another major challenge is limited community involvement in the park's management, which often results in a lack of ownership. The research aims to test a structural model of social capital, knowledge management, and efficiency of geotourism site management in northeastern Thailand. Data were collected from 280 residents of Nai Mueang Subdistrict Municipality, Khon Kaen Province. Descriptive statistics (frequency, percentage, mean, and standard deviation) and structural equation modeling were used for data analysis. Purposive and convenience sampling methods were applied to select participants who had visited Phu Wiang National Park at least once. Data were collected using a structured questionnaire. The results revealed that the active involvement of diverse stakeholders significantly fosters the development of social capital - particularly trust, norm, network, sense of belonging, and shared value - among various groups. These relational assets enhance the collective capacity to address challenges and achieve common goals within the geotourism context. Furthermore, stakeholder diversity plays a key role in improving knowledge management, as different groups contribute tools, expertise, and perspectives. This diversity ensures that management strategies are comprehensive, adaptive, and grounded in real-world contexts. Ultimately, the strengthening of social capital and the advancement of knowledge management enhance the efficiency of geotourism site management. A more connected and knowledgeable stakeholder network supports better decision-making and more sustainable practices. Accordingly, the study contributes to the theoretical understanding of stakeholder-based geotourism management and provides practical implications for policymakers and local stakeholders seeking to improve management practices in protected areas.

Keywords: social capital, knowledge management, efficiency, geotourism site management, national park

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INTRODUCTION

Geotourism site management in Phu Wiang National Park is crucial for preserving its unique geological, ecological, and cultural heritage while enhancing its efficiency. The park is renowned for its significant dinosaur fossil discoveries, including species like Phuwiangosaurus sirindhornae, which attract tourists and researchers. Effective management protects these invaluable geological resources from environmental degradation and human activities. The park can maintain its natural integrity while allowing public access and education, contributing to global knowledge about prehistoric life (Vivitkul & Singtuen, 2021). Phu Wiang National Park, located in Wiang Kao District, Khon Kaen Province, spans approximately 380 square kilometers and encompasses a variety of geotourism attractions. Key sites within the park include the Phu Wiang Dinosaur Museum and Dinosaur Sri Wiang Dinosaur Park, which highlight the region's paleontological significance. The park also features dinosaur footprints and the Dinosaur Nature Trail, offering educational insights into prehistoric life (Tourism Authority of Thailand, 2025). Additionally, the area includes prominent natural and cultural landmarks such as Chom Tawan Cliff, Scorpion Cave, Famue Daeng Cave, and the Giant Dipterocarp tree.

Visitors can also explore several waterfalls, including Tad Fa Waterfall, Wang Sak Siw Waterfall, and Thap Phaya Suea Waterfall, which contribute to the park's ecological diversity. Other significant sites include the Reclining Buddha, Thung Yai Sao Aram, Tad Fa Camp Site, and Tham Pha Keang Temple, enhancing the park's cultural and recreational value. These tourist attractions in Phu Wiang National Park, as described above, are illustrated in Figure 1.

Managing the geotourism site in Phu Wiang National Park presents several challenges that must be addressed to ensure the preservation of its unique geological resources and the sustainability of its tourism activities. Mitigating the impact of tourism on these fragile resources remains a critical concern (Gordon, 2023). Another major challenge is limited community involvement in the park's management. While local communities have the potential to contribute to the park's geotourism initiatives, there is often a lack of capacity-building and training to help them become effective geotourism guides or active

* Corresponding author

participants in park management. This gap in social capital can hinder the development of geotourism initiatives, which are crucial for fostering local economic benefits and enhancing visitor experiences (Matshusa et al., 2021).

Additionally, knowledge management in the park is a critical issue. While the park contains valuable geological and paleontological information, there is a need for better systems to organize, share, and utilize this knowledge effectively among park authorities, local communities, and visitors. Without proper knowledge-sharing platforms, such as training programs or accessible educational materials, the full potential of the park's resources may not be realized, leading to missed opportunities for scientific research and visitor education (Hvenegaard et al., 2021). Lastly, coordinating the efforts of multiple stakeholders - including park authorities, local government, and academic institutions - can be difficult. Effective collaboration is essential for policy implementation, research initiatives, and resource management. Still, the lack of coordination can lead to inefficiencies and conflicting interests, ultimately hindering the park's overall management goals (Williams et al., 2020). The management of geotourism site, particularly in the context of Phu Wiang National Park, presents a unique challenge in balancing conservation and the engagement of local communities. Despite the park's significant geological value, there is limited research on how social capital and knowledge management interact to enhance the efficiency of geotourism site management. Social capital, which refer to the trust, norm, network, sense of belonging, and shared value, plays a key role in geotourism site practices and resource conservation. However, the extent to which these social capitals influence knowledge management and contribute to decision-making in geotourism site management remains underexplored. Similarly, while knowledge management are essential for organizing and disseminating valuable information about the park's geological and ecological features, the impact of knowledge flow on management efficiency has not been adequately examined. Therefore, the researcher conducts this research to fill this gap.

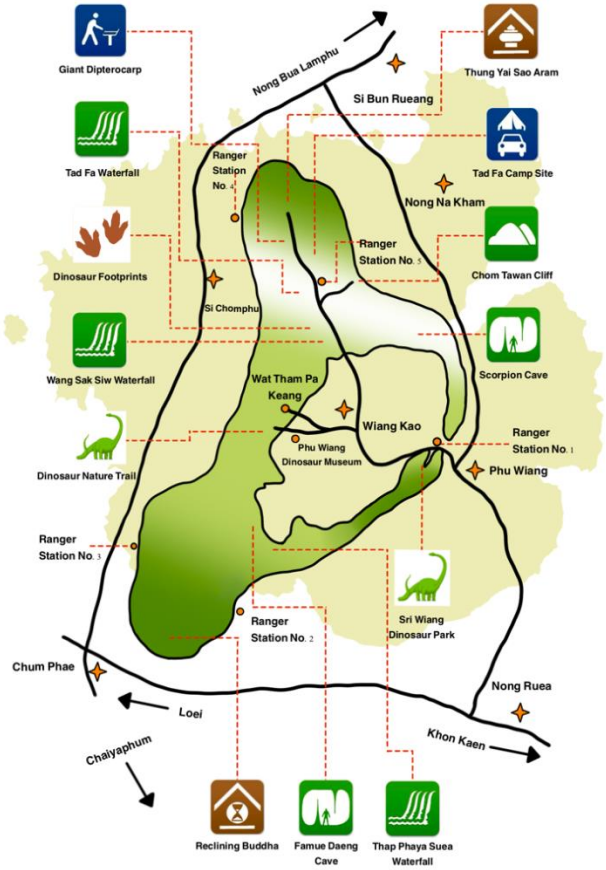

Figure 1. Tourist Attractions in Phu Wiang National Park (Source: Developed from Phu Wiang National Park, 2023)

LITERATURE REVIEW

Trust

Cooperation and sustainable development rely heavily on trust among the local community, business, and geotourism site management. Trust is the foundation of social cohesiveness in the local community setting since it helps people to work for shared interests (Kummitha, 2021). Recent research highlights that trust among stakeholders enhances the effectiveness of participatory management approaches by fostering open communication and collective accountability (Ghorbani et al., 2025). However, studies have also noted that trust-building is fragile and context-dependent; it requires ongoing engagement, historical sensitivity, and transparency in decision-making processes. For instance, in co-management models, uneven power dynamics and exclusion of marginalized voices have been shown to erode trust (Liu et al., 2022). Therefore, while trust is a facilitator of knowledge sharing and stakeholder integration, its establishment is neither automatic nor guaranteed and must be intentionally nurtured. Therefore, it is hypothesized that:

H1: Trust has a positive relationship with knowledge management in a statistically significant way.

Norm

Norm refers to the shared expectations, rules, and standards that guide behavior within a social group or community. They play a crucial role in maintaining social order, fostering mutual respect, and preserving cultural values (Saracevic & Schlegelmilch, 2021). In the context of geotourism site management, norm establishes guidelines for responsible behavior among visitors, local communities, and stakeholders, which is essential for the long-term sustainability of natural and cultural resources (Zheng et al., 2025). Many studies have highlighted the importance of community engagement in establishing and reinforcing norm. For instance, Rosilawati et al. (2020) emphasize that active participation of local communities in heritage conservation efforts fosters leads to the internalization of sustainable practices. Similarly, Zhu et al. (2020) discuss how social norms and values within a community can influence tourists' behavior, encouraging them to act responsibly and align with local expectations. Therefore, understanding and fostering appropriate norms is vital for effective knowledge management and collective action in geotourism site. Therefore, it is hypothesized that:

H2: Norm has a positive relationship with knowledge management in a statistically significant way.

Network

Networks - linked systems and structures - help people or companies coordinate, interact, and share resources. For knowledge sharing on sustainable practices, local involvement in conservation projects and cultural event staging, networks are important in communities around Phu Wiang National Park. These networks not only promote information flow and resource mobilization but also foster long-term trust and collective action among diverse actors (Aktymbayeva et al., 2020). In the concept of geotourism site management, networks are coordinated activities of the public sector, the park authority, the private sector, the academic sector, and the local community to provide effective site management and sustainable tourism. They facilitate joint decision-making, shared responsibilities, and adaptive strategies in response to local needs and environmental challenges. Witchayakawin et al. (2022) indicate that well-established networks foster mutual accountability and empower local actors to take leadership roles, thereby enhancing the sustainability of tourism initiatives and facilitating effective knowledge management through collaborative learning and experience exchange. Therefore, it is hypothesized that:

H3: Networks have a statistically significant positive relationship with knowledge management.

Sense of Belonging

Sense of belonging refers to the emotional connection people feel toward their local environment, community, and shared cultural traditions. This feeling plays an important role in encouraging people to take part in geotourism activities, help protect natural resources and support local knowledge sharing. In the case of Phu Wiang National Park, this sense of belonging promotes community responsibility and helps maintain ongoing efforts in both cultural and environmental conservation. Singtuen et al. (2022), in their study of a geosite in Khon Kaen, emphasized the value of participatory learning - such as local field trips and guided tours - in building community identity and pride. Their research shows that when local people join educational tourism activities based on their own surroundings, it strengthens their emotional connection to the place and increases their willingness to support sustainable site management. This suggests that feeling emotionally connected to a place can strongly influence people's long-term commitment to protecting it. Therefore, it is hypothesized that:

H4: A sense of belonging has a statistically significant positive relationship with knowledge management.

Shared Value

Shared value refers to creating economic value in a way that also creates value for society. In the local community context, shared value arises when community members work together to achieve common goals that benefit everyone, such as improving local infrastructure, supporting education, or preserving cultural heritage. At Phu Wiang National Park, shared value can be seen in how local communities collaborate with park authorities to promote sustainable tourism while benefiting from increased economic opportunities through tourism-related activities. Sarabia-Molina et al. (2022) caution that the implementation of shared value in tourism contexts can be uneven, particularly when external investors prioritize profit over local benefits. Achieving shared value requires continuous dialogue among stakeholders, clear benefit-sharing mechanisms, and inclusive planning processes. Without these, initiatives branded as 'sustainable' may end up reinforcing inequalities or cultural commodification. Therefore, it is hypothesized that:

H5: Shared value has a statistically significant positive relationship with knowledge management.

Knowledge Management

In geotourism site management, knowledge management (KM) helps improve operational efficiency, which in turn reduces environmental harm. KM also supports better decision-making by combining local knowledge with scientific research to address specific challenges at the site (Ferdowsi et al., 2025). KM encourages cooperation among different stakeholders, ensuring that everyone shares their knowledge to protect the natural and cultural values of the area (Pourfaraj et al., 2020). Additionally, KM supports continuous learning and adaptive management, increasing the ability to respond to new challenges. As a result, it boosts the overall efficiency, sustainability, and long-term success of geotourism site management. Otowicz et al. (2022) offer a more stakeholder-centered view, highlighting that effective knowledge management depends not only on the availability of information but also on the willingness of actors to collaborate and exchange insights. Therefore, it is hypothesized that:

H6: Knowledge management has a positive relationship with the efficiency of geotourism site management in a statistically significant way.

Efficiency of Geotourism Site Management

Efficiency in the use of resources at geotourism site is essential for balancing social, economic, and environmental sustainability. From a social perspective, efficient resource management ensures local communities benefit from tourism through job creation, cultural preservation, and community involvement in conservation efforts (Ma et al., 2023). From an economic perspective, the efficient use of resources at geotourism site maximizes financial benefits while minimizing waste and operational costs. Sustainable infrastructure, such as eco-friendly visitor centers and low-impact transportation, reduces energy consumption and maintenance costs. Implementing policies such as controlled visitor numbers, fair pricing strategies, and revenue-sharing models ensures that tourism income is distributed equitably among stakeholders (Herrera-Franco et al., 2021). From an environmental perspective, efficiency in resource use involves minimizing ecological disturbance and conserving the geological integrity of the site. This includes implementing measures such as waste reduction, water and energy conservation, and using renewable energy sources to support tourism operations. Sustainable site management strategies include limiting visitor access to sensitive areas and using eco-friendly materials for infrastructure (Frey, 2021). Figure 2 illustrates the conceptual framework of this research based on the above-mentioned literature review and proposed hypotheses.

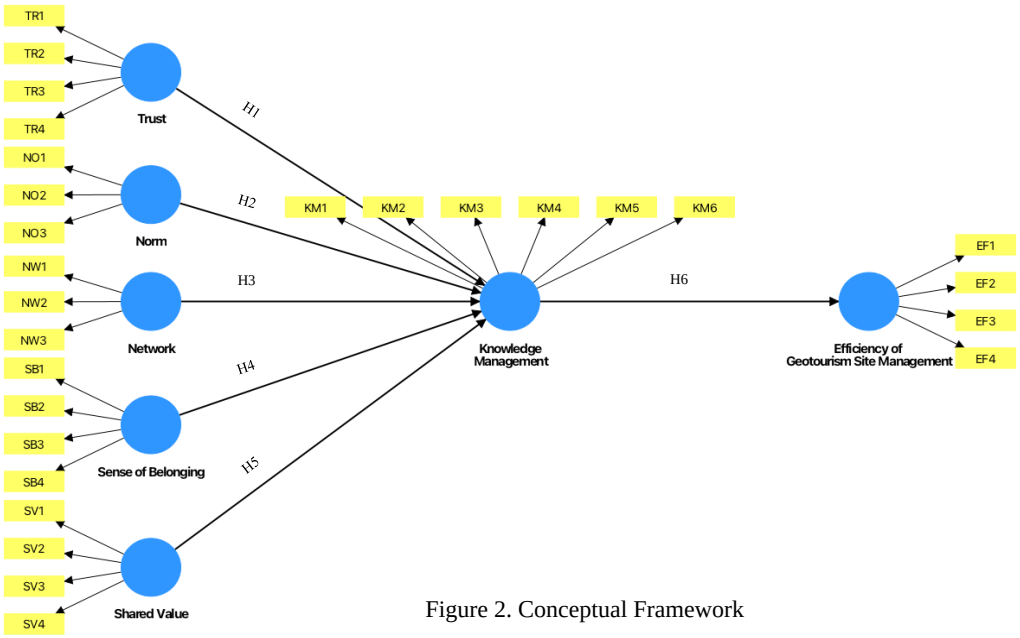

Figure 2. Conceptual Framework

METHODOLOGY

According to the general rule of thumb for structural equation modeling, the minimum sample size should be at least ten times the number of observed variables. Given that this study includes 28 observed variables, the required minimum sample size is 28 ×10 = 280 participants. The researcher uses purposive sampling and convenience sampling methods from people living in the Nai Mueang subdistrict municipality, with a minimum of one visit. The data collection instrument used in this study is a questionnaire, which is divided into four sections: 1) demographic information of the respondents, 2) social capital, 3) knowledge management, and 4) efficiency of geotourism site management. Three experts reviewed the questionnaire before distributing. The respondents rated all value items on a 5-point Likert scale (1 = 'strongly disagree'; 5 = 'strongly agree'). This research has received approval for human research protection by the Ethics Committee in Human Research, National Institute of Development Administration (NIDA) (No. ECNIDA 2024/0206), which is in full compliance with international guidelines of human research protection, such as the Declaration of Helsinki, CIOMS Guidelines, and the Belmont Report. The study employed partial least squares–structural equation modeling (PLS–SEM) as the primary analytical technique. The research flowchart is illustrated in Figure 3.

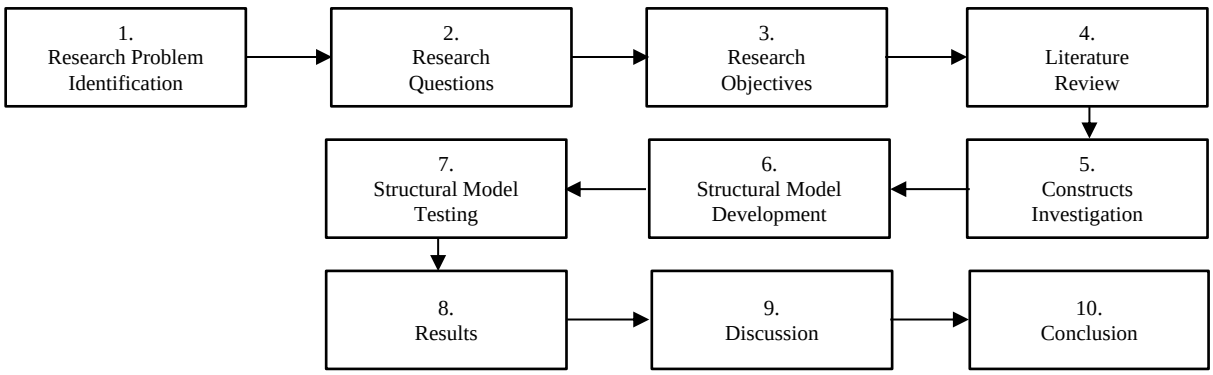

Figure 3. Research Flowchart (Source: Researcher)

RESULTS

Demographic information of the respondents

The characteristics of the respondents include gender, age, marital status, education, occupation, and salary. The sample was found to consist of 280 individuals, with most being male (182 individuals, or 65.0%). The largest age group was 30-39, comprising 109 individuals (38.9%). Most respondents had a bachelor's degree as their highest level of education (224 individuals, or 80%). Most were employed as private company employees (127 individuals, or 45.4%), and most earned a monthly salary between 20,000 and 29,999 THB (113 individuals, or 40.4%).

Table 1. Demographic information of the respondents

	Demographic	Frequency	Percent
1. Gender	Male	182	65.0
	Female	98	35.0
	Total	**280**	**100**
2. Age	20 – 29	87	31.0
	30 – 39	109	38.9
	40 – 49	65	23.2
	50 – 59	19	6.8
	Total	**280**	**100**
3. Marital Status	Single	117	41.8
	Married	144	51.4
	Divorce	19	6.8
	Total	**280**	**100**
4. Education	Below undergraduate	32	11.4
	Undergraduate	224	80.0
	Graduate	24	8.6
	Total	**280**	**100**
5. Occupation	Student	38	13.6
	Government Officer / Public Sector Employee	32	11.4
	State Enterprise Employee	19	6.8
	Private Company Employee	127	45.4
	Self-Employed / Business Owner	54	19.3
	Unemployed	10	3.6
	Total	**280**	**100**
6. Salary	Lower 15,000 THB	27	9.6
	15,000 – 19,999 THB	55	19.6
	20,000 – 29,999 THB	113	40.4
	30,000 – 39,999 THB	54	19.3
	40,000 – 49,999 THB	20	7.1
	50,000 THB or above	11	3.9
	Total	**280**	**100**

Measurement Model

The Measurement Model is assessed based on Convergent Validity, Discriminant Validity, and Reliability. The factor loadings must be greater than 0.5 and statistically significant. The obtained factor loadings range from 0.826 to 0.940. Additionally, the Average Variance Extracted (AVE) must exceed 0.5. The AVE values for all seven latent variables range from 0.745 to 0.858. Reliability is evaluated using Cronbach's Alpha (α), and Composite Reliability (ρC), all of which should be greater than 0.7 (Henseler et al., 2016). The results indicate that Cronbach's Alpha ranges from 0.870 to 0.940, and ρC ranges from 0.920 to 0.957, as presented in Table 2.

Table 2. The Measurement Model

Construct	Loading	Mean	SD	Cronbach's Alpha	CR	AVE
Trust (TR)						
TR1: You have confidence in the services provided by Phu Wiang National Park.	0.871					
TR2: You are willing to disclose information to Phu Wiang National Park.	0.826	3.82	0.673	0.888	0.922	0.748
TR3: You feel safe residing near Phu Wiang National Park.	0.881					
TR4: You have confidence in the safety and security measures implemented by Phu Wiang National Park.	0.881					
Norm (NO)						
NO1: You contribute to maintaining cleanliness and order near Phu Wiang National Park.	0.905					
NO2: You adhere to the guidelines provided by Phu Wiang National Park officials.	0.940	4.17	0.803	0.917	0.948	0.858
NO3: You comply with the rules and regulations of Phu Wiang National Park.	0.934					
Network (NW)						
NW1: You have collaborative networks with government agencies to	0.931	3.72	0.687	0.870	0.920	0.794

manage geotourism site within the national park jointly.						
NW2: You have collaborative networks with private business organizations to manage geotourism site within Phu Wiang National Park jointly.	0.840					
NW3: You have collaborative networks with the academic sector to manage geotourism site within Phu Wiang National Park jointly.	0.934					
Sense of Belonging (SB)						
SB1: You participate in the planning of geotourism site management in Phu Wiang National Park.	0.846					
SB2: You participate in managing geotourism site in Phu Wiang National Park.	0.899	3.88	0.663	0.925	0.947	0.817
SB3: You monitor the management of geotourism site in Phu Wiang National Park.	0.876					
SB4: You participate in receiving benefits from the management of geotourism site in Phu Wiang National Park.	0.876					
Shared Value (SV)						
SV1: You appreciate the historical significance of Phu Wiang National Park.	0.918					
SV2: You appreciate the value of natural resources and the environment within Phu Wiang National Park.	0.929					
SV3: You appreciate the importance of geotourism site management in Phu Wiang National Park.	0.938	4.18	0.748	0.940	0.957	0.847
SV4: You appreciate the significance of the existence of Phu Wiang National Park.	0.894					
Knowledge Management (KM)						
KM1: You share and exchange knowledge about Phu Wiang National Park with tourists.	0.842					
KM2: You share and exchange the knowledge from your travel experiences to Phu Wiang National Park on social media platforms.	0.879					
KM3: You provide feedback and share opinions on the management of geotourism site in Phu Wiang National Park.	0.857	3.82	0.626	0.931	0.946	0.745
KM4: You apply the knowledge gained from participating in tourism activities at Phu Wiang National Park to the local community.	0.871					
KM5: You apply the knowledge acquired through Phu Wiang National Park knowledge exchanges to the local community.	0.872					
KM6: You apply the knowledge obtained from Phu Wiang National Park study visits to the local community.	0.857					
Efficiency of Geotourism Site Management (EF)						
EF1: You believe that Phu Wiang National Park can effectively utilize its budget for geotourism site management.	0.890					
EF2: You believe that Phu Wiang National Park can efficiently utilize its natural resources and environment to benefit the local community and society.	0.886					
EF3: You believe Phu Wiang National Park can effectively utilize its natural resources and environment for economic benefit.	0.885	3.92	0.718	0.910	0.937	0.788
EF4: You believe that Phu Wiang National Park can use its natural resources and environment for geotourism site management without causing negative impacts on natural resources and the environment.	0.888					

Discriminant Validity is assessed using the Average Variance Extracted (AVE), which must be greater than the correlations with other latent variables (Fornell & Larcker, 1981). The results indicate that the diagonal values, representing the AVE of each latent variable, are higher than the correlations between that latent variable and others (Table 3). Additionally, the Heterotrait-Monotrait Ratio (HTMT) values are less than 1, satisfying the recommended threshold (Henseler et al., 2016) (Table 4). Moreover, the indicator loadings for each latent variable are higher than their cross-loadings with other latent variables (Table 5). All criteria meet the established validity thresholds.

The next test for discriminant validity involved examining cross-loadings ranging from 0.826 to 0.940. The cross-loadings presented in Table 5 suggest that all indicators loaded most strongly on their respective constructs. This finding indicates that there were no discriminant validity issues, and that further analysis could be carried out.

Table 3. Fornell-Larker Criterion

Construct	EF	KM	NO	NW	SB	SV	TR
EF	0.887						
KM	0.719	0.863					
NO	0.395	0.400	0.927				
NW	0.467	0.568	0.407	0.891			
SB	0.566	0.662	0.459	0.730	0.874		
SV	0.514	0.565	0.645	0.475	0.567	0.920	
TR	0.546	0.582	0.564	0.624	0.577	0.521	0.865

Table 4. Heterotrait-Monotrait Ratio (HTMT)

Construct	EF	KM	NO	NW	SB	SV	TR
EF							
KM	0.779						
NO	0.430	0.431					
NW	0.522	0.629	0.450				
SB	0.622	0.722	0.502	0.825			
SV	0.556	0.604	0.696	0.520	0.614		
TR	0.605	0.638	0.624	0.707	0.641	0.569	

Table 5. Cross Loading

Item Codes	EF	KM	NO	NW	SB	SV	TR
EF1	**0.890**	0.677	0.379	0.445	0.533	0.484	0.488
EF2	**0.886**	0.637	0.304	0.405	0.505	0.438	0.465
EF3	**0.885**	0.642	0.370	0.446	0.486	0.445	0.546
EF4	**0.888**	0.590	0.346	0.358	0.481	0.456	0.436
KM1	0.619	**0.842**	0.344	0.484	0.577	0.490	0.496
KM2	0.629	**0.879**	0.405	0.532	0.620	0.515	0.563
KM3	0.611	**0.857**	0.290	0.532	0.573	0.461	0.473
KM4	0.605	**0.871**	0.320	0.471	0.550	0.472	0.496
KM5	0.622	**0.872**	0.359	0.449	0.539	0.483	0.467
KM6	0.635	**0.857**	0.349	0.473	0.568	0.504	0.513
NO1	0.404	0.382	**0.905**	0.405	0.423	0.558	0.531
NO2	0.364	0.370	**0.940**	0.365	0.427	0.608	0.522
NO3	0.326	0.358	**0.934**	0.359	0.427	0.629	0.514
NW1	0.431	0.533	0.411	**0.931**	0.669	0.496	0.613
NW2	0.374	0.450	0.273	**0.840**	0.549	0.321	0.491
NW3	0.441	0.530	0.391	**0.900**	0.723	0.438	0.556
SB1	0.433	0.529	0.318	0.688	**0.846**	0.429	0.438
SB2	0.454	0.572	0.424	0.675	**0.899**	0.481	0.500
SB3	0.535	0.586	0.376	0.571	**0.876**	0.477	0.470
SB4	0.546	0.623	0.477	0.628	**0.876**	0.586	0.598
SV1	0.464	0.527	0.597	0.443	0.565	**0.918**	0.516
SV2	0.460	0.519	0.587	0.423	0.511	**0.929**	0.449
SV3	0.482	0.530	0.595	0.454	0.524	**0.938**	0.503
SV4	0.486	0.503	0.596	0.426	0.486	**0.894**	0.449
TR1	0.485	0.517	0.495	0.515	0.542	0.457	**0.871**
TR2	0.415	0.492	0.421	0.503	0.460	0.455	**0.826**
TR3	0.468	0.476	0.488	0.556	0.461	0.410	**0.881**
TR4	0.518	0.525	0.545	0.582	0.528	0.478	**0.881**

Structural Model

The path coefficient analysis indicates that the R^2 values for knowledge management and efficiency of geotourism site management are 51.7% and 53.4%, respectively. Additionally, the path coefficients for four examined relationships are statistically significant and exceed 0.2, with values ranging from 0.400 to 0.719. These results are presented in Figure 4 and Table 6.

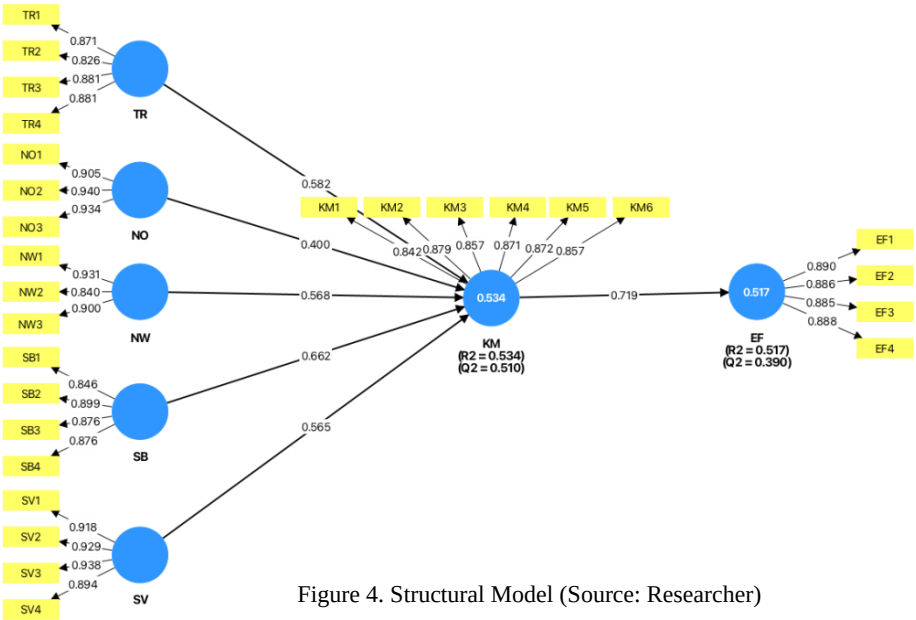

Figure 4. Structural Model (Source: Researcher)

Hypothesis Testing

The statistical significance testing of the parameters using the Bootstrapping process, with the criteria set at $p < 0.05$ and a t-value greater than the critical value of 1.96, resulted in the acceptance of four hypotheses and the rejection of two hypotheses presented in Table 6.

Table 6. Hypothesis Testing

Hypothesis Testing	Path Coefficient	t-value	p-value	Results
TR → KM	0.582	3.607	0.000	Supported
NO → KM	0.400	1.838	0.066	Not Supported
NW → KM	0.568	0.668	0.504	Not Supported
SB → KM	0.662	4.899	0.000	Supported
SV → KM	0.565	4.229	0.000	Supported
KM → EF	0.719	19.521	0.000	Supported

DISCUSSION

The findings of this study emphasize the relationship between social capital, knowledge management, and the efficiency of geotourism site management driven by stakeholders. Building trust and guaranteeing efficient knowledge management depend on a participatory strategy that includes the government sector, local leaders, the academic sector, and the community. This emphasizes the need for multistakeholder participation in decision-making procedures so that the several knowledge systems are appreciated and included in the plans of park management (Williams & Baláž, 2021).

The result also implies how norms might help or hinder cooperative efforts in the management of geotourism site (Wasaya et al., 2024). Networks improve stakeholders' capacity, skills, and knowledge management capacity (Yanou et al., 2023). The park should provide a more cooperative model for preserving and advancing knowledge by strengthening links between the public sector, the business sector, the academic sector, and local communities, therefore guaranteeing the long-term viability of the park. Sense of belonging is a fundamental factor in the success of knowledge co-creation and community involvement in the management of the National Park. They can actively contribute to knowledge sharing and management when local communities feel connected to the park and are given opportunities to participate in decision-making and conservation efforts (Ma et al., 2023). Shared value is essential for the successful and sustainable management of geotourism site. It emphasizes the need to make sure the local community gains fairly from tourism activities, including social, economic, and environmental benefits (Obradović et al., 2023). Knowledge management (KM) is fundamental for creating a sustainable, efficient, and collaborative management framework for geotourism site. KM facilitates effective communication, which leads to conservation and management outcomes. It also promotes local business participation in sustainable practices, supports the acceptance of policies, and helps resolve conflicts between stakeholders (Singtuen et al., 2022).

Cooperative partnerships among stakeholders help to enable the flow of scientific and indigenous knowledge, ensuring that management tactics complement social, economic, and environmental advantages (Kunjuraman, 2022).

Reducing barriers to information flow and encouraging a cooperative culture helps social capital become a main driver of knowledge management. Established social capital communities are more likely to see stakeholders engaged in knowledge management, directing more informed decision-making processes (Peng, 2024). The results show that geotourism site with well-organized knowledge management systems, including formalized knowledge sharing platforms or effective knowledge application, can improve resource optimization and environmental conservation, enabling the efficiency of geotourism site management. These revelations support the case that knowledge is not just a tool for information but also a strategic instrument for gaining efficiency and long-term success of geotourism site.

Similar to the findings of Ferdowsi et al. (2025), the study confirms that social capital plays a critical role in enhancing the knowledge management process. Communities with stronger knowledge capacity are more likely to improve operational efficiency in nature-based tourism, which supports the present study regarding geotourism site management.

Furthermore, Aktymbayeva et al. (2020) indicate that collaborative management models that formalize knowledge-sharing mechanisms and promote inclusive participation tend to be more resilient and adaptable in the face of environmental challenges and the pressures of growing tourism demand. Therefore, a well-structured stakeholder engagement strategy that fosters equity, inclusivity, and co-creation is essential for achieving sustainable geotourism site management.

In summary, stakeholder engagement and knowledge integration are not secondary but foundational elements of effective geotourism site management. Leveraging the collective wisdom and capacity of all stakeholders enhances efficiency, promotes shared responsibility, and supports sustainable tourism that respects both natural heritage and community well-being. Future frameworks should adopt a knowledge-inclusive governance model, rooted in mutual respect and co-creation, to ensure long-term success. This approach not only fosters resilience in management systems but also empowers local communities to become active stewards of their own cultural and natural resources.

CONCLUSION

The researcher discovers that the active involvement of diverse stakeholders significantly fosters the development of social capital - particularly trust, norm, network, sense of belonging, and shared value - among various groups.

These relational assets enhance the collective capacity to address challenges and achieve common goals within the geotourism context. Furthermore, stakeholder diversity plays a key role in improving knowledge management, as

different groups contribute tools, expertise, and perspectives. This diversity ensures that management strategies are comprehensive, adaptive, and grounded in real-world contexts. Ultimately, the strengthening of social capital and the advancement of knowledge management enhance the efficiency of geotourism site management. A more connected and knowledgeable stakeholder network supports better decision-making and more sustainable practices.

The findings highlight the importance of prioritizing local community participation and recommend that policymakers cultivate social capital through strong interpersonal relationships and clear communication of shared goals. The conclusion of this study is illustrated in Figure 5.

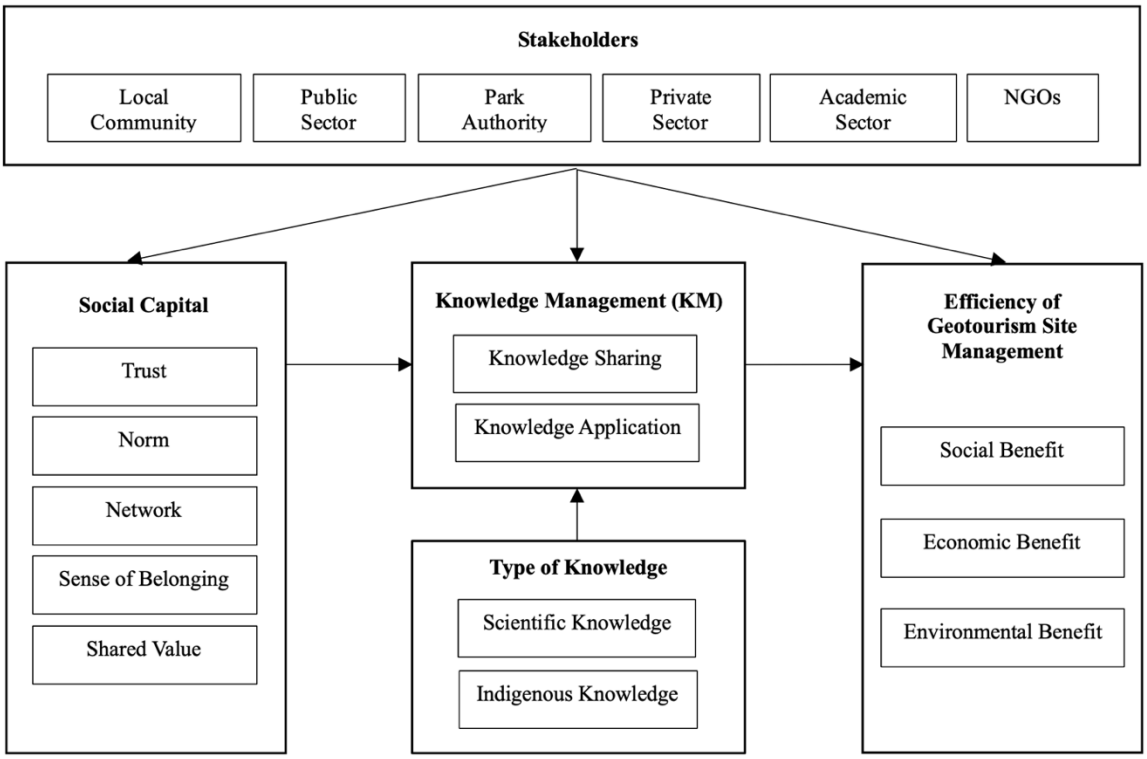

Figure 5. The Relationship between Social Capital, Knowledge Management, and Efficiency of Geotourism Site Management (Source: Researcher)

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