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Integrating Dynamic Governance into Sustainable Tourism Management: A Framework For Socio-Ecological Development

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ABSTRACT

This study aims at the direct and indirect consequences of adaptability, integration, and visioning, which are fundamental components of dynamic governance, on socio-ecological development and sustainable tourism. Data were obtained from 200 respondents with varied demographic backgrounds using a quantitative technique and Partial Least Squares Structural Equation Modeling (PLS-SEM). The results show ten statistically significant relationships: seven have positive impacts, while three have paradoxical negative connections. Notably, adaptiveness improves sustainable tourism while harming socio-ecological development, implying a trade-off between flexibility and ecological balance. Furthermore, socio-ecological development has a detrimental influence on tourist sustainability, highlighting possible contradictions between conservation aims and tourism expansion. The study contributes to the theoretical integration of governance dynamics and sustainability while also providing practical insights for aligning development agendas. It emphasizes the importance of collaborative, adaptable, and forward-thinking governance approaches that bridge environmental and economic goals in tourist planning.

1. INTRODUCTION

Tourism has become an integral part of national development strategies, particularly in emerging economies, where it is positioned as a key driver of economic growth, employment generation, and cultural preservation. In the post-pandemic era, the global tourism industry has regained its momentum and continues to be a pivotal sector in revitalizing local economies and restoring global mobility [1]. According to the United Nations World Tourism Organization (UNWTO), tourism remains one of the fastest-growing sectors worldwide, contributing significantly to inclusive development and socio-cultural enrichment. In Indonesia, tourism plays a strategic role in national development policies, serving as both an economic engine and a platform for environmental and cultural interaction [2]. Nevertheless, the evolving complexity of tourism-related challenges has necessitated a paradigmatic shift from traditional growth-oriented approaches to more holistic and sustainable models [3, 4]. In recent decades, tourism management has moved beyond merely increasing visitor numbers and must now integrate social and ecological sustainability in a comprehensive manner [5]. Therefore, the emergence of the sustainable tourism management paradigm is an important turning point in the transformation of modern tourism governance. This concept not only emphasizes environmental conservation but also community participation, economic justice, and social and cultural stability in tourist areas [6-8].

However, in practice, the implementation of sustainable tourism management often faces structural and institutional challenges [9, 10]. Studies have found that in many tourist destinations, including Indonesia, there are no integrated long-term planning mechanisms, a lack of policy adaptability to social and climate change, and a lack of collaboration between cross-sector actors and stakeholders [11-13]. Tourism governance systems are often the main obstacles to achieving inclusive sustainability. This is evident in the dominance of top-down development plans that exclude local community participation and overemphasize economic aspects while neglecting ecological carrying capacity [14].

More specifically, several policy studies at the local level show that environmental sustainability indicators in tourism management are often overlooked in regional development planning [15-17]. In many nature-based tourist areas such as coastal areas, mountains, or national parks, there is a conflict between the expansion of tourism development and ecosystem conservation [18, 19]. In addition, local governments often have difficulty accommodating various stakeholder interests holistically, which leads to policies becoming reactive and sectoral [20]. This underscores the need for a governance framework that is both responsive to dynamic changes and adaptive and integrative over the long term [21].

It is in this context that the dynamic governance approach becomes very relevant [22]. As an adaptive, anticipatory, and collaborative approach to governance, Dynamic Governance offers a conceptual and praxis framework that is able to respond to socio-ecological complexity in the tourism sector [23, 24]. This concept consists of three main components,

namely, visioning (thinking ahead), adaptiveness (thinking again), and integration (thinking across) [25].

First, visioning describes the ability of institutions or organizations to formulate a long-term vision that is sustainability-oriented and able to anticipate global challenges such as climate change, energy crises, and social pressures due to overtourism [26, 27]. Second, adaptiveness refers to institutional flexibility in evaluating and adjusting policies continuously based on socio-economic dynamics and feedback from the community, in line with the adaptive policy-making approach [28, 29]. Third, integration emphasizes the importance of cross-sectoral collaboration, both between government agencies, industry players, local communities, and civil society organizations, in creating synchronous and coordinated policies [30].

These three dimensions enrich our understanding of dynamic tourism governance and at the same time form a conceptual foundation for building a socio-ecological development framework [31]. This approach sees the importance of striking a balance between environmental conservation and improving the socio-economic well-being of local communities [32, 33]. Stated that a socio-ecological system-based (SES) approach in the context of tourism is a strong foundation for driving systemic sustainable transformation at the local level [34]. Therefore, the integration of Dynamic Governance principles into tourism management is not only an alternative approach but also a key strategy in dealing with contemporary challenges such as the destruction of the destination environment, economic inequality due to the exclusion of local communities, and spatial conflicts in tourist areas [35, 36].

In this context, the main question that needs to be answered is how the three components of Dynamic Governance (visioning, adaptiveness, and integration) can be systematically integrated in sustainable tourism management to support socio-ecological development [37]. To answer this question, an empirical and theoretical analysis of the relationship between these variables is needed to produce a governance model that is effective and responsive to local needs while being in line with global development goals such as the Sustainable Development Goals 2030 [38, 39].

The novelty of this research lies in its systematic operationalization of dynamic governance within the context of sustainable tourism and its empirical examination of trade-offs in socio-ecological outcomes. Unlike previous studies that treat governance attributes descriptively, this study models their influence using statistically validated constructs and pathways. Furthermore, by identifying the conditions under which governance mechanisms either reinforce or hinder sustainability, the study contributes to the refinement of theoretical models in tourism governance. The scope of the research encompasses both theoretical and practical dimensions, offering implications for policy design, institutional reform, and stakeholder engagement in the pursuit of sustainability in tourism destinations.

Based on the conceptual study and the research gap above, the following hypothesis is formulated:

H1: Adaptiveness has a positive effect on socio-ecological development.

H2: Adaptiveness has a positive effect on sustainable tourism management.

H3: Integration has a positive effect on socio-ecological development.

H4: Integration has a positive effect on sustainable tourism management.

H5: Visioning has a positive effect on socio-ecological development.

H6: Visioning has a positive effect on sustainable tourism management.

H7: Sustainable tourism management has a positive effect on socio-ecological development.

H8: Adaptiveness has an indirect effect on socio-ecological development through sustainable tourism management.

H9: Integration has an indirect effect on socio-ecological development through sustainable tourism management.

H10: Visioning has an indirect effect on socio-ecological development through sustainable tourism management.

Based on the dynamic governance framework, this study formulates ten hypotheses to assess how adaptiveness, integration, and visioning influence socio-ecological development and sustainable tourism, both directly and indirectly.

Despite the growing body of literature addressing dynamic governance, socio-ecological systems, and sustainable tourism, existing studies tend to examine these domains in isolation. Prior works on dynamic governance emphasize its conceptual strength but rarely provide empirical validation within complex, real-world settings. Similarly, scholarship on sustainable tourism often focuses on ecological or economic indicators, while socio-ecological perspectives highlight systemic interdependence without fully integrating governance mechanisms. Although several studies acknowledge the relevance of governance adaptability and integration, few have examined how these dynamic features operate simultaneously and interactively to affect sustainable tourism outcomes. Therefore, this study addresses a key gap by empirically testing how the core dimensions of dynamic governance visioning, adaptiveness, and integration collectively influence socio-ecological development and sustainable tourism. By synthesizing concepts across disciplinary boundaries and embedding them in a regionally specific case, this research contributes both theoretically and empirically to the literature on governance for sustainability [40].

2. RESEARCH METHODS

2.1 Studies and data collection

This study employed a quantitative research design to investigate the influence of the three dimensions of dynamic governance visioning, adaptiveness, and integration on socio-ecological development and sustainable tourism. The primary data collection method was a structured questionnaire distributed to a purposive sample of 200 respondents engaged in or knowledgeable about tourism development in Southeast Sulawesi, Indonesia. The analytical approach adopted was Partial Least Squares Structural Equation Modeling (PLS-SEM), which is particularly suitable for testing complex models involving latent variables and mediation effects.

PLS-SEM was chosen over covariance-based SEM (CB-SEM) for several reasons. First, the research objective is predictive and exploratory rather than confirmatory, aligning with the strengths of PLS-SEM in generating theory-informed insights. Second, the model includes multiple constructs with high measurement complexity, necessitating a variance-based approach that is robust against multicollinearity and non-

normal data distribution. Third, although the sample size (n = 200) is statistically sufficient for CB-SEM, the use of PLS-SEM allows for greater statistical power in small to medium samples, especially in models with mediation paths and reflective indicators.

The demographic characteristics of the respondents are an essential part of describing the basic profile of the sample population involved in this study [41]. Demographic information not only provides an overview of the distribution of respondents but also provides relevant social and psychological context in interpreting the results of the study [42]. While the sample of 200 respondents is consistent with methodological standards for PLS-SEM analysis, several limitations must be acknowledged. The use of purposive sampling while appropriate for targeting stakeholders with governance experience may introduce selection bias, as participants may possess above-average knowledge or engagement levels compared to the broader tourism community. Additionally, the data were collected from a single geographic region (Southeast Sulawesi), which may limit the generalizability of findings to other provinces or national contexts with different institutional capacities, stakeholder dynamics, or tourism characteristics. These limitations suggest caution in extending the conclusions beyond similar socio-ecological settings. Nonetheless, the results provide valuable insights into how dynamic governance operates within emerging tourism systems and can inform future comparative studies across regions [43]. Furthermore, according to Bougie and Sekaran [44], demographic variables such as gender, age, and education level can function as a differentiating factor (moderator) that has the potential to affect respondents' perceptions and attitudes towards an issue, especially in studies involving behavior, opinions, or experiences. In this study, demographic data were obtained from 200 respondents consisting of various backgrounds and covering three main variables, namely gender, age, and last level of education [45].

Table 1. Respondent demographic information

Demographic Variable		N = 200	
		Number	Percent
Gender	Male	88	44.0%
	Female	112	56.0%
Age	< 20 years	16	8.0%
	20–29 years	122	61.0%
	30–39 years	42	21.0%
	≥ 40 years	20	10.0%
Education Level	Senior High School	24	12.0%
	Diploma (D3)	34	17.0%
	Bachelor (S1)	98	49.0%
	Master (S2) or above	44	22.0%

Source: Author processing, 2025

Table 1 shows that based on gender, the majority of respondents were women as many as 112 people (56.0%), while men amounted to 88 people (44.0%). In terms of age, most of the respondents were in the age range of 20–29 years as many as 122 people (61.0%), followed by 30-39 years old as many as 42 people (21.0%), then ≥ 40 years old as many as 20 people (10.0%), and those aged < 20 years only 16 people (8.0%). Based on education level, the majority of respondents have completed Bachelor's (S1) education as many as 98 people (49.0%), followed by Master's (S2) or higher as many as 44 people (22.0%), Diploma (D3) as many as 34 people (17.0%), and high school/equivalent as many as 24 people (12.0%). In terms of employment, the most respondents came from students or students as many as 91 people (45.5%), followed by private employees as many as 53 people (26.5%), civil servants or government as many as 26 people (13.0%), entrepreneurs as many as 17 people (8.5%), and other categoriesas many as 13 people (6.5%).

2.2 Operationalization of constructs

This study employed five latent constructs derived from the dynamic governance framework and sustainability literature: Visioning, Adaptiveness, Integration, Socio-Ecological Development, and Sustainable Tourism. Each construct was operationalized into a set of measurable items based on prior validated instruments and adapted to the Indonesian tourism governance context. All items were measured using a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree).

a) Visioning was measured with 4 items adapted from Neo, and Chen [23] and Hooijberg and Choi [46], capturing the government's long-term orientation and ability to set shared goals. Example item: "Tourism authorities in our region promote long-term planning that balances environmental and economic interests."
b) Adaptiveness was operationalized using 5 items, based on Teo et al. [47], reflecting institutional flexibility and responsiveness to change. Example item: "Local government quickly revises tourism policies in response to environmental or economic changes."
c) Integration was measured using 4 items derived from previous studies [48, 49], evaluating the extent of inter-agency coordination and stakeholder participation. Example item: "Tourism governance involves effective collaboration between environmental, cultural, and economic agencies."
d) Socio-Ecological Development was captured using 4 items adapted from Inocencio [50] and Joshi and Takkar Dongre [51], assessing outcomes like community empowerment and ecological improvement. Example item: "Tourism development has led to improved management of local natural resources."
e) Sustainable Tourism was measured using 5 items adapted from Ju Lee et al. [49], addressing long-term environmental, economic, and social viability. Example item: "Tourism in our region supports environmental conservation and community welfare."

The operationalization of constructs in this study adheres to rigorous theoretical grounding and established measurement standards. By adapting validated indicators from prior literature and contextualizing them for sustainable tourism governance in Indonesia, the study ensures both content validity and empirical robustness. This structured approach enables the reliable examination of dynamic governance mechanisms and their influence on socio-ecological and tourism-related outcomes.

2.3 Questionnaire design and measurement

In quantitative research, questionnaires are the main instrument used to systematically collect data from respondents [52]. The proper design and measurement of questionnaires greatly determines the validity and reliability of the data, as well as affects the accuracy of interpretation of the

phenomenon being studied [53]. According to Hair [54], the quality of measurements in quantitative research is highly dependent on the extent to which the instruments used are able to accurately and consistently reflect theoretical constructs. Therefore, the questionnaire preparation in this study was carried out in a structured manner, taking into account the theoretical, conceptual, and operationalization aspects of variables**,** and following the standards of modern psychometric measurement methods [55].

Furthermore, the preparation of questionnaires must pay attention to aspects of content validity and internal reliability, which can be achieved through the development of indicators sourced from scientifically verified theories [56]. This aims to ensure that each item of the statement truly represents a measured construct and can be understood consistently by the respondent.

The questionnaire in this study was compiled based on indicators developed from the literature review and relevant theories that underlie each latent variable in the research model [57]. Each latent variable is operationalized into a number of statements or questions that can be measured through the Likert scale (Table 2). The scale used is a 5-point Likert scale, with a range from 1 = strongly disagree to 5 = strongly agree**,** which allows respondents to show their level of approval more flexibly and express. The use of this scale is considered effective to measure respondents' attitudes, perceptions, and preferences towards certain objects or issues [58].

To ensure the quality of the instrument, content validity *is* carried out by involving experts (expert judgment**)** in the relevant field. This approach is used to ensure that each item of the statement reflects the meaning of the construct in a representative and conceptually appropriate manner. This is reinforced by the view that emphasizes that the involvement of experts in the content validation process is a crucial first step to guarantee the psychometric feasibility of the instrument before it is statistically tested [59].

The validity of the construct and internal reliability were then tested through quantitative statistical analysis, namely Confirmatory Factor Analysis (CFA) to test the validity of the factor structure, as well as the calculation of Average Variance Extracted (AVE), Composite Reliability (CR), and Cronbach's Alpha (CA) as an indicator of internal consistency. Hair et al. [54] confirmed that in the analysis of SEM-based (Structural Equation Modeling) measurement models, AVE values exceeding 0.50 indicate adequate convergent validity, while CR and CA values above 0.70 indicate good construct reliability [60].

Before being widely used, this questionnaire has gone through the pilot testing stage for a limited number of respondents who have characteristics similar to the research sample. The results of the test were used to identify items that were less valid or unreliable, as well as to improve the structure of the questions to make them easier for respondents to understand. Based on the validity and reliability test, only items that meet the statistical criteria are used in the main data collection.

The distribution of the questionnaire was carried out both online and offline, depending on the characteristics of the population and field conditions. To ensure data quality, the instrument is equipped with clear filling instructions, data confidentiality guarantees, and screening for inconsistent or incomplete answers. With a systematic design approach and standardized measurements, the questionnaire instruments in this study are expected to be able to represent the actual conditions in the field, as well as support the validity of empirical inference of research results [61].

2.4 Data analysis method

The decision to employ PLS-SEM over CB-SEM was guided by both the theoretical and empirical goals of the study. While the sample size (n = 200) and indicator reliability are within acceptable thresholds for CB-SEM, PLS-SEM was preferred due to its superior capability in modeling complex, multi-dimensional constructs, handling non-normal data distributions, and supporting prediction-oriented objectives [54]. Furthermore, the research seeks to explore the formative impact of dynamic governance mechanisms on sustainability outcomes—an area that benefits from the variance-based focus and flexibility of PLS-SEM. Therefore, the selection of PLS-SEM aligns with both the nature of the constructs and the objective of theory development in emerging contexts.

Table 2. Description of research variables

Construct (Variable)	Indicator Code	Indicator Name	Outer Loading
Visioning	VIS_1	The government has a long-term vision in tourism management	0.941
	VIS_2	Tourism strategic plan considers the future	0.923
	VIS_3	Decision-making reflects a forward-looking orientation	0.956
	VIS_4	Tourism planning supports long-term sustainability	0.935
Adaptiveness	ADAP_1	The government is quick to respond to changes in the tourism sector	0.908
	ADAP_2	Tourism regulations are flexible and easy to update	0.927
	ADAP_3	Stakeholders can provide input on policy changes	0.934
	ADAP_4	There are periodic evaluations and adjustments in the tour program	0.944
Integration	INT_1	Collaboration between sectors in tourism planning and implementation	0.945
	INT_2	Government, the private sector, and communities work together integratively	0.933
	INT_3	Cross-sectoral policy-making is carried out jointly	0.946
	INT_4	Information is shared openly between stakeholders	0.949
Socio-Ecological Development	SED_1	Tourism programs support conservation and environmental preservation	0.931
	SED_2	Tourism development pays attention to local socio-cultural aspects	0.955
	SED_3	The impact of tourism activities on ecology is well managed	0.946
	SED_4	Tourism programs support inclusive social development	0.946
Sustainable Tourism	ST_1	Tourism management pays attention to economic sustainability	0.943
	ST_2	Tourism is carried out in an environmentally friendly manner	0.956
	ST_3	There is a balance between social, environmental, and economic aspects	0.964
	ST_4	The tourism program meets the principles of sustainable tourism	0.953

Source: Author processing, 2025

3. RESULTS

3.1 Reliability and validity

In quantitative research, especially that which uses variance-based structural equation modeling approaches such as PLS-SEM, testing the reliability and validity of the instrument is a crucial stage that aims to ensure that the constructed measure has internal consistency and is able to represent theoretical concepts accurately and precisely. Without adequate reliability and validity, the interpretation of the results of the model analysis becomes unreliable and risks producing erroneous conclusions [62].

Reliability refers to the level of internal consistency of the indicators that measure a latent construct. In PLS-SEM, reliability is usually evaluated through several measures, namely: CA, CR and rho_A where there is a condition if the significant level is ≥ 0.70 while the convergent validity is AVE, with a minimum suggested value of 0.50, which means that more than 50% of the variance of the indicator can be explained by its construct.

Convergent validity indicates that the indicators in a single construct have a high correlation with each other. The measure used to test the validity of the convergence is the AVE, with the minimum recommended value being 0.50, which means that more than 50% of the variance of the indicator can be explained by its construct [63].

In addition, it is also important to test the outer loadings of each indicator against its construct. Ideally, a ≥ factor loading value of 0.70 indicates a substantial contribution of the indicator to the latent construct. Indicators with a loading value of <0.40 should generally be eliminated, while those between 0.40–0.70 may be considered for retention if their contribution is theoretically significant and the AVE value is still eligible [64].

Table 3 displays the outer loadings of observed indicators on their respective latent constructs. Most indicators exhibit loadings above the recommended threshold of 0.70, indicating strong convergent validity. For instance, items measuring integration and sustainable tourism consistently demonstrate high loadings (>0.80), signifying that the items robustly reflect their underlying constructs. In cases where loadings are slightly below 0.70 (e.g., one indicator for adaptiveness), the item was retained due to its theoretical relevance and acceptable composite reliability at the construct level. High outer loadings support the notion that the instrument effectively captures the core dimensions of dynamic governance and sustainability. These results provide empirical confidence in the measurement quality and suggest that the constructs are conceptually coherent and statistically robust.

In the PLS-SEM based measurement model, discriminant validity testing is a crucial stage that aims to ensure that each construct tested in the model is unique and does not empirically overlap with other constructs. In other words, discriminant validity confirms that each construct actually measures a different concept according to a predetermined theoretical framework.

Table 3. AVE, CR, and CA

Constructs / Variables	Indicator Code	Outer Loading	CA	CR (ρA)	CR (ρC)	AVE
Visioning	VIS_1	0.941	0.938	0.943	0.956	0.845
	VIS_2	0.923				
	VIS_3	0.956				
	VIS_4	0.935				
Adaptiveness	ADAP_1	0.908	0.917	0.922	0.941	0.800
	ADAP_2	0.927				
	ADAP_3	0.934				
	ADAP_4	0.944				
Integration	INT_1	0.945	0.934	0.935	0.953	0.835
	INT_2	0.933				
	INT_3	0.946				
	INT_4	0.949				
Socio-Ecological Development	SED_1	0.931	0.937	0.939	0.955	0.840
	SED_2	0.955				
	SED_3	0.946				
	SED_4	0.946				
Sustainable Tourism	ST_1	0.943	0.952	0.953	0.965	0.874
	ST_2	0.956				
	ST_3	0.964				
	ST_4	0.953				

Source: Author processing, 2025

Table 4. Correlation matrix with the square root of the AVE on the diagonal

Construct	Mean	SD	Adaptiveness	Integration	Socio-Ecological Development	Sustainable Tourism	Visioning
Adaptiveness	4.21	0.51	**0.894**				
Integration	4.25	0.48	0.832	**0.914**			
Socio-Ecological Development	4.18	0.53	0.811	0.851	**0.917**		
Sustainable Tourism	4.30	0.50	0.805	0.843	0.866	**0.935**	
Visioning	4.22	0.52	0.827	0.837	0.845	0.853	**0.919**

Source: Author processing, 2025

One of the most widely used methods for evaluating discriminant validity is the Fornell-Larcker criterion [65, 66]. This technique presents correlations between constructs in the form of a correlation matrix table, where the square root value of the Average Variance Extracted (√AVE) for each construct is placed on the main diagonal of the matrix, and the correlation value between constructs is placed on the other cell (off-diagonal).

To enrich statistical interpretation, this matrix can also be supplemented with the mean and standard deviation values of each construct. This aims to provide an overview of the distribution of the value of each construct in the research data and help interpret the dynamics of the relationship between variables in a descriptive manner.

Table 4 assesses discriminant validity using the Fornell–Larcker criterion. The square root of the AVE for each construct—displayed on the diagonal exceeds the inter-construct correlations shown off-diagonal. This indicates that each latent variable shares more variance with its indicators than with other constructs, satisfying the criterion for discriminant validity. Notably, despite some conceptual overlap (e.g., between integration and socio-ecological development), the discriminant validity results confirm that the constructs remain empirically distinct. This separation enhances the credibility of the structural paths and reduces concerns regarding multicollinearity among governance variables.

Table 4 presents the results of the discriminant validity test using the Fornell-Larcker criterion. This test assesses whether each construct in the model is empirically distinct from the others. The square root of the AVE for each construct is positioned along the diagonal, while the inter-construct correlations are displayed in the off-diagonal cells. Discriminant validity is considered adequate when the AVE of a construct is greater than its correlations with all other constructs.

The results clearly demonstrate that all constructs satisfy this criterion. For example, the AVE for the Sustainable Tourism construct is 0.935, which exceeds its correlations with Socio-Ecological Development (0.866), Integration (0.843), Visioning (0.853), and Adaptiveness (0.805). Similar patterns are observed across the remaining constructs, indicating that each variable measures a unique conceptual domain without significant overlap.

Furthermore, the table includes descriptive statistics in the form of mean and standard deviation (SD) values. The mean scores range from 4.18 to 4.30, suggesting generally high and positive respondent perceptions toward all constructs. The relatively low SD values (0.48–0.53) indicate minimal dispersion and perceptual consistency among participants.

Figure 1 presents the final structural model, including path coefficients and the direction of relationships among the latent constructs. As shown, the relationships between adaptiveness and socio-ecological development (H1) and between visioning and socio-ecological development (H5) are statistically significant but negative, indicating potential misalignment between governance responsiveness or planning and ecological-social outcomes. Conversely, integration exhibits a strong and positive effect on both socio-ecological development (H3) and sustainable tourism (H6), highlighting the critical role of cross-sectoral coordination. Additionally, socio-ecological development serves as a significant mediator linking dynamic governance constructs to sustainable tourism. The model's explained variance (R^2) for the endogenous constructs is substantial, particularly for socio-ecological development and sustainable tourism, which reinforces the model's predictive power. These structural relationships are not only statistically significant but also theoretically meaningful, emphasizing the non-linear and sometimes paradoxical impact of governance variables on sustainability outcomes.

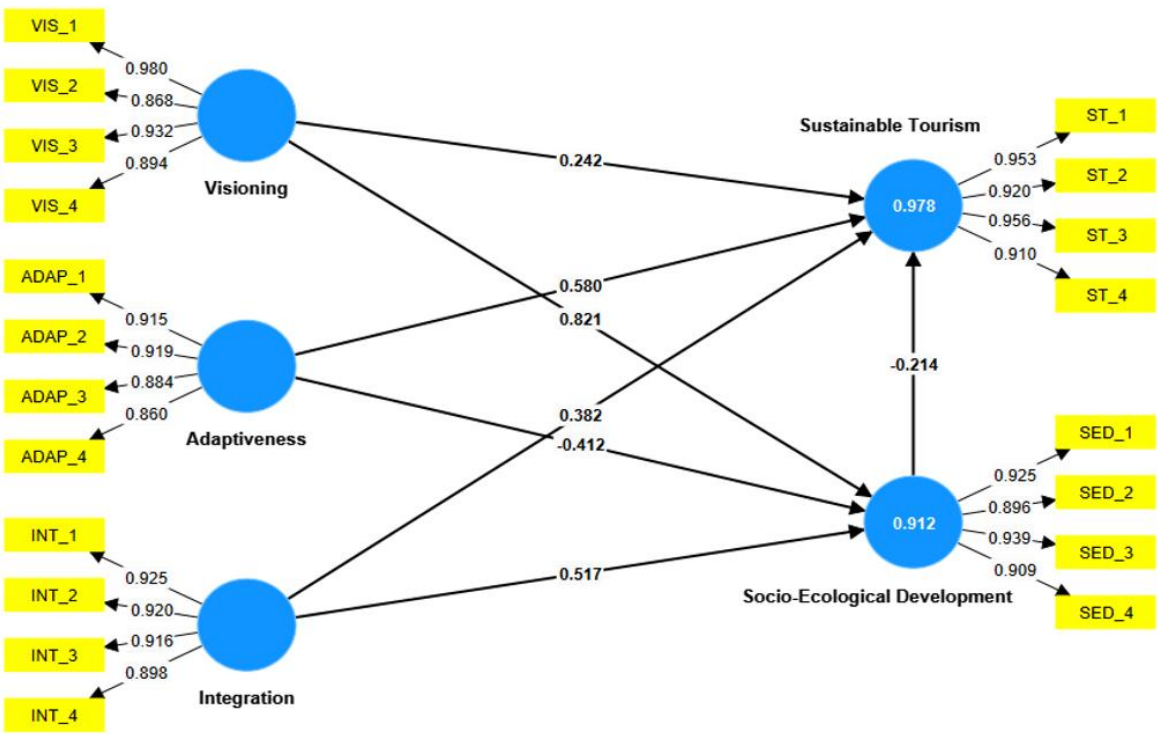

Figure 1. Structural model (path coefficient)
Source: Author's processing, 2025

3.2 Hypothesis testing

In the context of this study, hypothesis testing was carried out to assess the influence of the three main dimensions of Dynamic Governance, namely Visioning (Thinking Ahead), Adaptiveness (Thinking Again), and Integration (Thinking Across) on two outcome variables, namely Sustainable Tourism and Socio-Ecological Development. The use of the PLS-SEM approach is the right methodological choice considering that the research model is predictive, complex, and involves latent variables measured by a number of reflective indicators, each hypothesis proposed represents the direct or indirect influence of the independent variable on the bound variable, either through the main path or mediation. The test method uses a quantitative statistical approach based on a SEM model with path coefficient estimation accompanied by statistical T-values and P-values. The test results show the direction and strength of influence, as well as the degree of significance of the relationship between variables that empirically support or reject the initial hypothesis [67]. The results of the hypothesis testing in detail are presented in Table 5.

Table 5 shows that all hypotheses proposed in this study are statistically proven, as shown by a P-value of 0.000 on all paths of influence, which means that it is smaller than the standard significance limit of $\alpha = 0.05$. Thus, all hypotheses in this model are empirically significant, both in direct and indirect relationships. Furthermore, of the 10 hypotheses tested, 7 hypotheses showed a significant positive influence, namely H2 (Adaptiveness→Sustainable Tourism), H3 (Integration→Socio-Ecological Development), H4 (Integration→Sustainable Tourism), H6 (Visioning→Socio-Ecological Development), H7 (Visioning→Sustainable Tourism), H8 (Adaptiveness→Sustainable Tourism through Socio-Ecological Development), and H10 (Integration→Integration→Sustainable Tourism through Socio-Ecological Development). These seven pathways show that variables such as adaptiveness, integration, and visioning play an important role in improving the quality of socio-ecological development and sustainable tourism, both directly and through mediation mechanisms.

Meanwhile, there are 3 hypotheses that show significant negative influences, namely H1 (Adaptiveness→Socio-Ecological Development), H5 **(**Socio-Ecological Development→Sustainable Tourism), and H9 (Visioning→Visioning→Sustainable Tourism through Socio-Ecological Development). Negative results in these three pathways indicate a complex dynamic in the relationship between variables. For example, too flexible adaptiveness can adversely affect socio-ecological balance (H1), or highly conservative socio-ecological development can hinder the growth of the tourism sector (H5), which also affects the outcome of mediation pathways in H9.

Thus, although all hypotheses are statistically accepted, the direction of influence is not uniform, which has important implications for social-ecologically based sustainable tourism development policies and strategies.

Table 5. Summary of results

H	Relationship	Path Coefficients	T-Statistics	P-Value	Conclusion
H1	Adaptiveness → Socio-Ecological Development	-0.412	9.554	0.000	Significant, Negative
H2	Adaptiveness → Sustainable Tourism	0.580	26.858	0.000	Signifikan, Positive
H3	Integration → Socio-Ecological Development	0.517	8.475	0.000	Signifikan, Positive
H4	Integration → Sustainable Tourism	0.382	12.105	0.000	Signifikan, Positive
H5	Socio-Ecological Development → Sustainable Tourism	-0.214	8.159	0.000	Significant, Negative
H6	Visioning → Socio-Ecological Development	0.821	10.827	0.000	Signifikan, Positive
H7	Visioning → Sustainable Tourism	0.242	5.536	0.000	Signifikan, Positive
H8	Adaptiveness → Sustainable Tourism → Socio-Ecological Development	0.088	5.854	0.000	Signifikan, Positive
H9	Visioning → Socio-Ecological Development → Sustainable Tourism	-0.110	4.919	0.000	Significant, Negative
H10	Integration → Socio-Ecological Development → Sustainable Tourism	0.176	7.375	0.000	Significant, Negative

Source: Author processing, 2025

4. DISCUSSION AND IMPLICATIONS

4.1 Discussion

The results of hypothesis testing in this study provide an in-depth understanding of how the three main dimensions, namely adaptiveness, integration, and visioning, affect the development of socio-ecological development *and* sustainable tourism. Each path of influence provides rich insight into the dynamics between variables in the context of sustainable tourism destination development [68].

Adaptiveness shows contrasting results. On the one hand, adaptiveness has a significant positive effect on sustainable tourism (H2), showing that the flexibility and ability of destinations to adapt to changing tourist preferences, environmental challenges, and technological innovations greatly support tourism sustainability [69]. But on the other hand, adaptiveness actually has a significant negative effect on socio-ecological development (H1). This indicates that adaptation that is too pragmatic, for example, accommodating the needs of tourists without considering the carrying capacity of the local ecosystem, can damage the social and ecological dimensions [70]. However, the H8 results show that adaptiveness still has a positive indirect influence on sustainable tourism through socio-ecological development. This shows that if adaptive management is carried out with ecological and social balance in mind, then the negative impact can be minimized and still contribute to sustainable

tourism [71].

The results of the analysis show that integration has a significant positive influence, both directly and indirectly, on socio-ecological development (H3), sustainable tourism (H4), and sustainable tourism through socio-ecological development mediation (H10). These findings underscore the importance of coordination and collaboration across actors, including governments, local communities, the private sector, and non-governmental organizations, in the design and implementation of destination development policies. Sustainable tourism requires collaborative governance that is able to bridge the interests of diverse stakeholders to ensure that there is no dominance of certain actors that can disrupt the ecological, social, and economic balance [72].

Meanwhile, visioning, or visionary leadership, has also been proven to have a strong and positive influence on socio-ecological development (H6) and on sustainable tourism (H7). This shows that leadership that is able to set a long-term vision, inclusive strategic direction, and sustainability values greatly contributes to the success of the overall development of destinations. Good visioning not only formulates development goals but also unites stakeholders in the spirit of collective change. As emphasized, transformational leadership in the tourism sector plays an important role in building a sustainability narrative that is integrated between environmental protection, social welfare, and economic growth [73].

However, the results of H9 reveal that the influence of visioning on sustainable tourism through socio-ecological development mediation has a significant negative value. These results are in line with the findings of Mandić et al. [74], which suggest that ecosystem conservation policies that are not aligned with tourism planning can create tensions between conservation and destination economies, especially if they are not accompanied by adaptive mitigation and communication approaches [75].

The socio-ecological development variables in this study showed a significant negative influence on sustainable tourism (H5), which is quite surprising because normatively socio-ecological development is seen as an important foundation for tourism sustainability. In sustainable development theory, the balance between social, ecological, and economic aspects is the main element in maintaining the long-term resilience of tourist destinations. However, these results indicate that in practice, the implementation of socio-ecological development policies has not been fully effectively integrated with the strategies and needs of the tourism sector. In line with the research, restrictive socio-ecological conservation policies, such as restricting tourist access to conservation areas, limiting the number of visits, or banning certain activities for the sake of environmental protection, can have a negative impact on economic aspects and tourist attractions [76].

4.2 Implications

4.2.1 Theoretical contributions

The results of this study make an important contribution to the development of sustainable tourism theory, especially by integrating the concepts of adaptiveness, integration, and visioning into models of influence on socio-ecological development and sustainable tourism. Findings that show the negative influence of socio-ecological development on sustainable tourism open up a new space in the study of the conflict between conservation and tourism development. It emphasizes the need for a more dynamic theory, not only assuming that all social and ecological dimensions inevitably reinforce sustainability but also considering the potential trade-offs between aspects [77].

In addition, the role of socio-ecological development mediation in strengthening or even reversing the direction of influence of key variables provides new insights into the importance of understanding internal mechanisms in the tourism development model.

4.2.2 Practical recommendations

Some strategic steps that can be taken by policymakers and destination managers based on these results include:

i. Pro-Sustainability Adaptive Quality Improvement

Adaptiveness needs to be directed not only to meet the demands of the tourist market but also to maintain social and ecological integrity. Training of destination managers in sustainable adaptation strategies is needed so that they are not only responsive but also accountable to the carrying capacity of the environment.

ii. Strengthening Cross-Sector Coordination

The findings show that integration is key to increasing the success of socio-ecological development and tourism sustainability. Therefore, it is necessary to establish a multi-stakeholder collaboration forum at the regional level or tourist destination that is able to harmonize the vision of cross-sectoral development.

iii. Formulation of a Balanced Long-Term Vision

It is important for tourism authorities and local governments to develop a development master plan that combines the vision of conservation with the development of the tourism economy. Without an integrative vision, policy can be contradictory, as the H9 results show.

iv. Harmonization between Socio-Ecological Development and the Tourism Sector

The finding that socio-ecological development has a negative impact on sustainable tourism (H5) demands serious harmonization efforts. This can be done through the implementation of instruments such as ecotourism zoning, community-based tourism, and incentives for tourism actors who follow environmental standards.

The findings of this study reveal that adaptiveness and visioning, two key elements of dynamic governance, exert statistically significant but negative effects on socio-ecological development (H1 and H5), and that adaptiveness has a negative indirect effect on sustainable tourism via socio-ecological development (H9). While these results appear counterintuitive, they can be theoretically explained and are not without precedent in real-world governance scenarios [78].

First, although adaptiveness is often associated with institutional responsiveness and learning, excessive or reactive adaptiveness can lead to policy volatility, fragmentation, and confusion among stakeholders. In tourism governance, frequent policy shifts, even if well-intentioned, can undermine long-term ecological planning and weaken community trust. For instance, in parts of Indonesia, frequent changes to tourism zoning regulations driven by adaptive responses to investor pressure have led to unmanaged ecological degradation

Second, visioning, while crucial for long-term planning, may produce negative outcomes if it is detached from operational capacity or ground-level realities. Vision statements that are overly aspirational but lack integration with community input or local feasibility may be perceived as performative, leading to public disengagement. This dynamic

has been observed in several top-down tourism master plans in Southeast Asia that failed to align with socio-cultural realities, resulting in resistance or policy failure.

The negative indirect effect of adaptiveness through socio-ecological development (H9) suggests that in some cases, rapid adaptation undermines the slower, cumulative processes required for meaningful socio-ecological change, such as participatory land use reform or ecosystem restoration. This underscores a tension between short-term policy responsiveness and long-term development goals. Such dynamics have been documented in ecotourism programs in Sulawesi and Kalimantan, where reactive environmental policies eroded social capital among local communities.

Collectively, these findings indicate that dynamic governance mechanisms must be context-sensitive: not all flexibility or forward-looking plans guarantee positive outcomes. Without institutional coherence, accountability, and community alignment, even progressive governance features can produce unintended negative consequences. This nuance contributes to the emerging literature that challenges the assumption of linear benefits from governance innovations in complex socio-ecological systems.

5. CONCLUSION

This study advances the theoretical and empirical understanding of sustainable tourism governance by demonstrating how the dimensions of dynamic governance—adaptiveness, integration, and visioning—interact with socio-ecological development and sustainable tourism outcomes. The findings reveal a nuanced landscape: while integration and visioning exhibit consistently positive effects, adaptiveness shows a dual role, benefiting tourism but potentially undermining socio-ecological balance if not aligned with long-term environmental priorities. Moreover, the unexpected negative relationship between socio-ecological development and sustainable tourism underscores the tensions that can arise between conservation efforts and tourism expansion. This paradox highlights the need for governance frameworks capable of reconciling ecological sustainability with economic vitality, rather than assuming automatic alignment between the two.

These insights highlight the importance of governance models that balance flexibility with strategic foresight and intersectoral collaboration. By integrating dynamic governance into tourism management, this study offers a robust framework for reconciling ecological sustainability with economic vitality. The results suggest that sustainable tourism requires adaptive yet coherent governance strategies that integrate ecological, social, and economic goals. Future research should explore these dynamics in different regional contexts and through longitudinal designs to capture the evolving interplay between governance practices and sustainability outcomes. Future research is encouraged to explore these dynamics in varied regional contexts and to examine longitudinal impacts to better capture the evolving interplay between governance practices and sustainability goals.

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