JOURNAL OF CULTURAL ANALYSIS AND SOCIAL CHANGE

Journal of Cultural Analysis and Social Change,
2025, 10(4), 925-943
ISSN: 2589-1316

Navigating Community Collaborative Dynamics in Environmental Management of Indonesian Lake Conservation Zones

Nurkhalila Fajrini[1]*, Iriana Bakti[2], Herlina Agustin[3], Evi Novianti[4]

[1,2,3,4] *Universitas Padjadjaran, Faculty of Communication Science, Bandung, INDONESIA*

***Corresponding Author:** nurkhalila15001@mail.unpad.ac.id

Citation: Fajrini, N., Bakti, I., Agustin, H. & Novianti, E. (2025). Navigating Community Collaborative Dynamics in Environmental Management of Indonesian Lake Conservation Zones, *Journal of Cultural Analysis and Social Change*, 10(4), 925-943. https://doi.org/10.64753/jcasc.v10i4.2963

Published: December 07, 2025

ABSTRACT

Restoring the environmental quality of lakes is essential to encourage sustainable tourism and maintain the ecological balance of conservation areas. This study has explored the dynamics of collaboration between local communities and stakeholders in managing environmental restoration in lake conservation areas in Indonesia, emphasizing the intention and support for community collaboration. By applying the Theory of Planned Behavior (TPB) as a guiding framework, this study has examined the influence of attitudes, subjective norms, perceived behavioral control, and behavioral intentions on community participation in restoration efforts. A cluster random sampling method has been utilized to survey local communities in the Lakeshore region. The study findings have revealed that positive attitudes and strong subjective norms significantly encourage collaboration intentions, while perceived behavioral control moderates' community support and restoration initiatives. These findings highlight the necessity of aligning local perceptions with conservation goals to enhance collaborative efforts and ensure the success of sustainable lake management. This study has contributed to the understanding of community-based environmental management and provided policymakers with some applicable insights to encourage effective collaboration and sustainable tourism development.

Keywords: Collaboration Intention; Local Community Support; Lake Environmental Management; Sustainable Tourism

INTRODUCTION

Over the previous decades, concerns regarding environmental quality have been increasing (Kalafatis et al., n.d.; Laroche et al., n.d.) Aligned with the principles of sustainable tourism development, the management of tourist destinations has significant role to maintain environmental quality. The uncontrolled exploitation of natural resources, however, often exacerbates environmental degradation. A distinct approach has been adopted for the *Selingkar Danau Maninjau* (Maninjau Lakeshore) tourism area, where government initiatives emphasize sustainable tourism development. Despite these efforts, certain local communities remain using Floating Net Cages (*Keramba Jaring Apung* or KJA), which is still a significant source of environmental pollution within the vicinity of the lake.

It has become challenging for the government to implement detailed management programs to comprehensively oversee the tourism industry due to limited control at the macro level and limited administrative resources (Kadarisman et al., 2024). Previous studies on tourism governance have mostly focused on policy management. Collaboration among stakeholders attempting to utilize tourism as an alternative strategy to encourage economic development should be enhanced to ensure the achievement of sustainable tourism that effectively meets the current needs and expectations of local communities. (Puczkó & Rátz, 2000)(Winarni et al., 2023).

Achieving sustainable tourism development is challenging without the active support and engagement of local communities (Fallon & Kriwoken, 2003; Gursoy & Rutherford, 2004; Nicholas et al., 2009). Community support is, therefore, a pivotal factor in delivering sustainable tourism development. The concept of sustainable development has been extensively explored within the tourism sector due to its potential to foster economic growth, preserve cultural and natural heritage, meet tourist demands, enhance the quality of life for residents, and secure long-term opportunities by aligning tourism activities with environmental management (Eagles et al., n.d.). Consequently, community-based tourism development has become a vital tool for sustainable management (Sebele, 2010; Taylor, 1995).

Government policies on sustainable tourism development in *Selingkar Danau Maninjau* (Maninjau Lakeshore) emphasize the role of local communities as crucial stakeholders in fostering these initiatives (Kamil et al., 2021). This vision has begun to take shape through training programs focused on restoring the environmental quality of Lake Maninjau in recent years. While early indications showed encouraging signs of community willingness to support government efforts in tourism development, participation in environmental management initially lagged and was void of a strong institutional framework. However, significant progress has been observed in recent years, with increasing community involvement in these efforts. Researchers have also focused on community participation in environmental management from various perspectives, including participation models (Long, 2005; Chen et al., 2015; Fedorenko & Sun, 2016), system construction (Xi, 2017), and performance evaluation (Brombal et al., 2017).

In early 2020, the tourism sector experienced a severe "deadlock" as a result of the COVID-19 pandemic, forcing local communities to shift away from tourism as a reliable economic foundation. Although the usage of Floating Net Cages (*Keramba Jaring Apung*, or KJA) had previously begun to decline, it has now re-emerged as the major source of livelihood for many residents. This shift is not only occuring to *Nagari Selingkar Danau Maninjau* (Maninjau Lakeshore Region) but also reflects a broader global trend. The outbreak of the COVID-19 virus triggered tremendous financial losses, plunging the world into an unprecedented health and economic crisis (Anderson et al., 2020; McKenna & Bargh, 1998; Brewer, 2016). The utilization of *Selingkar Danau Maninjau* (Maninjau Lakeshore) for Floating Net Cages (KJA) by the local community has emerged as an urgent issue requiring immediate attention from the Agam Regency government. This concern is predominantly driven by economic factors that force the local community to persist in this practice.

Understanding the precedence of local community support for sustainable tourism development is crucial, as local communities are uniquely positioned to evaluate these precedents and anticipate their level of commitment (Fajrini & Mujtahid, 2024). This insight can significantly contribute to advancing sustainable tourism initiatives. (Lee, 2013). Factors influencing local community support for sustainable tourism development have been extensively studied, including attitudes (Lai & Nepal, 2006; Lepp, 2008), perceived impacts (Dyer et al., 2007; Yoon et al., 2001), community attachment (Nicholas et al., 2009), and perceived benefits (Gursoy et al., 2002; Nunkoo & Ramkissoon, 2011). Previous studies have systematically explored the relationship between support for sustainable tourism development and its perceived impacts. However, limited attention has been devoted to the role of local community engagement and attachment in aligning KJA development with lake tourism initiatives.

Numerous theories from various disciplines have attempt to explain human behavior, many of which have been applied to research examining participation in collaborative partnerships. Among these, the Theory of Planned Behavior (TPB) (Ajzen, 1991) provides a general model for predicting diverse intentional behaviors by examining specific variables. According to TPB, an individual's actual behavior depends on their intention to perform that behavior (Fishbein & Ajzen, 2010). TPB is widely regarded as a valuable framework for understanding human behavior across diverse fields. It is often employed to predict individual participation in public events and has become one of the most researched topics in tourism (Nunkoo & Ramkissoon, 2011) Support from local communities for tourism development is a significant determinant in the success of sustainable tourism (Stylidis, 2016).

Multiple studies have demonstrated that local community support for tourism development is influenced, either directly or indirectly, by factors such as attitudes and perceptions, the impacts of tourism, and perceived personal benefits. (Andereck & Vogt, 2000; Gursoy & Rutherford, 2004). Moreover, the TPB has been extensively utilized to explain a range of pro-environmental behaviors, such as litter collection in protected areas, due to its effectiveness in predicting intentions and actions (Brown et al., 2010), urban bike-sharing for holiday cycling (Kaplan et al., 2015), and green hotel visits (Verma & Chandra, 2018). This study also employs this theory.

This research presents several novel contributions that distinguish it from existing tourism and environmental management literature. Most significantly, this study pioneers the application of the Theory of Planned Behavior (TPB) specifically to the context of community decision-making between competing livelihood strategies in lake tourism environments. While TPB has been extensively applied to individual environmental behaviors and general

tourism contexts, its application to community-level choices between immediate economic benefits (KJA) and long-term sustainable tourism development represents a significant theoretical advancement. This novel application addresses a critical gap in behavioral prediction models for complex socio-environmental decision-making scenarios.

Furthermore, this research introduces an innovative conceptual framework that bridges environmental conservation behavior with tourism development support behavior within the same community context. Previous studies have typically examined these domains separately either focusing on environmental conservation attitudes or tourism development support but rarely investigating how communities navigate the tension between these potentially competing priorities. By examining how communities simultaneously consider environmental restoration and tourism development as interconnected rather than separate phenomena, this study contributes a more holistic understanding of community behavior in sustainable destination management.

The study also advances methodological innovation by developing context-specific behavioral prediction models for lake destination communities. Unlike existing tourism behavior models that primarily focus on urban or coastal contexts, this research addresses the unique environmental, cultural, and economic characteristics of freshwater lake communities. This methodological contribution is particularly significant given the growing importance of lake tourism globally and the distinct challenges these destinations face compared to other tourism environments.

Previous research reveals a scarcity of studies examining the intention and behavior of communities in supporting environmental conservation programs and lake tourism simultaneously. Therefore, this research offers new empirical evidence for similar future studies. It emphasizes the importance of analyzing and engaging local communities in general destination governance processes. Specifically, the study aims to better understand the dynamics associated with collaboration intentions and local community support in managing the environmental restoration of Selingkar Danau Maninjau (Maninjau Lakeshore) toward sustainable tourism (Novianti et al., 2023). The aim is to contribute to the development of a new concept of local community participation in environmental efforts and provide further insights to support collaborative partnerships in managing sustainable tourism, particularly for lake destinations.

LITERATURE REVIEW

Theory of Planned Behavior (TPB)

The Theory of Planned Behavior (TPB) is an extension of the Theory of Reasoned Action (TRA), initially developed by Ajzen and Fishbein (1980). Ajzen integrated perceived behavioral control into the TRA framework to predict individual behavior, reforming it into what is currently known as TPB (Ajzen, 1991) TPB states that an individual's behavior is driven by their intention to act, which is shaped by three key factors: attitude, subjective norms, and perceived behavioral control. These elements collaborate to form the intention, which subsequently guides the individual's actions.

In this framework, attitudes toward behavior, subjective norms, and perceived behavioral control collectively influence both intention and behavior. In general, more favorable attitudes and subjective norms, combined with higher perceived behavioral control, lead to stronger intentions to engage in a behavior. Consequently, when individuals have sufficient actual control over a behavior, they are likely to act on their intentions when opportunities arise, rendering intention a direct predictor of behavior. However, since many behaviors involve challenges that limit volitional control, combining perceived behavioral control along with intention is beneficial. When perceived behavioral control closely aligns with actual control, it can act as a proxy, enhancing the accuracy of behavior prediction (Ajzen, 2002).

Behavioral beliefs encompass positive and negative attitudes that impact behavior, thereby shaping an individual's overall attitude. Normative beliefs involve perceptions of social pressure that influence subjective norms, while control beliefs are concerned with the perceived ease or difficulty of performing a behaviour, which influences perceived behavioural control.

The TPB framework has offered an alternative to predict collaboration intention and the support behavior of local communities in managing environmental restoration around Lake Maninjau toward sustainable tourism. TPB has been extensively applied to study human environmental behavior, as it effectively identifies the key factors that influence decision-making processes. (Fielding et al., 2008; Gifford, 2014; Martin et al., 2017). In social psychology,

TPB is based on a rational decision-making framework and has been widely utilized in various fields to explain and predict behavior. (Chin et al., 2016; Turaga et al., 2010). A meta-analysis by Overstreet et al. (2013) revealed that TPB is highly predictive and explanatory in determining target behaviors and corresponding outcomes.

Indeed, applying TPB to this issue enables policymakers to understand which attitudes are associated with community participation in local government programs and develop strategies to overcome it. Researchers have suggested to incorporate additional independent variables into TPB to better explain various conditions and contexts in the study (Ajzen, 1991). The theory also highlights its flexibility, which enables the incorporation of additional predictors, provided that these predictors explain a significant portion of the variance in intention or behavior beyond the variables already incorporated into the model.

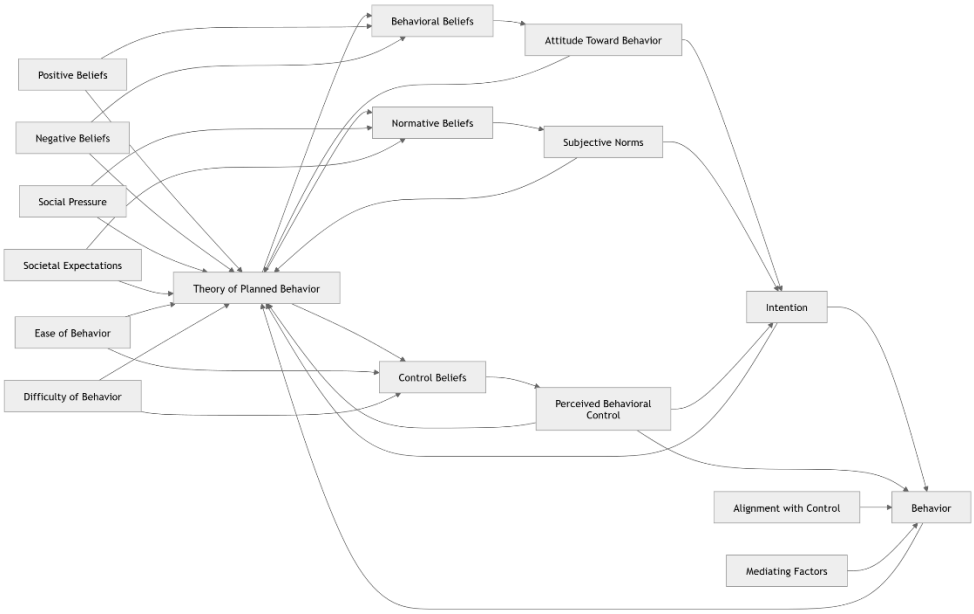

Figure 1. TPB Lake Maninjau Sustainable Tourism Dialectics.

In this study, a theoretical argument is developed to investigate additional variables such as past behavior, informational variables, and financial factors associated with local community behavioral control in managing environmental restoration around Lake Maninjau toward sustainable tourism in Agam Regency.

While past behavior might not directly determine future behavior, repetitive or habitual actions can contribute to the formation of habits. Numerous studies have discovered that in the case of habitual behaviors, such as recycling, previous recycling practices often serve as a strong predictor of future actions (Boldero~, 1995; Chan, 1998; Cheung et al., 1999). Others argue that when behavior becomes habitual, individuals are more likely to use simplified decision rules and rely on past behavior as a source of information (Verplanken & Knippenberg, 1996). Information from past behavior may then be automatically activated by the context in which the behavior occurs (Bargh, 1990). In the context of this study, past actions by local communities in building Floating Net Cages (KJA) around Lake Maninjau are being considered.

Some researchers suggest incorporating informational variables, such as information-seeking, information processing, and information exposure, as key factors that relate behavior and behavioral intentions (Griffin et al., 1999). Trumbo and O'Keefe (2000) demonstrated that information-related factors, including seeking, exposure, and attention, strongly influence attitudes and norms, which collectively predict intentions to engage in water conservation. In this study, local communities exposed to or provided with information about environmental restoration efforts around Lake Maninjau are more likely to actively participate in related initiatives.

Previous studies have emphasized the role of financial capability as a critical component of behavioral control in shaping farmers' intentions to adopt water-saving technologies (Lynne et al., 1995). Considering that the government-assisted environmental restoration program around Lake Maninjau incorporates cost-sharing mechanisms, financial capability and motivation are likely to be key predictors of behavioral intentions. In addition, the financial constraints encountered by local communities due to the COVID-19 pandemic have affected their ability to maintain fish farming by building Floating Net Cages (KJA) in Lake Maninjau. This study aims to provide valuable insights for the government to enhance collaboration and foster supportive behavior among local

communities in environmental restoration initiatives, thereby encouraging sustainable tourism development around Lake Maninjau.

Hypothesis Development

Attitude and Intention to Collaborate and Support by Local Communities

The first key determinant of behavioral intention is attitude. Attitude towards a behavior refers to the extent to which an individual has a favorable or unfavorable evaluation of the benefits and drawbacks of a specific behavior. When determining whether to engage in a particular behavior, individuals are likely to evaluate the benefits and costs associated with that behavior (Cheng et al., 2006). Both positive and negative emotions can significantly influence pro-environmental behavior. Studies have specifically explored the roles of emotions such as fear, guilt, and sadness in shaping sustainable attitudes and behaviors (Carrus et al., 2008; Li, 2014; Sevillano et al., 2007). Favorable attitudes are more likely when individuals perceive positive outcomes, increasing the likelihood of engaging in a specific behavior (Ajzen, 1991; Cheng et al., 2006; M. J. Lee, 2005). In essence, a positive attitude toward a behavior enhances the intention to perform it (Ajzen, 1991). Additionally, local communities' attitudes towards the environment are recognized as a key factor influencing their intention to support tourism (Gursoy et al., 2002). Similarly, attitudes towards collaboration in the context of intangible cultural heritage have been identified as the most critical predictor of public collaboration intentions (Xia et al., n.d.). Therefore, the first hypothesis proposed in this research is as follows:

> **Hypothesis 1:** The local communities' attitude towards the management of environmental quality restoration in the Maninjau Lake region for sustainable tourism positively and significantly influences their intention to collaborate and provide support.

Subjective Norms and Intention to Collaborate and Support by Local Communities

Ajzen (1991), defines subjective norms as the perceived social pressure to perform or refrain from a specific behavior. In other words, if local communities perceive that important individuals or groups in their lives support a particular behavior, they are more likely to feel motivated to align with these expectations and engage in that behavior. Typically, people tend to value and act upon the opinions of others when deciding whether a behavior is necessary (Song et al., 2014), indicating that an individual's actions are often influenced by those they consider significant. Therefore, if local communities perceive that others view supporting efforts to restore environmental quality and promote tourism sustainability in the lake region as valuable, their intention to participate in such activities is likely to increase. Therefore, this study proposes the following hypothesis:

> **Hypothesis 2**: Subjective norms positively and significantly influence the local communities' intention to collaborate and support the management of environmental quality restoration in the Maninjau Lake region for sustainable tourism.

Perceived Behavioral Control and Intention to Collaborate and Support by Local Communities

The third determinant of behavioral intention is perceived behavioral control. Perceived behavioral control can be defined as "the ease or difficulty of performing a behavior" (Ajzen, 1991). Specifically, perceived behavioral control assesses one's perception of how well they can control the factors that may facilitate or hinder the actions required to address a particular situation. Research has consistently demonstrated a positive relationship between perceived behavioral control and pro-environmental behavioral intentions among tourists. (Brown et al., 2010) identified perceived behavioral control as a visitor's belief in their opportunity, knowledge, skills, abilities, and resources to perform a behavior, positively influencing their intention to participate in waste collection. Chen and Tung (2014) found that individuals in Taiwan who perceived greater control over behaviors related to green hotels were more likely to express an intention to visit them. On the other hand, (Hauser et al., 2012) argued that perceived behavioral control does not significantly affect the intention to engage in volunteer activities within watershed collaborative partnerships.

When individuals think about the increasing amount of information they have and the fewer barriers they anticipate, the stronger the influence on their perceived behavioral intention becomes. Perceived behavioral control signifies an individual's readiness to perform a particular behavior and is considered a direct prerequisite for behavior (Ajzen, 2002). Therefore, this third factor of behavioral intention remains a key component in this research. Consequently, the following hypothesis is proposed:

> **Hypothesis 3**: Perceived behavioral control positively influences the local communities' intention to collaborate in the management of environmental quality restoration in the Maninjau Lake region for sustainable tourism.

Past Behavior, Information Exposure, and Financial Factors

Several studies using the TPB suggest that current behavior is influenced by past behavior and the repetition of past habits (Boldero~, 1995; Cheung et al., 1999). Past actions taken to protect riverbank areas on one's property can serve as a strong indicator of future behavior (Corbett, 2002). Meaningful past behavior can include future participation in government-sponsored riparian programs, as well as past independent actions undertaken to maintain riparian areas, such as planting vegetation (not for livestock) and installing fences (Corbett, 2002). In this study, past behavior in managing fish farming in Maninjau Lake for financial livelihood impacts current and even future behavior. Therefore, this research proposes the following hypothesis:

> **Hypothesis 4:** Previous behavior has a positive impact on the local communities' willingness to collaborate and support efforts to restore environmental quality in the Maninjau Lake region, contributing to sustainable tourism development.

Information exposure is measured by assessing the amount of information the local community has received regarding the management of environmental quality restoration in the Maninjau Lake region for sustainable tourism. Governmental information exposure correlates positively with behavioral intention to participate in riparian programs (Corbett, 2002). In this study, information exposure is derived from local government communication through various meetings, including outreach programs related to environmental quality restoration for sustainable tourism in the Maninjau Lake region. Thus, the researcher considers the variable of information exposure to be relevant in the formation of collaboration intentions among local communities. Therefore, the following hypothesis is proposed:

Hypothesis 5: Government information exposure positively influences the local communities' intention to collaborate and support the management of environmental quality restoration in the Maninjau Lake region for sustainable tourism.

The financial factor is an additional variable in the TPB framework. Financial factors have been demonstrated to have the strongest correlation with the behavioral intention to participate in riparian programs (Corbett, 2002). In this study, financial factors are also considered as a variable influencing the local communities' intention to collaborate in the management of environmental quality restoration in the Maninjau Lake region for sustainable tourism. The financial factors prior to and within the COVID-19 pandemic are studied as supplementary variables in providing empirical evidence of their impact on behavioral intention. Therefore, this research proposes the following hypothesis:

Hypothesis 6: Financial factors positively influence the local communities' intention to collaborate and support the management of environmental quality restoration in the Maninjau Lake region for sustainable tourism.

RESEARCH FRAMEWORK

By employing the Theory of Planned Behavior (TPB) model (Ajzen, 1991), an extended model is proposed to investigate the local communities' intention to collaborate and support the management of environmental quality recovery around Lake Maninjau towards sustainable tourism in Agam Regency. This study attempts to integrate new factors—past behavior, exposure to government information, and financial factors—that may influence local communities' collaboration and support into the TPB model.

First, in this model, the attitudes, subjective norms, and perceived behavioral control are exogenous variables that significantly and positively influence local community collaboration and support intentions in managing the environmental quality recovery of Lake Maninjau towards sustainable tourism in Agam Regency. Second, the new factors—past behavior, exposure to government information, and financial factors—also significantly and positively influence the local communities' intention to collaborate and support the management of environmental quality recovery around Lake Maninjau toward sustainable tourism in Agam Regency.

The proposed conceptual model is shown in the figure below.

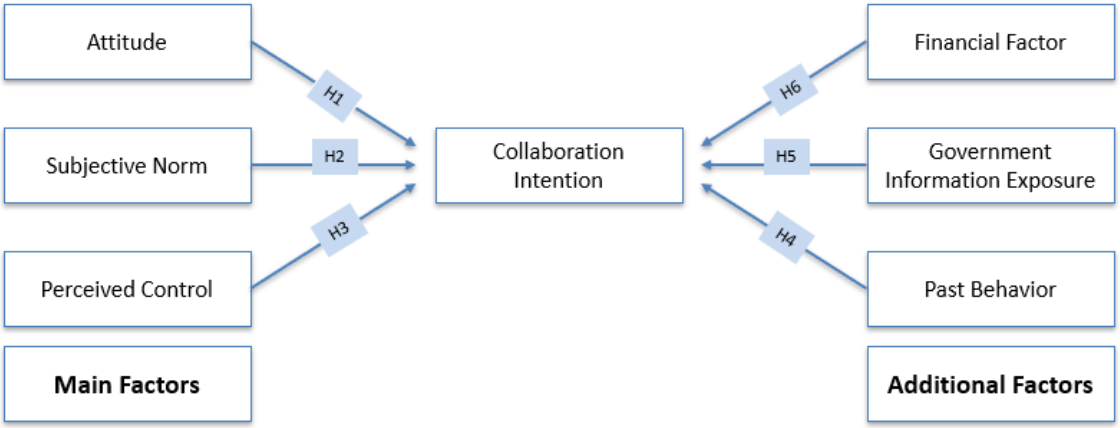

Figure 2. Conceptual Research Model

Operational Definitions

Floating Net Cages (Keramba Jaring Apung - KJA)

Floating Net Cages (Keramba Jaring Apung or KJA) are aquaculture systems consisting of net enclosures suspended in water bodies, primarily used for intensive fish farming in Lake Maninjau. These structures typically measure 7x7x4 meters and are constructed using bamboo frames, polyethylene nets, and floating drums or styrofoam for buoyancy (Sulardiono et al., 2018). KJA operations involve high-density fish cultivation, particularly of tilapia (Oreochromis niloticus) and common carp (Cyprinus carpio), with feeding practices that utilize commercial pellets containing high protein content.

The environmental impact of KJA operations on Lake Maninjau's ecosystem is multifaceted and significant. Organic waste accumulation from uneaten feed and fish excrement leads to eutrophication, characterized by excessive nutrient loading (nitrogen and phosphorus) that stimulates algal bloom formation and reduces dissolved oxygen levels. Water quality degradation manifests through increased turbidity, altered pH levels, and accumulation of suspended solids that affect the lake's aesthetic and recreational value essential for tourism development. Additionally, the intensive use of antibiotics and growth enhancers in KJA operations introduces chemical pollutants that can persist in the aquatic environment and affect biodiversity.

Sustainable Tourism in Lake Environments

Sustainable tourism in the context of Lake Maninjau refers to tourism development practices that maintain the ecological integrity of the lake ecosystem while providing economic benefits to local communities and satisfying visitor experiences. This concept encompasses three interconnected dimensions: environmental sustainability (preservation of water quality, biodiversity conservation, and ecosystem service maintenance), economic sustainability (equitable distribution of tourism benefits, livelihood diversification for local communities, and long-term economic viability), and social-cultural sustainability (preservation of Minangkabau cultural heritage, community participation in decision-making, and respect for traditional governance systems)(Kahn, 1993).

The relationship between KJA operations and sustainable tourism development creates a complex socio-environmental dilemma. While KJA provides immediate economic benefits through fish production and employment opportunities, the associated environmental degradation directly undermines the natural resource base upon which lake tourism depends . Clear water conditions, scenic landscapes, and healthy aquatic ecosystems are fundamental tourism assets that attract visitors for recreational activities such as fishing, boating, swimming, and cultural tourism experiences. The visual pollution caused by extensive KJA installations, combined with water quality deterioration and occasional fish die-off events, significantly reduces the destination's attractiveness and long-term tourism potential.

Collaboration Intention in Environmental Management

Collaboration intention in this study is operationally defined as the local communities' willingness and commitment to actively participate in joint efforts with government agencies, NGOs, and other stakeholders to implement environmental restoration programs around Lake Maninjau. This construct encompasses several behavioral dimensions: voluntary participation in community meetings and planning sessions, willingness to

modify or cease KJA operations when required, active involvement in alternative livelihood programs, and support for tourism development initiatives that align with environmental conservation goals.

The measurement of collaboration intention incorporates both attitudinal and behavioral components, reflecting the complexity of community decision-making in contexts where individual economic interests intersect with collective environmental concerns. This definition recognizes that collaboration in Minangkabau cultural contexts occurs within traditional governance structures (adat) and consensus-building processes (musyawarah and mufakat), where individual intentions are shaped by communal discussions and collective decision-making protocols (Kato, 1982).

METHODOLOGY

Research Design and Approach Justification

This study employs a quantitative approach specifically designed to test the hypothesized relationships within the extended Theory of Planned Behavior framework and to provide statistically generalizable findings that can inform evidence-based policy development for lake conservation management. The quantitative methodology was selected over mixed-methods approaches for several strategic reasons: first, the study aims to establish causal relationships between specific predictor variables (attitudes, subjective norms, perceived behavioral control, past behavior, government information exposure, and financial factors) and collaboration intention, which requires statistical hypothesis testing and structural equation modeling techniques best suited to quantitative analysis. Second, given the policy-oriented nature of this research, quantitative findings provide the statistical precision and generalizability necessary for government agencies to make informed decisions about resource allocation and program design across similar lake communities throughout Indonesia. Third, the cultural sensitivity of the topic involving potential economic displacement of KJA operators necessitated a standardized, anonymous survey approach that could minimize social desirability bias and provide respondents with greater comfort in expressing honest opinions about government programs and environmental collaboration, whereas qualitative interviews might have been perceived as more intrusive or politically sensitive in the tight-knit community context of Minangkabau villages.

The population in this study consists of local community members in the Tanjung Raya Subdistrict, Agam Regency, who are directly involved in the management of Floating Net Cages (KJA) and tourism management around Lake Maninjau. Tanjung Raya Subdistrict is composed of 9 Nagari (villages) and 53 Jorong. Jorong is an administrative division in Indonesia which is under Nagari (village). Among the 9 Nagari, in 2022, there is also a Definitive Nagari (village), namely Nagari Dalko. However, at least two and at most 4 Nagari would be selected for the samples. The initial sample size determination from these 9 Nagari would be conducting by using Proportional Random Sampling. By using this technique, 4 Nagari were selected with the following criteria: the Nagari in Tanjung Raya Subdistrict, Agam Regency, that are geographically adjacent to Lake Maninjau, located around the lakeshore, and that directly interact with the lake in terms of community activities, agriculture, fisheries, and tourism. These Nagari are: Nagari Bayua, Nagari Maninjau, Nagari Koto Malintang, and Nagari Sungai Batang.

Furthermore, the selection of *Jorong* in this study would be conducted using Cluster Random Sampling. This will result in the identification of *Jorong* within each selected *Nagari*, as follows:

Table 1. Sample Locations

Nagari	**Jorong**	**Population**	**Sample**
Nagari Sungai Batang	Jorong Batu Ajuang	30	3
	Jorong Batuang Panjang	247	25
	Jorong Kubu	244	24
Nagari Koto Malintang	Jorong Ambacang	248	25
	Jorong Muko-Muko	310	30
	Jorong Pauh Taruko	164	17
Nagari Duo Koto	Jorong Pasar Ahad	104	11
	Jorong Tanjung Batuang	250	25
Nagari Sungai Manijau	Jorong Bancah	247	25
	Jorong Gasang	244	24
Amount		**2088**	**209**

These *Jorongs* have direct interactions with Lake Maninjau, including daily activities such as agriculture, fisheries, and tourism. The residents of these *Jorong*s typically utilize the lake for various economic and daily life purposes.

Furthermore, the sampling technique to determine the sample size per *Jorong* will use Random Sampling. In Random Sampling, the samples are selected randomly without considering the strata present within the population (Smith & Sørensen, 2014). A total of 7 participants will be selected from each *Jorong*. This sample size is deemed appropriate for the data analysis, as it is considered adequate to ensure representativeness. As previously mentioned, the study indicates that it is normally advantageous to have 5 to 7 participants in a problem-solving group (e.g., Hackman & Vidmar, 1970).

This study employs validated items from existing research to assess behavioral intentions (e.g., Ajzen & Fishbein, 1980; Ajzen, 2002). The wording of these measures has been adjusted to align with the context of this study (see Appendix). Attitudes are evaluated using a 5-point semantic differential scale, while other constructs are assessed with a 5-point Likert-type scale that varies in wording formats. Multi-item scales are utilized to measure these variables in order to accurately capture the domains of the constructs. (Churchill, 1979; Nunnally, 1978). Furthermore, measures for the supplementary variables influencing behavioral intentions were adapted from Corbett (2002), with each item modified to suit the objectives of this study. The questionnaire distributed to respondents consists of 30 items.

This study utilizes Partial Least Squares (PLS) analysis as an alternative to multiple regression analysis. PLS regression is a contemporary technique that combines and extends the features of principal component analysis and multiple regression. Its primary objective is to predict or analyze a set of dependent variables based on a set of independent variables or predictors.(Abdi, 2007). Therefore, this analytical technique is applied to provide higher and potentially more accurate estimates of the relationships between key variables and supplementary variables influencing collaborative intentions and community support for the environmental restoration of Lake Maninjau's surroundings toward sustainable tourism in Agam Regency.

RESEARCH FINDINGS

The population in this study consists of local community members in the Tanjung Raya Subdistrict, Agam Regency, who are directly involved in the management of Floating Net Cages (KJA) and tourism management around Lake Maninjau. Tanjung Raya Subdistrict is composed of 9 Nagari (villages) and 53 Jorong. Jorong is an administrative division in Indonesia which is under Nagari (village). Among the 9 Nagari, in 2022, there is also a Definitive Nagari (village), namely Nagari Dalko. However, at least two and at most 4 Nagari would be selected for the samples. The initial sample size determination from these 9 Nagari would be conducting by using Proportional Random Sampling. By using this technique, 4 Nagari were selected with the following criteria: the Nagari in Tanjung Raya Subdistrict, Agam Regency, that are geographically adjacent to Lake Maninjau, located around the lakeshore, and that directly interact with the lake in terms of community activities, agriculture, fisheries, and tourism. These Nagari are: Nagari Bayua, Nagari Maninjau, Nagari Koto Malintang, and Nagari Sungai Batang The demographic profile of respondents is presented in table 2.

Table 2. Respondent profile.

Variable	Category	Frequency	Percentage
Gender	Man	156	74.64
	Woman	53	25.36
Age	18-25	9	4.31
	26-35	22	10.53
	36-45	83	39.71
	46-55	67	32.06
	56-65	22	10.53
	65+	6	2.87
Education	Elementary school	74	35.41
	Middle school	64	30.62
	High	55	26.32
	Undergraduate	16	7.66

	<1m	1	0.48
	1-3m	48	22.97
	3-5m	45	21.53
	5-7m	59	28.23
	7-10m	53	25.36
Income	>10m	2	0.96
	KJA	201	96.17
	Private sector	7	3.35
Occupation	Unemployment	1	0.48
	Yes	192	91.87
Ownership	No	17	8.13

The data shows a large proportion of respondents are male (74.64%), while female respondents represent only 25.36%. The most frequent age group is 36-45 years, with a frequency of 83 (39.71% of the sample). The 18-25 years and 26-35 years age groups have lower frequencies, with 9 (4.31%) and 22 (10.53%) respondents, respectively. The gender distribution is skewed, with a much higher percentage of males than females. Age Group Concentration: The 36-45 years age group represents a significant portion of the sample. This indicates that this demographic was more engaged or present in the context of the data collection. The dataset shows the educational attainment levels of the respondents: Elementary school is the most common level of education, with 74 respondents (35.41%). Middle school follows closely, with 64 respondents (30.62%). High school accounts for 55 respondents (26.32%). Only 16 respondents (7.66%) have an undergraduate degree. The education levels suggest a population predominantly with basic education, which could influence their employment opportunities and income levels.

Income levels are categorized into ranges, measured presumably in millions (Rupiah): The most common income range is 5-7 million, with 59 respondents (28.23%). 7-10 million follows, with 53 respondents (25.36%). Other notable ranges are 1-3 million (48 respondents, 22.97%) and 3-5 million (45 respondents, 21.53%). Very few respondents earn less than 1 million (0.48%) or more than 10 million (0.96%). Most respondents fall within a mid-income range of 5-10 million, indicating a relatively stable economic status for a significant portion of the population. Employment data indicates the majority occupation is in KJA (Floating Net Cage), with 201 respondents (96.17%). A small fraction works in the private sector (7 respondents, 3.35%), and one respondent is unemployed (0.48%). The overwhelming majority occupation in KJA could suggest dependence on a dominant local industry. Most respondents (192, or 91.87%) own KJA, while a minority (17, or 8.13%) do not. High ownership rates suggest the population has significant stakes in this industry, likely as part of a self-sustained or entrepreneurial economy.

Quantitative descriptive analysis using SPSS to analyse the proposed hypotheses revealed that:

Table 3. Path coefficients

Variable	**Y**
Attitude	0,114
Subjective Norms	-0,083
Perceived Control	0,297
Past Behavior	0,175
Government Information Exposure	0,081
Financial Factors	0,316

The following analysis interprets the path coefficients representing the direct effects of predictor variables (X_1 to X_6) on the dependent variable Y (Collaboration Intention and Support). These coefficients highlight the magnitude and direction of the relationships, supported by *T*-statistics and *P*-values. X1 (Attitude toward Collaboration): Path Coefficient: 0.1140. Attitude has a positive but non-significant influence on collaboration intention and support. This indicates that while positive attitudes are favorable, they do not strongly drive collaboration intentions in this context. X_2 (Subjective Norms): Path Coefficient: −0.083. Subjective norms have a negative and non-significant effect. This suggests that social pressures or expectations are not effective in

enhancing collaboration intentions. X3 (Perceived Behavioral Control): Path Coefficient: 0.2970, *T*= 2.068**,** P=0.039P. Perceived behavioral control has a significant positive influence on collaboration intention. This underscores the importance of individuals confidence in their ability to collaborate as a strong determinant of their intention to do so. X_4 (Past Behavior): Path Coefficient: 0.1750, *T*=1.241T**,** P=0.215. Past behavior exhibits a positive but non-significant effect, indicating that while previous collaborative experiences might inform intentions, the effect is not strong enough to be conclusive. *X*5 (Government Information Exposure): Path Coefficient: 0.0810. Government information exposure has a positive but non-significant influence, suggesting that while exposure to government campaigns or information is somewhat helpful, it is not a key driver of collaboration intentions. *X*6 (Financial Factors) Path Coefficient: 0.316, *T*=3.090**,** P=0.002**.** Financial factors have a significant positive effect, making them a critical enabler of collaboration intentions. This highlights the role of economic incentives or financial security in fostering community collaboration.

Table 4. Construct Reliability and Validity

Variable	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
Attitude	0,866	0,872	0,903	0,652
Subjective Norms	0,742	0,748	0,853	0,659
Perceived Control	0,778	0,819	0,856	0,602
Past Behavior	0,722	0,772	0,814	0,475
Government Information Exposure	0,156	0,368	0,627	0,432
Financial Factors	0,754	0,787	0,835	0,510
Collaboration Intention	0,805	0,811	0,865	0,562

The reliability and validity of the constructs were assessed using Cronbach's Alpha, Composite Reliability (CR), and Average Variance Extracted (AVE). Cronbach's Alpha values exceeding 0.7 indicate good internal consistency, which was observed for most constructs. However, the construct X_5 (Government Information Exposure) exhibited a very low Cronbach's Alpha value of 0.156, signaling significant issues with its reliability and necessitating further evaluation or revision of its measurement items. Similarly, Composite Reliability values demonstrated adequate reliability across most constructs, with scores exceeding 0.8. The only exception was X_5, which had a CR value of 0.627, reaffirming the need to address its measurement inconsistencies. In terms of convergent validity, AVE values above 0.5 were achieved by most constructs, confirming their validity. However, X_4 (Past Behavior) and X_5 fell below this threshold, with AVE values of 0.475 and 0.432, respectively. These findings indicate that while X_4 requires minor adjustments to improve its validity, X_5 demands significant revisions or restructuring to ensure it accurately represents the intended construct. Without such improvements, the reliability and validity of X_5 remain insufficient for robust analysis.

Table 5. Latent Variable Correlations

Variable	Attitude	Subjective Norms	Perceived Control	Past Behavior	GIE	Financial Factors	Collaboration Intention
Attitude	1,000	0,519	0,496	0,490	0,387	0,724	0,564
Subjective Norms	0,519	1,000	0,624	0,572	0,475	0,630	0,499
Perceived Control	0,496	0,624	1,000	0,704	0,579	0,578	0,654
Past Behavior	0,490	0,572	0,704	1,000	0,606	0,649	0,646
GIE	0,387	0,475	0,579	0,606	1,000	0,464	0,510
Financial Factors	0,724	0,630	0,578	0,649	0,464	1,000	0,669
Collaboration Intention	0,564	0,499	0,654	0,646	0,510	0,669	1,000

The correlation table highlights the key predictors of collaboration intention (*Y*). Financial Factors (X_6) and Perceived Control (X_3) show the strongest correlations with Y (0.669 and 0.654, respectively), emphasizing their critical roles. Past Behavior (X_4) and Attitude (X_1) also positively correlate with Y, while Government Information Exposure (X_5) has a weaker but meaningful relationship (0.510). Strong inter-variable correlations, such as between X_1 and X_6 (0.724), highlight the interconnected nature of these predictors. These findings suggest that financial considerations and individuals' perceived efficacy are the most influential drivers of collaboration, supported by attitudes, past experiences, and external information sources.

Table 6. Latent Variable Covariances

Variable	Attitude	Subjective Norms	Perceived Control	Past Behavior	GIE	Financial Factors	Collaboration Intention
Attitude	1,000	0,519	0,496	0,490	0,387	0,724	0,564
Subjective Norms	0,519	1,000	0,624	0,572	0,475	0,630	0,499
Perceived Control	0,496	0,624	1,000	0,704	0,579	0,578	0,654
Past Behavior	0,490	0,572	0,704	1,000	0,606	0,649	0,646
GIE	0,387	0,475	0,579	0,606	1,000	0,464	0,510
Financial Factors	0,724	0,630	0,578	0,649	0,464	1,000	0,669
Collaboration Intention	0,564	0,499	0,654	0,646	0,510	0,669	1,000

The correlation table reveals significant relationships among the variables influencing collaboration intention (*Y*). Financial Factors (X_6) exhibit the strongest correlation with Y (0.669), followed by Perceived Control (X_3) at 0.654, indicating their critical influence. Past Behavior (X_4) and Attitude (X_1) also show positive correlations with Y, while Government Information Exposure (X_5) demonstrates a weaker yet meaningful relationship (0.510). Strong inter-variable correlations, such as between X_1 and X_6 (0.724), underscore the interconnectedness of these predictors. These findings suggest that financial considerations and perceived behavioral control are primary drivers of collaboration intention, supported by individual attitudes, past behaviors, and external information sources, reflecting a multifaceted framework for understanding collaboration dynamics.

Table 7. Mean, STDEV, T-Values, *P-value*s

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
X1 -> Y	0,114	0,128	0,147	0,775	0,439
X2 -> Y	-0,083	-0,002	0,170	0,491	0,624
X3 -> Y	0,297	0,243	0,144	2,068	0,039
X4 -> Y	0,175	0,134	0,141	1,241	0,215
X5 -> Y	0,081	0,083	0,075	1,079	0,281
X6 -> Y	0,316	0,316	0,102	3,090	0,002

The path analysis highlights the direct relationships between predictors and collaboration intention (*Y*). Financial Factors (X_6) have the strongest and most significant influence (O=0.316, T=3.090, P=0.002), followed by Perceived Control (X_3) (O=0.297, T=2.068, P=0.039). Past Behavior (X_4) and Government Information Exposure (X_5) exhibit positive but nonsignificant effects. Attitude (X_1) shows a weak, nonsignificant positive relationship, while Subjective Norms (X_2) display a negligible and nonsignificant negative effect. These results suggest that financial considerations and perceived control are key drivers of collaboration intention, whereas other variables may play secondary or indirect roles. Significance levels and effect sizes underscore the need for focused strategies to enhance collaboration outcomes.

Table 8. Confidence Intervals

	Original Sample (O)	Sample Mean (M)	5.0%	95.0%
X1 -> Y	0,114	0,128	-0,108	0,377
X2 -> Y	-0,083	-0,002	-0,219	0,299
X3 -> Y	0,297	0,243	-0,001	0,432
X4 -> Y	0,175	0,134	-0,102	0,338
X5 -> Y	0,081	0,083	-0,038	0,216
X6 -> Y	0,316	0,316	0,148	0,480

The confidence interval analysis assesses the stability of the predictors' effects on collaboration intention (*Y*). Financial Factors (X_6) demonstrate a significant and robust positive effect, as their confidence interval (CI=[0.148,0.480]) excludes zero. Perceived Control (X_3) also shows a positive influence, with its upper bound (CI=[−0.001,0.432]) nearing statistical significance. In contrast, Attitude (X_1), Subjective Norms (X_2), Past

Behavior (X_4), and Government Information Exposure (X_5) have confidence intervals that include zero, indicating nonsignificant relationships. These results confirm that financial factors and, to a lesser extent, perceived control are primary drivers of collaboration intention, while other variables may not have a meaningful direct impact within the observed sample.

Table 9. Confidence Intervals Bias Corrected

		Original Sample (O)	Sample Mean (M)	Bias	5.0%	95.0%
X1 -> Y		0,114	0,128	0,014	-0,122	0,372
X2 -> Y		-0,083	-0,002	0,082	-0,247	0,249
X3	-> Y	0,297	0,243	-0,054	0,022	0,451
X4	-> Y	0,175	0,134	-0,041	-0,064	0,365
X5	-> Y	0,081	0,083	0,002	-0,043	0,209
X6	-> Y	0,316	0,316	0,000	0,140	0,475

The table presents the path coefficients and bias-corrected confidence intervals for the relationships between six predictor variables (X_1–X_6) and collaboration intention (Y). Financial factors (X_6) exhibit the strongest positive effect on collaboration intention (β = 0.316, *CI*: 0.140–0.475), followed by perceived control (X_3) (β = 0.297, *CI*: 0.022–0.451), indicating their significant contributions. Past behavior (X_4) shows a moderate positive influence (β = 0.175), but its confidence interval spans negative values, suggesting limited statistical significance. Attitude (X_1) and government information exposure (X_5) demonstrate minor, non-significant positive relationships (β = 0.114 and β = 0.081, respectively). Subjective norms (X_2) have a negligible and non-significant negative effect (β = -0.083). These findings highlight financial factors and perceived control as key drivers of collaboration intentions.

Table 10. Inner VIF Values

X Variable	Y
Attitude	2,157
Subjective Norms	2,030
Perceived Control	2,467
Past Behavior	2,640
GIE	1,725
Financial Factors	2,999

The table presents the inner Variance Inflation Factor (VIF) values for the predictor variables influencing collaboration intention (Y). VIF values assess the presence of multicollinearity among independent variables. All variables exhibit VIF values below 3, indicating acceptable levels of multicollinearity and ensuring reliable estimation of regression coefficients. Financial factors (X_6) show the highest VIF (2.999), suggesting a stronger relationship with other predictors but still within an acceptable threshold. Perceived control (X_3) and past behavior (X_4) follow with VIF values of 2.467 and 2.640, respectively, reflecting moderate interdependencies. Attitude (X_1), subjective norms (X_2), and government information exposure (X_5) display lower VIF values, underscoring their relatively independent contributions to explaining collaboration intention.

The analysis of path coefficients reveals several critical insights into the factors influencing collaboration intention. Attitude (X1) shows a positive effect on collaboration intention, but this influence is not statistically significant. This suggests that although individuals may possess a favorable outlook toward collaboration, their attitude alone is insufficient to meaningfully enhance their intention to participate. Similarly, subjective norms (X2), which represent social expectations or pressures from the community, exhibit a negative yet insignificant effect. This indicates that such norms fail to provide a compelling impetus for individuals to engage in collaborative actions.

Perceived behavioral control (X3), reflecting individuals' confidence in their ability to engage in collaborative efforts, emerges as a significant and positive factor. This highlights the importance of individuals believing in their capacity to participate effectively, as such perceptions strongly enhance their intention to collaborate. Past behavior (X4), while showing a positive relationship with collaboration intention, does not achieve statistical significance. This finding implies that previous experiences with collaboration, though potentially influential, are not a decisive factor in driving current intentions. Government information exposure (X5) also has a positive but insignificant effect. Despite efforts to disseminate information about environmental recovery, such exposure does not

significantly impact collaboration intention. Conversely, financial factors (X6) exhibit a significant and positive influence, underscoring the essential role of financial support in fostering collaboration intention and gaining community support.

The evaluation of construct reliability and validity provides additional context. Constructs such as attitude (X1), perceived behavioral control (X3), and financial factors (X6) demonstrate high reliability, indicating consistent and dependable measurement of these variables. However, government information exposure (X5) shows low reliability, signaling inconsistencies in its measurement that necessitate refinement. In terms of validity, most constructs achieve satisfactory levels, confirming that they effectively measure the intended concepts. Nonetheless, government information exposure (X5) falls short in this regard, suggesting a need for improved operationalization and measurement to capture its impact more accurately. These findings emphasize the significant roles of perceived control and financial factors in influencing collaboration intentions, while identifying areas for methodological improvement in assessing government information exposure.

DISCUSSION

This study provides significant insights into the application of the Theory of Planned Behavior (TPB) within the unique socio-cultural context of Indonesian lake conservation zones, particularly those influenced by Minangkabau cultural values. The findings necessitate a reinterpretation of TPB's fundamental constructs when applied to community-based environmental management in collectivistic cultures with traditional governance systems. Comparing these results with similar studies reveals both convergent and divergent patterns that illuminate the cultural specificity of environmental behavior prediction models. Chen and Tung's (2014) research on green hotel visit intentions in Taiwan found significant positive effects for attitude ($\beta = 0.45$, $p < 0.001$) and subjective norms ($\beta = 0.32$, $p < 0.01$), contrasting sharply with the non-significant effects observed in this Lake Maninjau study (attitude: $\beta = 0.114$, $p = 0.439$; subjective norms: $\beta = -0.083$, $p = 0.624$). This divergence suggests that TPB constructs operate differently across cultural contexts, with individualistic societies showing stronger attitude-behavior relationships while collectivistic communities prioritize practical considerations over personal preferences. Similarly, Nunkoo and Ramkissoon's (2011) study of Caribbean tourism communities found that financial benefits ($\beta = 0.41$, $p < 0.001$) and perceived control ($\beta = 0.38$, $p < 0.001$) were primary predictors of tourism support, closely paralleling this study's findings where financial factors ($\beta = 0.316$, $p = 0.002$) and perceived behavioral control ($\beta = 0.297$, $p = 0.039$) emerged as the only significant predictors (Chen, M. F. & Tung, 2014).

The unexpected non-significance of attitude (X1) and subjective norms (X2) in predicting collaboration intention challenges conventional TPB applications, which typically position these variables as primary determinants of behavioral intention. This deviation requires systematic analysis of why traditional TPB constructs failed in this context, revealing fundamental issues with applying Western-derived psychological theories to non-Western cultural settings. The failure of attitude to predict collaboration intention (H1 rejected) can be attributed to the Minangkabau cultural concept of *musyawarah* (communal decision-making), where individual attitudes become subordinated to collective economic assessments and community welfare considerations rather than personal environmental preferences. Similarly, the rejection of H2 (subjective norms effect) reflects the complex nature of social influence in Minangkabau society, where *adat* (customary law) and traditional governance structures create normative pressures that operate through different mechanisms than the Western concept of subjective norms measured in standard TPB scales. The success of H3 (perceived behavioral control) and H6 (financial factors) while H4 (past behavior) and H5 (government information exposure) failed, suggests that environmental collaboration in resource-dependent communities is driven by immediate capability assessments and economic security rather than historical patterns or external information campaigns. This pattern indicates that successful environmental interventions must focus on building community confidence and providing economic alternatives rather than relying on attitude change or information dissemination strategies (Rafles & Taufan, 2017).

This study faces several methodological limitations that constrain the generalizability and robustness of findings, necessitating careful interpretation of results and identification of areas for future research improvement. The cross-sectional design prevents causal inference and fails to capture the dynamic nature of community attitudes toward environmental collaboration, particularly in the post-COVID-19 context where economic pressures may be intensifying community resistance to conservation programs that threaten KJA livelihoods. The severe reliability issues with the government information exposure construct (Cronbach's $\alpha = 0.156$, CR = 0.627, AVE = 0.432) represent a critical methodological flaw that undermines confidence in any conclusions about information dissemination effectiveness, suggesting that standard Western-derived scales for measuring information exposure may be culturally inappropriate for contexts where knowledge transmission occurs through traditional oral communication and community deliberation processes. Geographic limitations constrain generalizability, as the

study focuses exclusively on four *Nagari* around Lake Maninjau, potentially missing important variations in community characteristics, economic dependencies, and cultural practices that exist across Indonesia's diverse lake ecosystems and ethnic groups. The reliance on self-report measures introduces social desirability bias, particularly given the politically sensitive nature of KJA regulation and the potential for respondents to provide answers they perceive as socially acceptable to government-affiliated researchers rather than honest assessments of their collaboration intentions. Sample representativeness concerns arise from the overwhelming dominance of KJA operators (96.17%) and male respondents (74.64%), potentially missing perspectives from community members with different economic interests and gender-based environmental knowledge that could provide alternative insights into collaboration dynamics (Asmin et al., 2019).

The significant influence of financial factors ($\beta = 0.316$, $p = 0.002$) and perceived behavioral control ($\beta = 0.297$, $p = 0.039$) provides clear direction for developing operationally specific policy interventions that address the economic and capacity-building needs of Lake Maninjau communities. Government agencies should implement a comprehensive KJA transition program that includes: (1) Direct financial compensation of IDR 50-75 million per KJA unit for voluntary dismantling, based on the average investment and annual income loss calculations; (2) Establishment of a revolving credit fund with 2% annual interest rates specifically for tourism-related microenterprises, including homestay development, traditional craft production, and eco-tourism guide services; (3) Intensive skills training programs lasting 6-12 months that provide certification in hospitality management, sustainable fishing practices, organic agriculture, and cultural tourism services, with guaranteed employment placement or business startup support upon completion. To address the perceived behavioral control deficit, policy makers should: (1) Create community-led environmental management committees with legal authority and budget allocation for local conservation initiatives; (2) Establish demonstration projects that showcase successful transitions from KJA to sustainable tourism in similar lake communities, providing concrete evidence that economic alternatives are viable; (3) Develop partnerships with established tourism operators to guarantee market access and fair pricing for community-produced tourism services and products. The ineffectiveness of current government information campaigns ($\beta = 0.081$, $p = 0.281$) necessitates fundamental restructuring of environmental communication strategies to align with traditional Minangkabau governance processes, including integration of conservation messaging into *adat* ceremonies, collaboration with traditional leaders (*penghulu*) as conservation advocates, and development of culturally appropriate educational materials that frame environmental protection within traditional ecological knowledge systems rather than external scientific paradigms (von Benda-Beckmann & von Benda-Beckmann, 2012).

This research contributes three distinct theoretical advances to the environmental behavior and community-based conservation literature that extend beyond simple variable addition to fundamental reconceptualization of behavioral prediction in culturally distinct contexts. First, the study proposes the "Resource-Capability Framework" as a culturally adapted extension of TPB, positing that environmental collaboration intentions in resource-dependent communities are primarily determined by the intersection of economic feasibility and perceived self-efficacy rather than traditional attitude-behavior relationships assumed in Western psychological theories. This framework challenges the universal applicability of TPB and demonstrates that behavioral prediction models require cultural recalibration to account for collectivistic decision-making processes, traditional governance structures, and economic pragmatism that characterizes indigenous and traditional communities globally. Second, the research introduces the concept of "Cultural Governance Domains" as a theoretical construct that explains how traditional decision-making systems mediate the relationship between individual psychological factors and behavioral intentions, providing a bridge between individual-level behavioral theories and community-level cultural anthropology that has been largely absent in environmental psychology literature. Third, the study contributes empirical evidence for "Environmental Pragmatism Theory" in indigenous contexts, demonstrating that ecological values are consistently subordinated to immediate livelihood security considerations in communities facing economic vulnerability, thereby challenging romantic notions of indigenous environmental stewardship and providing realistic foundations for policy development that acknowledges the economic constraints within which environmental decisions occur. These theoretical contributions collectively advance understanding of environmental behavior in non-Western contexts and provide frameworks for developing culturally responsive conservation strategies that recognize the complex interplay between individual agency, cultural governance, and economic realities in shaping environmental collaboration outcomes (Tengö et al., 2014).

The demographic characteristics of respondents reveal critical insights that extend beyond simple descriptive statistics to illuminate the complex socio-economic context within which environmental collaboration decisions occur at Lake Maninjau. The predominance of male respondents (74.64%) reflects traditional Minangkabau economic structures where men typically manage KJA operations despite the matrilineal inheritance system, creating a gendered dimension to environmental decision-making that may not be captured in standard TPB

applications developed for more gender-egalitarian Western contexts. The concentration of respondents in the 36-45 age bracket (39.71%) represents the economically active population who have invested heavily in KJA infrastructure and possess the greatest financial stakes in maintaining current operations, while also having the longest remaining working years to justify major livelihood transitions to tourism-based activities. The educational profile showing 66.03% of respondents with only elementary or middle school education suggests that environmental communication strategies requiring high literacy levels or complex technical understanding may be fundamentally inappropriate for this community context. Most significantly, the near-universal KJA ownership (91.87%) and occupation (96.17%) rates indicate that this study captured a population with extremely high economic dependency on aquaculture, where environmental collaboration necessarily implies direct personal economic sacrifice rather than abstract environmental stewardship, fundamentally altering the psychological calculus underlying behavioral intentions compared to studies conducted in more economically diverse communities.

The income distribution data reveals a community economic structure that profoundly influences environmental collaboration possibilities, with 53.59% of respondents earning between 5-10 million rupiah monthly, positioning them in a middle-income bracket that creates both vulnerability and opportunity for conservation program participation. This income level represents sufficient economic security to consider long-term environmental benefits while remaining vulnerable enough that immediate income losses from KJA cessation would create significant hardship, explaining why financial factors ($\beta = 0.316$, $p = 0.002$) emerged as the strongest predictor of collaboration intention. The virtual absence of very low-income (0.48% earning <1 million) and high-income (0.96% earning >10 million) respondents suggests a relatively homogeneous economic community where collective action decisions may be more feasible than in economically stratified contexts, but also where alternative livelihood options are limited and economic risks of environmental collaboration are shared across the community. The finding that financial factors significantly outweigh attitude and subjective norms in predicting collaboration intention aligns with economic vulnerability theory, which posits that communities facing livelihood insecurity prioritize immediate survival considerations over long-term environmental or social values, necessitating conservation programs that address economic security before attempting to leverage environmental values or social pressures. This economic context also explains why perceived behavioral control ($\beta = 0.297$, $p = 0.039$) emerged as significant, as community members may be assessing their capability to successfully transition to alternative livelihoods given their current economic resources and skill sets rather than their abstract ability to participate in environmental programs.

CONCLUSION

This study contributes to environmental management literature by offering a contextual reinterpretation of TPB within the unique cultural setting of Indonesian lake conservation zones. The quantitative analysis revealed that perceived behavioral control ($\beta = 0.297$, $p = 0.039$) and financial factors ($\beta = 0.316$, $p = 0.002$) significantly predicted collaboration intention, while attitudes, subjective norms, past behavior, and government information exposure showed non-significant relationships. These findings challenge conventional applications of TPB and highlight the need for culturally responsive theoretical frameworks that acknowledge indigenous knowledge systems, economic realities, and traditional governance structures.

The proposed Resource-Capability Framework extends TPB by integrating economic pragmatism with cultural governance principles, offering a more nuanced understanding of collaboration dynamics in resource-dependent communities with strong cultural identities. This theoretical contribution moves beyond functional variable addition to conceptual reinterpretation, addressing the complex interplay between individual agency, communal values, and economic imperatives in environmental decision-making.

The methodological limitations identified, particularly regarding the measurement of government information exposure, underscore the necessity for developing culturally calibrated research instruments that can effectively capture knowledge transmission pathways in communities with dual governance systems. Future research should focus on refining these measurement approaches and further investigating the mediating role of cultural governance structures in environmental collaboration.

Conservation practitioners and policymakers may benefit from considering economically integrated, culturally aligned approaches that build upon existing capabilities and knowledge systems. By recognizing the primacy of economic considerations and self-efficacy in driving collaboration intentions, environmental management strategies can foster more effective community engagement in lake conservation efforts.

This study demonstrates that effective environmental collaboration in culturally distinct settings requires moving beyond universal applications of behavioral theories to context-specific frameworks that honor the

complex socio-cultural dynamics shaping community responses to conservation initiatives. The integration of traditional ecological knowledge with modern conservation approaches presents a promising pathway for sustainable environmental management in Indonesian lake conservation zones and similar contexts worldwide.

REFERENCES

Abdi, H. (2007). Partial Least Square Regression PLS-Regression. http://www.utd.edu/

Ajzen, I. (1991). The Theory of Planned Behavior. Organizational Behavior And Human Decision Processes, 33(1), 52–68. https://doi.org/10.47985/dcidj.475

Anderson, R. M., Heesterbeek, H., Klinkenberg, D., Dã, T., & Hollingsworth, irdre. (2020). How will country-based mitigation measures influence the course of the COVID-19 epidemic? The Lancet, 395, 931–934. https://doi.org/10.1016/S01406736(20)305675

Asmin, F., Darusman, D., Ichwandi, I., & Suharjito, D. (2019). Mainstreaming community-based forest management in west sumatra: Social forestry arguments, support, and implementation. Forest and Society, 3(1), 77–96. https://doi.org/10.24259/fs.v3i1.4047

Boldero~, J. (1995). The Prediction of Household Recycling of Newspapers: The Role of Attitudes, Intentions, and Situational Factors1.

Brombal, D., Moriggi, A., & Marcomini, A. (2017). Evaluating public participation in Chinese EIA. An integrated Public Participation Index and its application to the case of the New Beijing Airport. Environmental Impact Assessment Review, 62, 49–60. https://doi.org/10.1016/j.eiar.2016.07.001

Brown, T. J., Ham, S. H., & Hughes, M. (2010). Picking up litter: An application of theory-based communication to influence tourist behaviour in protected areas. Journal of Sustainable Tourism, 18(7), 879–900. https://doi.org/10.1080/09669581003721281

Carrus, G., Passafaro, P., & Bonnes, M. (2008). Emotions, habits and rational choices in ecological behaviours: The case of recycling and use of public transportation. Journal of Environmental Psychology, 28(1), 51–62. https://doi.org/10.1016/j.jenvp.2007.09.003

Chan, K. (1998). Mass communication and pro-environmental behaviour: waste recycling in Hong Kong. In Journal of Environmental Management (Vol. 52).

Chen, M., Qian, X., & Zhang, L. (2015). Public Participation in Environmental Management in China: Status Quo and Mode Innovation. Environmental Management, 55(3), 523–535. https://doi.org/10.1007/s00267-014-0428-2

Cheng, S., Lam, T., & Hsu, C. H. C. (2006). Negative Word-of-Mouth Communication Intention: An Application of the Theory of Planned Behavior. Journal of Hospitality and Tourism Research, 30(1), 95–116. https://doi.org/10.1177/1096348005284269

Cheung, S. F., Chan, D. K. S., & Wong, Z. S. Y. (1999). Reexamining the theory of planned behavior in understanding wastepaper recycling. Environment and Behavior, 31(5), 587–612. https://doi.org/10.1177/00139169921972254

Dove, M. R. (2006). Indigenous people and environmental politics. Annual Review of Anthropology, 35, 191–208. https://doi.org/10.1146/annurev.anthro.35.081705.123235

Dyer, P., Gursoy, D., Sharma, B., & Carter, J. (2007). Structural modeling of resident perceptions of tourism and associated development on the Sunshine Coast, Australia. Tourism Management, 28(2), 409–422. https://doi.org/10.1016/j.tourman.2006.04.002

Eagles, P. F. J., Mccool, S. F., Haynes, C. D., & Phillips, A. (n.d.). Best Practice Protected Area Guidelines Series No. 8 IUCN World Commission on Protected Areas (WCPA) IUCN Programme on Protected Areas Rue Mauverney 28 Sustainable Tourism in Protected Areas Guidelines for Planning and Management Sustainable Tourism in Protected Areas: Guidelines for Planning and Management. www.iucn.org/bookstorewww.wcpa.iucn.org

Fajrini, Nurkhalila., & Mujtahid, I. M. (2024). Pengembangan Model Komunikasi Persuasif Pemuda Berbasis Kasepuhan Abstrak Developing Persuasive Communication Model Of Ciptagelar. Perspektif Komunikasi: Jurnal Ilmu Komunikasi Politik Dan Komunikasi Bisnis, 8(1), 29–42.

Fallon, L. D., & Kriwoken, L. K. (2003). Community involvement in tourism infrastructure-the case of the Strahan Visitor Centre, Tasmania. In Tourism Management (Vol. 24).

Fedorenko, I., & Sun, Y. (2016). Microblogging-Based Civic Participation on Environment in China: A Case Study of the PM 2.5 Campaign. Voluntas, 27(5), 2077–2105. https://doi.org/10.1007/s11266-015-9591-1

Fielding, K. S., McDonald, R., & Louis, W. R. (2008). Theory of planned behaviour, identity and intentions to engage in environmental activism. Journal of Environmental Psychology, 28(4), 318–326. https://doi.org/10.1016/j.jenvp.2008.03.003

Fishbein, Martin., & Ajzen, Icek. (2010). Predicting and changing behavior : the reasoned action approach. Psychology Press, Taylor & Francis Group.

Gifford, R. (2014). Environmental psychology matters. In Annual Review of Psychology (Vol. 65, pp. 541–579). Annual Reviews Inc. https://doi.org/10.1146/annurev-psych-010213-115048

Griffin, R. J., Dunwoody, S., & Neuwirth, K. (1999). Article ID enrs. In Environmental Research Section A (Vol. 80). http://www.idealibrary.comon

Gursoy, D., Jurowski, C., & Uysal, M. (2002). Resident Attitudes A Structural Modeling Approach. In Annals of Tourism Research (Vol. 29, Issue 1). www.elsevier.com/locate/atoures

Gursoy, D., & Rutherford, D. G. (2004). Host attitudes toward tourism: An improved structural model. Annals of Tourism Research, 31(3), 495–516. https://doi.org/10.1016/j.annals.2003.08.008

Hackman, J. R., & Vidmar, N. (1970). Effects of Size and Task Type on Group Performance and Member. In Source: Sociometry (Vol. 33, Issue 1).

Hauser, B. K., Koontz, T. M., & Bruskotter, J. T. (2012). Volunteer participation in collaborative watershed partnerships: insights from the Theory of Planned Behaviour. Journal of Environmental Planning and Management, 55(1), 77–94. https://doi.org/10.1080/09640568.2011.581535

Kadarisman, A. A. A., Bakti, I., Agustin, H., & Mulyani, H. S. (2024). Environmental Communication Challenges in the Development Process of the Ciletuh Palabuhanratu Geopark Area, Sukabumi Regency. Revista de Gestao Social e Ambiental, 18(8), 1–21. https://doi.org/10.24857/rgsa.v18n8-096

Kalafatis, S. P., Pollard, M., East, R., & Tsogas, M. H. (n.d.). Green marketing and Ajzen's theory of planned behaviour: a cross-market examination.

Kamil, I., Abdoellah, O. S., Agustin, H., & Bakti, I. (2021). Dialectic of Environmental Communication in Indonesian Conservation Area. Environmental Communication, 15(2), 203–217. https://doi.org/10.1080/17524032.2020.1819362

Kaplan, S., Manca, F., Nielsen, T. A. S., & Prato, C. G. (2015). Intentions to use bike-sharing for holiday cycling: An application of the Theory of Planned Behavior. Tourism Management, 47, 34–46. https://doi.org/10.1016/j.tourman.2014.08.017

Lai, P. H., & Nepal, S. K. (2006). Local perspectives of ecotourism development in Tawushan Nature Reserve, Taiwan. Tourism Management, 27(6), 1117–1129. https://doi.org/10.1016/j.tourman.2005.11.010

Laroche, M., Bank, R., Molson, J., Bergeron, J., & Barbaro-Forleo, G. (n.d.). Targeting consumers who are willing to pay more for environmentally friendly products. http://www.emerald-library.com/ft

Lee, M. J. (2005). Effects Of Attitude And Destination Image On Association Members' Meeting Participation Intentions: Development Of Meeting Participation Model.

Lee, T. H. (2013). Influence analysis of community resident support for sustainable tourism development. Tourism Management, 34, 37–46. https://doi.org/10.1016/j.tourman.2012.03.007

Lepp, A. (2008). Attitudes towards initial tourism development in a community with no prior tourism experience: The case of Bigodi, Uganda. Journal of Sustainable Tourism, 16(1), 5–22. https://doi.org/10.2167/jost630.0

Lynne, G. D., Casey, F., Hodges, A., & Rahmani, M. (1995). Conservation technology adoption decisions and the theory of planned behavior ". In Journal Of Elsevier Journal of Economic Psychology (Vol. 16).

Martin, V. Y., Weiler, B., Reis, A., Dimmock, K., & Scherrer, P. (2017). 'Doing the right thing': How social science can help foster pro-environmental behaviour change in marine protected areas. Marine Policy, 81, 236–246. https://doi.org/10.1016/j.marpol.2017.04.001

Mekonen, S. (2017). Roles of Traditional Ecological Knowledge for Biodiversity Conservation. In Journal of Natural Sciences Research www.iiste.org ISSN (Vol. 7, Issue 15). Online. www.iiste.org

Munro, S., Lewin, S., Swart, T., & Volmink, J. (2007). A review of health behaviour theories: How useful are these for developing interventions to promote long-term medication adherence for TB and HIV/AIDS? In BMC Public Health (Vol. 7). https://doi.org/10.1186/1471-2458-7-104

Nicholas, L. N., Thapa, B., & Ko, Y. J. (2009). Residents' Perspectives Of A World Heritage Site. The Pitons Management Area, St. Lucia. Annals of Tourism Research, 36(3), 390–412. https://doi.org/10.1016/j.annals.2009.03.005

Novianti, E., Sjuchro, D. W., Oktavia, D., Adnani, Q. E. S., Gumilang, L., Sunardi, & Nurfauziah, I. (2023). Citarum Watershed Restoration through Community Involvement and Tourism Village Development. Jurnal Komunikasi, 15(2), 331–346. https://doi.org/10.24912/jk.v15i2.25222

Nunkoo, R., & Ramkissoon, H. (2011). Developing a community support model for tourism. Annals of Tourism Research, 38(3), 964–988. https://doi.org/10.1016/j.annals.2011.01.017

Puczkó, L., & Rátz, T. (2000). Tourist and Resident Perceptions of the Physical Impacts of Tourism at Lake Balaton, Hungary: Issues for Sustainable Tourism Management. Journal of Sustainable Tourism, 8(6), 458–478. https://doi.org/10.1080/09669580008667380

Rafles, H., & Taufan, M. (2017). Role of Abdullah Ahmad on the Modernization of Islamic Education in Minangkabau CORE View metadata, citation and similar papers at core.ac.uk provided by Khalifa Journal of Islamic Education. Minangkabau Khalifa Journal of Islamic Education, 1(1).

Sebele, L. S. (2010). Community-based tourism ventures, benefits and challenges: Khama Rhino Sanctuary Trust, Central District, Botswana. Tourism Management, 31(1), 136–146. https://doi.org/10.1016/j.tourman.2009.01.005

Septriani, Edi Satria, & Basyarul Aziz. (n.d.). Antropologi Ekologi (Tomi Arianto, Ed.). https://www.researchgate.net/publication/389899544

Sevillano, V., Aragonés, J. I., & Schultz, W. P. (2007). Perspective taking, environmental concern, and the moderating role of dispositional empathy. Environment and Behavior, 39(5), 685–705. https://doi.org/10.1177/0013916506292334

Siapno, J. A. (2012). Muslims and Matriarchs: Cultural Resilience in Indonesia Through Jihad and Colonialism. By Jeffrey Hadler. Ithaca; London: Cornell University Press, 2008. xii, 211 pp. $41.95 (cloth). The Journal of Asian Studies, 71(1), 299–302. https://doi.org/10.1017/s0021911811002890

Smith, L., & Sørensen, P. N. (2014). Rational Social Learning with Random Sampling.

Song, H. J., You, G. J., Reisinger, Y., Lee, C. K., & Lee, S. K. (2014). Behavioral intention of visitors to an Oriental medicine festival: An extended model of goal directed behavior. Tourism Management, 42, 101–113. https://doi.org/10.1016/j.tourman.2013.11.003

Taylor, G. (1995). The community approach: does it really work? In Tourism Management (Vol. 16, Issue 7).

Tengö, M., Brondizio, E. S., Elmqvist, T., Malmer, P., & Spierenburg, M. (2014). Connecting diverse knowledge systems for enhanced ecosystem governance: The multiple evidence base approach. In Ambio (Vol. 43, Issue 5, pp. 579–591). Kluwer Academic Publishers. https://doi.org/10.1007/s13280-014-0501-3

Thornton, T. F., & Bhagwat, S. A. (2021). The Routledge Handbook Of Indigenous Environmental Knowledge.

Verma, V. K., & Chandra, B. (2018). An application of theory of planned behavior to predict young Indian consumers' green hotel visit intention. Journal of Cleaner Production, 172, 1152–1162. https://doi.org/10.1016/j.jclepro.2017.10.047

Verplanken, B., & Knippenberg, A. Van. (1996). Habit, information acquisition, and the process of making travel mode choices. In European Journal of Social Psychology (Vol. 27). John Wiley & Sons.

von Benda-Beckmann, F., & von Benda-Beckmann, K. (2012). Identity in dispute: Law, religion, and identity in Minangkabau. Asian Ethnicity, 13(4), 341–358. https://doi.org/10.1080/14631369.2012.710073

Winarni, W., Agustin, H., & Supriadi, D. (2023). Pola Komunikasi Manajemen Konflik: Studi Fenomenologi Pada Polisi Hutan Di Cagar Biosfer Cibodas. Jurnal Belantara, 6(1), 54–68. https://doi.org/10.29303/jbl.v6i1.916

Xia, H., Chen, T., & Hou, G. (n.d.). Study on Collaboration Intentions and Behaviors of Public Participation in the Inheritance of ICH Based on an Extended Theory of Planned Behavior. https://doi.org/10.3390/su12104349

Yoon, Y., Gursoy, D., & Chen, J. S. (2001). Validating a tourism development theory with structural equation modeling. In Tourism Management (Vol. 22).

Zhang, Y., Xiong, Y., Lee, T. J., Ye, M., & Nunkoo, R. (2021). Sociocultural Sustainability and the Formation of Social Capital from Community-based Tourism. Journal of Travel Research, 60(3), 656–669. https://doi.org/10.1177/0047287520933673