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Balancing Tourism and Conservation: The Role of Local Communities in Bali's Ecotourism Management

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Abstract

This study examines key factors and interaction patterns influencing local community participation in Bali's ecotourism management, responding to the persistent imbalance between tourism interests and nature conservation. It aims to provide policy and program recommendations that strengthen community roles in sustainable practices across five key sites: West Bali National Park, Buyan–Tamblingan, Bali Mangroves, Batur Kintamani, and Lembongan. This study aims to identify key factors influencing the role of local communities in Bali's ecotourism management, providing targeted policy recommendations to enhance sustainable practices through a quantitative approach. The study utilizes structured questionnaires and direct observation among 250 residents from five different ecotourism areas. Data were analyzed using Exploratory Factor Analysis (EFA) to identify the main drivers of community involvement. The results show strong local leadership, plenty of business openings, willingness for novelty, collaboration, and environmental awareness boost the level of participation leading to economic development through social cohesion and creating long-term commitment, on which government training, technical support, and funding role necessitate sustaining ecotourism enterprises. Novelty is empirically identifying such community-based factors with their linkages toward environmental protection within the unique context of Bali.

Keywords: Community Participation, Ecotourism Management, Environmental Protection, Leadership and Collaboration, Sustainable Development.

1. Introduction

Indonesia is considered a country with extremely rich biodiversity and natural and cultural wealth, which gives it great potential for ecotourism development [1,2]. Bali is one of the most important tourist destinations in Indonesia, not only with beautiful natural scenery, but also with unique cultural heritage and local knowledge that can be integrated into ecotourism management [3,4]. However, in practice, ecotourism management in Bali still relies heavily on national parks or protected forests, which are mainly designated as protected areas, although these areas are also promoted to attract tourists [5,6].

The participation of local communities in ecotourism management is crucial because they play a key role in ensuring ecological sustainability and reaping the economic benefits of tourism. Effective ecotourism management aims to bridge the gap between environmental protection interests and the economic needs of local communities [7,8]. Nevertheless, there is still a gap between the ideal and reality of ecotourism, especially in terms of community participation in management and sharing of ecotourism benefits [9,10]. Field research shows that although ecotourism is considered a strategy for environmental protection and community economic empowerment, many ecotourism areas in Bali still face challenges related to community participation [11,12]. The most common problems include: low level of local community participation in ecotourism management, lack of capacity and skills of community members to professionally run ecotourism businesses, inadequate local infrastructure and supporting facilities, limited funding and financing channels, and lack of cooperation between communities, governments, and tourism stakeholders [13]. These challenges highlight the gap between the ideal concept of community-based ecotourism and its implementation at the local level, especially in the context of Bali [14,15].

This study seeks to address this gap by identifying key factors and patterns of interaction that influence local community participation in ecotourism management in Bali, thereby providing more effective policy and program recommendations to enhance community roles in sustainable ecotourism management [1,16]. Bali's five main ecotourism areas (**Figure 1**), namely West Bali National Park (Jembrana), Buyang and Tamblingan (Buleleng), Bali Mangroves (Denpasar), Batur Kintamani (Bangli), and Lembongan (Klungkung), have been extensively studied in terms of their potential, landscape planning, development strategies, and contributions to the economy and conservation [21].

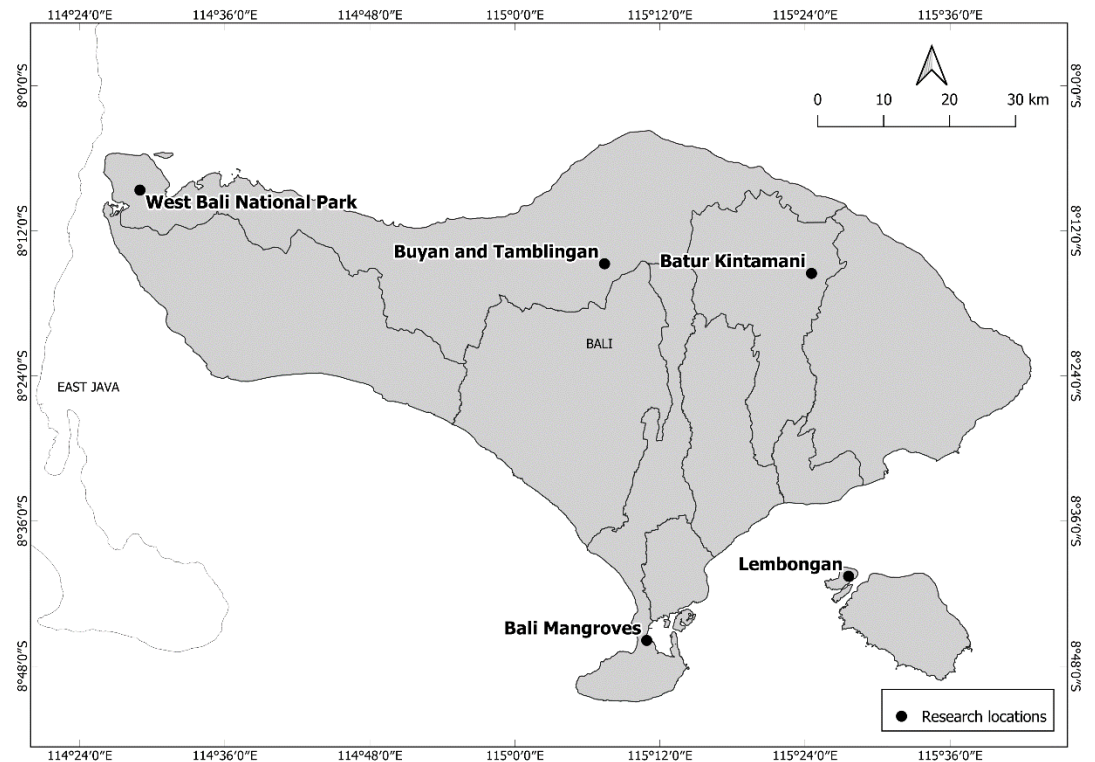


Figure 1. Five Research locations of Ecotourism in Bali.

There is still a significant research gap on the determinants of local community participation in ecotourism management in these areas [17,18]. Most previous studies have focused on the characteristics of these sites, destination development, or conservation and tourism-based management strategies, but have not specifically and thoroughly identified or analysed the factors that influence the level of local community participation, such as motivation, capacity, access to funds, and cooperation models with other stakeholders [19,20]. Therefore, empirical research is needed to focus on the interaction of these factors so that ecotourism management in these five main destinations can truly increase local community participation and benefits in a sustainable manner [21–23].

2. Materials and Methods

2.1. Research Method

This study used a quantitative research method that combined questionnaires with direct observation. The subjects were local residents living near five ecotourism areas in Bali: (1) West Bali National Park (Jembrana), (2) Buyang and Tamblingan (Buleleng), (3) Bali Mangrove Forest (Denpasar), (4) Batur Kintamani (Bangli), and (5) Nusa Lembongan (Klungkung), as described previously (**Error! Reference source not found.**) [7,24]. This study used a questionnaire survey as the primary data collection instrument. For practical reasons, the research instrument was not tested for validity and reliability. Factor analysis, particularly in the context of inverse image analysis, is considered part of construct validity testing. This reflects a practical principle sometimes used in research: if the inverse image correlation

matrix (all diagonal values or the measure of sampling adequacy (M.S.A.) > 0.5) meets requirements, the instrument is considered suitable for factor analysis, thereby supporting construct validity [25,26].

2.2. Research Indicators

Indicators and questionnaire items were developed based on previous research on the MOA (Motivation, Opportunity, and Ability) framework for ecotourism management. Data were collected from five different research sites, with 50 participants at each site, for a final sample size of 250. The questionnaire included a comprehensive set of indicators, including economic motivation, knowledge motivation, optimism, mindset, interest, socialization, income, commitment, independence, facilities, awareness, natural beauty, education, visitor numbers, infrastructure, financing, skills, participation, employment, leadership, youth and women participation, collaboration, nature-based tourism, forest products, agricultural products, handicrafts, and commitment. Each indicator was refined into a specific questionnaire item to ensure the validity and reliability of the collected data [27].

2.3. Data Analysis

The researchers analyzed the questionnaire responses to describe and explain the factors influencing ecotourism management based on the MOA framework. Questionnaire responses were systematically tabulated and subsequently processed using SPSS software. Descriptive statistics were used to summarize the data, with particular emphasis on calculating means to represent respondents' perceptions of ecotourism management in their respective regions. Descriptive statistics, such as means, provide a clear overview of overall perceived trends across all indicators and provide a comprehensive understanding of respondents' overall attitudes and opinions [28].

To identify the key determinants of ecotourism management, this study employed Exploratory Factor Analysis (EFA) in SPSS [25,29]. This analytical method groups related variables into new latent factors, revealing key influencing factors of ecotourism management. EFA is particularly effective in reducing data complexity and revealing the underlying structure between measured indicators. This allowed the identification of core factors that determine ecotourism practices in the study area [30,31]. The factor analysis is processed using SPSS software and applied to all the variables, and the inappropriate ones are excluded from further analysis. Variables that pass individual tests for adequacy shall be retained. The KMO and Bartlett's Test, along with individual Measures of Sampling Adequacy and Anti-Image Matrices, are crucial preliminary checks in factor analysis that assess whether the dataset is appropriate for extracting meaningful factors; the KMO measures overall sampling adequacy (values above 0.5 indicate suitability), Bartlett's Test determines if variables are sufficiently intercorrelated (significant results mean factor analysis can proceed), individual MSA values highlight whether each variable contributes adequately, and Anti-Image Matrices help identify variables that may need to be removed based on low partial correlations, collectively ensuring the strength and validity of the factor model. Factoring is the process of extracting factors from the variables that have been chosen. The extraction method used is Principal Component Analysis. After that, in order to further clarify whether these extracted factors are indeed very different from each other, a rotation procedure is used. Each formed factor is named (the naming of determinant factors in factor analysis is based on interpreting the underlying meaning of grouped variables that load highly onto each factor; this process is guided by theoretical considerations, previous research, and the conceptual relevance of the variables, so the chosen names should reflect the shared essence or construct that the variables represent, rather than just statistical properties, ensuring that factor labels meaningfully communicate the latent dimensions extracted from the data) according to its characteristics, beginning with the factor possessing the highest eigenvalue, continuing to those with smaller eigenvalues (all values above one) [25].

3. Results and Discussion

3.1. Community Motivation and Readiness for Ecotourism Programs in Bali

Research conducted in five major ecotourism destinations in Indonesia demonstrates that the Motivation-Opportunity-Ability (MOA) model is effective in measuring and enhancing community motivation and willingness to manage ecotourism. The findings, consistent with previous research in Malaysia and Bali, highlight the importance of strong community motivation (e.g., economic expectations, knowledge, and optimism), existing opportunities (e.g., infrastructure and training), and local capacity (e.g., funding, skills, and leadership) for the success and sustainability of community-based ecotourism projects [32–34]. The study's findings further support the wisdom of Bali's "Tri Hita Karana," which emphasizes harmony between people, nature, and spirit. Across all five ecotourism destinations, local communities demonstrated strong motivation to participate in ecotourism. They were eager to generate income, learn about conservation, and were optimistic that ecotourism would positively impact the public good. This motivation was complemented by a high degree of idealism about the importance of conservation, an independent interest in conservation, and a strong commitment to sustainable management practices. This positive attitude was further enhanced by abundant natural resources, available infrastructure and amenities, and opportunities for capacity building through training and collaboration with various stakeholders. This embodies the "Tri Hita Karana" principle of promoting balanced and sustainable community-based ecotourism [22,35–37].

In the context of Balinese culture, forests and lakes are considered sacred and must be protected not only for ecological reasons but also due to their deep religious, cultural, and existential significance. Research shows that this belief strongly motivates communities to develop ecotourism and conservation efforts, as protecting these areas is seen as a religious obligation, a way to maintain cultural identity, and a path to community well-being. Each study site has developed unique community-led initiatives that embody these values. For example, in the mangrove areas of Bali and Lembongan, local groups have pioneered conservation and ecotourism activities that integrate environmental education, environmental management, and economic empowerment. At Lake Buyang, Lake Tamblingan, and Lake Batur, community participation encompasses all aspects of planning, management, and assessment.

Environmental and cultural protection are highly valued and often integrated into traditional rituals and ceremonies that honour the sacredness of the lakes. In West Bali National Park, the development of small ecotourism enterprises has brought direct economic benefits and strengthened local community cohesion. At the same time, the principles of respecting and protecting nature are practiced. Compared to other regions where economic or environmental factors may be the primary driving force, Bali combines religious and cultural values with practical conservation measures to create a unique and comprehensive model of sustainable ecotourism [6,9,38]. The study highlights the consistently high levels of community motivation and preparedness across these diverse ecotourism destinations and underscores the key role that local engagement, multi-stakeholder collaboration, and adaptive management play in achieving sustainable tourism development in Indonesia.

Table 1. Assessment of Community Motivation and Readiness for Ecotourism Programs.

Indicator	Operational Definition	Tendency	Description
Financial Motivation	Motivation to generate income	3.68	Very Good
Knowledge	Motivation to acquire knowledge about nature conservation	3.60	Very Good
Optimism	Optimism that the ecotourism program is beneficial for the community	3.84	Very Good
Mindset	Idealism regarding the importance of nature conservation	3.72	Very Good
Interest	Independent interest from the local community	3.62	Very Good
Socialization	Motivation of the local community by government and community leaders	3.14	Very Good

Indicator	Operational Definition	Tendency	Description
Income	Potential for generating income for the community	3.08	Very Good
Commitment	Existence of commitment from the local community	3.09	Very Good
Independence	Concern among the local community regarding external intervention	3.79	Very Good
Facilities	Availability of facilities	3.23	Very Good
Awareness	Growth of awareness within the community	3.76	Very Good
Natural Beauty	Availability of natural beauty	3.48	Very Good
Training	Ecotourism training received	3.68	Very Good
Tourist Arrivals	Tourist arrivals as an opportunity for ecotourism management	3.57	Very Good
Infrastructure	Availability of infrastructure	2.52	Good
Funding	Availability of budget	2.41	Good
Skills	Availability of skilled human resources	2.65	Good
Participation	Existence of commitment from the local community	3.87	Very Good
Employment	Availability of support from local human resources	3.74	Very Good
Leadership	Presence of leaders who guide and motivate	3.65	Very Good
Youth and Women Involvement	Support from youth and women	3.21	Very Good
Collaboration	Collaboration with tourism service providers such as travel agents	3.55	Very Good
Nature Tourism	Tourism enterprises (e.g., trekking and similar activities)	3.82	Very Good
Forest Products	Enterprises related to local forest products	3.86	Very Good
Agricultural Products	Enterprises in intercropping agriculture and similar activities	3.77	Very Good
Handicrafts	Handicraft enterprises using forest products as raw materials	3.78	Very Good
Involvement	Involvement in nature conservation programs	3.85	Very Good

Notes: "Tendency" refers to the average score (on a scale, e.g., 1–4) for each indicator. "Description" is the qualitative assessment based on the score. [27], [39].

In the calculation of the level of participation as mentioned in **Table 1**, the tendency of using descriptive statistics by mean involves summarizing the central tendency of a dataset and interpreting scores on a Likert scale from 1 (Very bad) to 5 (Very good) by providing an average value that represents the overall level of responses [40]. It is, therefore, true to say that using both tendency and description makes an assessment acquire some degree of objectivity from statistical facts infused with the purposefulness brought about by qualitative judgment, resulting in a relatively holistic analysis of community participation. It assesses community enthusiasm and readiness for ecotourism projects, revealing that local stakeholders are generally well prepared and enthusiastic. Most indicators, including economic motivation, knowledge acquisition, optimism, mindset, self-interest, commitment, independence, awareness, and participation, received a "very good" rating, consistently maintaining an average score above 3.5 on a four-point scale. This suggests that communities not only recognize the potential economic and educational benefits of ecotourism but also demonstrate a strong internal drive to participate in conservation and sustainable tourism practices [10,41,42]. Furthermore, positive leadership, the active participation of youth and women, and close collaboration with tourism service providers have strengthened

community willingness to participate in and benefit from ecotourism projects. Abundant natural beauty, well-equipped facilities, and extensive training have also positively impacted the community's capacity to manage and promote ecotourism activities. The flourishing nature-based tourism, forestry, agriculture, and handicraft industries demonstrate a diversified model for sustainable local economic development [43,44].

Several previous studies have identified similar challenges in community ecotourism development and have offered recommendations, particularly in terms of infrastructure, financing, and human resources. For example, Suansri, in his Handbook of Community Tourism, emphasized that while community initiative and participation are often high, a lack of adequate infrastructure and qualified personnel can undermine the sustainability and effectiveness of ecotourism projects [45]. Stone and Stone share that while the local community, or in fact whole rural ecotourism in Indonesia, were highly motivated and realized the benefits that could accrue to them from practicing ecotourism, inadequate infrastructure and lack of access to finance were major challenges towards achieving the optimum implementation of the project and its long-term success [4]. In the Balinese context, Putra and Hitchcock, in their study of community ecotourism in the Lake Batur region, highlighted that despite community enthusiasm and active cooperation, the lack of adequate infrastructure and training opportunities in the local area limited the development and sustainability of ecotourism projects [46]. Furthermore, an assessment of ecotourism readiness in several villages in Bali revealed that targeted measures to improve infrastructure, secure financing, and strengthen local capacity are crucial to maximizing the benefits of ecotourism while ensuring the protection of natural and cultural resources. Together, these studies support the findings of the current study and highlight the importance of addressing gaps in infrastructure, funding, and human resources to ensure the long-term resilience and success of community-based ecotourism projects.

3.2. The Role of Local Communities in Bali's Ecotourism Management

Understanding the factors influencing local community participation in ecotourism management within Bali's social, cultural, and environmental context implies that truly sustainable tourism requires empowering local residents, integrating traditional knowledge, and fostering partnerships to ensure resilience and inclusiveness; as ecotourism has evolved in Bali, strong community engagement rooted in economic opportunities, cultural values, leadership, collaborative decision-making, and conservation awareness has become essential for achieving durable and equitable development that aligns with both environmental protection and the aspirations of Balinese society.

3.2.1. Determining the Adequacy of the Research Sample

The sample of the study was tested for adequacy by the Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy and Bartlett's Test of Sphericity. This returned a KMO value of 0.782, considerably above the generally accepted level of 0.7, which indicates that the data are adequate for running a factor analysis and there is enough common variance among the variables. Also, Bartlett's Test of Sphericity came out close to chi-square with 325 degrees of freedom at a significance level .000, indicating that indeed the correlation matrix is not an identity matrix; hence, there are quite a few relationships between variables that warrant factor analysis in this study (see Table 2).

Table 2. KMO and Bartlett's Test of Sphericity.

Test	Value	df	Sig.	Interpretation
Kaiser-Meyer-Olkin (KMO)	0.782	–	–	Sampling adequacy is good (above 0.7), data suitable for factor analysis.
Bartlett's Test of Sphericity	$\chi^2 \approx$ (reported)	325	.000	Correlation matrix significantly differs from identity matrix; factor analysis is justified.

Source: Primary Data Measure of Sampling Adequacy [28] [25].

The Bartlett test of sphericity assesses whether the correlation matrix differs significantly from the identity matrix. Significant results (p -values less than 0.05) indicate that the

correlations between variables are sufficiently high to justify the application of factor analysis. In summary, a high KMO value and a significant Bartlett's test result confirm that the data meet the necessary assumptions and can proceed to the next step of factor analysis. Identifying these eight determinants provides insight into the complex interactions among social, economic, cultural, and environmental variables that influence community participation. By quantifying the proportion of variance explained by each factor, this analysis provides empirical evidence on the relative importance of these determinants, enabling the development of targeted strategies to enhance community engagement. This approach not only advances theoretical understanding of community-based ecotourism management but also offers practical guidance for policymakers, practitioners, and stakeholders working to promote inclusive and sustainable ecotourism practices in Bali.

3.2.2. Total Variance Explained into 8 Determinant Factors of Local Community Involvement

The total variance explained results presented in **Table 3** highlight the complexity of community engagement and identify key areas where interventions can be most effective. By illuminating these key factors, this study contributes to the development of a more responsive and locally relevant ecotourism management framework that meets the aspirations and capacities of local communities in Bali.

Table 3. Total Variance Explained into 8 Determinant Factors of Local Community Involvement in Ecotourism Management in Bali.

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings
	Total	% of Variance	Cumulative %	Total
1	5.31	20.43	20.43	5.31
2	2.51	9.64	30.06	2.51
3	1.83	7.03	37.10	1.83
4	1.49	5.73	42.83	1.49
5	1.40	5.39	48.22	1.40
6	1.32	5.09	53.31	1.32
7	1.13	4.35	57.66	1.13
8	1.05	4.05	61.71	1.05

Source: Primary Data Extraction Factors [28] [25].

The Total Explained Variance analysis results in **Table 3** are crucial to the factor analysis process, as they form the basis for determining the number of factors to be extracted and the subsequent naming of these factors. The initial eigenvalue table shows eight components with eigenvalues greater than 1, indicating the formation of eight significant factors according to the Kaiser criterion. Each factor contributes a different percentage to the total variance: the first factor explains 20.425%, the second factor explains 9.638%, and so on, for a cumulative total of 61.710%. This cumulative percentage reflects the proportion of the original data information successfully captured by these eight factors. Determining the number of factors is crucial because it directly impacts the interpretability and validity of the results. Researchers will then interpret each factor and assign meaningful names by examining the variables with the highest loadings on each factor and ensuring that the factor names accurately reflect their underlying concepts. Therefore, the Total Explained Variance results are crucial because they not only guide factor extraction but also support the entire interpretive process of the factor analysis.

3.2.3. Naming of Determinant Factors

The determinants of local community participation in ecotourism management in Bali refer to the proportion of total variability in the observed data that can be attributed to these 8 key factors. These factors influence local community participation in ecotourism management in Bali. In factor analysis, the "sum of squared loadings extracted" indicates how much of the total variance across all measured variables can be attributed to the extracted factors, thus reflecting the explanatory power of the model. When 8 factors were extracted, their combined explanatory power of variance indicated how effectively these factors summarized the key factors influencing local community participation in ecotourism

management. This provides a solid empirical foundation for understanding and promoting local community participation in sustainable tourism initiatives.

Table 4. Naming of Determinant Factors of Local Community Involvement in Ecotourism Management and Their Relationship with Environmental Conservation in Bali.

No.	Factor Name	% of Variance	Variable/Indicator Names
1	Leadership Roles and Business Opportunities	20.43	Local leadership, community mobilization, tourism business development, local resource utilization (forestry, agriculture, fisheries, handicrafts).
2	Mindset and Industry Collaboration	9.64	Openness to innovation, willingness to collaborate, number of tourists, local employment, youth and women participation, collaboration with tourism companies.
3	Income, Socialization, and Commitment	7.03	Perceived income growth, socialization of ecotourism benefits, community engagement, active participation.
4	Environmental Conservation Awareness	5.73	Environmental awareness, understanding of environmental quality, supporting infrastructure,
5	Optimism for Income Generation and Knowledge	5.39	Income expectations, environmental knowledge, optimism about the industry's future.
6	Facilities and Self-Reliance	5.09	Availability of facilities (transportation, information, infrastructure), self-management skills.
7	Training, Interest, and Participation	4.35	Training programs, community skills, interest in ecotourism, and confidence in participation.
8	Skills and Funding	4.05	Technical skills, access to financing/capital, and professional development of ecotourism entrepreneurs.

The factors (**Table 4**) reflect local community participation in ecotourism management in Bali and their relationship to environmental protection. The following sections explain each factor in detail and its importance:

- 1) Leadership Roles and Business Opportunities (Percentage of Variance = 20.43): The findings of this study are consistent with previous research conducted across ecotourism sites in Malaysia and Bali, particularly regarding the critical role of strong local leadership and existing business opportunities in the success of community-based ecotourism. Studies in Malaysia and Bali have demonstrated that visionary local leaders are crucial for mobilizing community engagement, promoting the development of tourism-related industries, and supporting the sustainable use of local resources, such as forest products, agriculture, fisheries, and handicrafts. These leaders act as catalysts, guiding communities to collaborate, innovate, and adapt to the changing needs of the ecotourism industry. Conversely, a lack of effective leadership presents a significant barrier to inclusive business growth and the optimal utilization of ecotourism's benefits. Therefore, this study reinforces the widespread understanding that strengthening local leadership and expanding business opportunities are key strategies for achieving sustainable and inclusive ecotourism development, as evidenced by similar models in Malaysia and Bali [41,42].
- 2) Mindset and Industry Collaboration (Percentage of Variance = 9.64): A community's openness to innovation and change, as well as its willingness to collaborate with tourism stakeholders, are key determinants of community engagement in ecotourism. This openness is reflected in communities that welcome large numbers of tourists, effectively absorb the local workforce, and encourage the active participation of youth and women in joint ventures and ecotourism enterprises. This inclusiveness not only expands economic opportunities but also strengthens the community's social fabric. Furthermore, collaboration with tour companies and other tourism stakeholders can

expand local networks and reach broader markets, further enhancing economic prospects. Overall, these indicators suggest that communities that promote innovation, inclusiveness, and strategic partnerships are better positioned to maximize the benefits of ecotourism and ensure its long-term sustainability [6,47].

- 3) **Income, Socialization, and Commitment (Percentage of Variance = 7.03):** Community participation in ecotourism projects often increases when residents experience tangible income growth from tourism activities. This economic incentive fosters greater participation and fosters a sense of shared benefit. Furthermore, enhanced social engagement, such as ongoing education and outreach about the benefits and goals of ecotourism, can enhance community understanding and strengthen their commitment to continued support for these projects. This increased engagement is reflected in the active participation of community members in all aspects of ecotourism management, from planning and implementation to monitoring and evaluation, ensuring the long-term success and resilience of ecotourism projects [48].
- 4) **Environmental Conservation Awareness (Percentage of Variance = 5.73):** Community participation in ecotourism is largely determined by their awareness of the importance of environmental protection. When communities recognize the need to maintain environmental quality, they are more likely to actively participate in conservation and ecotourism management activities. This enthusiasm is further enhanced if appropriate infrastructure is in place to support their efforts. This enables communities to more effectively implement sustainable practices and contribute to the long-term success of ecotourism initiatives [22,35,49].
- 5) **Optimism for Income Generation and Knowledge (Percentage of Variance = 5.39):** The community's expectation of ecotourism profitability, combined with knowledge of ecological conservation and optimism about the industry's future, are the primary drivers of community participation. When community members clearly understand conservation principles and have positive expectations about the economic benefits and long-term prospects of ecotourism, their motivation for active participation is significantly enhanced. Therefore, higher levels of knowledge and positive expectations are directly correlated with community participation in ecotourism projects [10,42].
- 6) **Facilities and Self-Reliance (Percentage of Variance = 5.09):** Supporting facilities such as transport hubs, information services, and a well-developed tourism infrastructure are crucial for effective ecotourism management. These facilities not only enhance the visitor experience but also enable smoother operations, better connectivity, and easier access to ecotourism attractions. When communities have reliable transport options, clear information channels, and well-developed infrastructure, they are better able to attract and host tourists, manage environmental impacts, and ensure the sustainability of their ecotourism projects. Equally important is the ability of communities to independently manage and develop ecotourism businesses. The ability to operate without over-reliance on external forces enables local actors to make decisions that are consistent with their values, priorities, and long-term interests. This independence fosters a sense of ownership, promotes innovation, and enables profits to be reinvested directly into the community. Communities that successfully manage their own ecotourism projects are more resilient and adaptable, and are able to have a positive impact on the environment and local livelihoods. Therefore, the availability of supporting facilities and community autonomy are key success factors for effective and sustainable ecotourism management [22].
- 7) **Training, Interest, and Participation (Percentage of Variance = 4.35):** Having the right technical skills and access to financing are key factors in the professionalization and sustainability of ecotourism enterprises. Communities with ecotourism management expertise and access to capital are better able to independently operate and grow their businesses. However, for optimal results, community commitment must be complemented by strong government support. Government commitment can be demonstrated through supportive policies, training programs, infrastructure development, and grants and subsidies, all of which can help fill knowledge and resource gaps at the community level. When both communities and governments demonstrate a

high level of commitment—through capacity building, financial support, and partnerships—ecotourism projects are more likely to be professionally managed, generate sustainable benefits, and contribute to the long-term conservation of natural and cultural resources [6,50,51].

- 8) Skills and Funding (Percentage of Variance = 4.05): Possessing appropriate technical skills and access to financing are key factors in the professionalization and sustainability of ecotourism enterprises. Rural communities equipped with specialized skills in areas such as leadership, hospitality, and environmental management, as well as access to funding, are better able to independently manage and expand their ecotourism projects. However, the success of these initiatives also depends crucially on the commitment of various stakeholders, including local governments, tourism industry partners, and non-governmental organizations. This commitment, manifested in the provision of policy support, training, infrastructure, and financial assistance, can help bridge capacity and resource gaps within communities. When technically skilled rural communities work together with committed stakeholders, ecotourism projects are more likely to be professionally managed, generate sustainable economic benefits, and contribute to the long-term conservation of the environment and culture. This collaborative approach ensures the resilient and inclusive development of ecotourism, maximizing its positive impacts on local people and the natural environment [19,42,52].

3.3. Discussion

The success of community ecotourism relies on strong local leadership, ample business opportunities, an open spirit of innovation, and effective collaboration with industry stakeholders. Tangible economic benefits, sustained socialization, and a shared commitment to ecotourism goals further promote community participation. Environmental awareness, optimism about income generation, and sufficient knowledge reserves also play a key role in ensuring the sustainability of community participation. Supporting facilities, community self-reliance, technical skills, and financing channels are essential for the professional management and long-term sustainability of ecotourism projects. Finally, the synergy between community efforts and strong support from the government and other stakeholders ensures that ecotourism development is inclusive and resilient, and can bring sustainable economic, social, and environmental benefits to local communities [6,10,22,42].

Leadership and Business Opportunities: The prevalence of Leadership Roles and Business Opportunities (20.43% variance) underscores the crucial role of local leaders in spearheading community mobilization. Parallel studies in Malaysia and Bali indicate that good leadership encourages collective action while opening up economic avenues for enhancement and building resilience to support ecotourism projects [19,53]. This factor tallies with Stone's reading of collaborative partnerships in CBET, placing local leadership as an indispensable force for intervention toward equity benefit distribution and long-term sustainability [4,54]. **Mindset, Collaboration, and Innovation-**In this allocation of the variance, Mindset and Industry Collaboration included 9.64%, indicating the receptivity of the community to varying forms of adaptive strategies and stakeholder partnerships. This validates what was theorized by Suansri that community-based tourism is developed with both collaboration with external partners and initiatives from the grassroots [45]. Some ethical and sustainable avenues for further enhancement of ecotourism businesses were discussed by Fennell and Markwell through innovation and joint ventures. In Bali's context, inclusivity, particularly of women and youth, resonates with Tri Hita Karana's "pawongan" principle or harmonious human relations [6,55].

Economic Incentives, Socialization, and Commitment: Income, Socialization, and Commitment (7.03%) underscore the role of tangible benefits in sustaining participation. Rogos, and Sumarmi et al. discovered that local communities participate more when tourism projects have visible economic results as well as outreach and education accompanying them [10,14]. The findings support Regmi and Walter by asserting that learning processes embedded in ecotourism develop long-term commitment to conservation efforts [16].

Environmental Awareness and Conservation: The contribution of Environmental Conservation Awareness (5.73%) falls in very well with the Balinese philosophical Tri Hita

Karana principle, especially its "palemahan" principle, which speaks about harmonizing relationships between humans and nature [35,56]. This finding validates the assertion of global literature that awareness of conservation is a primary motivator for community participation in ecotourism when the necessary infrastructure is available to channel efforts toward sustaining the environment [15,57].

Optimism for Income Generation and Knowledge has recorded 5.391% while Facilities and Self-Reliance posted 5.09%, and Skills and Funding reflected 4.05%. These three factors have a very close interrelation. Ecotourism can be successful in a place where the community has optimism for future opportunities, facilities, technical knowledge, and access to finances [34,58]. Business self-reliance ensures resilience of the community; however, this internal strength is better with outside assistance from the government and NGOs, on the initiative being led by the community. This leads to a synthesis, as argued by Cohen & Silva, that collaborative strategies lead to ecological protection while achieving economic [43].

To all the stakeholders, government, community, business, academia, and media, please embrace a holistic collaborative approach grounded in the Penta helix model. These integrated actions are essential to unleash the potential of community-based ecotourism in Bali: (1) Community Leadership and Entrepreneurship Empowerment: Organize leadership and business management training that targets and fits into local content for strengthening the capacity of community leaders and ecotourism managers. (2) Multi-Stakeholder Partnerships and Innovation. Partnerships between communities, tourism industry actors, and academic institutions that will widen the networks promote innovation, quality, and sustainability of ecotourism services. (3) Economic Incentives with Conservation Goals Alignment: Provide incentives accompanied by capital support for the community-based ecotourism program so that economic benefits are attained together with environmental as well as cultural conservation. (4) Socialization, Commitment Promotion, and Environmental Awareness: Programs on comprehensive campaigns on the environment, plus education to raise awareness on conservation, involving long-term commitment from all parts of society. Build Infrastructure and Community Self-Management Facilities: Invest in adequate facilities and community capacity for self-management, training access, community involvement in training, continuous skill development, and funding support. Applied management-based research support on community models, regular evaluation of the socio-economic and environmental impacts, with an open publication to shape practice and policy. Cross-sectoral communication strengthened through the establishment of cross-sectoral forums, collaborative programs (e.g., ecotourism festivals, joint training, integrated promotion), raising the profile of Bali's ecotourism nationally and internationally.

It calls for the coming together of all stakeholders in the spirit of sustainability, transparency, and mutual support. When consistently applied, these integrated recommendations have the potential to make Bali's ecotourism management a model of effectiveness, inclusiveness, and environmental stewardship that delivers real benefits to both local communities and their natural heritage. Let us ensure that ecotourism preserves Bali's unique environment as well as its cultural heritage while contributing to the well-being and resilience of its people for generations.

4. Conclusions

The balance of tourism and conservation in the management of ecotourism in Bali has to underline the active participation of local communities, who are directly involved as main actors in economic development and environmental protection. Community empowerment can lead to the creation of sustainable tourism since such a strategy ensures the distribution of the benefits accrued from tourism at the local level and, simultaneously, preserves cultural heritage and natural resources for future generations. Conservation efforts, the implementation of green practices, and the application of traditional knowledge, Tri Hita Karana tourism practice by local communities, ensure this balance. Direct involvement in decision-making processes and resource management on a sustainability path, as well as other forms of collaborative networking with the government and tourism industry, explain ecological sustainability side by side with economic growth happening at ecotourism

destinations, leading Bali. Essentially, putting local communities in charge of eco-tourism is the way to get a balance between success in tourism and conservation, making Bali a tough example of sustainable tourism that is based on solid community strength, plus environmental awareness and cooperative governance.

Author Contributions

The following presents the role played by each author in this study: **IGBRU** led conceptualization, methodology, software development, and investigation, besides contribution to writing, review, and editing. **CPT** has written reviewed and edited while supervising the entire process of research. **IWRJ** and **NPDK** have also written reviewed and edited the manuscript. Such collaboration enabled a proper implementation analysis as well as refinement of the results obtained from this study.

Conflicts of interest

The authors declare that there are no conflicts of interest regarding the conduct, analysis, or publication of this research. All stages of the study were performed independently and professionally, without any external influence that could affect the results or interpretation of the research.

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