



# Tourist Growth and Adaptation of Local Community in Komodo National Park and Labuan Bajo, Manggarai Barat Regency, Indonesia

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## ABSTRACT

The surge in tourism within Komodo National Park and Labuan Bajo, located in the Manggarai Barat Regency of Indonesia, presents both opportunities and challenges for the local community and the environment. This study provides a comprehensive analysis of the significant increase in tourist arrivals and its implications on the ecological and social dynamics of the region. The allure of Komodo National Park's unique biodiversity and Labuan Bajo's picturesque landscapes has led to an unprecedented influx of tourists, emphasizing the critical need for sustainable tourism practices. This research examines the multifaceted impact of this growth on local communities, focusing on shifts in traditional livelihoods, the emergence of environmental pressures, and the strategies implemented to harmonize tourism development with ecological conservation. The study also explores various initiatives undertaken to mitigate the adverse effects of tourism, including community-based tourism projects and sustainable tourism policies. By offering a detailed assessment of these dynamics, the study provides valuable insights into effectively managing the challenges of tourism expansion in ecologically sensitive areas, ensuring the well-being of local communities, and preserving the natural heritage of the region.

## 1. INTRODUCTION

### 1.1. Research Background

The Manggarai Barat Regency, encompassing the iconic Komodo National Park and the scenic town of Labuan Bajo in Indonesia, has experienced a significant surge in tourism over recent years. This region, known for its unique biodiversity, including the famed Komodo dragons and its stunning natural landscapes, has become a focal point for domestic and international tourists seeking diverse and eco-centric travel experiences. Manggarai Barat's economy historically relied on traditional livelihoods such as fishing and agriculture [1], [2]. However, the advent of tourism [3], especially with the designation of the Komodo National Park as a UNESCO World Heritage Site and the development of Labuan Bajo as a gateway to the park, has transformed the socio-economic landscape of the region.

The influx of tourists has boosted economic activities and brought new challenges and opportunities for the local communities.

The transition in Manggarai Barat Regency, characterized by the rapid growth of tourism, became particularly pronounced during and after the COVID-19 pandemic. Initially, the pandemic profoundly impacted the global tourism industry [4]–[6], and Manggarai Barat was no exception. The imposition of travel restrictions and health safety concerns led to a drastic reduction in tourist numbers [6], significantly affecting the local economy, which had become increasingly reliant on tourism. This downturn not only disrupted the livelihoods of those directly involved in the tourism sector, such as hoteliers, tour operators, and local artisans but also had ripple effects across the community. However, the post-pandemic period witnessed a vigorous resurgence in tourism activities.



As travel restrictions eased and global travel resumed, Manggarai Barat experienced an influx of visitors eager to explore the natural wonders of Komodo National Park and the cultural richness of Labuan Bajo. This rebound was attributed to pent-up travel demand, enhanced safety protocols, and strategic marketing campaigns that highlighted the region's unique offerings.

The pandemic underscored the need for sustainable tourism practices [7], [8] in Manggarai Barat. The sudden halt in tourism activities brought to the forefront the fragility of the region's economy and its heavy dependence on tourism. It highlighted the necessity of diversifying the local economy and developing tourism in a way that is ecologically sustainable and culturally sensitive. The period of reduced tourist activity also provided a unique opportunity to assess the environmental impact of tourism on the region's natural resources, including the delicate habitats of the Komodo dragons and marine ecosystems.

Adaptive strategies became essential for the long-term viability of the region's natural and cultural resources [9], [10]. This included measures such as implementing capacity limits at popular tourist sites to prevent overcrowding, promoting eco-friendly tourism activities that minimize environmental impact, and involving local communities in tourism planning and decision-making processes. There was also a greater emphasis on developing community-based tourism, which not only provides economic benefits to local residents but also fosters cultural exchange and a deeper appreciation for the local heritage and environment [11]. The study focuses on understanding the growth trajectory of tourism in this region and its impact on the local community, particularly in terms of how they have adapted to the changing landscape. It seeks to explore the balance between harnessing the economic benefits of tourism and preserving the ecological and cultural integrity of Manggarai Barat. This background sets the stage for a comprehensive examination of the tourism dynamics in Komodo National Park and Labuan Bajo, providing insights into sustainable tourism development in ecologically sensitive areas.

## 1.2. Literature Review

Tourism in ecologically and culturally sensitive regions like Manggarai Barat Regency in Indonesia, encompassing Komodo National Park and Labuan Bajo [12], has been a subject of extensive study, particularly focusing on its impact on local communities and the environment, the emergence of sustainable tourism practices, the effects of the COVID-19 pandemic on tourism, and the adaptive strategies of communities in tourism-centric areas. Studies on the impact of tourism often reveal a complex interplay between economic benefits and environmental-cultural strains. Ashley et al. [13] research underscores this dual nature, indicating that while tourism catalyzes economic growth, it can place considerable stress on local resources and habitats. This aligns with findings by Blau and Thomas [14], who emphasizes the potential threats to biodiversity in such regions, making a strong case for eco-conscious tourism approaches.

Weaver's conceptualization of sustainable tourism as a model that minimizes environmental degradation while maximizing socio-economic advantages for local communities [15] is particularly relevant for Manggarai Barat. This is complemented by Khan et al., [16] exploration of sustainable tourism models, which provide valuable insights for economic

balancing growth and environmental quality. The application of these models in similar ecological settings, as documented by Holden, offers practical examples and policies for destinations grappling with similar challenges.

The COVID-19 pandemic's disruption of global tourism sectors is well-documented, with [17] and [18] detailing the extent of the pandemic's impact. The tourism industry's rapid adaptation and resilience, as explored by Sigala, are critical in understanding the post-pandemic recovery phase. In the context of Indonesia, studies by Susilowati shed light on the specific impacts and recovery strategies employed by regions such as Manggarai Barat, underscoring the importance of adaptive and flexible approaches in crisis situations.

Community adaptation strategies in tourism-dependent regions form another critical aspect of this discourse [9], [19]. The literature [20] consistently highlights the need for a careful balance between harnessing the economic benefits of tourism and preserving the ecological and cultural integrity of destinations. This is particularly pertinent for Manggarai Barat Regency, where the natural allure of Komodo National Park and the scenic beauty of Labuan Bajo draw considerable tourist interest. The challenge lies in ensuring that this interest does not translate into environmental degradation or cultural dilution.

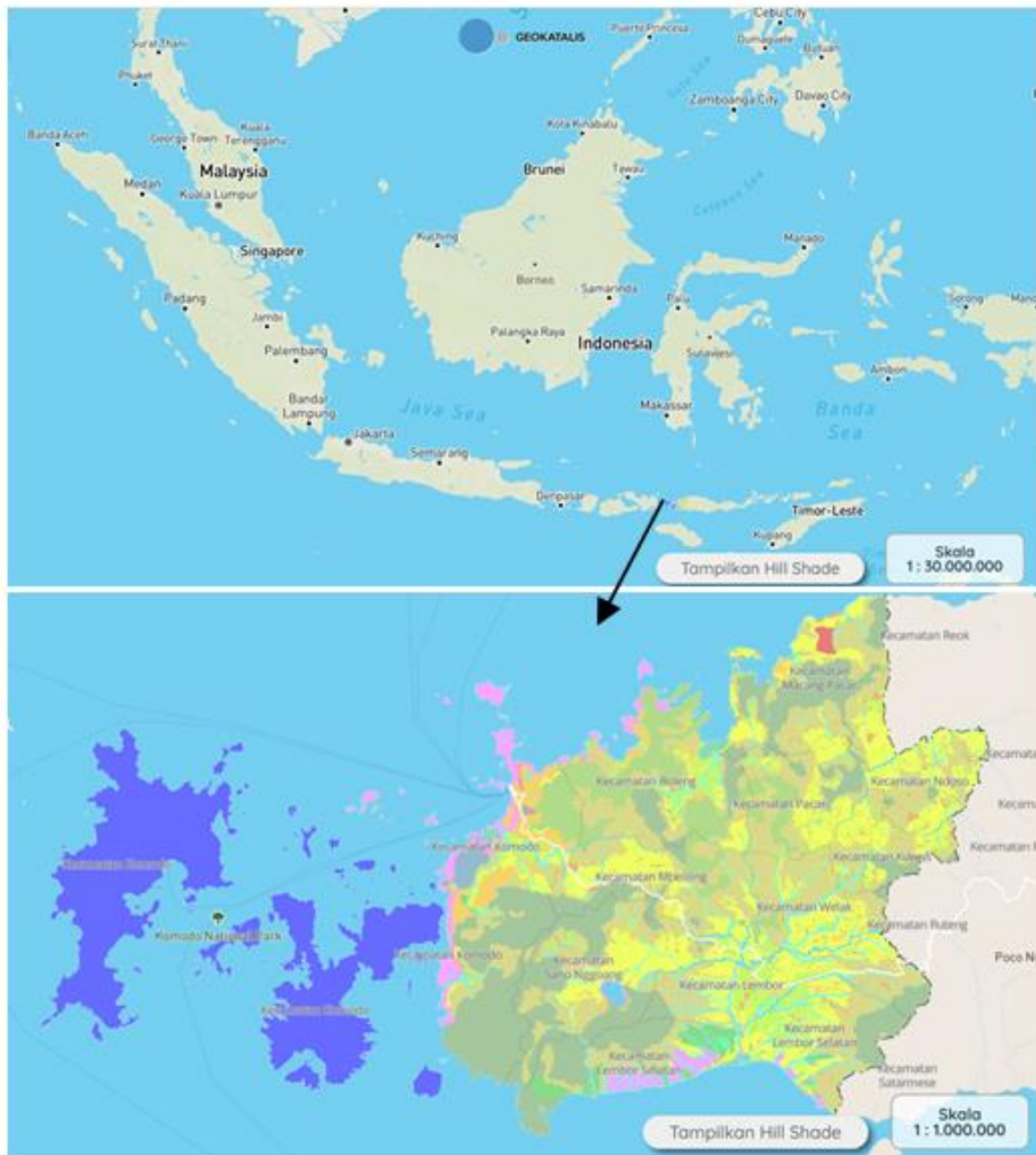
Another critical aspect that emerges from the literature is the role of policy in shaping sustainable tourism development. Policies at both local and national levels play a significant role in directing the course of tourism development, as seen in the implementation of Local Regulation No. 3 of 2014 in Manggarai Barat, which focuses on enhancing the Regional Tourism Development Plan [21]. The effectiveness of such policies in achieving sustainable tourism objectives, as well as the challenges in their implementation, are often discussed in the literature, providing a framework for analyzing similar initiatives in Manggarai Barat.

## 1.3. Research Objective

There is a paucity of recent, comprehensive studies focusing on the post-COVID-19 recovery phase in the region. This study aims to fill this gap by providing updated data and analysis on the tourism sector's recovery trajectory and its current state. The primary objective of this study is to explore and understand the dynamics of the burgeoning tourism growth in Manggarai Barat Regency, specifically focusing on Komodo National Park and Labuan Bajo, and its implications on the local community and environment. This involves analyzing the patterns and trends in tourist arrivals, the economic impact of this growth, the environmental challenges it poses, and the strategies employed by local communities and authorities in adapting to these changes.

## 2. MATERIALS AND METHODS

This study employed a qualitative research approach, utilizing a combination of literature review and observation methods to explore the growth of tourism in Komodo National Park and Labuan Bajo, and its impact on the local community in the Manggarai Barat Regency, Indonesia (Fig. 1).



**Fig. 1** Study Location [22]

## 2.1. Literature Review

The first phase involved an extensive review of existing literature, including academic journals, government reports, tourism statistics, and previous studies relevant to the tourism sector in Manggarai Barat Regency. The literature review focused on understanding the historical context of tourism development in the region, the evolution of tourist attractions in Komodo National Park and Labuan Bajo, and the various socio-economic and environmental impacts associated with this growth. Special attention was given to studies highlighting the community's adaptation strategies in response to tourism development. This phase provided a theoretical and contextual foundation for the study.

## 2.2. Observation

The second phase comprised observational research conducted in Komodo National Park and Labuan Bajo. This involved field visits to various tourist sites, including popular destinations within the national park and community-based tourism initiatives in Labuan Bajo. During these visits, observations were made on the interaction between tourists and the local environment, the types of tourism activities conducted, and the visible impacts of tourism on the local community and natural habitat. Informal conversations with local residents, tourism operators, and park officials were also conducted to gather insights on their experiences and perceptions of the tourism growth. These interactions provided valuable firsthand information on the practical aspects of tourism development and its implications for the local community.

### 3. RESULT AND DISCUSSION

#### 3.1. Tourist Flux

In 2023, the Manggarai Barat Regency located in East Nusa Tenggara, Indonesia, witnessed a substantial boom in its tourism sector according to the records of the local Department of Tourism, Creative Economy, and Culture. The region saw an influx of 423,870 tourists, a stark contrast to the 170,354 visitors in 2022 (Figure 2), reflecting a robust increase and highlighting the area's escalating appeal and the effectiveness of its promotional activities [23], [24]. This tourist traffic consisted of 184,698 domestic and 239,149 international visitors, underscoring the regency's allure to both Indonesian residents and visitors from abroad. [23], [24]. A significant portion of this data was derived from visitors to the Komodo National Park Authority, a premier destination famous for its distinct wildlife and scenic beauty.

The 2023 surge in tourist numbers not only exceeded the year's goal of 296,000 but also eclipsed the figures prior to the COVID-19 pandemic [25], signaling a remarkable recovery and expansion in the tourism industry. This success can be attributed to strategic planning and the introduction of new attractions such as the Ngalor Kalo Agrotourism area in Siru Village, Lembor. Such initiatives are part of a grander scheme to develop Labuan Bajo as a top-tier tourist destination, backed by the enactment of Local Regulation No. 3 of 2014 aimed at the enhancement of the Regional Tourism Development Plan [21].

The growth trajectory of tourism in Manggarai Barat is impressive. From approximately 55,021 visitors in 2010, the region experienced a 501.4% increase in tourist numbers by 2019, before the COVID-19 pandemic. There was a noticeable

uptick in domestic tourism in 2019, possibly reflecting effective marketing campaigns or an increased domestic interest in the attractions offered.

The adverse effects of the COVID-19 pandemic on international tourism during 2020 and 2021 are highlighted by a red rectangle, illustrating a significant downturn in international tourist arrivals due to travel restrictions. Although domestic tourism also suffered a decline, it was less pronounced, suggesting that local travel remained feasible to a certain degree. Post-pandemic, the recovery in tourism was swift and marked. In 2023, there was a remarkable 770.3% increase in tourist visits compared to 2010, with a surge in international tourism that significantly outnumbered domestic tourism. This resurgence is likely due to the release of pent-up travel demand, the relaxation of travel restrictions, and the successful implementation of marketing strategies by tourism officials. Popular destinations within the region, such as Rinca Island, Komodo Island, Mirror Stone Cave, Rangko Cave, and Cunca Ulang [26], continued to attract visitors.

Overall, the linear regression analysis in Figure 3 suggests that while there is a positive trend in tourist numbers over time for both domestic and international visitors, the model predicts international visitor numbers with a higher degree of confidence than domestic or total numbers. The lower  $R^2$  value for the total visitors could be due to more significant variability in the data, which could result from factors such as economic conditions, global events like the pandemic, or other anomalies that affect tourism numbers.

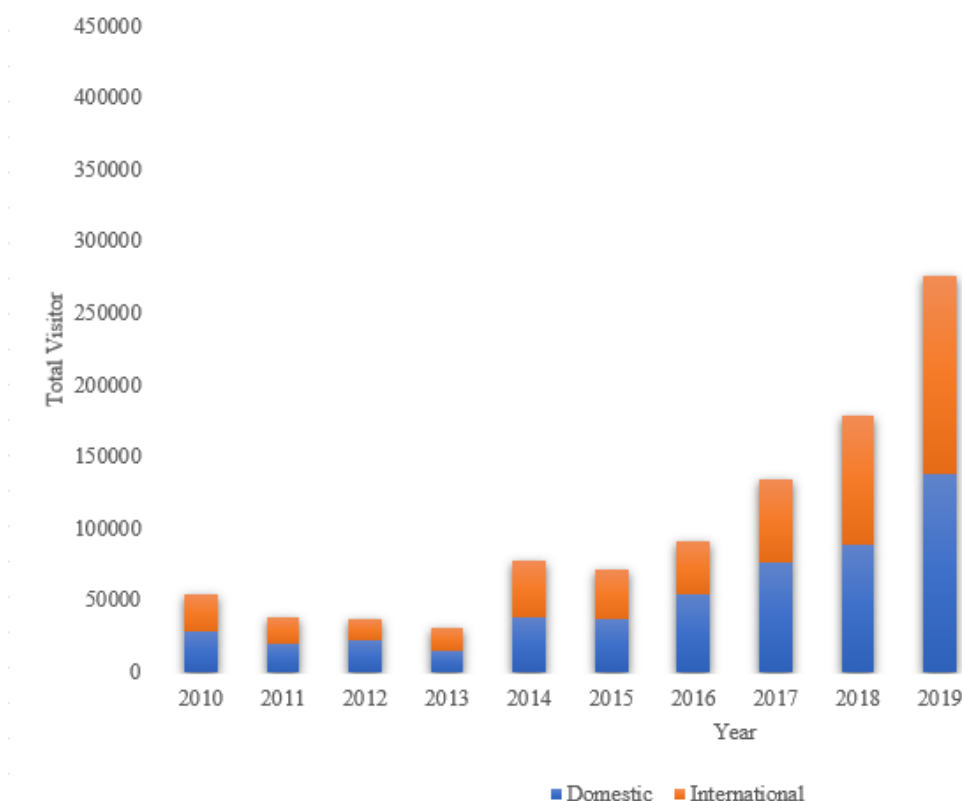
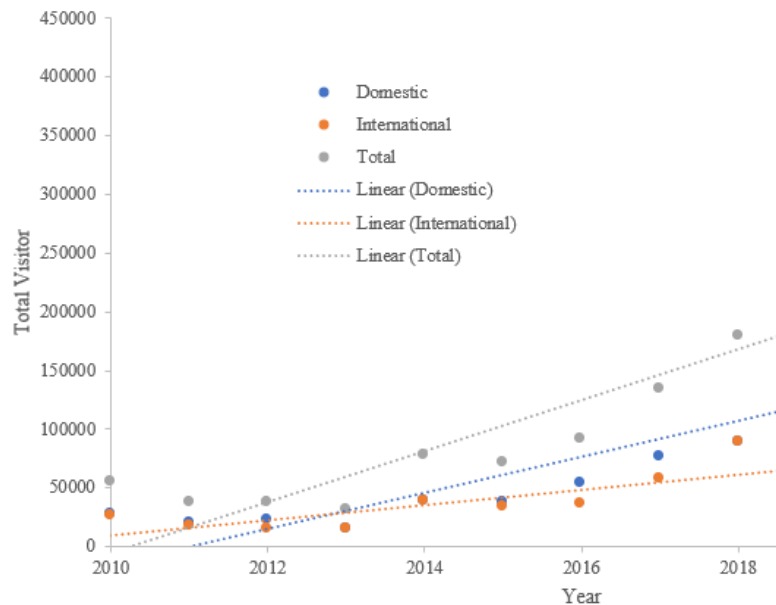


Fig. 2. Total Visitor to Manggarai Barat Regency in East Nusa Tenggara [23], [24]



**Fig. 3.** Linear Regression of Number Visitor to Manggarai Barat Regency in East Nusa Tenggara

### 3.2. Adaptation of Local Communities to Tourism Sector during the COVID-19 pandemic

The tourism sector in Manggarai Barat Regency is rich and diverse, encompassing a total of natural, geological, and cultural attractions [29]. Nature-based attractions constitute the majority [30], accounting for of all tourism, and these attractions are distributed across 9 sub-districts, with the highest concentration in the Komodo sub-district. This abundance and variety of attractions have been a significant draw for international (mananegara), national (nusantara), and local tourists, fueling the tourist visits to the area.

The analysis of the tourist visitation data from the pre-COVID-19 era, specifically between 2017 and 2019, shows an average annual increase in tourist numbers of 7%. However, the onset of the COVID-19 pandemic in 2020 had a pronounced negative impact, with a 17% decline in tourist visits. This downturn had a substantial effect on the regional income from the tourism sector, causing a 35% decrease in revenue for Manggarai Barat Regency.

The COVID-19 pandemic's influence on tourist visits and tourism-related revenue is consistent with the trends observed in the linear regression analysis shown in Figure 3. The analysis reflects the overall positive trajectory of tourism growth in the region, despite the significant setback caused by the pandemic. The recovery post-pandemic, particularly in 2023, indicates not only a return to pre-pandemic levels but also a surpassing of those figures, signaling a strong revival and potential for continued growth in the sector.

During the COVID-19 pandemic, workers in the tourism sector, particularly those associated with the Komodo National Park, had to adapt to the new challenges posed by the health crisis. As tourism activities dwindled due to travel restrictions and safety concerns, the focus shifted towards preserving and protecting the ecosystem and integrity of the national park.

The Komodo National Park Authority remained steadfast in its commitment to conservation, even amid the pandemic [31]. A key adaptation was the implementation of patrol activities. These patrols were aimed at identifying and controlling external threats to the ecosystem's integrity. The park rangers, along with law enforcement personnel such as the West Manggarai Police and members of the Mobile Brigade Corps from Labuan Bajo, conducted these patrols [31].

The operational targets of these patrols were to deter illegal fishing, poaching, and unauthorized entry into the park during the temporary closure [31]. The monitored areas included those particularly vulnerable to forestry crimes, especially on the western and southern parts of Komodo Island and Rinca Island [31]. With the temporary suspension of tourist visits, many individuals who were previously engaged in the tourism sector transitioned to fishing or repurposed their tourist boats for fishing activities. This was observed both within the national park and in the surrounding buffer zones. Patrol teams encountered community members from Kampung Komodo engaging in the collection of sea cucumbers and other marine life, which provided an opportunity for the park authority to carry out inspections and educate these individuals on proper fishing zones and the regulations of the park [31].

Moreover, the patrol teams took a preventive approach by conducting educational outreach regarding the zoning regulations of the Komodo National Park and the rules regarding the use of fire on land. The goal of these efforts was to foster a cooperative relationship with the local communities, helping them understand and voluntarily comply with regulations to maintain the park's ecosystem [31].

The patrols over the five days did not uncover any forestry crimes in the areas prone to such activities. Moving forward, the Komodo National Park Authority planned to continue these patrols regularly in collaboration with various stakeholders as part of their ongoing commitment to protecting and securing the

park's ecosystem [31]. These adaptive measures during the pandemic highlight the resilience and flexibility of the workers in the tourism sector, particularly those involved in conservation efforts. By shifting focus from tourism to protection and sustainability, these workers played a vital role in maintaining the natural heritage of the Komodo National Park during an unprecedented global crisis.

### 3.3. *Adaptation of Local Communities to Tourism Sector*

The linear regression analysis depicted in Figure 3, which shows a positive trend in both domestic and international tourism to Manggarai Barat Regency from 2010 to 2023, can be directly correlated with the immersive and sustainable tourism practices observed in Desa Pasir Panjang, located on Rinca Island, Labuan Bajo. The increase in tourism numbers, particularly the surge in international visitors, can be partially attributed to the unique and eco-friendly experiences that places like Desa Pasir Panjang offer. The presence of the Komodo dragon, an ancient and protected species, adds substantial value to the tourism experience in the region. The report of a rich community life, where children swim freely in the sea and locals sell Komodo souvenirs and operate homestays, demonstrates a symbiotic relationship between the residents and the tourism industry. The community's high awareness of the need to preserve Komodo dragons, and by extension their habitat, enhances the appeal of the region as a destination that offers not just sights but also stories and experiences of conservation and community living.

This sustainable approach to tourism, where locals and Rangers guide and educate visitors on how to interact responsibly with the environment [12], [32], [33], aligns with the growing trend of eco-tourism and can draw more responsible tourists. Tourists are seeking authentic experiences that allow for cultural exchange without disrupting the local ecosystem. The role of Rangers in ensuring the safety of both Komodo dragons and visitors exemplifies a model of tourism that is both engaging and sustainable.

The narrative of local communities illustrates how the local population's daily practices contribute to the conservation of the Komodo dragons and their habitat. This conservation effort has likely become a part of the attraction for tourists, further driving the numbers shown in the linear regression analysis. Visitors are encouraged to be responsible tourists, respecting local rules and customs, which reinforces the positive image of Labuan Bajo as a high-quality and sustainable tourism destination.

### 3.4. *Development of Adaptive Capacity Programs Post-Pandemic*

The development of adaptive capacity programs post-pandemic necessitates a nuanced strategy that encompasses the protection and utilization of assets, the cultivation of flexibility, the enhancement of organizational structures, the promotion of learning, and the fostering of agency [9], [10], [19], [34]. The natural and cultural heritage of Komodo National Park is a primary asset that forms the foundation of the local tourism industry. By empowering these individuals to participate in governance and oversight, they become champions of the park's sustainability, ensuring that their practices align with broader conservation goals. By weaving together these elements, adaptive capacity programs not only facilitate the tourism

sector's recovery and progress post-pandemic but also fortify it against future adversities. A strong focus on sustainability, coupled with active community involvement, is key to bolstering the sector's resilience, ultimately leading to an increase in tourist numbers and a flourishing, robust tourism economy.

## 4. CONCLUSION

The study concludes that the Manggarai Barat Regency has demonstrated remarkable resilience and capacity for recovery in the aftermath of the COVID-19 pandemic, as evidenced by the significant rebound in tourist numbers in 2023. The record indicates a marked increase in both domestic and international visitors, with the latter showing a particularly strong resurgence. This increase reflects the successful implementation of strategic planning and development of new attractions, which have enhanced the region's appeal as a prime tourist destination. The  $R^2$  values indicate that international tourism may be more susceptible to strategic initiatives and global tourism trends.

The local community's adaptations during the pandemic have been instrumental in maintaining the integrity of the tourism sector. The proactive shift in focus from tourism to protection and sustainability has ensured that the Komodo National Park remains a pristine destination. Patrol activities and community engagement in conservation efforts have been critical during the travel restrictions.

The development of adaptive capacity programs post-pandemic, which emphasize asset utilization, flexibility, organizational enhancement, learning, and agency, is set to further strengthen the region's tourism sector. The integration of these strategic areas is expected to not only support the sector's recovery but also ensure its sustainable growth and resilience against future challenges. With a concerted focus on sustainability and community participation, the Manggarai Barat Regency is poised to continue its trajectory as a leading sustainable tourism destination, contributing significantly to the local economy and the preservation of its unique natural heritage.

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