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**Pentahelix Model Application for Lusi Island Tourism
Development Strategy**

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Abstract: Lusi Island in East Java possesses significant potential for sustainable tourism development but faces challenges in stakeholder coordination and engagement. This study investigates the strategic application of the Pentahelix model, which integrates the roles of government, academia, businesses, local communities, and media, in shaping the island’s tourism strategy. A qualitative research design was employed, utilizing semi-structured interviews, and stakeholder mapping to explore collaborative dynamics among the five pillars. The findings indicate that while local government efforts and academic support are evident, involvement from businesses and communities remains fragmented, and media participation in promoting the destination is limited. The adoption of the Pentahelix model has demonstrated its capacity to enhance synergy among stakeholders, provide strategic direction, and lay the foundation for inclusive and resilient tourism development. The study concludes that multi-stakeholder approaches like Pentahelix can be effectively implemented in emerging tourism destinations, provided that communication, capacity building, and coordination mechanisms are strengthened to achieve long-term sustainability.

Keywords: Pentahelix Model Collaboration; Tourism Development Strategy

A. Introduction

Tourism is a strategic sector in economic and social development because it can create jobs, increase regional income, and encourage cultural and environmental preservation. With its multidimensional characteristics, tourism is not only focused on tourist visits, but also involves destination management, community participation, and sustainable infrastructure

support. Sidoarjo Regency has considerable tourism potential, as evidenced by Sidoarjo being one of the favorite destinations in East Java in the last semester of 2025 after Surabaya (Jatim.Suaramerdeka.com, 2025). There are many tourism potentials that can be developed in Sidoarjo Regency, such as culinary, historical sites, and natural attractions. One tourist area that is not yet well known is Lusi Island.

Based on reviews from several sources, Lusi Island is a reclaimed island resulting from Lapindo mud sedimentation which is now being converted into an educational ecotourism area by the Sidoarjo Regency Government (Supriyadi, 2020). Lusi Island is essentially a new geological phenomenon that emerged following the Lapindo mudflow in 2006. Lusi Island covers a total area of 94 hectares, and within it, the Wanamina pond, measuring 4.90 hectares, was established to monitor the behavior of fish biota related to the mud's impact on estuarine fish. After three years, the fish thrived and even produced milkfish (Minata, et al, 2024; Prabandari, et al, 2024). Furthermore, several facilities have been built on the island, such as mangrove tracking, gazebos, toilets, and water management installations. Lusi's tourism potential is beginning to be recognized due to its unique nature and the story behind it. However, according to research related to the island's management strategy, tourism management and development direction remain unclear. Although the local government has ambitions to make it a leading destination, local community participation at that time was still low, despite positive perceptions of Lusi Island's tourism potential (Prabandari, et al, 2024). This raises the need to involve various elements in a sustainable collaborative approach. One model that can be used to involve various parties is the Pentahelix collaborative model.

The pentahelix model comprises five key elements involved in the tourism development strategy for Lusi Island. Each party possesses unique strengths that can be leveraged. Therefore, this model emphasizes collaboration between these five key elements: government, academics, business actors, the community (local residents), and the media. Therefore, the application of the pentahelix model to Lusi Island provides the synergistic framework needed to integrate all parties, clarify the direction of tourism development, increase community involvement, and ensure sustainable tourism—both environmentally and economically.

B. Materials and Methods

This research uses a descriptive qualitative approach with a library research method, which aims to examine the application of *Pentahelix Model* in the tourism development strategy of Lusi Island. A literature study was chosen because this method allows researchers to examine various relevant information from secondary sources to gain a comprehensive understanding of the contributions of key actors in the Pentahelix model: government, academics, the business world, communities, and the media (Yudoko, 2018; Nugroho et al., 2020).

The data in this study is primary data where field studies and direct observations are conducted. It is also using secondary data which obtained from various relevant and reliable sources. The literature was collected through searches of various scientific databases. After the data was collected, the next step was to classify the data based on the five elements of the Pentahelix model. Each data set was categorized according to the role of government, academic contribution, business sector involvement, community participation, and media support in tourism development on Lusi Island. The goal was to examine how collaboration between these parties has been carried out and the extent to which this synergy has been effective (Pramono & Prasetyo, 2019).

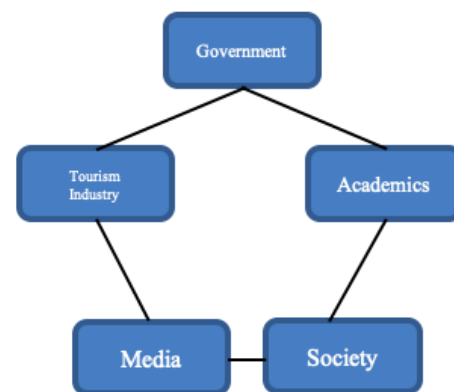


Figure 1. Pentahelix Model Collaboration Conceptual Model

Through this approach, the research is expected to provide a comprehensive picture of the collaborative roles of actors in the Pentahelix model and produce a sustainable tourism development strategy for Lusi Island.

C. Result and Discussion

This section may be divided by subheadings. It should provide a concise and precise description of the experimental results, their interpretation, as well as the experimental conclusions that can be drawn. Authors should discuss the results and how they can be interpreted from the perspective of previous studies and of the working hypotheses. The findings and their implications should be discussed in the broadest context possible. Future research directions may also be highlighted.

1. Government

The government is a key element with a crucial role in regional development, particularly in tourism. Tourism in Sidoarjo Regency is the responsibility of the Youth, Sports, and Tourism Office (Dinas Kepemudaan, Olahraga, dan Pariwisata). Governments provide essential infrastructure and facilities to support tourism, such as transportation, accommodations, and recreational areas (Consina, et al, 2023). They organize training programs to enhance local skills in hospitality and tourism services, empowering communities to engage in tourism-related businesses (Fauziah, et al, 2024). Government also has played a role in the development of basic infrastructure such as connecting bridges and piers, but has not yet fully provided regulations that support private investment or systematic empowerment of local communities (Sidoarjo Tourism Office, 2022).

The location of Lusi Island is about 30 km from the center of Sidoarjo city (Alun-alun) or can be reached by car in about 1 hour. Providing good infrastructure, such as paved roads and well-maintained tourist facilities, will ensure the comfort and safety of tourists. Furthermore, local

communities are prepared to welcome tourists, so government-facilitated hospitality training is crucial. Tourist attractions must be well prepared so that when tourists come they have a pleasant experience.

Not only as a facilitator, the government also has a role as a promoter. Local governments identify and promote unique cultural and natural attractions, which can diversify tourism products and enhance visitor experiences (Mhalangalila & Mhache, 2023). They also engage in marketing efforts to attract tourists, ensuring that local destinations gain visibility on national and international platforms (Page & Connel, 2023). Marketing and promotion can increase visitor traffic. The government can collaborate with various parties to promote the program, such as travel vloggers, academics, and the local community.

Another responsibility is maintaining environmental conservation and promoting sustainable tourism practices to protect local ecosystems (Consina, et al, 2023). They also play a role in ensuring safety and security for tourists, which is vital for fostering a positive tourism climate (Mhalangalila & Mhache, 2023). Routine evaluation is essential for sustainable tourism. Therefore, The government plays a pivotal role in the development of tourism by acting as a facilitator, promoter of local attractions, and ensuring sustainable practices.

2. Academics

Academics have the Tri Dharma of Higher Education (Tri Dharma Perguruan Tinggi). Research is one of their obligations. Many issues can be addressed through lecturers' research, including environmental, societal, business, and other issues. The results of this research can be used as a reference by the government, the community, and various other parties to explore the potential of Lusi Island.

The role of academia in the Pentahelix collaboration model for tourism development is multifaceted, encompassing research, education, and stakeholder engagement. Academic

institutions serve as critical partners in fostering innovation, integrating sustainable practices, and facilitating collaboration among various stakeholders, including government, industry, and local communities. However, the presence of academics is crucial for conducting environmental impact studies, training human resources, and developing a scientifically based tourism development roadmap (Nugroho et al., 2020).

Academic research is pivotal in stimulating tourism innovation, as seen in case studies where tourism academics collaborated with businesses to develop new products for emerging markets (Gardiner, et al, 2016). Students play a vital role in university spinoffs, often making initial establishment decisions and navigating organizational challenges (Hayter, et al, 2017). Academics can also mobilize students to take part in activities on Lusi Island, for example in KKN (Real Work Lecture) activities, community service, etc.

3. Tourism Industry (Business)

The results of the literature review show that the development of the tourism industry on Lusi Island, Sidoarjo, still faces various structural and coordinative challenges, but has great potential if managed with a collaborative approach such as *Pentahelix Model*. In the context of the tourism industry, Lusi Island has begun to be promoted as an environmental and marine educational destination. However, its management remains fragmented and does not optimally involve all elements of the *Pentahelix*. The business world or for this context is Tourism business is not yet actively engaged, as evidenced by the lack of professionally managed economic facilities such as restaurants, souvenir shops, and tourist transportation. This indicates low investment interest due to the lack of attractive business models and strong policy support.

When examined through a SWOT framework, Lusi Island's strengths lie in its unique geographic origins, potential for environmental education, and proximity to

Surabaya and Sidoarjo. Its weaknesses include a lack of infrastructure, tourism human resources, and synergy between stakeholders. Opportunities include trends in ecotourism and educational tourism, as well as central government policies to strengthen local destinations post-pandemic. Challenges include dynamic environmental conditions due to sedimentation and the risks of climate change. The indicators of success from this SWOT analysis include an increase in the number of visitors, increased tourism income, the number of people involved in tourism, and the number of facilities that are well maintained or developed.

Thus, the development strategy for Lusi Island must be implemented by strengthening the synergy of the five elements of the *Pentahelix*. The government needs to facilitate regulations and supporting infrastructure, academics must be involved as concept and innovation developers, business actors must be given incentives to invest, the community must be empowered in locally-based creative economic activities, and the media must be actively involved in building a positive image for the tourist destination.

4. Society (Communities)

In the *Pentahelix* model, society serves as a driving force and vital participant in shaping tourism that is sustainable, inclusive, and grounded in local values. Participation society so far, these activities have been informal, with residents working as fishermen or providing traditional boat services. However, the significant potential of local communities as community-based tourism actors needs to be developed through training, tourism cooperatives, or tourism village programs. Among these, society is uniquely positioned to influence the soul and authenticity of tourism strategies—especially in places like Lusi Island, which emerged from a dramatic environmental disaster.

Society contributes more than just manpower or support—it offers collective

memory, identity, innovation, and resilience. Local residents deeply understand the geographic, social, and cultural nuances of the island. Their active involvement can transform a site of tragedy into a meaningful destination for healing and learning. They organize community-based tourism, preserve cultural heritage, maintain environmental practices, and innovate through crafts and entrepreneurial ventures. Their engagement lends legitimacy to tourism programs, ensuring initiatives are welcomed and sustained over time. When empowered, they become storytellers, stewards, and change-makers.

5. Media

In the Pentahelix Model, media plays a vital role as a communicator, connector, and catalyst in tourism development—particularly in places like Lusi Island, which are transitioning from environmental disaster zones to emerging tourist destinations. Media helps shape public perception and create compelling narratives that reframe the island's identity from tragedy to transformation. Through television, newspapers, social media, and digital platforms, media promotes the island's cultural uniqueness, local attractions, and recovery journey. It engages audiences by telling stories that spark interest and empathy, encouraging both tourists and residents to participate in revitalization efforts. Moreover, media delivers accurate and timely information about tourism-related developments, fostering transparency among stakeholders. It also supports digital innovation, such as online campaigns and virtual tours, broadening visibility and market reach. In moments of crisis, media plays a crucial part in reputation management, helping regain public trust and instilling optimism. Overall, media doesn't just spread the message—it builds the narrative, amplifies community voices, and helps pave the way for inclusive and sustainable tourism.

Meanwhile, the role of media promotion of Lusi Island is also still minimal. Lusi Island's

digital image on social media and in the news has not been consistently established, despite the media's crucial role in enhancing its tourist appeal (Pramono & Prasetyo, 2019). The media's role within the Pentahelix model for developing Sidoarjo's Mud Island tourism is emerging but still requires significant strengthening. Media outlets such as TVRI and Bhirawa, along with digital content creators, have begun contributing to promotional efforts and digital support for the five tourism villages in Sidoarjo, including Lumpur Village. Their involvement includes coverage of tourism activities, digital marketing campaigns, and storytelling to highlight local attractions. However, current media engagement remains limited in scope and consistency.

Challenges include underutilization of digital platforms, lack of strategic collaboration with other stakeholders, and minimal integration into long-term tourism planning. To fully realize the potential of the Pentahelix framework, media actors must take a more proactive role in shaping narratives, amplifying local culture, and fostering public awareness. Strengthening partnerships between media and other helix components—government, academia, business, and community—will be essential to building a resilient and inclusive tourism ecosystem on Mud Island. In short, while the media has begun to play a role, its impact is still modest. With enhanced coordination and strategic storytelling, it could become a powerful driver of sustainable tourism development in the region.

D. Conclusion

The application of the Pentahelix model in developing Lusi Island as a tourism destination demonstrates the importance of collaborative synergy among five key stakeholders: government, academia, Tourism Industry, media, and society. Each element contributes distinct strengths—policy and infrastructure from government, research and innovation from academia, investment and services from business, promotion and public engagement from media, and cultural authenticity and

participation from society. When these actors work in harmony, tourism development becomes more **inclusive, sustainable, and resilient**, especially in transforming post-disaster areas like Lusi Island into meaningful and competitive destinations. The model not only fosters economic growth and environmental stewardship but also empowers local communities to become co-creators of their own tourism narratives.

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