

Opportunities and challenges in developing potential of Batu Angus as geotourism in Ternate city

Riri Rodiah Noer Syahsiaty*, Kadek Wiweka, Rd. Rita Ritasari

Magister Terapan Perencanaan dan Pengembangan Pariwisata Politeknik Sahid

Jl. Kemiri Raya No.22, Pd. Cabe Udik, Kec. Pamulang,

Kota Tangerang Selatan, Banten 15418, Indonesia

ARTICLE INFO

Keywords:

Batu Angus geotourism, opportunities and challenges, swot analysis

Katakunci:

analisis swot, geowisata batu angus, peluang dan tantangan

DOI:

<https://doi.org/10.26905/jpp.v11i1.16518>

Received **December 12, 2025**

Review **December 22, 2025**

Accepted **February 4, 2026**

Corresponding Author:

Riri Rodiah Noer Syahsiaty

ririrodiahns@gmail.com

HOW TO CITE ITEM

Syahsiaty, R. R. N., Wiweka, K., & Ritasari, R. R. (2026). Opportunities and challenges in developing potential of Batu Angus as geotourism in Ternate City. *Jurnal Pariwisata Pesona*, 11(1), 43–51. <https://doi.org/10.26905/jpp.v11i1.16518>

ABSTRACT

Gamalama Mountain erupted in 1907, leaving behind a vast expanse of enough lava rocks area now called Batu Angus Geotourism in Ternate City. With its geological, ecological, and cultural value, this area can become a tourist destination. As national Geopark and has potential to be Global Geopark, this study aims to identify the potential, opportunities, and challenges in the development of Batu Angus as a geo tourism destination in Ternate. This applies a naturalistic qualitative approach, using interviews, observations, and literature review. Therefore, a SWOT analysis was used to identify the strengths, weaknesses, opportunities, and threats associated with the development of the area. The results showed that the main strengths are local wisdom, unique geology, and local government support. External opportunities are indicated by the trend of educational tourism, support for academic research, and digital promotion. However, limited infrastructure, a lack of interpretive facilities, and a lack of human resources remain obstacles. This research provides theoretical benefits for the development of literature on geotourism, as well as practical benefits for data-based strategic planning. pentahelix which emphasizes conservation, education, and empowerment. The results of this study also serve as policy recommendations and a basis for developing a roadmap.

ABSTRAK

Gunung Gamalama meletus pada tahun 1907, meninggalkan hamparan lava beku yang sekarang disebut Geowisata Batu Angus Kota Ternate. Dengan nilai geologis, ekologis, dan budayanya, kawasan ini dapat menjadi geopark nasional dan UNESCO Global Geopark. Dengan menggunakan pendekatan kualitatif naturalistik, penelitian ini bertujuan mengidentifikasi potensi dan nilai Batu Angus sebagai destinasi geowisata dan menganalisis peluang dan tantangan dalam pengembangannya. Dengan menggunakan metode wawancara, observasi, dan tinjauan literatur. Oleh karena itu, SWOT Analisis digunakan untuk mengidentifikasi kekuatan, kelemahan, peluang, dan ancaman yang terkait dengan pengembangan Kawasan tersebut. Hasil penelitian menunjukkan bahwa kekuatan utama adalah kearifan lokal, keunikan geologi, dan dukungan pemerintah daerah. Peluang eksternal ditunjukkan oleh tren wisata edukasi, dukungan untuk riset akademisi, dan promosi digital. Namun, infrastruktur yang terbatas, kurangnya fasilitas interpretative serta kurangnya sumber daya manusia, masih menjadi hambatan. Penelitian ini memberikan manfaat teoritis untuk pengembangan literatur tentang geowisata dan geopark, serta manfaat praktis untuk perencanaan strategi berbasis pentahelix yang menekankan konservasi, edukasi, dan pemberdayaan. Hasil penelitian ini juga

berfungsi sebagai saran kebijakan dan dasar untuk pengembangan peta jalan geopark Batu Angus.

INTRODUCTION

Geo tourism, a rapidly growing form of tourism, is a concept that integrates geological, environmental, and cultural aspects (KHOA *et al.*, 2025). By promoting an understanding and appreciation of geological heritage, geo tourism plays a vital role in promoting sustainable tourism (OROZCO & Figueroa, 2025)(OROZCO & Figueroa, 2025) . In this concept, geo tourism not only emphasizes natural beauty but also educates the public about the history and geological processes that shape a location. UNESCO plays a role in promoting geo tourism through its management. *Geopark* which integrates the protection of geological resources with social and economic benefits for local communities (Herrera-Franco *et al.*, 2020). The central and regional governments will increase development *Geopark* as one of the national priority programs. The concept *Geopark*, Also known as "Geoparks", are a way to manage integrated geographical areas rich in globally valuable geological heritage. More than just protected areas, *Geopark* consists of three main pillars: conservation (preservation), education (science), and sustainable development (economic and social). The goal of this approach is to manage the earth's heritage (Domniku & Kacamakovic, 2025), which includes geological, biological, and cultural diversity, for the well-being of local communities and to raise public awareness of important issues such as the sustainable use of the earth's resources and climate change mitigation (Lestari & Indarayati, 2022). There are several of *Geopark* in Indonesia which has been recognized as UNESCO *Global Geopark* as of April 2025 *Geopark* Mount Sewu, Ciletuh harbor queen *Geopark*, Rinjani Mountain *Geopark* in Lombok, Toba Caldera *Geopark*, Belitung *Geopark*, Ijen *Geo park*, Maros Pangkep *Geopark*, Merangin *Geopark*, Jambi, Raja Ampat *Geopark*, Kebumen *Geopark* and Meratus *Geopark* (Wyk *et al.*, 2022).

UNESCO defines "*Geopark*" as an area or region that has prominent geological elements and involves the local community to participate in protecting, preserving and enhancing natural heritage, including the ecological, archaeological and cultural values contained within it. *Geopark* started by UNESCO in 2001. The initial aim of the network *Geopark* is to protect the geological heritage of European countries (Briggs *et al.*, 2022), known as EGN (*Europe Geopark Network*). However, in 2004, UNESCO developed and facilitated the existence of *Geopark* by forming GGN (*Global Geopark Network*), which can accommodate members from other countries around the world. GGN became a French-regulated NGO in 2014. In 2015, the new UNESCO Global *Geopark* label was officially inaugurated at the 38th session of the conference (Rahmasari & Parameswari, 2020). *Geopark* is a type of educational tourism where visitors can observe the geological history of the formation of the Earth's surface millions of years ago and enjoy attractions such as the lives of humans, animals, and plants that live in certain natural landscapes. Currently, rapid development is demonstrated by *Geopark* in Indonesia because their development holistically combines the concepts of protection, education, and local economic development. For example, geo tourism and geological resource protection will generate innovative local business activities, new jobs, and high-quality training, which will stimulate the growth of new income sources. Through collaborative activities, *Geopark* can also help local communities. As a result, *Geopark* established through the process of "*bottom-up*" by involving all relevant parties, both local and regional. Of course, this process requires local community commitment, strong cooperation, political support, and a comprehensive strategy to support development (Maulana & Adiputra, 2023; Fauzi, & Kurniawan, 2025; Noina, *et al.*, 2025). The unique geological potential of Batu Angus Geo tourism is the expanse of *enough* Igneous rocks formed by the eruption of Mount Gamalama. This potential creates a beautiful landscape and bears witness to the geological history of the formation of the Batu Angus geo tourism area. This potential aligns with UNESCO's goal of making *Geo parkas* a tool to teach the public about how the Earth has worked for millions of years. This potential allows for the development of geological education and research, as well as the creation of new jobs through local businesses such as tourism services, MSME products, and tour guide training based on geology and cultural knowledge. With UNESCO's support, Batu Angus has the opportunity to join international networks, enhancing Ternate's reputation globally.

However, there are several things that need to be considered during the development process. First, to fulfill the process principles *bottom-up* outlined by UNESCO, cross-sector coordination and the role of *pentahelix* (government, academics, society, business, and media) that need to be strengthened. Second, there are resource issues, such as a shortage of labor. Local geo tourism and the lack of environmentally friendly supporting infrastructure are key factors. Third, the political and local government commitment to comply with UNESCO's long-term development plans. Therefore, the relationship between the prospects and challenges of Batu Angus Geo tourism and the UNESCO Global Concept is crucial. *Geopark* This demonstrates that the development of this region must not only focus on economic growth through the tourism sector, but also integrate geological protection, public education, and community empowerment. If opportunities can be maximized and challenges overcome through collaboration between stakeholders, Batu Angus has great potential to become a *Geopark*.

In 1996, Tom Hose, a scientist, used the term "*geo tourism*" for the first time. He did this in a paper entitled "*Geo tourism, or can tourists become casual rock hounds: Geology on your doorstep*" (N L Hakimah, l et

al., 2023). In a national seminar on geo tourism held in Indonesia in 1990, the term "geo tourism" was defined as tourism that utilizes all aspects of geology, including abiotic elements such as landscapes, rocks, minerals, fossils, soil, water, and processes, as well as geological history.

Geo tourism, also known as "*geo tourism*", is a special type of tourism that utilizes the potential of natural resources in a place and requires enrichment of knowledge and processes of natural physical phenomena (N L Hakimah, I et al., 2023). Simply put, geo tourism is a type of tourism with a primary focus on the geology of the earth's surface and the elements contained therein to increase understanding of the environment, nature, and culture. In addition, as a form of appreciation and activity Journal of Applied Tourism Science. To increase environmental awareness through conservation efforts, geo tourism is expected to be a way to appreciate the meaning and diversity of geological heritage contained in a region (Hermawan, H. & Ghani, 2018). Geo tourism is a form of geoscience that relates to society and can be understood through various scientific approaches or the use of social sciences to understand "natural science" in the context of Geoparks. A more holistic approach is needed not only in terms of discussion but also in terms of methods; this includes an interdisciplinary approach in the research process. For example, to transform the Natuna National Geopark into a UNESCO Global Geopark, field observations must be conducted at various Geopark locations in Natuna (Hutabarat, 2023).

The concept of geo tourism (Briggs et al., 2022) is highly relevant to Batu Angus. Its rich geological heritage offers opportunities for the development of unique educational tourism destinations. This natural phenomenon not only has aesthetic value but also scientific value, helping us understand more about the processes of volcanic eruption. This aligns with the goal of geo tourism to raise public awareness of natural phenomena and use them as a means of learning about the environment. Furthermore, Batu Angus offers the potential to enhance the interpretive value of tourism by integrating the cultural potential of the Ternate community, which has long coexisted with volcanic activity. This potential could encourage the emergence of educational tourism products, community-based conservation, and local economic opportunities through MSMEs, geological guides, and other educational tourism services.

However, the development of Batu Angus as a geo tourism destination faces several challenges related to the community's understanding of the concept of geo tourism, often perceived as merely natural tourism without educational aspects. Planning for the provision of geological information boards is still underway, and limited local human resources to provide geological knowledge-based tourism services reduce the potential for a quality educational tourism experience. Furthermore, the potential for regional damage due to uncontrolled mass tourism poses challenges to environmental conservation. Consequently, developing Batu Angus geo tourism requires an integrated strategy that combines elements of conservation, education, and community empowerment, as outlined in the geo tourism concept. Therefore, the relationship between the opportunities and challenges of Batu Angus as a geo tourism destination indicates that this area has great potential to become an icon of geological tourism in Ternate City. However, its success depends heavily on the ability to address existing challenges through community capacity building, providing educational facilities, and raising conservation awareness for tourists and local communities.

Conservation, economy (tourism), and education are the three main pillars in development (Teixeira, 2025). This concept refers to regional management that combines geological heritage with its biodiversity and culture. The geological heritage of the Batu Angus Site is unique due to the expanse of igneous rock, which is the remnant of the cooled lava flow from the eruption of Gamalama mountain. This uniqueness has become a tourist attraction that attracts domestic and international tourists. Furthermore, Batu Angus has a significant connection to local cultural and historical heritage, which adds value. From an economic perspective, this Geo park are considered a spot that encourage local economic growth and make a significant contribution to the tourism industry. Tourists are currently only able to take photographs at Batu Angus due to a lack of information. An interactive tourist guide can enhance visitor understanding and experience (Wahyuni, et al., 2025).

The Batu Angus Geo tourism phenomenon originated from the melting of the active lava of the Gamalama volcano in 1907, the eruption created traces enough rocks form a unique landscape that is the main attraction of this area. Volcanic rocks stretch from the foot of the mountain to the beach, creating a dramatic natural landscape. The geo tourism potential of Batu Angus has a main attraction whose rock formations reflect the freezing process. The Unique form of textures and patterns of this area is a location for geological research because of the diversity of its rock formations and *lava* which is rarely found elsewhere. Furthermore, it is used as an educational tourism destination to learn how volcanic activity shapes the landscape (Abdul et al., 2022), **see also** (Wonderful-Ternate, 2025)

Development opportunities *Geopark* burnt stone becomes part of the development *Geopark* national with the theme "*volcano and spice island*" Batu Angus is a geo tourism magnet that not only offers geological heritage but also endemic flora and fauna, making this site a potential educational resource. The concept of sustainable regional development management is implemented by integrating three natural diversities: geological diversity (*geodiversity*), biological diversity (*biodiversity*), and cultural diversity (*cultural diversity*). The purpose of *Geo park* is to preserve the earth's heritage and improve the welfare of the community. The number of visits based on entrance tickets in 2024 is as follows:

Table 1. Recapitulation of Retribution for the Batu Angus Geo tourism Area

No	Month	Number of Entry Tickets	Amount Visitors
1	January	17.509.000	4.500
2	February	7.181.000	1.663
3	March	5.509.000	1.333
4	April	13.161.000	3.253
5	May	7.823.000	1.854
6	June	7.555.000	1.803
7	July	7.418.000	1.875
8	August	5.207.000	1.254
9	September	9.253.000	2.395
10	October	4.152.000	982
11	November	4.999.000	1.264
12	December	7.259.000	1.900

Source: Ternate City Tourism Office Data, 2024

Based on the number of visits, the Batu Angus geo tourism area in Ternate City faces challenges such as limited infrastructure development aimed at preserving the area's authenticity. Regional policies on sustainable tourism development are fully supported by the government, which are adjusted to the use of funds from the Regional Planning, Research, and Development Agency (Bappelitbangda). Furthermore, there is a lack of available information by the management and inadequate human resources. Therefore, this study is crucial to identify the potential and value of Batu Angus as a geo tourism destination, analyze the opportunities and challenges in its development towards the status of a tourist attraction. *Geopark*, thus providing strategic recommendations for local governments, communities, and tourism stakeholders.

METHOD

This study employed qualitative research methods, data presented descriptively. A naturalistic approach was employed to describe the phenomena experienced by Batu Angus geo tourism. The research focused on identifying the potential and value of Batu Angus as a geo tourism destination by analyzing the opportunities and challenges in its development towards heritage status. Data collection was conducted through field observations, literature studies, documentation, and direct interviews with 7 local communities, 4 government agencies staff, and 2 related parties. Researchers used purposive sampling. This data analysis consisted of data collection, data reduction, data presentation, and drawing conclusions. The data were analyzed using the SWOT Analysis concept, using three stages consisting of IFAS and EFAS Matrix analysis, SWOT Matrix, and Cartesian Diagram. Data collection was conducted in Ternate North Maluku Province, especially Ternate City, boasts a variety of natural beauty, Batu Angus as Geo tourism which is located in Kulaba, Ternate Island District, which serves as the object of the research. The research was conducted from July to September 2025.

RESULT AND DISCUSSION

In general, the Batu Angusas Geo tourism in Ternate City is still in the development stage, and on average is fully supported by tourists and local communities. Therefore, the Ternate City Tourism Office manager is still working on improving the facilities. The Batu Angus as Geo tourism in Ternate City is located about 10 km from the center of Ternate City, with strategic accessibility and easy to reach by private or public vehicles. Accessibility conditions have been improved. The Batu Angus as Geo tourism area has the potential for unique geology that is not found in other geological sites, namely the existence of geological features and cultural diversity and biodiversity, in addition to plants known as bone trees that only grow in the Batu Angus Geo tourism area and are a stop over point for birds from Siberia. Therefore, indicators of readiness and challenges for Batu Geo tourism towards *Geopark* as follows:

Table 2. Geo tourism Concept Indicators of Batu Angus

Aspects	Opportunities	Challenges
Geology and Conservation	1. The uniqueness of the geosite volcanic eruptions Mount Gamalama 2. Scientific value and geology education 3. Potential entry <i>Geo park</i> national and UNESCO	1. Risk of damage geosite as a result of tourist activities mass 2. Lack of regulation geosite protection 3. Threat of disaster nature (earthquakes and eruption)
Education and Study	1. Angus stone as natural laboratory 2. Interpretation materials in the narrative of history eruption	1. Academic research not much yet implemented 2. Local human resources who still minimal in interpretation

	Obtained university research support	
	3. Local	
Social and cultural public	1. Local wisdom as an attraction	1. Lack of community participation
	2. Pokdarwis and Communities are available youth	2. Low Level conservation awareness
	3. Potential <i>community based tourism</i>	3. Potential conflict land use
Economics and Business	1. Potential of MSMEs	1. Low Power local product competitiveness
	2. Investment opportunities	2. Limited budget
	3. Improvement income public	
Media and <i>branding</i>	1. Global promotion by using media digital	1. The low <i>branding</i>
	2. <i>Branding</i> unique	2. Not consistent yet in promotion and educational
	3. <i>Collaboration with</i> influencer And travel blogger	3. Risk over <i>promoting</i> without conservation

Source: Processed Data (2025)

Compared with previous research on successful geology in the Global Batur Region *Geopark* Located in Kintamani, Bali, based on research conducted, it was found that in general, the Batur Geopark tourist area has strong potential to be developed as an educational tourism product. This is evident from the availability of various attractions and activities that can be utilized, such as those related to local language and culture, art, architecture, music, village communities, environmental and nature care activities, as well as flora and fauna, to deepen tourists' interest in cultural heritage and historical sites (Martania et al., 2022; Lim, & Berutu, 2025). This potential can provide an educational tourism experience for tourists (Arcana & Wiweka, 2016).

Therefore, the results of the interview with the Secretary of the Ternate City Tourism Office, in this case as the manager of the Batu Angus Geo tourism tourist destination, that the potential of Batu Angus deserves attention because it has an attraction, namely geological heritage (Munajat et al., 2022), the Geopark development agency was formed to make the Batu Angus geo tourism destination object one of the sites that are recognized for its existence, the development of Batu Angus geo tourism in this case has received recognition but is still in process and waiting for a Decree from the Ministry of Creative Economy. However, the development of Batu Angus as a geo tourism in Ternate city must be considered, because previously the local community used Batu Angus as a basic material in construction. Therefore, the development of Batu Angus as geo tourism tourist objects, its authenticity must be maintained and must not be engineered so as not to eliminate the authenticity of the Batu Angus identity itself so that currently not many renovations are carried out.

SWOT Analysis

SWOT analysis is a data processing technique commonly used to determine development strategies. SWOT analysis is a good tool for identifying what is important for a business strategy (Rangkuti, 2023). Strengths, Weaknesses, Opportunities, and Threats are these factors. As has been informed through table 3, a good strategy begins with understanding the company's internal strengths and weaknesses. Then, you must study the opportunities and threats external to the company (Suhendah, et al., 2022; Wahyudin et al., 2023; Lestari, & Triana, 2024).

All SWOT elements fall into two categories (table 4): EFAS (external factor analysis), which covers opportunities and threats, and IFAS (internal factor analysis), which covers strengths and weaknesses (Rangkuti, 2023). A SWOT (Strengths, Weaknesses, Opportunities, and Threats) matrix was used to analyze data based on findings and interviews conducted in the field. The SWOT analysis was used to maximize strengths, weaknesses, opportunities, minimize weaknesses, and threats to produce much more accurate final data. The SWOT analysis, which looked at the internal and external environmental factors of the Batu Angus geological site, showed the extent to which the government collaborated with the local community in managing the Batu Angus geological site. It is hoped that this analysis will improve the development of Batu Angus geo tourism towards *Geopark* Ternate city.

Table 3. SWOT Matrix

	<i>STRENGTH (S)</i>	<i>WEAKNESSES (IN)</i>
IFAS /EFAS	1. Unique geological potential of burnt stone 2. Local wisdom and culture 3. Community/Tourism Group 4. Government support are 5. Accessibility	1. Limited facilities 2. Limited human resources Local 3. Low <i>branding</i> 4. Lack of budget and regulations weak 5. Research not yet implemented

OPPORTUNITIES (O)	STRATEGY (SO)	STRATEGY (WO)
1. Geo tourism and education trends	1. Integrating geological, cultural and research narratives academics into the package educational geo tourism	1. Benefiting collaboration opportunities private sector for support budget constraints
2. Opportunity <i>Geo park</i> national and UNESCO	2. Pushing Batu Angus enter the network national <i>Geopar</i>	2. Research support academics for increase human resource capacity and geo tourism interpretation
3. Research support academy	3. Building collaboration between the government and private sector for facilities tour	3. Strengthening <i>branding</i> through digital with media support an <i>influencer</i>
4. Private collaboration and MSMEs as well Digital promotion	4. Using media digital for branding global	4. Develop training <i>hospitality</i> based on MSMEs and Tourism Group
5. Digital promotion and global <i>branding</i>		

Source: Processed Data (2025)

Table 4. IFAS and EFAS Matrix

Internal Strategy Factors	Weight	Ranking	Weight + Ranking
Strengths			
1. Unique geological potential of burnt stone	0,15	4	0,60
2. Local wisdom and culture	0,10	3	0,30
3. Community/Tourism Group	0,10	3	0,30
4. Local government support	0,10	3	0,30
5. Accessibility	0,10	3	0,30
Weaknesses (<i>Weakness</i>)			
1. Limited facilities	0,10	2	0,20
2. Limited local human resources	0,10	2	0,20
3. Low <i>branding</i>	0,10	2	0,20
4. Lack of budget and weak regulations	0,10	2	0,20
5. Research has not been implemented	0,5	2	0,20
Total IFAS	1,00		2,70
External Strategy Factors			
Opportunity (<i>Opportunities</i>)			
1. <i>Trend</i> Geo tourism and education	0,15	4	0,60
2. Opportunity to be national <i>Geo park</i> and UNESCO	0,15	4	0,60
3. Academic research support Collaboration between the private sector and MSMEs and digital promotion	0,10	3	0,30
5. Digital and global promotion <i>branding</i>	0,10	3	0,30
Threat (<i>Threats</i>)			
1. Destination Competition	0,10	2	0,20
2. Risk of environmental damage	0,10	2	0,20
3. Dependence on government policies	0,05	2	0,10
4. Lack of private investment	0,10	2	0,20
5. Risk of natural disasters	0,05	2	0,10
Total EFAS	1,00		2,90

Source: Processed Data (2025)

Based on the IFAS score of 2.70, Batu Angus geo tourism has quite significant internal strength as seen from the uniqueness of the geology, the existence of community support and accessibility, the EFAS score shows 2.90, which has obtained large external opportunities in trend of Batu Angus as geo tourism, opportunities to be *Geopark* and digital *branding* for tourist attraction. Therefore, the right strategy to be followed is *growth, oriented strategy* namely strengthening internal strength to capture external opportunities such as *branding* global, collaboration between academics, government, and the community in interpreting geo tourism, private investment, strengthening MSMEs and *roadmap* going to as national *Geopark* and UNESCO.

Cartesian diagram

Based on the Cartesian diagram (figure 1), it shows that the opportunities and challenges of Batu Angus geo tourism as a *Geopark* in Ternate City has greatly developments. This means that the right development strategy is to utilize internal resources to capture external opportunities, which focuses on *branding*, strengthening of facilities and the provision of geological education so as to obtain readiness in moving towards *Geopark* national.

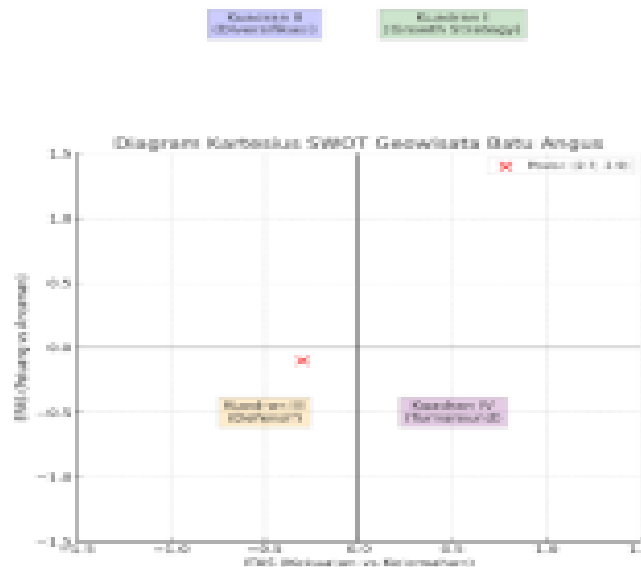


Figure 1. Cartesian diagram
Source: Processed Data (2025)

CONCLUSION

Batu Angus Geo tourism in Ternate City has many opportunities to become a tourist attraction, as national *Geopark* and UNESCO Global *Geopark*. Batu Angus is a tourist destination that focuses on conservation, education, and community empowerment because of its unique geology, formations huge rock sediments originating from the 1907 eruption of Gamalama Mount, endemic flora such as the bone tree, and local wisdom. Therefore, the analysis results indicate strong opportunities for local government support, community and MSME involvement, academic collaboration, and educational and sustainable tourism trends. However, significant challenges remain, such as limited infrastructure, a lack of interpretive facilities, a lack of human resources, weak regional regulations, the risk of environmental damage and dependence on central government policies. Therefore, the right step is to increase internal strengths to capitalize on external opportunities. Conservation-based human resource training, regulatory development *Geopark* Specifically, integrating geological and cultural stories into educational tourism packages and strengthening digital branding are major parts of the plan. Batu Angus has the potential to become a sustainable, world-class geotourism icon in Eastern Indonesia with a holistic and synergistic approach, *pentahelix* (government, academics, business, society, and media).

ACKNOWLEDGEMENT

Many thanks I adress to Kesbangpol Kota Ternate and the staff Ternate Tourism office department satf have provided valuable information related to my research that are very helpful. I am also to be grateful for the guidance and assistance of my advicers Kadek Wiweka dan Rd Ritha Ritasary during my research.

REFERENCES

- Abdul, I., Wulansari, W. L., & Henratono, T. (2022). Pengembangan Batu Angus Sebagai Kawasan Geowisata Melalui Konsep SCIENTIA. *SCIENTIA: Journal of Multi Disciplinary Sciences*, 01(2), 86–98.
- Arcana, T. P. K., & Wiweka, K. (2016). Global Geopark , Kintamani - Bali. *Atlantis Press*, 310–316.
- Briggs, A., Newsome, D., & Dowling, R. (2022). A proposed governance model for the adoption of geoparks in Australia. *International Journal of Geoheritage and Parks*, 10(1), 160–172. <https://doi.org/10.1016/j.ijgeop.2021.12.001>
- Domniku, M., & Kacamakovic, M. K. (2025). Preserving Intangible Heritage Through Sustainable Ethnic Tourism: A Systematic Review Of Kosovo's Approach Mirjeta Domniku. *Geojournal of Tourism and Geosites*, 63(4), 2593–2603. <https://doi.org/10.30892/gtg.634spl04-1619>
- Fauzi, D., & Kurniawan, K. (2025). Pentahelix collaboration strategy in building city branding of Pangkalpinang as a creative city. *Jurnal Pariwisata Pesona*, 10(1), 50–61. <https://doi.org/10.26905/jpp.v10i1.14956>

- Hermawan, H. & Ghani, A. (2018). Geowisata : solusi pemanfaatan kekayaan geologi yang berwawasan lingkungan. *Jurnal Sains Terapan Pariwisata*, 3(3), 391–408.
- Herrera-Franco, G., Montalván-Burbano, N., Paúl Carrión-Mero, Apolo-Masache, B., & Jaya-Montalvo, M. (2020). Research Trends in Geotourism : A Bibliometric Analysis Using the Scopus Database. *Geosciences*, 10(372), 1–29.
- Hutabarat, L. F. (2023). *Pengembangan Geopark Nasional Indonesia menuju UNESCO Global Geopark sebagai Diplomasi Geotourism Indonesia* Pendahuluan Tulisan ini menjelaskan bahwa upaya Pemerintah Indonesia mewujudkan lebih banyak geopark nasional Indonesia untuk menjadi UNESCO Global. 9(1), 94–106. <https://doi.org/https://doi.org/10.26593/jihi.v19i1.6000.94-106> Pengembangan
- KHOA, B. T., NHUNG, N. T. T., KHANH, T., & NGUYEN, S. N. (2025). *Out Shapes Generation Z ' S Authentic Cultural Experiences*. 63(4), 2573–2585. <https://doi.org/10.30892/gtg.634spl02-1617>
- Lestari, F., & Indarayati, I. (2022). Pengembangan Kelembagaan dan Pembiayaan Geopark di Indonesia : Tantangan dan Strategi. *Journal of Regional and Rural Development Planning*, 6(2), 102–122.
- Lestari, N. S., Rosman, D., & Triana, I. (2024). Analyzing the effect of innovation and strategic planning on MSME performance, utilizing technology adoption as a moderator. *Procedia Computer Science*, 245, 500–507.
- Lim, E., & Berutu, F. (2025). Preserving Sunda Kelapa port as a heritage tourism with a sustainable tourism approach to increase tourist visiting interest. *Jurnal Pariwisata Pesona*, 10(2), 203–214. <https://doi.org/10.26905/jpp.v10i2.15731>
- Martania, D. R., Tanjung, M. H., & Suryadi, A. (2022). *Engineering , Environment , and Technology Identification of Potential Geotourism Destination in the River Subayang areas of Kampar , Riau , Indonesia*. 7(4), 167–175. <https://doi.org/10.25299/jgeet.2022.7.4.10394>
- Maulana, M., & Adiputra, A. (2023). Analisis Geopark Ciletuh – Palabuhanratu sebagai Daya Tarik Wisata Berbasis Edukasi. *Satwika: Kajian Ilmu Budaya Dan Perubahan Sosial*, 7(2), 404–418. <https://doi.org/doi:https://doi.org/10.22210/satwika.v7i2.28037>
- Munajat, M., Avenzora, R., Darusman, D., & Basuni, S. (2022). *Polarization of Stakeholder Orientation Towards Geotourism Development in the Mount Slamet and Serayu Mountainous Areas , Central Java Province*. 28(December), 201–211. <https://doi.org/10.7226/jtfm.28.3.201>
- N L Hakimah, I, N., Sanjaya, M, G, I., Hariyono, E., & Kodir, A. (2023). Geotourism : Use of Environmentally Friendly Geological Wealth (Field Study of Kayangan Api , Mystical Tourism for the Traces of Empu Supo in Bojonegoro). *Studies in Philosophy of Science and Education*, 4(3), 94–102. <https://doi.org/doi.org/10.46627/sipose> INTRODUCTION
- Noina, N. M. K., Mahadewi, N. M. E., & Surata, I. K. (2025). Strategic approaches to tourism development in village destinations for increased competitiveness and sustainability. *Jurnal Pariwisata Pesona*, 9(2), 236–242. Retrieved from <https://jurnal.unmer.ac.id/index.php/jpp/article/view/14011>
- OROZCO, E. L. L., & Figueroa, G. (2025). Exploring Scientific Production On Heritage Tourism In Ibero-America: A Bibliometric Perspective (1995–2023). *Geojournal of Tourism and Geosites*, 63(4), 2653–2662. <https://doi.org/10.30892/gtg.634spl10-1625>
- Rahmasari, I., & Parameswari, P. (2020). Strategi Pemerintah Indonesia untuk Memperoleh Pengakuan UNESCO sebagai UNESCO Global Geopark. *Balcony*, 4(2), 183–194. <https://jom.fisip.budiluhur.ac.id/balcony/article/view/229>
- Rangkuti, R. (2023). *Analisis SWOT Teknik Membedah Kasus Bisnis*. Jakarta: PT Gramedia.
- Suhendah, R., Angelina, A., Ricardo, R., & Stevansyah, N. (2022). MSME business management and development with IFE-EFE matrix. *Journal of innovation and community Engagement*, 3(3), 175–188.
- Teixeira, N. (2025). *Economic Sustainability and the Circular Economy : Pillars for Sustainable Economic Development*. 11(4), 13–15. <https://doi.org/10.19080/ASM.2025.11.555816>

- Wahyudin, Herwanto, D., & Nugraha, B. (2023). MSME Strategy Planning Using the SWOT and IE Matrix Analysis Approach. *Nternational Journal of Economics Development Research*, 4(5), 2531–2539.
- Wahyuni, W., Aryaseta, B., & Oktavia, D. (2025). The analysis of visitor satisfaction of Ngerit stone park Trenggalek in the framework of memorable tourism experience using the importance-performance. *Jurnal Pariwisata Pesona*, 10(1), 72–80. <https://doi.org/10.26905/jpp.v10i1.14814>
- Wonderful-Ternate. (2025). *Wonderful Ternate*. (2025). *Geowisata Batu Angus: Jejak Lava Gunung Gamalama*: <https://wonderful.ternatekota.go.id/destinasi/geo-wisata-batu-angus-jejak-lava-gunung-gamalama>.
- Wyk, B. Van, Vries, D., Karatson, D., Gouard, C., Németh, K., Rapprich, V., & Aydar, E. (2022). Inverted volcanic relief : Its importance in illustrating geological change and its geoheritage potential. *International Journal of Geoheritage and Parks*, 10, 47–83. <https://doi.org/10.1016/j.ijgeop.2022.02.002>