

Smart Tourism Destination: A Comparative Study for Five Super Priority Destinations in Indonesia

Fithria Khairina Damanik, Hana Ulinnuha, Wendy Purnama Tarigan

Lecturer at Tourism Destination Department, Faculty of Economics and Communication, Bina Nusantara University, Jakarta, 11480, Indonesia

fithria.damanik@binus.edu, hana.ulinnuha@binus.edu, wtarigan@binus.edu

Ersalora Lutfianti

2Researcher at Centre of Tourism Planning and Development, Bandung Institute of Technology, Bandung, 40116, Indonesia

ersalora@itb.ac.id

Theodora Evelyn Wijaya, Olivia Oh

4Student at Tourism Destination Department, Faculty of Economics and Communication, Bina Nusantara University, Jakarta, 11480, Indonesia

Theodora.wijaya@binus.ac.id, oliaooh@gmail.com

Abstract

Smart tourism destination (STD) is an answer for the needs of current tourism development which shows strong relationship with Information Communication and Technology (ICT) application. Smart destination is built upon four main foundations which are technology, innovation, accessibility, and sustainability. This research aims to compare the four foundations of STD in five super priority destinations in Indonesia. Those destinations are Likupang, Mandalika, Labuan Bajo, Borobudur, and Toba Lake, which currently being the focus of tourism development by the Government. The research method used systematic literature review with specific criteria of reference used. The paper must be coming from Scopus or Google scholar within the previous five years. The result will show how destination implement each aspect of the foundation. Hopefully, the result of this research will be evaluation for local and national government about the smart tourism destination in their area, how each destination implements each foundation in Smart tourism destination.

Keywords

Smart Tourism Destination, Super Priority Destination, Indonesia, Comparative Study

1. Introduction

In this digital era, the term “smart” is often used in various types of products, system, and service that use information communication technologies (ICT) for innovation enhancement. The smart product is defined as products that can use information about themselves and about the environment in which they run, and that are able to inter-operate with other products (Gutiérrez et al. 2013). The word “smart” has become a popular term also for describing the development assisted by ICTs (Lesniewska-Napierala et al 2020), including Smart City. The concept of smart city first appeared in the 1990s (Samih 2019). Smart city is simply defined as a term used to show a city utilizing technology in various activity related to social, economic, and environment (Sari et al. 2020). During its development, the idea of smart tourism is emerged, as one of the fastest growing industries in the universe. To be specific, the idea is derived from the concept of smart city, as technology has become an enabler of development of tourism (Lesniewska-Napierala et al. 2020).

A smart tourism destination can be seen as a concept that response to the requirements and needs of the present global and mobile elites by facilitating access to tourism and hospitality products, services, spaces and experiences through ICT-based tools (Calisto and Gonçalves 2016). The use of ICT in tourism is something undeniable. It has resulted in significant disruptive innovation in the relationship between supply and demand (De Ávila and López 2015). In

Indonesia, smart tourism strategy increases the number of tourists through giving positive influence of smart tourism experience, perceived value, memorable tourism experience, and revisit intention (Nugraha et al. 2018). The destination that utilizes ICT to make innovation in all aspect and give better tourist satisfaction while maintain quality of life of its residents is simply explaining smart tourism destination concept. There are four foundations of smart tourism destinations, which are technology, innovation, accessibility, and sustainability (De Ávila & López 2015). These four foundations will be the highlight of the research. This research will use comparative study to get the comparison of those four foundations of STD in the five super priority destinations in Indonesia, which are Labuan Bajo (East Nusa Tenggara), Toba Lake (North Sumatera), Borobudur (Central Java), Mandalika (West Nusa Tenggara), and Likupang (North Sulawesi). To get the data, this research will do literature review from the reputable and updated journals.

1.1 Objectives

The aim of this research is to compare the implementation of Smart Tourism Destination foundation (technology, innovation, accessibility, and sustainability) in the five super priority destinations. Those locations are used to support The Government's focus to develop five most potential destinations to be New Bali of Indonesia. Hopefully, the result of this research will be evaluation for local and national government of how each aspect implemented in each destination.

2. Literature Review

Smart city is believed as the beginning of emergence the term STD. Smart city is understood as a city which assigned primacy to ICT with the aim of designing innovative urban spaces which facilitates sustainable development and improve the quality of life of their resident (De Ávila and López 2015). Meanwhile, STD can be defined as an innovative space based on the territory and a state-of-the-art technological infrastructure, committed to sustainability and with the socioeconomic and cultural singularities of the habitat, equipped with an intelligence system able to effectively capture, analyze and interpret information in real time, thus encouraging interaction between visitors and their surroundings and enriching the quality of tourist experiences (Sigalat-Signes et al. 2020). There are several differences between smart city and STD (De Ávila and López 2015), such as geographical limits, a STD can be referred to a municipality or network of cities. In STD, the target audience is the tourist, not really for the residents, although the latter benefit must be for their surroundings. STDs also are bound to the increase in their competitiveness and to the improvement of the tourist experience.

The focus of this research will be about the foundations of STD, which include four aspects, technology, innovation, accessibility, and sustainability (De Ávila and López 2015). This following will talk about each aspect:

1. Technology

Technology is a very important aspect of a STD development. Technology can be used as the basic infrastructure of communication and flow of information, at the same time, needed for the management of destinations and companies. These technology aspects can include free Wi-Fi, mobile apps related to the destination (used for searching for destinations, products, and services; for geolocation of all kinds of resources; real time information on offers; augmented and virtual reality, etc.), QR codes (can be used to check information board, promotional material, billing process, campaign, etc.), Big data, Open data, Geological System, video mapping and holography techniques.

2. Innovation

Innovation is often associated with the incorporation with ICT, although in tourism, it also can be more into personalized product. Innovation means transforming product or service into something that generate more economic, social, environment, and human value. The ability of a destination to anticipate and prepare the best for the future will define its sustained success. No one guarantee that innovation will pay off, but if we do not, the failure is guaranteed.

3. Accessibility

Accessibility is not only talking about the road and transportation, but more into ensuring maximum accessibility for all potential visitors, including various types of disabilities, children, pregnant women, the elderly, and sick people. In term of its relation to digitalization, smart tourism destination also needs to adapt digital material for their promotion and make easier information service for people with visual impairments.

4. Sustainability

UNWTO defines sustainable development in tourism as a development that takes full account of its current and future economic, social, and environmental impacts, addressing the needs of visitors, the industry, then environment and host communities. There are three major aspects of sustainability (De Ávila and López 2015) including Environmental (related to efficient energy management and use of clean energy), economy (related to budgets, income and sustainable working), and cultural (related to investment determined by conscious tourism).

3. Methods

This research is aiming to see the comparison of STD foundations in five super priority destinations of Indonesia. To get its goal, this research will use systematic literature review. Literature review research is research using a survey of scholarly articles, books, and other sources relevant to an issues or area of research in order to provide a description, summary, and critical evaluation of the work (Ramdhani et al. 2014). Furthermore, a systematic literature review aims to give a complete list of published and unpublished studies with explicit and rigorous criteria related to a particular subject area. These criteria are important to ensure the reliability and validity of the research.

4. Data Collection

The literatures used for this research is taken from two main sources which are Scopus and Google Scholar database, and additional sources of unpublished works and reputable media. The paper is limited from the last five years to ensure the data used is still relevant. For google scholar database, the search strings formulated with “elements of STD + destination name”, for example accessibility in Labuan Bajo. This is because the result shows a lot of documents that not related to the topic. Then, the first five pages of the result will be skimmed read, then the unrelated articles will be eliminated. In fact, during the keyword searched, there are so many articles that not related at all to the topic and being eliminated. However, after a quick search, Scopus database has fewer research related to the five super priority destinations. Therefore, the search used in Scopus is only the destination’s name for title, abstract, and keyword. The result will be analyzed based on the title, and those which are not related to the study will be eliminated.

Table 1. Total or Article and Article Used from the Database

	SCOPUS		GOOGLE SCHOLAR
	Total Article	Total of Chosen article	Total of Chosen article
Likupang	13	0	18
Labuan Bajo	18	4	22
Mandalika	25	6	19
Borobudur	119	18	13
Toba Lake	118	13	26

The article chosen will be read carefully to find the information needed to support the research. (Table 1) The next finding section will show the result of literature review in destination sequence.

5. Results and Discussion

This section will talk about finding from the literature review related to the implementation of each foundation in Sustainable tourism destinations for each super priority destination.

5.1 Likupang

Likupang is one of five super priority destinations in Indonesia which located in North Minahasa Regency, North Sulawesi Province (Figure 1). Likupang is a destination based in natural and cultural resources especially marine tourism. Likupang has several potential attractions including Paal Beach, Pulisan Beach, Gangga Island, and Lihaga Island (Putro and Azkarifa 2020). Its development theme is resort and cultural tourism near to the beach (Portal Informasi Indonesia 2020).

Although the area does not have enough characteristic of a city, Likupang is trying to implement using technology to develop their tourism industry. One of the implementation examples is Small Medium Enterprises, who makes souvenir, has already used technology to do souvenir manufacturing (Kawulur et al. 2021), although it is not explained clearly what kind of technology used for that purpose. However, the SMEs tries to sell their product through social

media (Facebook and Twitter). To provide digitalization for the area, several companies also try to provide e-wallet services for Likupang SMEs. For example, Bank Nasional Indonesia (BNI) facilitates Likupang's homestays with QR Code Indonesia standard (QRIS) to make an easier payment by the visitor (Manado Post 2021).

Not every area in Likupang has free wifi which being one of element of technology foundation in STD. Gangga Island got free wifi installation in 2020 with coverage 70 meters (Harwin, 2020). However, there are several blank spot areas which have no signal for telecommunication, which unfortunately also tourist attraction area (Sulut Daily, 2020).

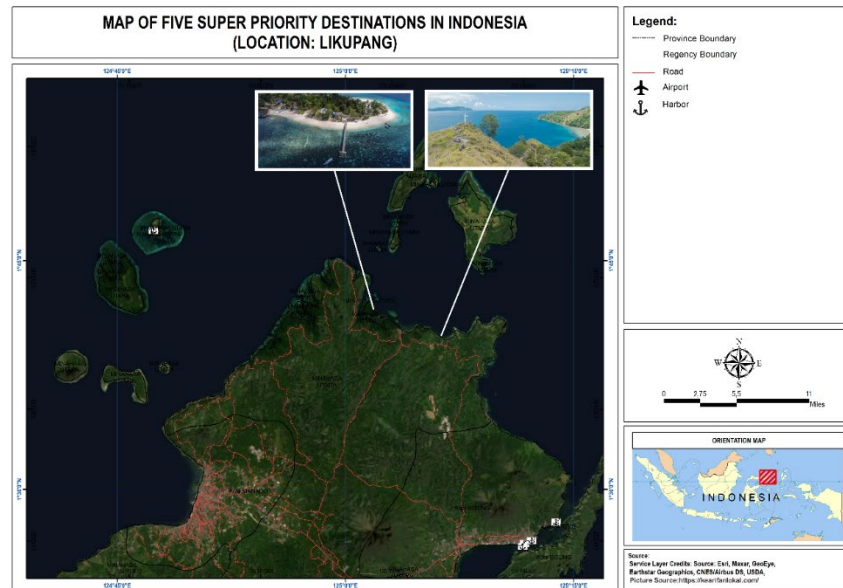


Figure 1. Map of five super priority destinations in Indonesia (Location: Likupang)

Technology has closely related to innovation. One of innovation happened in the Bia Music, which is one of the traditional musical instruments of North Sulawesi which can be found in South Likupang, especially in Batu Village. This instrument was previously used as a ritual and communication media. Now, the function is growing into evangelism media, cultural festivals events, association, entertainment, publicity, and education (Kapoyos et al. 2017). This happened due to innovation and creativity from the artist, as well as the influence of other culture.

The data about accessibility related to easier access for disabled people is not provided from the literature. A literature in 2017, analyzed that the infrastructure in Pulisan Beach, East Likupang is not well provided. The infrastructure such as road, drainage and sewage are not appropriate (Thaib et al. 2017). If the basic need is not adequate, then it can be concluded it is not smart enough. No doubt that infrastructure is one of important keys in tourism development. Related to sustainability, Bahoï Village in Likupang has been assigned as ecotourism village since 2002. Tourist activity is concerned in marine area such as diving, snorkeling, mangrove plantation, and cultural attraction. The activity is designed by exploring the nature without changing their landscape (Andaki and Aling 2017). Based on another literature in Bahoï village, the local people also involved well in tourism development. Most of local people showed good perception on their increased social welfare do tourism (Pangau et al. 2018). This because they are involved and participated, such as being local tour guide for mangrove plantation. Their opinion related to natural exploration for ecotourism activity is also relatively good.

5.2 Borobudur

Borobudur is the name of the largest Buddhist temple in the world which belong to Indonesia. As one of five super priority destinations in Indonesia, this place needs the focused management and planning from the government. The site has been listed as a regular historical tourist destination which got serious concern by Indonesian people, especially the Buddhist. The main focus is on preserving Buddhist sites over a thousand years ago (Budi Hermawan et al. 2019). Besides that, Borobudur temple is also recognized as the world heritage site by UNESCO. Borobudur located in Central Java as shown in Figure 2. The area around Borobudur Temple can be seen from a different perspective. The integration of spatial studies from a scientific and geographic point of view can comprehensively explain interesting

and potentially can produce different points of view. The potential problems are specific to the physical environment of the Borobudur Temple area. There are many different perspectives used to explain this uniqueness by looking at the history and the things that happen in the region. Observed by the geological and geomorphological approaches, the augmented reality can explain the evolution of landscapes that have taken place in the region. (I. Yunanda et al. 2019). As super priority destination, Borobudur Temple supposed to have a high quality in terms of the accessibility for tourist, a sustainable planning, and innovation based on technology to keep up with digitalization.

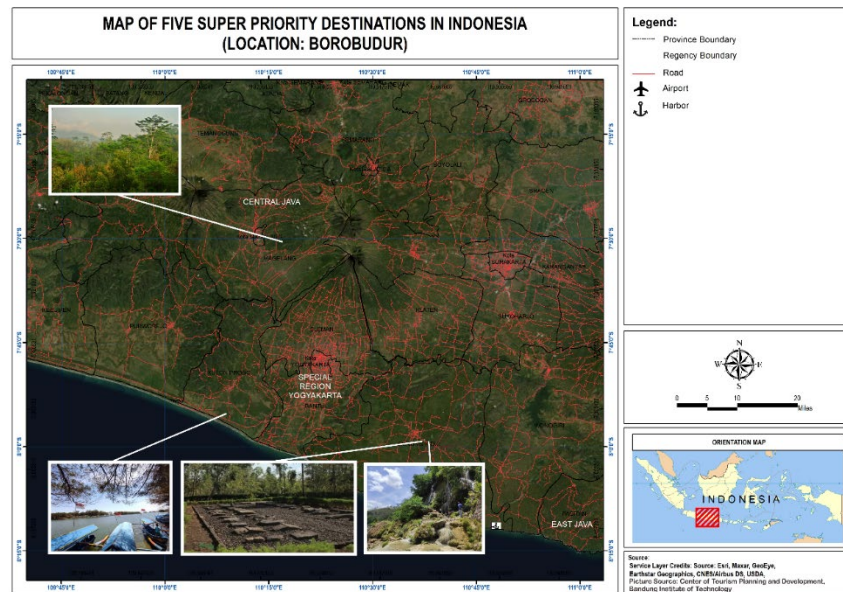


Figure 2. Map of five super priority destinations in Indonesia (Location: Borobudur)

One of the villages in the Borobudur area Karangrejo Village has apparently implemented a VIS (Village Information System). VIS was born from a variety of information technologies and software operated by simpler technology to help improve the quality of public services to the community. VIS is a type of e-government that can be used at the local level. This system allows people to access data and information about the number of visitors and local communities from various computer applications. Communities experience a synergistic effect of VIS presence on social, economic, cultural, and political levels. This Village Information System can transform the village into interesting new way and make the village become magnificent in nearly future. The Internet, VIS, social networks, come from hot spots to build real communities and expose themselves. But there are the logical consequences from the usage of VIS because the local villager should be able to maintain it themselves and need to provide the information about the local wisdom. The local villager should be able in preserving community population and local wisdom as well as living together but keeping its identity. By combining global information technologies, the role of resources in all communities is needed to preserve regional wisdom (Irawan et al. 2021).

Another similar Village Information System come from Tourism Village named Jatimulyo Village which is still within the reach of the Borobudur area. Jatimulyo village's website has the similar information provided for the website visitor. But there is interesting feature that can make this website become the solution for the local economic because in this website they are selling their local Small Medium Enterprise product. And since Jatimulyo Village is a tourism village, they have their local tourism community (PokDarWis) to develop their tourism plan. (Novie and Sugi 2017). On social aspect, this VIS also help the locals to interact directly to the village service guide from the website. And indirectly there will be a reduction in paper waste because the information is integrated in one website.

Borobudur Temple has been processed to be printed and digitalized into a mobile application and website by the Borobudur Conservation Center named Borobudurpedia (link on <http://borobudurpedia.id/>). The mobile apps and website are accessible from people around the world and can be utilized to increase tourist's interest with this place and give knowledge about the stupa, statue, and sculpture for free. This has been proven by research that measure the effectiveness of the Borobudurpedia website as a product for repackaging information on the Borobudur Temple world site, which is measured based on these five indicators, namely Awareness, Awakening of Interest and Knowledge,

Formation of Behavior, Trial Decisions and Acceptance or Rejection. And the result shows that the use of Borobudurpedia can be categorized as effective as a medium for digitizing the Jataka story contained in the building at Borobudur (Anggita and Athanasia, 2019).

Based on the research, Borobudur Temple is one of the Provincial Strategic Areas (PSA) in Central Java, in conjunction with Solo and Selo. This condition gives those areas special recognition in spatial planning based on their significant influence on economic, socio-culture, or environmental perspectives including the accessibility of Borobudur Temple itself. This is one of the reasons Borobudur Temple Area also has a high score for its accessibility measured by the distance to other tourism objects in a sub-area, travel time to the nearest bus station, railway station, and airport, availability of public transportation, various modes of transportation and the roads conditions to the locations. And in line with the developments in Central Java, the strongest tourism linkage has been established between Solo Sub Area and Borobudur Sub Area (A J Pinangsih et al. 2021). In addition, based on the analysis results of the text network formed by tourists about Borobudur Temple were made dynamically from 2016 to 2019, and access to Borobudur Temple was positively recognized by 87.9% (Risca et al. 2020).

When it comes to the sustainability of Borobudur Temple Complex, there is a lot of nearby tourism village which based on the local community or known as community-based tourism. Local community involve in the tourism activity around Borobudur Complex and interact with the visitor. They also increase tourist experience by adding some tourism products include (Arintoko et al. 2020):

- Traditional agricultural experiences, for example, rice plows and rice planting, papaya and yam picking.
- Animal husbandry experiences, for example, the honeybee cultivation and the goat milk production.
- Handicraft experiences, for example, making the miniature of Borobudur Temple and other handicraft products with local culture.
- Home industry food experience for example making tofu, noodles, slondok (snacks with cassava-based), and cassava flakes.
- Traditional arts experience, for example, Gatholoco, and others.
- Art performances of the local traditions to preserve the local wisdom such as Saparan and others.
- Management of homestays originating from residents, and this level up the interaction between the tourists of Borobudur Temple and the local community to get to know and learn about the local's daily life.

5.3 Mandalika

Mandalika is one of Super Priority Tourism Destinations in Indonesia which has Special Economic Zone (SEZ). It is built in an area of 1,035.67 hectares and located in Central Lombok, West Nusa Tenggara (Figure 3). Besides that, according to the Data from Ministry of Tourism and Creative Economic in 2019, Mandalika also occupied the 2nd rank after Borobudur Temple as a tourist destination with the best performance from 10 priority destinations (Estriani, 2019). In Mandalika, the most visible potential of development is the concept of ecotourism, because the Mandalika SEZ, which excels in aspects of natural beauty, planned to keep 51 percent of the area as a green area (Sugiarto and Mahagangga 2020).

Even though Mandalika still in development progress to become one of the best destinations in Indonesia, Mandalika already started using technology implementation to develop their tourism industry. One of the implementations in Mandalika happened in Mandalika Resort which starting to implement the Smart Tourism system for their attractions by creating The Augmented Reality (AR). The AR shows a story related to the Princess Mandalika by the added images on the real world with the aim to make tourist remember her story and enrich the resort with an Artificial Intelligent of architecture as a part of sustain spirit of the legend (Ardhiati, 2019). By a Visual Prototyping Augmented Reality as images that can manipulate the Princess Mandalika within the Sasak Architecture background. Therefore, by exploring the legend, tourists can enjoy more about the local culture of Indonesia. Besides that, in 2017 ITDC (Indonesia Tourism Development Corporation, a state-owned enterprise that develop and manage several tourism areas, including Mandalika) hired PT Perentjana Djaja Architect to create an architecture-event (The Artificial Intelligent in Architecture) of the Princess Mandalika within the six criterias of the Architecture-Event concept, namely: sequences, the open-serialize, narrative, cinematic, the drama, and the choreography (Ardhiati, 2019).

The next part is about innovation carried out in Mandalika. To strengthen its tourism development, through Micro Small and Medium Enterprises (MSMEs), local people in Mandalika also creates several innovative products, such as

in the handicraft industry, transportation services, lodging or bungalow services, online media business promotion, and recruitment of professional employees (Mahendra, 2020). The new location for lodge or bungalows is created due to the opening of a new road for tourism village development. Through these innovations, there are a lot of benefits for the local people, especially in economic sector (Mahendra, 2020).

In accessibility aspect, Mandalika promotes their tourism through social media, especially twitter, Instagram, and Facebook, by the program of NTB Bangkit. This program is initiated by Department of Tourism of West Nusa Tenggara and Ministry of Tourism to revive their tourism industry after the earthquake in 2018. This program tries to create a sense of empathy of the people visiting their social media and convince that Lombok is a safe destination, including Mandalika (Wulandari, Chotijah, & Suadnya, 2019). For the sustainability aspect, Mandalika focuses on the development of agro and ecotourism industry activities on an area of 1,035.67 hectares located in Kuta Village, Pujut District, Central Lombok Regency, West Nusa Tenggara Province (Triyanti et al. 2020). This can be shown by the ecotourism concept that has been applied for the construction of Mandalika and reforestation effort by ITDC (Estriani 2019).

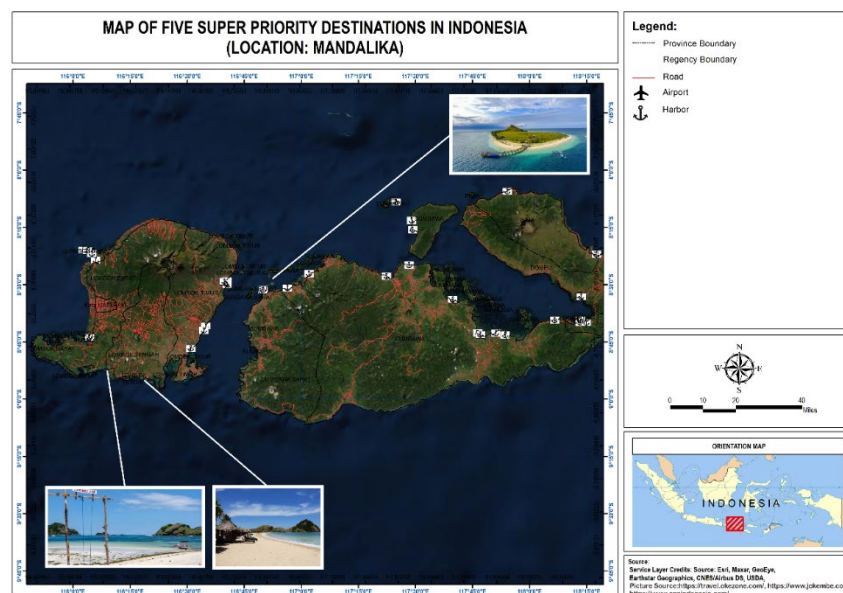


Figure 3. Map of five super priority destinations in Indonesia (Location: Mandalika)

Besides that, ITDC have prepared a visionary Master Plan for Mandalika which includes the building regional infrastructure and facilities with international standard (Ardhiati, 2019). The Masterplan in 2015 contains three of major development of Mandalika Tourism. First, to create the independent and sustainable tourism. Second, to provide the international standard infrastructure. And the third is to develop the principle of preservation and ecological restoration (Masterplan ITDC 2015). In 2017, ITDC also giving their attention into one of Village in Mandalika, namely Kuta Fishermen Village, to manage and arrange the village by applying the concept of sustainable development so that tourism in the Kuta Fisherman Village can be developed optimally (Sapraningtyas 2021). The concept has been implementing by relocating fisherman houses into storey-houses, upgrading existing houses in Kuta village, and building several facilities such as fishery guest house, fresh market, marine center, and green open spaces (Sapraningtyas 2021).

5.4 Labuan Bajo

Labuan Bajo is another super priority destination which located in West Manggarai, East Nusa Tenggara (Figure 4). It is famous with Komodo, an endemic animal from Indonesia, precisely in Komodo National Park which often visited by local and foreign tourist. Besides that, Labuan Bajo is also well-known for its marine tourism potentials which become one of its main attractions. The marine potentials especially located in group of small islands with combination of beautiful hills, savannah, and coastal area which crease a very interesting landscape (Sugiarto and Mahagangga 2020). One of each is Komodo Island, where most of Komodo Dragon lives. Labuan Bajo has been chosen as 10

priority destination since 2016. And to accelerate its development, the Government established a tourism authority in 2018 to achieve its aim (Kodir, et al., 2020).

As one of priority destination, Labuan Bajo keeps pace with the time by implementing technology for their tourism development. Many cafes in Labuan Bajo provides wi-fi connection for easier communication. Labuan Bajo also provides website-based application for tourism renting a boat to bring tourists from Labuan Bajo to Komodo Island (Rosyadi and Nosy 2020). This makes tourist more convenience in having boat rental services. Another technology implementation can be seen also by the tourism businesses in Labuan Bajo which started to use digital tools for easier transaction by using EDC devices in non-cash transactions. They also promote their businesses through social media and use internet-based applications for their business' development (Hutagalung et al. 2021).

Not only technology, but Labuan Bajo also made some innovations to make it a better destination. One of them is made an Innovative Indigenous Flores Ecotourism for Sustainable Trade (INFEST) Program. This program made by tourism community empowerment in Labuan Bajo that focuses on innovative ecotourism development (Laurentius, Fios, & Situmorang, 2021). Some of implementations that created through that program are 5 tour packages and 5 villages with several ecotourism products. Those 5 villages also become more sustainable through participatory planning process by involving village communities and related local government (About Us: Wonderful Flores, 2016). For its accessibility related to the information, Labuan Bajo has a website to promote their destination in www.labuanbajo.go.id. This website provides any informations about tourism in Labuan Bajo. Beside of that, the Government of Labuan Bajo will engage community and media to communicate as Destination Branding Labuan Bajo one of them is to create an official account on social media (Twitter) with the aim of sharing information about Labuan Bajo Tourism to everyone (Putranto and Astuti 2021).

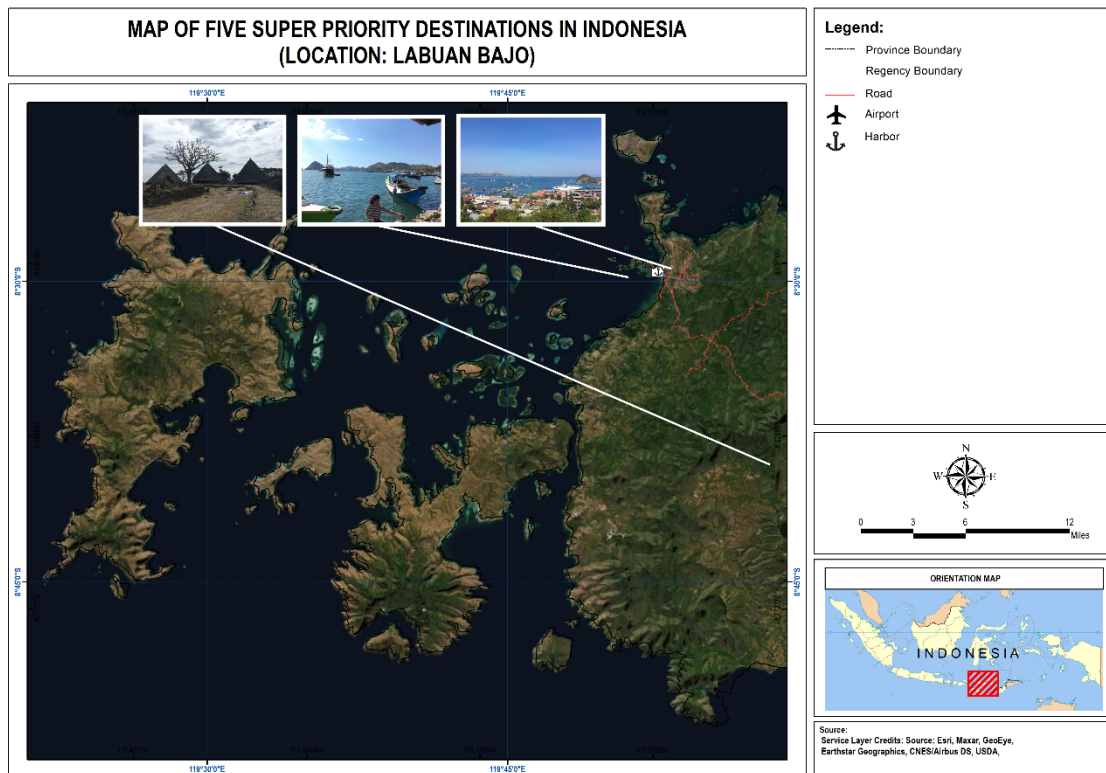


Figure 4. Map of five super priority destinations in Indonesia (Location: Labuan Bajo)

Labuan Bajo has a traditional village named Waerebo Village which implements Community based tourism concept which shows their support for sustainability in tourism. Waerebo is fully initiated and managed by the local community, from the planning, structuring, managing, until the development phase (Beeh 2017). The financial incoming coming from tourism is also utilized for the sake of community needs. Community participation on Waerebo Village arises because it is driven by the unique development of the Waerebo village tourist attraction, from before it

was established until after being designated as a tourist attraction by Manggarai Government (Beeh 2017). Waerebo has a lot of uniqueness in their Village, including sacred location around their traditional house (Mbaru Niang) called “Compang” which perform a ritual worship for God and their ancestors. They also have a traditional ceremony called “Penti Ceremony” as a sign of year-end gratitude and hope to start the new year better. Related with Penti Ceremony, one of the performances held during the ceremony is Caci Dance which symbolize communication between God and Human. Last, there is an animal named “The Sacred of Weasel” that has its own history that become a reason why Weasel become a sacred animal in Waerebo (Beeh 2017).

5.5 Toba Lake

Toba Lake, which located in the high land of North Sumatra Province (named Tapanuli), is the largest lake in Indonesia (Figure 5). The area covers 1.124 km² including Samosir Island (D Tanjung and P Hutagaol 2019) with a length of 100 km, a width of 30 km, a depth of 505 meters. Toba Caldera is the world’s biggest quarterly caldera formed by a super volcano eruption 74.000 years ago (N, Ginting and A, Sasmita 2018). In the long run, caldera has attracted local people to set up settlement and livelihood (W Utami and Andalucia 2021). Lake Toba region, which spread in 7 districts, has a very diverse tourism objects ranging from cultural, natural, and man-made attractions (D Tanjung and P Hutagaol 2019). Lake Toba region is one of the most well developed and well promoted destination in Indonesia, which has been marketed by the Government as one of the most desirable tourism destinations throughout the world (P, Lumbanraja et al. 2019).

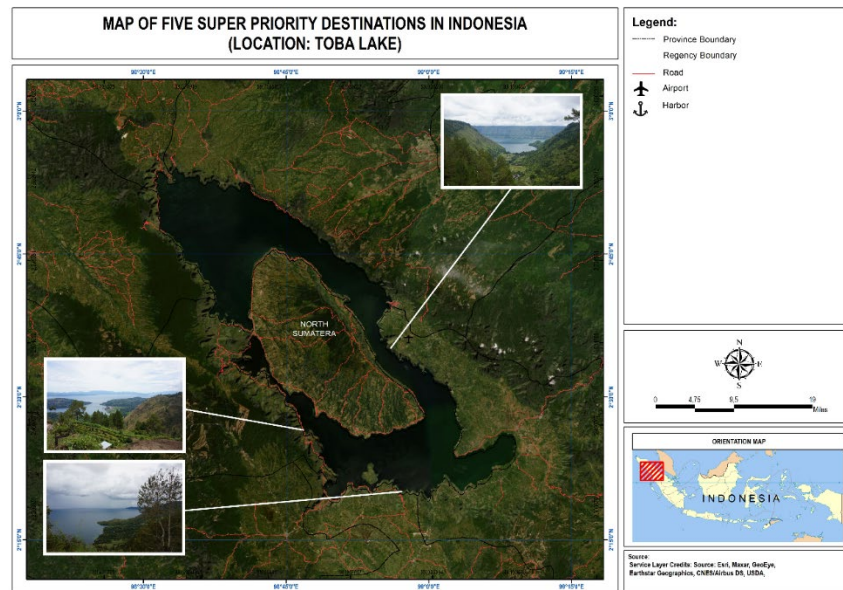


Figure 5. Map of five super priority destinations in Indonesia (Location: Toba Lake)

The main advantage of the Toba Lake is the linkage with the Toba Caldera Geopark which has 4 major sub-themes, namely GeoArcheo-Anthropology, Geo-Biodiversity, Geo-Culture Diversity, and Geo-diversity. The four sub-themes are potential attractions which are grouped into geotourism potential, Batak cultural tourism, and agrotourism which are all very distinctive, unique, and related to the existence of the Toba Caldera Geopark. The uniqueness of geophysical of the caldera formation can bring geotourism appreciation for anyone who visit the area N, Ginting and A, Sasmita, 2018). Toba Caldera Geopark has been assigned as one of Unesco Global Geopark after its proposal in 2013 and 2016. Geoparks are areas of geological interest, where ecosystems are managed sustainably to protect natural resources such as geological, biological, and cultural diversity in line with efforts to protect natural resources for sustainable development. The landscapes, geological and archaeological sites in the Lake Toba Region are a form of trail of rare events on earth, as well as ancestral cultural heritage that is interesting to visit. Thus, it is not surprising that Lake Toba is one of the prioritized destinations in its development.

For technology aspect, Lake Toba has the tourism mobile application named “Visit Samosir” which still available for Android platform. Another 3 apps such as Visit Toba Lake, Info Toba, Pariwisata Sumatera Utara have the closest theme to Samosir tourism. However, the information is very limited and have no connectivity to integrating apps with

GPS technology that often used in Android. Visit Samosir app is developed to maximize the use of technology and provide more functionality to the tourists (H Tobing, 2015).

Visit Samosir App can be run in online and offline mode. In offline mode, the mobile app can display basic information about Samosir Regency and emergency contacts. When connected to Internet, the application can fetch data from the server and has the fully functioned application. All menus that are available in the application can be used by the users. If a user presses a menu button, a request will be sent to the web service. The web service then processes the request and retrieves data from the database (H Tobing, 2015).

As one of priority destination, Toba Lake actively creates innovation to satisfy the tourist. One of each is by implementing green marketing strategies that can be improved and accomplished by continually modifying them according to the needs of potential tourists (P Lumbaraja et al. 2019). Therefore, many tourists who visited Lake Toba tend to report a higher level of satisfaction with the products and services offered in the holiday package which can promote a good and memorable tourism experience (P Lumbaraja et al. 2019).

Another innovation can be seen from a village which using canvas business model in Meat ecotourism. Innovative tourism business villages can be seen from people’s willingness to recognize natural resources human resources, local wisdom, technology, or new ways to solve problems and improve their economy using expertise, workshop and mentoring activities. The characteristic of ecotourism business innovation in Meat is in the stage of formation and development. Therefore, local management is required for its management, quality of travel and tourism products, cultural preservation, local wisdom, the uniqueness of Meat, continuous training and coaching related to natural resources. Meat Culture is also supported by integration of development and conservation (M, Simanjuntak and A, Manalu 2019).

For the sustainability aspect, Toba can be seen in several settlement and the people’s activities in a specific space. Toba, which known with Batak ethnic group, built from the landscape and local value (Utami, 2020). As the lake is the main attraction of this area, the cleanliness of water in Toba Lake is considered vert crucial especially fot international tourists coming from developed nations. Thus, another concern of the government is quality of water of Lake Toba (D Tanjung and P Hutagaol 2019). The existence of Lake Toba's aquatic ecosystem is highly dependent on the existence of the surrounding terrestrial ecosystem (S, Sundari and E, Kintamani 2021). The management at geotourism area can also provide optimal benefits for the community. Therefore, ecotourism development must meet several requirements, namely geologically based, sustainable, educative, community participation, and tourist satisfaction (N, Ginting and A, Sasmita 2018). Despite being a geologically based tourism, the purpose of geotourism is similar to other forms of tourism in terms of environmental conservation and community empowerment (Ginting et al. 2020).

In term of its accessibility, mostly have easier access when visiting Lake Toba nowadays especially with the availability of toll road that enable a better access to Lake Toba (Alfifto 2020). However, the development several highway and operations of Sibisa and Silangit airport has been a lot easier for tourists to reach the Lake (N Marpaung 2016).

Table 2. Summary of implementation of STD foundation in 5 super priority destinations

Foundations of STD	Technology	Innovation	Accessibility	Sustainability
Name of DSP				
Likupang	<ul style="list-style-type: none"> • Souvenir manufacturing • E-wallet • QRIS code • Free wifi in several area 	<ul style="list-style-type: none"> • Bia music (from ritual media into evangelism media, cultural festivals events, association, entertainment, publicity, and education) 	<ul style="list-style-type: none"> • Infrastructure is not well built yet 	<ul style="list-style-type: none"> • Ecotourism concerning in marine tourism • Local people involvement
Borobudur	<ul style="list-style-type: none"> • Village Information system 	<ul style="list-style-type: none"> • Mobile apps (Borobudurpedia) 	<ul style="list-style-type: none"> • Tourism website 	<ul style="list-style-type: none"> • Local community involvement

Foundations of STD	Technology	Innovation	Accessibility	Sustainability
Name of DSP				
Mandalika	<ul style="list-style-type: none"> • Augmented reality about Princess Mandalika's story • The Artificial Intelligent in Architecture (events) of Princess Mandalika 	<ul style="list-style-type: none"> • handicraft industry, transportation services, lodging or bungalow services, online media business promotion, and recruitment of professional employees 	<ul style="list-style-type: none"> • NTB Bangkit through social media 	<ul style="list-style-type: none"> • Agro and ecotourism concept • Kuta Fishermen village development with sustainable concept
Labuan Bajo	<ul style="list-style-type: none"> • Wifi connection in cafes • Boat rental application • Noncash transaction 	<ul style="list-style-type: none"> • Innovative Indigenous Flores Ecotourism for Sustainable Trade program 	<ul style="list-style-type: none"> • Website and social media for tourism promotion 	<ul style="list-style-type: none"> • Local community empowerment In Waerebo village • Traditional houses and ceremony
Toba Lake	<ul style="list-style-type: none"> • Visit Samosir apps 	<ul style="list-style-type: none"> • Green marketing strategy • Meat Village culture 	<ul style="list-style-type: none"> • Better access due to the highways built • Visit Samosir apps 	<ul style="list-style-type: none"> • Geotourism concept • Concerning in water of the lake

After comparing each destination in five super priority destinations in Indonesia, this research will talk about one destination that has been certified as STD, named Malaga. (Table 2) Malaga is municipality of Spain, and this city is the oldest continuously inhabited cities in the world with 16 beautiful beaches with the Mediterranean shores. And since this is the birthplace of Pablo Picasso, he has reinvented itself and inaugurating museums for all tastes. And with this combination of sea and culture with a lively atmosphere, Malaga City become an exciting city that everyone would want to explore.

Malaga city is one of the transformed destination examples because of its changes from a traditional sun-and-sea tourism hotspot into a modern and innovative tourism destination. Malaga succeeds in making digitalization convenience for the locals and visitors while exploring Malaga city. Malaga City become the 2020 European Capital of Smart Tourism to reactive tourism in safe and responsible way. During the COVID-19, there are weekly antigen test available to the sector. The companies participated in this campaign are given an opportunity to be displayed on a prominent and visible place in the formation. Malaga local TV recently aired a show to show their city's cultural heritage and creativity. This city approach to celebrate their cultural heritage and creativity of the city. If we starting to discuss about each aspect for becoming a Smart Tourism Destination, let's talk about the innovation which based on technology. Malaga has made an innovative application for tourist to facilitate safe and seamless travel in form of revive the tourism condition. And significantly, Malaga city also has an app to monitor beach capacity from user smartphone, this app offers real-time information such as water's temperature, sea condition about seaweed and jellyfish in water, height and direction of the waves and the speed of wind around the sea. This innovative app let everyone access the local information. (Málaga - Winner of 2020 European Capitals of Smart Tourism, 2020).

Smart Tourism implementation in Spain and the public understanding about Smart Tourism concept itself is considered as effective (Ewerton et al. 2017). The implementation of Smart Tourism applied in various municipalities including Malaga. Malaga as the best practice on Smart Tourism 2020 in Europe, become one of the main objects of the research. From technology and innovation, the ICT development be judged based on the growth of internet usage (connectivity) and Malaga city also already have a supporting ICT for accessibility to the information specifically to the tourist needed information. The city of Malaga aims to meet the technological desires of tourists and make the interaction with the surrounded environment and make the travel experience become dynamic and adaptable through the technological scenario for the tourism activity that they created. And through the combination of policies, guidelines and the marketing sides, Malaga have a management that processed based on the destination's development as well supported by the government agency too.

The smart tourism destinations need to improve the kind of sustainability of the city. The sustainability judges based on the awareness raising, and tourists' experience (based on their mobility, accessibility, and safety) and Malaga also put the attention in making savings in basic resources for tourism (water, energy, and heritage) and still use the technology for those resources. In addition to the smart tourism destination plan also to improve the quality of the local's life and the environment holistically. In fact, there are many actions that affect services and some areas that used by both tourist and the inhabitants because of the positive condition that essential for attracting tourist and fulfill the local's daily need.

From the sustainability, innovation, technology and accessibility of the information, Malaga City fulfilled all the indicators of Smart Tourism Destination

6. Conclusion

Each destination of five super priority destinations has various way to implement each aspect of smart tourism destinations. This difference hopefully can be good case practice for another destination as well. Furthermore, the implementation of smart tourism destination in each location can inspire another destination in Indonesia for further impact. The suggestion of further research is to compare each foundation of smart tourism destination in one specific

References

- A J Pinanigas, E Fatimah and A Ramadhani. *Linkages between Solo-Selo-Borobudur as the Jawa Tengah Provincial tourism strategic area*. IOP Conf. Series: Earth and Environmental Science 737, 1-6. 2019.
- About Us: Wonderful Flores. Retrieved September 29, 2021, from <http://www.wonderfulflores.com/about-u>. January 2016
- Alfitto, Rini, E. S., & Absah, Y. *Experiential Tourism in Lake Toba Samosir District*. Journal of Environmental Management and Tourism, 1385-1390. 2020
- Andaki, J. A., & Aling, D. R. *Pengembangan Ekowisata Bahari Melalui Peningkatan Usaha Promosi di Desa Baho Kecamatan Likupang Barat Kabupaten Minahasa Utara*. Akulturasi: Jurnal Ilmiah Agrobisnis Perikanan, 5(10). 2017
- Anggita Pratiwi and Athanasia Octaviani Puspita Dewi. *Website Borobudurpedia Sebagai Sarana Pencarian Informasi Situs Dunia Candi Borobudur*. 2019
- Ardhiati, Y. *An Artificial Intelligent of Princess Mandalika Legend: A New Strategy to Sustain the Resort of Mandalika-Lombok*. The Eurasia Proceedings of Educational and Social Sciences, 13, 148-154. 2019.
- Arintoko, Abdul Aziz Ahmad, Diah Setyorini Gunawan, and Supadi. *Community-Based Tourism Village Development Strategies: A Case of Borobudur Tourism Village Area, Indonesia*. GeoJournal of Tourism and Geosite, 398-413. 2020.
- Beeh, Y. Y. *The role of community in the development of Wae Rebo as a community-based tourism destination in East Nusa Tenggara*. Journal of Business on Hospitality and Tourism, 3(1), 55-79. 2017.
- Budi Hermawan, Ubud Salim, Fatchur Rohman, and Mintarti Rahayu. *Making Borobudur a Buddhist Religious Tourist Destination: an Effort to Preserve Buddhist Temples in Indonesia*. International Review of Social Research, 71-77. 2019.
- Calisto, M. d., & Gonçalves, A. C. *Smart Citizens, Wise Decisions: Sustainability-driven Tourism Entrepreneurs (in press)*. In Handbook of Research on Entrepreneurial Development and Innovation within Smart Cities. IGI Global. 2016.
- D, T., & P, H. *Analysis of Potential Social Conflicts in Ecotourism Development in the Lake Toba Region*. IOP Conference Series: Earth and Environmental Series, 1-7. 2019.
- De Ávila, L., & López, A. *Smart Destination Report: building the future*. Madrid. 2015.
- Erni Widarti, Suyoto and Andi W.R Emanuel. *Mobile Application Design for Heritage Tourism Uses*. International Journal of Engineering Pedagogy, 89-100. 2020.
- Estriani, H. N. *Kawasan Ekonomi Khusus (KEK) Mandalika dalam Implementasi Konsep Pariwisata Berbasis Ecotourism: Peluang dan Tantangan*. Jurnal Hubungan Internasional, 2. 2019
- Ewerton Lemos Gomes, José Manoel Gândara, Josep A. Ivars-Baidal. *Is it important to be a smart tourism destination? Public managers' understanding of destinations in the state of Prana*. Brazillian Journal of Tourism Research, 503-536. 2017.
- Ginting, N., Marpaung, B., & Sinaga, F. A. *Geotourism and Stakeholders: An approach to Enhance Geoconservation* 1-10. 2020.
- González-Reverté, F. *Building Sustainable Smart Destinations: An Approach Based on the Development of Spanish Smart Tourism Plans*. Sustainability. 2019.
- Gutiérrez, C., Garbajosa, J., Díaz, J., & Yague, A. *Providing a Consensus Definition for the Term "Smart Product"*. International Conference and Workshop, 203-211. 2013.
- H, T. R. *Mobile Tourism Application for Samosir Regency on Android Platform*. International Symposium on Technology Management and Emerging Technologies (ISTME), 249-253. 2015
- Harwin. (2020, 11 4). Sulut Review. (Sulut Review) Retrieved 9 1, 2021, from <https://www.sulutreview.com/2020/11/04/kissjo-realisasikan-wifi-gratis-di-pulau-gangga/>
- Hutagalung, S., Poernomo, M. H., RIadi, D., & Rudiyanto, R. *Kajian Indeks Daya Saing Destinasi Pariwisata Di Kabupaten Manggarai Barat*. Syntax Literate; Jurnal Ilmiah Indonesia, 6, 3542-3552. 2021

- I. Yunanda, N. Y. Praptiwi, and A. E. Damayanti, and Nurhadi. *Developing evacuation scenario for ecotourism based on hazard assesment in Borobudur area*. IOP Conf. Series: Earth and Environmental Science 271, (pp. 2-3). Yogyakarta, Indonesia. 2019.
- Irawan Irawan and Luhung Achmad Perguna. *Benefit and Social Implications of Village Information System in the Village at Karangrejo Village, Blitar Regency*. Journal of Environmental Science and Sustainable Development Symposium, 1-8. 2021.
- Kapoyos , R. J., F , T. S., & Utomo, U. *Polarization Music Function of Bia in Context of Social Change in Culture in Community Village South District Likupang South Regency of North Minahasa North Sulawesi*. Journal of Arts Education, 6(2). 2017.
- Kawulur, A. F., Mawitjere, N., & Kawulur, H. *Business Competitiveness of Small Medium Enterprise in Pandemic Era Covid-19 (Case Study on Souvenir Business in the Special Economic Area of Tourism Likupang, North Sulawesi Province, Indonesia)*. Journal of International Conference and Proceeding, 4(1). 2021.
- Kodir, A., Tanjung, A., Astina, I. K., Nurwan, M. A., Nusantara, A. G., & Ahmad, R. *The Dinamics of Access on Tourism Development in Labuan Bajo, Indonesia*. GeoJournal of Tourism and Geosites, 29(2), 662-671. 2020.
- Laurentius, L. Y., Fios, F., & Situmorang, A. S. *Human Capital Analysis on Regional Ecotourism Development Program in Indonesia: Case Study in Labuan Bajo-Flores-East Nusa Tenggara*. 355-359. 2021.
- Lemy, D. M. *Sustainable Tourism Development (STDev) Strategy in Indonesia*. Jakarta. 2018.
- M, S., & A, M. S. *Innovative Business Models in Developing Meat Ecotourism in Toba Samosir*. Journal of Physics: Conference Series, 1-8. 2019.
- Lesniewska-Napierala, K., Napierala, T., Birdir, K., & Birdir, S. S. *Smart Tourism Planning: Geographical Evidence from Poland*. In Handbook of Research on Smart Technology Applications in the Tourism Industry (pp. 473-487). IGI Global. 2020.
- Mahendra, Y. I. *Dampak Pembangunan Kawasan Ekonomi Khusus Mandalika (KEK) Terhadap Pengembangan Usaha Mikro Kecil Dan Menengah Di Kuta Lombok Tengah Di Tinjau Dalam Perspektif Ekonomi Islam*. Jurnal Econetica: Jurnal Ilmu Sosial, Ekonomi, dan Bisnis, 2, 13-21. 2020.
- Málaga - Winner of 2020 European Capitals of Smart Tourism. (2020). Retrieved from European Capitals of Smart Tourism: https://smart-tourism-capital.ec.europa.eu/cities/smart-cities-0/malaga-winner-2020-european-capitals-smart-tourism_en
- Manado Post. (2021, 3 7). (Manado Post) Retrieved 2 9, 2021, from <https://manadopost.jawapos.com/ekonomi-bisnis/07/03/2021/dengan-digitalisasi-bni-dorong-umkm-di-kek-likupang/>
- N, G., & A, S. *Developing Tourism Facilities Based on Geotourism in Silalahi Village, Geopark Toba Caldera*. IOP Conference Series: Earth and Environmental Series, 1-10. 2018.
- N, M., B, H. M., & O, G. W. *Management Strategy on Lake Toba Development Being 10 Main Tourism Destination in Indonesia*. Advances in Social Science, Education and Humanities Research (ASSEHR), 193-198. 2016.
- Novie Istoria Hidayah and Sugi Rahayu. *Pemberdayaan Masyarakat dalam Pengembangan Desa Wisata Jatimulyo, Girimulyo, Kulon Progo, Daerah Istimewa Yogyakarta*. 2017.
- Nugraha, D. Y., Wibowo, L. A., Disman, D., & Hurriyati, R. *Smart Tourism Strategy in Increasing the Number of Advances in Economics, Business and Management Research*, 63. 2018.
- Pangau, G. M., Andaki, J. A., & Lumenta, V. *Persepsi Masyarakat terhadap Pengelolaan Ekowisata Bahari. Akulturasi*, 6(11). 2018.
- P, L., A, N., & K, H. B. *Sustaining Lake Toba's Tourism: Role of Creative Industry, Green Tourism Marketing and Tourism Experience*. Asian Journal of Business and Accounting, 257-278. 2019.
- Portal Informasi Indonesia. (2020, 6 28). Retrieved 9 1, 2021, from <https://indonesia.go.id/kategori/budaya/1910/mengenal-likupang-untuk-kemudian-jatuh-cinta>
- Putranto , D., & Astuti, M. T. *Tourism Marketing Communication Strategy at Labuan Bajo Priority Destination*. International Journal of Development Research, 05(46733-46740), 11. 2021.
- Putro, H. P., & Azkarifa, S. *Study on Application of Touristification*. ASEAN Journal on Hospitality and Tourism, 18(1), 13-21. 2020.
- Ramdhani, A., Ramdhani, M. A., & Amin, A. S. *Writing a Literature Review Research Paper: International Journal of Basic and Applied Science*, 3(1), 47-56. 2014.
- Risca Septi Widyawati, Herry Irawan, and Astri Ghina. *Content Analysis of Tourist Opinion based on Tourism Quality (TOURQUAL) by Text Mining Online Reviews*. 2020
- Rosyadi, H. E., & Nosy, A. A. *Sistem Penyewaan Kapal Penyebangan Wisata Pulau Komodo Berbasis Website*. Senasif, 4, 2555-2563. 2020.
- S, S., & E, K. *Monitoring of Ecosystem Types in Lake Toba Region, North Sumatra*. IOP Conference Series: Earth and Environmental Science, 1-18. 2021.

- Samih, H. *Smart cities and internet of things*. Journal of Information Technology Case and Application Reserach, 21(1), 3 - 12. 2019
- Saptaningtyas, R. S., Utomo, P. K., Hilyana, S., & Anwar, S. N. *Planning of Fishing Residential in Kuta Village (Supporting the Mandalika Special Economic Zone) Based on Green Concept*. IOP Conference Series: Earth and Environmental Science, 847, 012009. 2021.
- Sari, L. P., Noor, A., & Rahayu, A. U. Tourist Experience Dari Smart Tourism Destination, Studi Kasus Di Kota Bandung, Jawa Barat, Indonesia. Journal of Indonesia Tourism, Hospitality, and Recreation, 3(2). 2020.
- Sigalat-Signes, E., Calvo-Palomares, R., Roig-Merino, B., & Garcia-Adána, I. *Transition towards a tourist innovation model: The smart tourism destination: Reality or territorial marketing?* Journal of Innovation & Knowledge, 5(2), 96-104. 2020.
- Sugiarto, A., & Mahagangga, I. G. *Kendala Pengembangan Pariwisata di Destinasi Pariwisata Labuan Bajo Nusa Tenggara Timur*. Jurnal Destinasi Pariwisata, 8, 18-25. 2020.
- Sulut Daily. (2020, 6 31). (Sulut Daily) Retrieved 9 1, 2021, from <https://sulutdaily.com/berjumpa-kemenkominfo-ketua-klir-minta-perkuat-sinyal-internet-di-likupang-roya/>
- Thaib, K. H., Supardjo, S., & Lahamendu, V. *Pengembangan Objek Wisata Bahari Di Likupang Timur (Studi Kasus : Pantai Pulisan)*. Spasial : Perencanaan Wilayah dan Kota, 4(3). 2017.
- Triyanti, R., Kurniasari, N., Yuliati, C., Muawanah, U., & Febrian, T. *Management of Coastal Resources in Mandalika in an Era of Disruptive Innovation Waves*. IOP Conference Series: Earth and Environmental Science, 584, 012064. 2020.
- W, U. *Resilience of Cultural Landscape Heritage Study in Spatial Tourism Context*. IOP Conference Series: Earth and Environmental Science, 1-6. 2020.
- W, U., & Andalucia. *Managing Toba Area as Cultural Landscape Heritage*. IOP Conference Series: Earth and Environmental Science, 1-6. 2021.
- Wulandari, S. H., Chotijah, S., & Suadnya, I. W. *Strategi Komunikasi Pemasaran Kawasan Ekonomi Khusus (KEK) Mandalika sebagai Destinasi Pariwisata Pasca Gempa Lombok 2018*. Journal Of Media and Communication Science, 2, 158-167. 2019.