Tourism Component Evaluation: GIS Based Analysis Towards The Qualification of Destination Planning

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Abstract—The role of GIS in tourism development has been known as an effective tool. Its ability to group the spatial data based on certain criteria is very helpful for decision making in the tourism sector. In this study, GIS is used to analyze the readiness of the region in developing its tourism sector. Four tourism components are used as readiness indicators, namely accessibility, amenities, ancillary services, and attractions. The research method used in this study is the mixed method (Qualitative and Quantitative) where qualitative method is the main method and method of mapping geographic information systems with mapinfo. The sample used is three sub-districts in Purwakarta Regency, those are the districts with a high tourism development in Indonesia. The results of this study are divided into three classes of readiness, namely high, medium and low. In this analysis, it can be concluded that tourist attractions are the main components that determine the level of regional readiness for tourism (0.13). The use of GIS in determining the final category of regional readiness is also very effective because it is able to map spatial data in detail, based on its weight and score. It is expected that the use of GIS could act as a recommendation for planning and creating the strategy in the field of the planning of tourism destination in many regions.

Keywords—tourism component; GIS for tourism; destination planning.

1. INTRODUCTION

The success of tourism development is largely determined by the quality of tourism components that existed in an area. Successful tourism development will be marked by the increasing of tourist interest and visits, as well as the increasing of regional economic development. It is often believed that tourism attraction is one of the major components in the development of tourism destination, which stimulates the motivation to travel [1]. Following that, Indonesia’s Constitution No. 10-2009 [2] determined the diversity of natural wealth, culture, and man-made products as the tourism attractions. It also includes anything that has uniqueness, convenience, and values that are targeted or visited by tourists. The visitation might develop the experience which is influenced by the combination of tourism products [3], [4]. Tourism products are the combination of tangible and intangible aspects [4]. This argument meant that there are several components which contribute to tourism development.

The tourism task force of Australia [5] points out that tourist destination will be successfully attracting tourist when they can provide not only the attractions as a core product but also access to get there, which are accommodations and activities. There are several theories regarding the component of tourism explaining that it has to include attractions, accessibility, amenities, available packages, activities, ancillary services [3]. All of these components are interconnected and form something that is integrated.

Moving forward to the use of GIS in tourism, there are many benefits of using GIS in the tourism sector. It is supported by [6], who mentioned that there are enormous studies about the usage of GIS application as an analysis instrument in tourism. [7] point out that GIS in tourism was functioned for something related to the caring capacity of the tourist attraction, managing the use of tourism area, assessing the impact resulting from the visitors, evaluating potential conflicts from a strategy management, creating information system, and helping the local government as the decision maker. Moreover, they revealed that this application was used from the tourists’ circulation movement and behavior to the detrimental effect of sustainable tourism management. [8] recognized GIS as a useful system to manage, analyze, and display various data that is significant to the development strategy. It can be concluded that GIS could be employed locally in the tourist attraction and wider scale—in sub-district for example.

Although tourism development can be varied and there are many methods of doing this, this research will consider the utilization of GIS in tourism destination in the developing area. The area is assessed by the distribution of tourist attractions, the condition and completeness of the tourism components as their tourism supplies, and also compiling the evaluation of tourism component using observation form, paired comparison, and GIS to see the distribution of the components in this area. The purposes are to identify how qualified they are and to provide
the recommendation of the best development for the area to the local government.

II. LITERATURE REVIEW

A. GIS in Tourism Development

In terms of using GIS in tourism, this system has been utilized for analyzing some questions related to determine the land-use, to indentify the location of tourism components, and visitor management in tourism destination [7], [9]. Furthermore, although [7] think that Tourism sector has not used GIS technology well to reinforce this industry, [10] reveal that the three governmental institutions in Scotland have benefited from using GIS for their tourism industry. Eventually, this technology would be highly recommended in the tourism development project, especially for the tangible aspects.

B. The Components of Tourism in Developing the Destination

Since people know that tourism is not only about the attraction, which is the product, other tourism components are also known as the supply in this industry. Tourism components are classified as 6 As, they are, “attractions (natural, man-made, artificial, purpose-built, heritage, special events), accessibility (entire transportation system comprising of routes, terminals, and vehicles), amenities (accommodation and catering facilities, retailing, other tourist services), available packages (pre-arranged packages by intermediaries and principals), activities (all activities available at the destination and what consumers will do during their visit), ancillary services (services used by tourists such as banks, telecommunications, post, newsagents, hospitals, etc.) [3]. Australian Department of Tourism & Recreation (1975) cited in [11] thinks that this sector is a substantial industry, in which “transportation, accommodation, recreation, food, and related services” are involved. In contrast, [1] points out tourism components with 4 As, “attractions, accomodations, accessibility and amenities” and it is likely for a component to form the tourism destination.

III. METHODOLOGY

The role of GIS in this research is as the visualization of the distribution of tourism components. Each component is mapped and overlayed to measure and to analyze the availability of the components, the distance of the components from the tourist attractions, the varieties of attractions, and the road classifications. Ultimately, the results of the observation are matched with the criteria in the observation form and scored based on the criteria.

In terms of the geographical information system, in this research Mapinfo 9.5 is utilized for trashing the map with 1: 25,000 scale. Moreover, other software is used including, Google Maps to retrieve the coordinate numbers, Microsoft Excel for organizing the data, and Microsoft Word. The primary data were acquired through field survey using GPS devices to retrieve the coordinates points of some tourist attractions which were not registered in the government data and were not detected in the Google Map. The data are grouped into four different categories; accessibility, amenities, ancillary services, and tourist attractions. The secondary data used in this research was the existing road network map which was converted to a digital form; the tourist attractions, the hotels, the restaurants and cafes, the hospitals, the travel agents, the mosques, the public transportations, the ATM, these data were obtained from the government’s organizations and the internet.

<table>
<thead>
<tr>
<th>Table I. Observation Criteria Sheet</th>
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<tbody>
<tr>
<td>Parameter</td>
</tr>
<tr>
<td>N. o.</td>
</tr>
<tr>
<td>1</td>
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<tr>
<td>2</td>
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by the fulfillment of the tourism components where the tourist’s motivation would be led by the availability of the tourism components [16]–[18].

The existence of public facilities also determines the level of readiness of the destination. Public facilities that are not directly related to tourist facilities can still accommodate the visitors’ daily needs. Since visitors travel to various areas for certain days, this general facility may create comfort for the tourists. The lack of public facilities such as ATMs, restaurants, and money changers in two sub-districts brought an impact to the level of destination readiness. Moreover, the low standard of hotels and souvenir shops that are available would reduce the value of the destination readiness as well.

![Fig. 1. Map of Tourism Component Readiness in Purwakarta, Wanayasa, and Plered Sub-District](image)

The accessibility, including the road to tourist attractions, is assessed by the width of the road and the current road conditions in 2015. In some tourist attractions in those three sub-districts, the majority of accessibility is passing the local roads with a width fewer than 8 meters. This would be the obstacles for a big group which usually uses buses. Therefore, it might not be attractive to travel agents. In addition, quality is an important factor, because of the possibility of tourism attractions to be reached either by individuals or groups.

Some literature mentioned that in order to manage the visitor and the visitation, the supply and the demand factors have to be taken into consideration[19]. Thus, if the supply factor is attractive, eventually the demand will increase. In this case, the area site manager must continue to pay more attention to the quality of recreation in order to make the area as a leading tourist spot. Here is the result of the analysis showing the readiness of tourism components in Purwakarta sub-district, Wanayasa sub-district, and Plered sub-district (Figure 1).

From this study, it can be concluded that the use of GIS in analyzing the quality of tourist attractions is considered to be very effective. The overlay function owned by MapInfo makes it easier to analyze the related components detailed in an area. The consideration of the weight of tourism components is also easily analyzed using GIS as resulted in the accurate information about the quality of tourism components of a region.

### IV. RESULTS AND DISCUSSION

The findings from the analysis of the tourism components in the three sub-districts reveal that from the 3 sub-districts, Purwakarta is the readiest one to be the tourism destination functioning as the center of tourism activities. It is determined

<table>
<thead>
<tr>
<th>Component</th>
<th>Readiness</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Travel Agent (In Sub-District)</td>
<td>&gt;1 travel agent</td>
<td>[12], [13], [14], [15], [3]</td>
</tr>
<tr>
<td>Souvenir Shop (In Sub-District)</td>
<td>&lt;2000 m</td>
<td>[12], [13]</td>
</tr>
<tr>
<td>Ancillary Services</td>
<td>Available units of ATM machines</td>
<td>[12], [13]</td>
</tr>
<tr>
<td>Hospitals and Clinics (In Sub-District)</td>
<td>&lt;3000 m</td>
<td>[12], [13]</td>
</tr>
<tr>
<td>Money Changer (In Sub-District)</td>
<td>&gt;1 money changer</td>
<td>[12], [13]</td>
</tr>
<tr>
<td>Prayer Room (In Sub-District)</td>
<td>&lt;1000 m</td>
<td>[12], [13]</td>
</tr>
<tr>
<td>Attractions (Diversity of Attraction: Nature, Culture, Special Interest)</td>
<td>3 types of tourist attraction</td>
<td>[12], [13]</td>
</tr>
</tbody>
</table>

Sources: [12], [13], [14], [15], [3]; Modification researchers based on literature reviews.
V. CONCLUSION

The readiness of an area to become a tourist destination is largely determined by the quality of its tourism component. The most dominant tourist component is attraction or attractiveness. Natural and artificial attractivenesses are the main components in developing tourist destinations. The utilization of GIS itself is very effective in analyzing the level of readiness of the destinations in a region. In general, GIS in the tourism sector will be very helpful in providing information, allocating tourist attractions based on its resources, and helping the decision making for grouping the patterns and relating them according to certain criteria. In addition, GIS can be used to provide a more holistic approach to solve the problem in which qualitative and quantitative data must be processed. In general, this technology is used to collect information, data, and spatial analysis which then displayed in the form of graphs or maps that are more effective and easier for users to understand.

REFERENCES