



Tourist Information System for Royal Belum State Park

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Abstract— *This study encompass the tourism destination in the Royal Belum which include the facilities, attractive places and some activities that can be carried out in the rainforest by using the Geographic Information System (GIS). This study mainly focuses on a database development that can be accessed which composed of spatial and information that related to the tourism. The capability and performance of the database system was tested and the finding shows that with assistance of the information system, the tourist can acquire and explore more information of intended destination effectively as well as planning the travel.*

Keywords— *Geographic Information System, Database development, Tourist, information system, Royal Belum*

I. INTRODUCTION

Tourism is an important industry in Malaysia as it is one of the sectors that gave an advantage in national income in term of foreign currency exchange and others. On the other hand, the tourism benefit the tourist with cultural plus knowledge about the history of development as well as experienced the culture of the country. Therefore, tourism played an important role to expose the culture, history and attraction places to the tourist from around the world. Aside from the economic growth and the history, tourism sector also enhanced employment opportunities for the people directly and indirectly through the tourism services and activities. At the end of this paper, from the database development showed the main attractions to the Royal Belum with the information of attractive places, facilities and also activities provided.

[4] stated that “*the tourism comprises the activity of persons travelling to and staying in places outside their usual environment for not more than one consecutive year for leisure, business and other purposes not related to the exercise of an activity remunerated from within the place visited*”. In the other words, tourism defines about people who do the activities outside of the working places or reside for a temporary short-term movement. Therefore, the tourism information system must expand correspondingly if anything like effective understanding and control is to be achieved.

An information system is part of the mechanism for reducing effort and uncertainty in the knowledge acquirement and understanding of the natural environment. Nowadays, the information of the tourism destination played an important role as it is one of a medium to introduce the tourism spot to the tourist. It gives the major impact to the industry that involved in the tourist sector. In this paper, the information system of the places developed by using Geographic Information System (GIS) where the technology are capable of capturing, storing, checking and displaying the database system. Geographic Information System (GIS) is one of the computer systems that enable people to see, analyse and understand the patterns and relationships by using the five key components which are hardware, software, data, people and methods. Furthermore, by using these components of GIS, the data can be shown in many different kinds of data on one map by capturing, storing, checking and display data related to the positions on the earth's surface. GIS is an interactive mapping system that can be used to attract the public user and tourist because it can visualize the tourist sites which showed the service provided around the attractive places and also it can help people to acquire information of the specific the places.

II. STUDY AREA

In Malaysia, Royal Belum is one of the world-class protected areas that have comprises of in terms of conservation, research, watershed, tourism, education and indigenous culture. According [3], the Royal Belum State Park (RBSP) was gazetted as a protected area on 3 May 2007 under the Perak State Parks Corporation Enactment 2001. Besides that, Royal Belum is one of the oldest rainforest which is 130 million year old that has abundant of biodiversity other than any places in the world. The mission of the Royal Belum State Park is to be a high skill organization that expert in maintaining and managing the diversity of ecosystems. The visions RBSP is to move towards efficient and effective in the sustainable management of the ecosystem diversity State Park. Therefore, the development of land that is planned and should be carried out systematically in order to achieve its mission and vision.

This rainforest with the encompasses a total area of 117,500ha are also one of the most listed destinations of ecotourism in the national ecotourism plan as it is contains a lot of heritage about the habitats of flora and fauna in the various areas. Other than that, the other characteristics of the Royal Belum and Temenggor forest capacity are almost four times from the size of Singapore, therefore, this rainforest have a lot of diversity species of flora and fauna that are still in the state of original habitat without being touched by another sector.

Unique properties of this park is there are several of salt licks areas found for the animal to get the mineral for energy such as Sambar deer, Malayan tapirs, Malayan tiger and others. Aside from the animal, the unique flower and

becoming the icon of the Royal Belum is the largest florals in the world which is Rafflesia are also found in this rainforest. This flower species only grows around the hillside near the water sources. In addition, the other main attraction spot can be seen in this oldest tropical rainforest of the world is the community of indigenous people which is located in two locations which is Sungai Kejar and Sungai Tiang. This community is still used traditional ways to live in the state park such as build their house based on palm fronds and bamboo. Furthermore, to be more convenience, there are several campsites and also recreation that can be done in this state park for the tourist to enjoy and appreciate the natural environment. Therefore, this paper focused on developing a GIS – information system which portrays the unique properties of tourism in Royal Belum.

III. METHODOLOGY

The methodology used in the development of a database involved a several stages which are data collection, database design, analysis, and validation. The study area for this paper is Royal Belum State Park that is located in Hulu Perak, Malaysia. A visit was made to Perak Royal Belum State Park on 1st April 2015 until 4th April 2015 to collect the attribute data of the camp site and the infrastructure of the indigenous community. This data collection was conducted by using several equipment of detailing survey in order to get more accurate position of the attractive places and camp sites which is Total Station and also Global Positioning System (GPS) for the control point. The raw data of detailing are processed by using the CDS software before export into AutoCAD software for plotting process to produce maps. Other than that, the observation method also has been conducted to determine the availability facilities in the state park. The data were collected based on the requirement from the tourist to be included in the tourist information system.

Moreover, to develop the database system, the base map of the Royal Belum was digitized by using the software of ArcGIS 10. Four coordinates of map were selected to be the control points in the process of georeferencing in the ArcGIS software to cover the whole area of Royal Belum. The contents of layer generally contain of hydrography, land transportation and also built environment. The attribute data of attractive places and facilities was inserted into the database system. After that, the interface of the database system was developed by using the Microsoft Visual Studio 2010. It was intended for the presentation of the geographic information system of the database to complete the requirement of user-friendly and concept. Nevertheless, the database system was validated to analyses the capability of the system from the user's perspective.

IV. RESULT

The development of the interface database system was tested after completion of the system design phase. This is to determine the capabilities of the system from the user views and the ability of the system work whether it is functioning well or not. The tested are divided into two categories which are the tourist information system by using the Microsoft visual basic and the database system by using the ArcGIS software in the development of the tourist information system.

The database system of tourist information system was created by using the Microsoft Visual Studio 2010 to facilitate user to find the information about the destination in Royal Belum State Park aside from compatible to link with the digitized map. The application also showed the information in spatial which is in the digitizing map and non-spatial in the interface of the system with the attractive graphic display. This tested was done in order to determine the effectiveness and efficiency of the database system to achieve the aim of the study in the development of the tourist information system.

A. Tourist Information System

The interface of the Royal Belum database system was created to assist the user to find more information about the attractive destination in the Royal Belum. Fig 1 shows the main interface of the database system that will lead to other main items by clicking on the buttons provided. The main items in the database system are divided into two categories which are the master pages of the database system and also the spatial data that contain the digitizing map of Royal Belum.

The main pages contain a short description about the Royal Belum that consists of six tabs that shown in the Fig 2. Through the database system, the user can find out the attractive places, facilities and the activities provided in the Royal Belum clearly.



Fig. 1 Interface of Royal Belum database system

As mention above, each tab of the master pages shows the information of the attractive destination in the Royal Belum State Park with the supporter of pictures to show the places which is a. information about Royal Belum, b. camp sites, c. indigenous community, d. Rafflesia, e. anglers and f. packages provided that showed in the Fig 2.

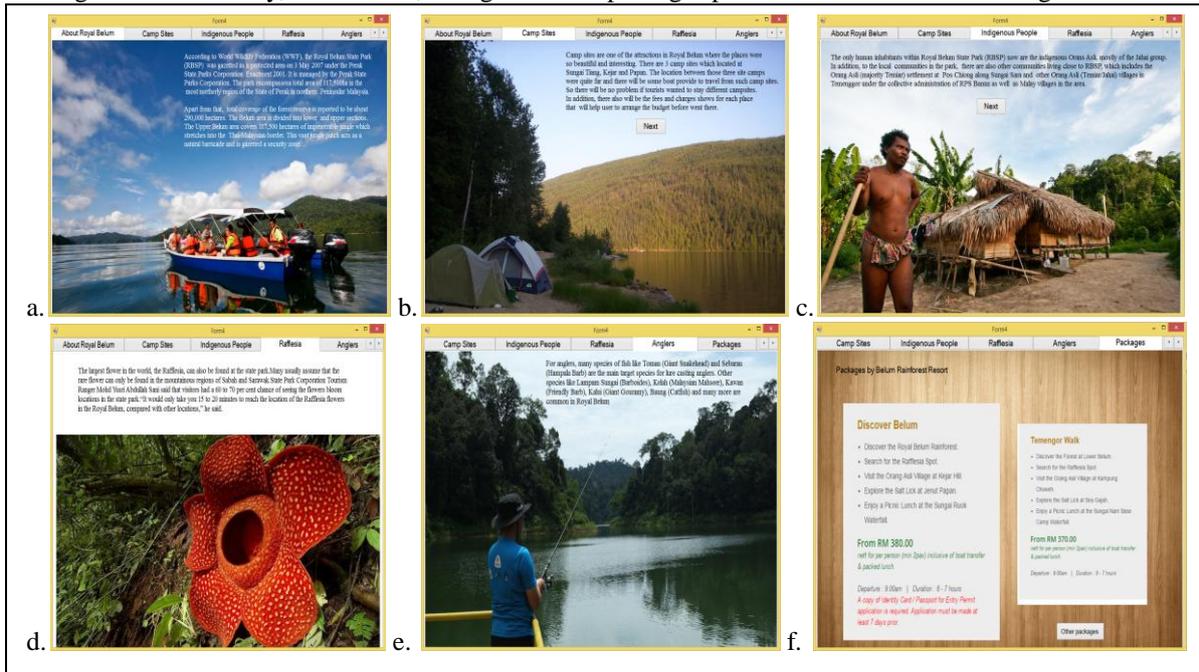


Fig. 2 Main pages of Royal Belum database system

In this database system, there are more specific information about the camp site and also indigenous community. This information can be shown in another interface by clicking the button 'Next' in the interface. The additional information about the camp site included the facilities provided such as toilet, amenities, control point and others that shown in the Fig 3a. On the other hand, there are two main indigenous villages, which are Sungai Tiang and Sungai Kejar. In this database system, the other information about the community is included such as the total residents, religion, occupation and the development of infrastructure in Sungai Tiang and Sungai Kejar that are shown in the Fig 3b.

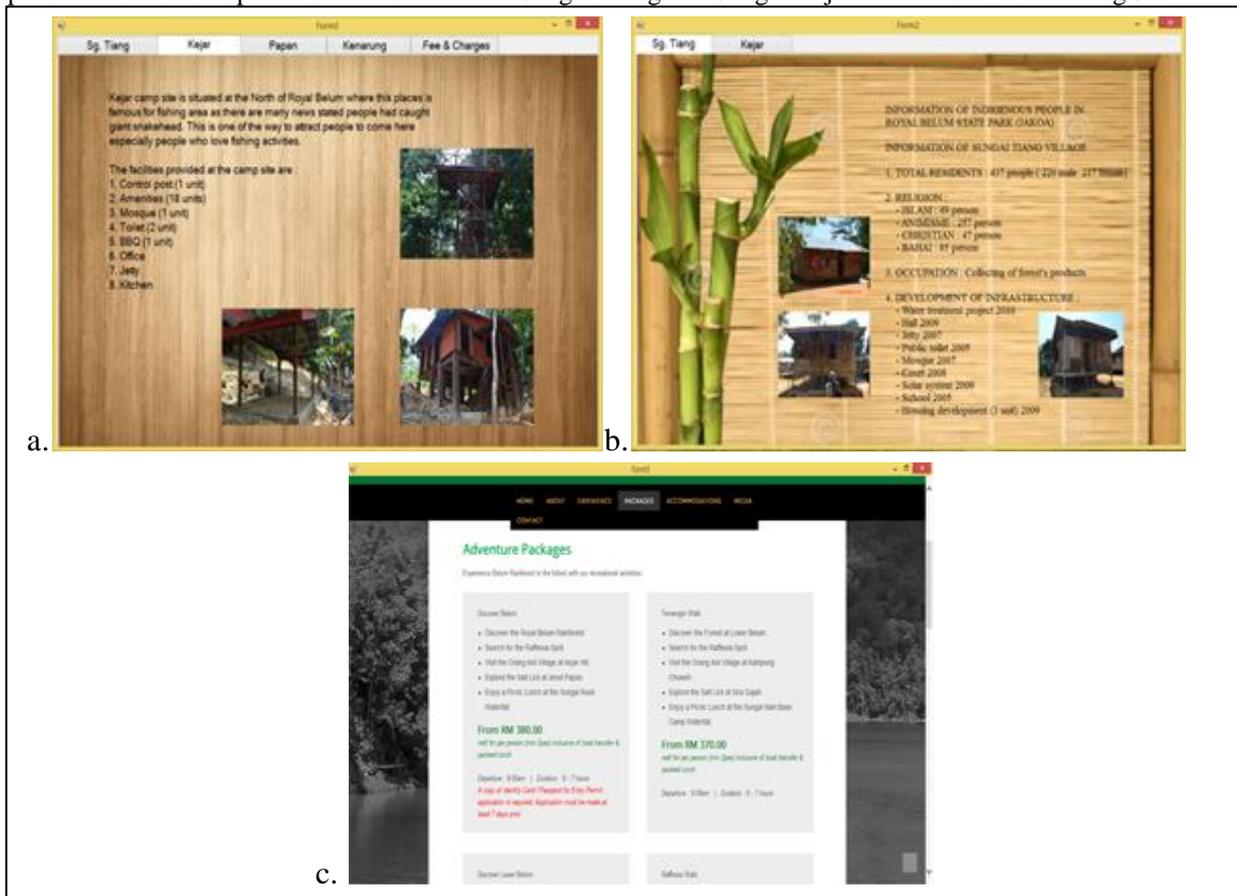


Fig. 3 Additional information

Moreover, there other functionality of this system that can be linked by the internet through the button provided in the interface of packages showed the extra activities included in it. This system is linked to an existing website that enables the tourist to choose the activity packages provided that shown in Fig 3c.

B. Database system

In addition, this interface also had included a database system of the Royal Belum. In this phase, there are three components that involved in the database system which are conceptual, logical and physical design. This component is based on the requirement from the tourists about the destination places in the Royal Belum. Fig 4 showed the output of design the database system which is the entity relationship model (ER Diagram) that contained several layers which are hydrography, land transportation and also built environment. The information of this layer is also included in the database system to ease the tourist to get more specific information efficiently.

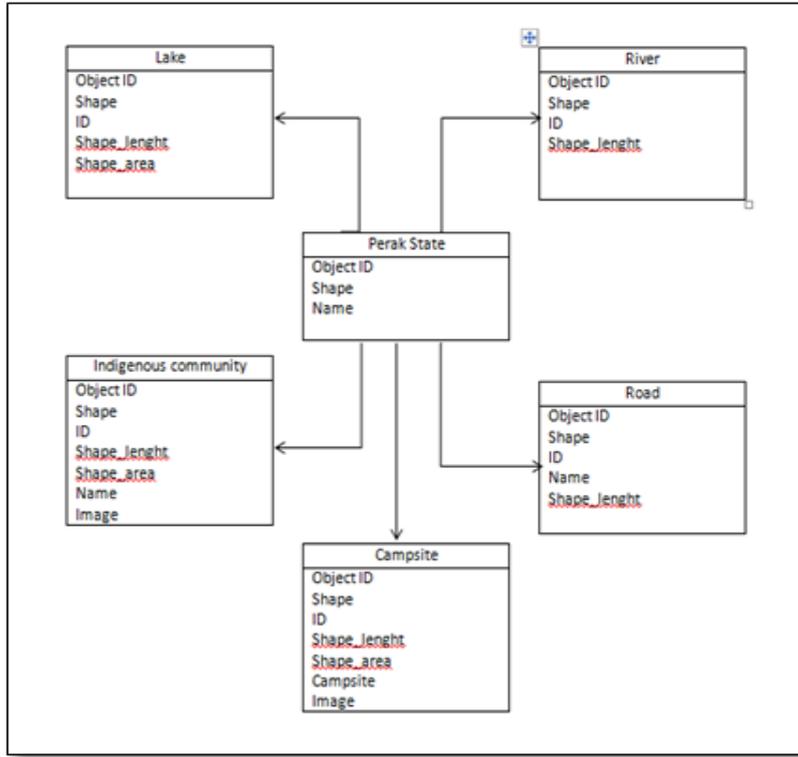


Fig. 4 Entity Relationship Diagram

As the main result, the digitized map of Royal Belum have been used and displayed in the interface for the user to know the location of attractive places in the Royal Belum effectively. Other than that, the attribute data files of facilities and another attractive placed were also included in the database system in the ArcGIS software. The feature themes which are point and polygon are used in the spatial data to make the database system displayed. more clearly about the location of the places in the database system of Royal Belum. Fig 5 showed the digitized map of Royal Belum that included in the interface of database system by clicking on the button provided in the main interface.

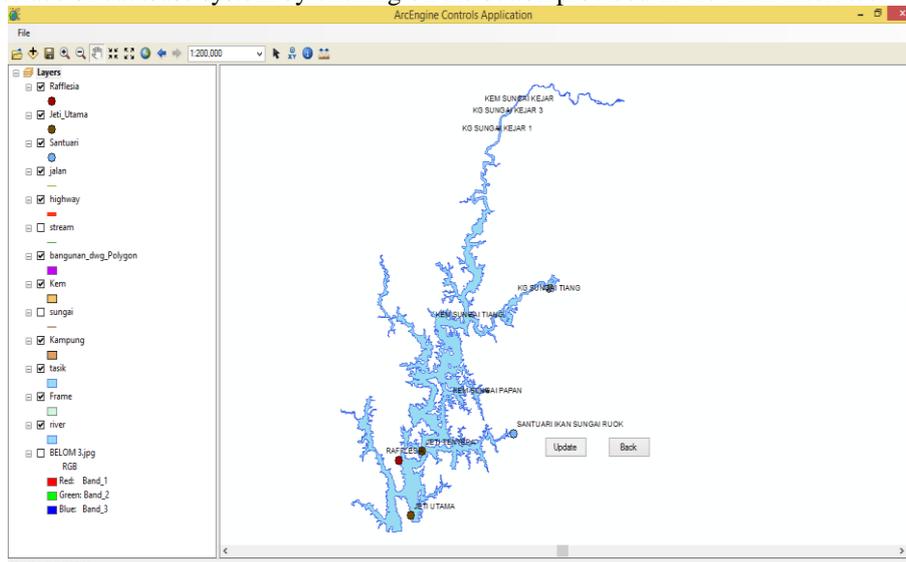


Fig. 5 Database system of Royal Belum

In the database system, there are also provided two buttons that will lead to other main program which is update and back button. The update button is provided in the spatial data of Royal Belum to make the user easy to manage and update more information about the attractive places or facilities in the Royal Belum while the back button were used to lead the main interface of the database system.

In this database system, there are also provided functionality for the user to use the system such as full extent, identify, zoom, measure, pan and scale bar. Besides that, this functionality can be used by clicking on the displayed map to get more description of the destination places. On the other word, this functionality was provided in the database system to facilitate user to find the interesting places in Royal Belum.

This paper only focused for two functionality which are identify function and zooming function. Fig 6a showed the identify function which is to allow the selected feature classes to be easily identify. All the information with included the graphic of the selected feature classes will be shown on the screen by clicking on the spatial data that shown in the Fig 6b. This functionality can help the user to find the other description aside from facilitate to the attractive places in Royal Belum. On the other hand, there are also zooming functions in this database system. This functionality was used for the user to see a clear vision of the map Royal Belum whether the user can zoom out the map to see the whole map or zoom in the map to see a specific feature classes that shown in the Fig 6c and Fig 6d.

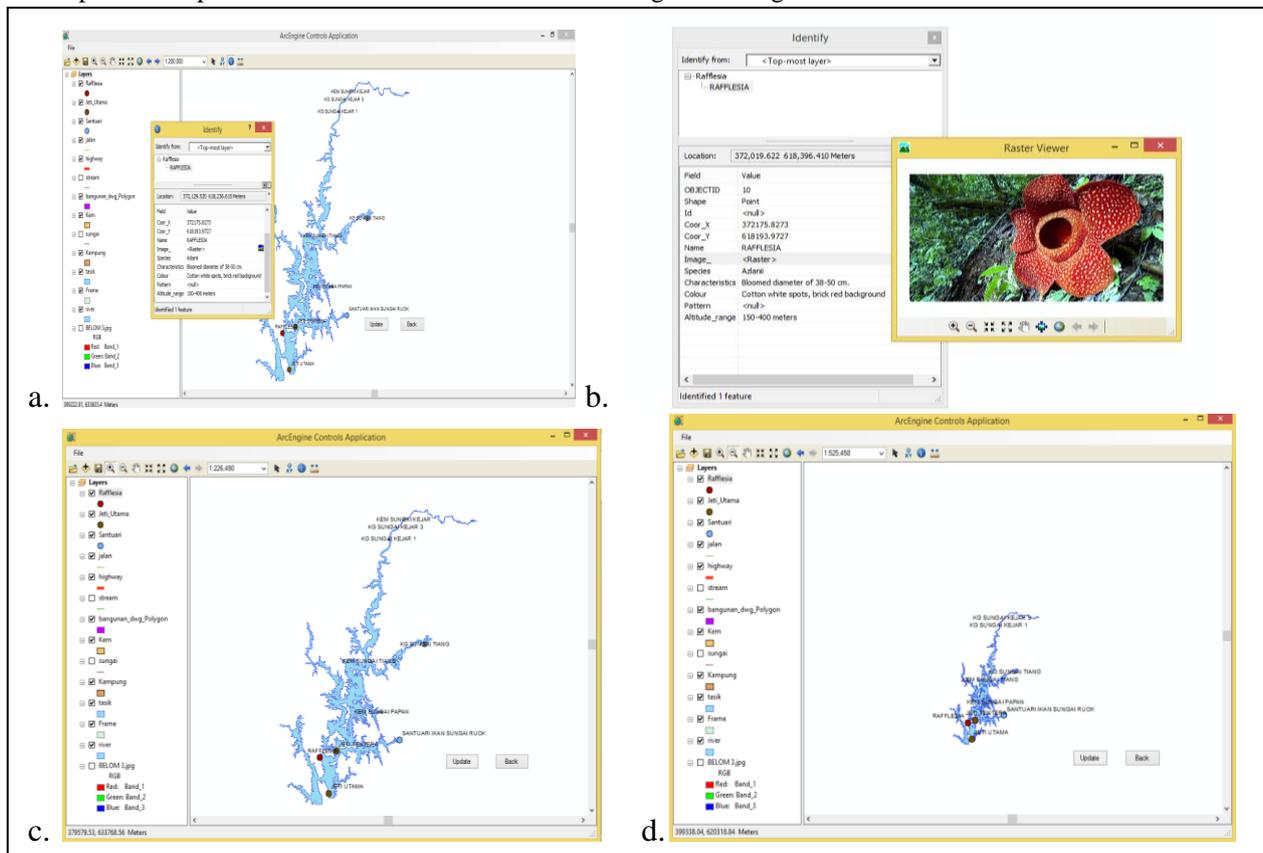


Fig. 6 Functionality in the database system

V. ANALYSIS

A. Validation of Database System

In this paper, the database system was analysed to examine its effectiveness. This part was analyzed by using the method of the set of questionnaire that was contributed to the random respondents. In order to answer the questionnaire, this database system was tested by 30 respondents from UTM. Through this test, the capability of the system was analyzed to make sure that the system functioning well or not. Fig 7 showed the percentage of the effective system to find the interesting places in Royal Belum. 90% of the respondents was agreed that the database system was an effective system to find the interesting locations while 8% of it chose to be neutral and 2% was disagreeing.

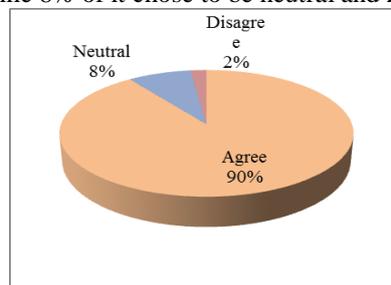


Fig. 7 The effectiveness of database system

This showed that the database system was an effective system and also efficient where it can facilitate the user to the attractive places in the Royal Belum State Park. Besides that, by including the functionality, the database system also can assist the tourist to get more information about the database system.

VI. CONCLUSION

The database system was one of the methods that obtained many information and specific compared by searching the information on the map. The main purpose of this study was to introduce the tourist attraction in the Royal Belum by using the database system that can be accessed which composed of spatial and information that related to the tourism. From this study, the agencies and organization can easily updated and edited the information on the database system conveniently as this database was created by using the Microsoft Visual Studio software. Other than that, the information on the digitizing map also can be updated by using the ArcGIS software including added up more information about the destination specification.

Aside from that, the entire menu provided by the database system can be used to guide the user in accessing the system to get more information. The user also can easily manipulated the map displays by using the toolbars provided such as pan, zoom, extend and others. In addition, the user can get the other information on the packages in Royal Belum by using the hyperlink that provided in the interface of database system. In this study, the interface of the tourist information system using the technology of Microsoft Visual Studio in Royal Belum State Park is one of the successful methods to attract the tourist to travel around the country.

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REFERENCES

- [1] Antouskova, M. and Mikulec. J (2009), Use of GIS To Study Tourism Burden Case Study of Protected Landscape Area Kokorinsko, Department Of Economic And Department Of Applied Geoinformatics And Spatial Planning, Faculty Of Economic And Management And Faculty Of Environmental Sciences, Czech University Of Life Sciences, Kamycka, Suchdol.
- [2] Perbadanan Taman Negeri Perak (2015 March 30 & 2015 June 23). Perak state parks corporation (in malay). [Interview]
- [3] Royal Belum State Pak by World Wildlife Federation Malaysia (2007), Access from 1 April 2015. Available at: http://www.wwf.org.my/?uNewsID=7_980
- [4] World Tourism Organization (2008), Accessed from 11 March 2015. Available at: <http://www2.unwto.org/content/why-tourism>