

## Functional Requirement Design for Optimizing Tourism Promotion of DKI Jakarta based on Descriptive Research Method

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### Abstract

*This study presents data collected as sample from two places of tourism spots, TMII and MONAS. Furthermore, additional data has also been collected from public places such as campuses to support current data collection. The data is collected in order to recognize the visitors' responses according to their tourism information needs in preparing their traveling activities. Descriptive research method adopted using self-designed questionnaires focusing on "what" is applied to investigate the questions which are related with the topic of the study. The results of data analysis would be referred as foundation in designing the system functionalities required to develop an application for the future development. Furthermore, more data is observed from some data resources such as Central Bureau of Statistics (BPS) of DKI Province and Global Destination Cities Index to recognize the performance of DKI Jakarta in receiving visitors within the last three years compared to other cities in some neighboring countries such as Bangkok, Kuala Lumpur and Singapore. Thirty respondents are involved in the study to identify what potential information which can be explored. The information which is related to visitors' travel preparation becomes imperative to be analyzed to optimize the tourism promotion. Descriptive research method helps researchers in obtaining data on functional needs according to the current state of society, in the scope of travel activities and preparations. The system design viewed from the functional needs shows what people can do based on the results of the analysis.*

**Keywords:** Functional Requirement, System Design, Descriptive Research, Tourism, Data Analysis

### 1. Introduction

Jakarta, the capital city of Indonesia, has been internationally recognized as a metropolitan city with a lot of potentials in tourism. Jakarta also has many attractive tourism spots to be explored, comparable with the ones in Kuala Lumpur (Malaysia), Singapore or Bangkok (Thailand), and it is possible that Jakarta has more advantages due to its beaches and underwater attractions. Jakarta has almost complete tourism packages such as shopping tourism, culture tourism, nature tourism, historical tourism, entertainment, theme parks and even island tourism. However, the statistics stated that Jakarta could not compete with other cities in ASEAN. Jakarta needs an idea to establish place branding as a trigger for local community development [1] which is important to highlight the best sides of the city to attract the visitors. According to 2014-2016 data, Jakarta's yearly percentage of foreign tourists was still below that of Kuala Lumpur, Singapore and Bangkok even though Jakarta actually has more potentials [2][3][4][5][6].

The data shows that there is a need to optimize the marketing strategy of tourism spots in order to increase the statistics of travelers coming to Jakarta. Thus, there is a need to research and requirement analysis of what kind of information do travelers need when they want to go on vacation. If there's a good and accurate information provider, travelers would be more confidence and assured to come to certain places, especially to Jakarta which socially and economically has been evolving continuously. Those requirements could become a reference to identify what kinds of functional requirements needed to be accommodated in order to build an information system to optimize tourism marketing strategy in Jakarta because this issue still has not been yet properly addressed.

This research uses descriptive methods by distributing some questionnaires to travelers visiting various tourism destinations in Jakarta. Descriptive method [7][8] is used to collect the actual and accurate data which will be used to decide the requirements which were needed to build the system information. This research also uses observation method to learn about the

performance of Jakarta's acceptance of foreign travelers in comparison to other cities in the selected neighboring countries. To build the system, this research uses a prototype model as SDLC [9][10], while the functional of the system will be modeled using use case diagram [11] to see the behavior of the users toward the system.

## 2. Research Method

The descriptive research method used in this research has a purpose to make a systematic, factual and accurate description of facts and habits of local travelers to prepare their vacation according to the current trend [12]. The feedbacks from travelers could be used as reference about the general habits of travelers to prepare their vacation. Additionally, this research also evaluates the number of foreign travelers in comparison to other cities in different countries. Descriptive research method provides a statistical analysis to show the research results based on facts on the various method data collections [13][14].

The procedure of this research is preparing and collecting the data using observation and questionnaire [15]. Observation method employed is observing the relevant documents to compare the numbers of foreign travelers in Kuala Lumpur, Singapore and Bangkok. The results of the observation will be used to evaluate the number of foreign travelers in Jakarta and will be used as secondary data. Meanwhile, the questionnaire is used to collect reference data which will be used to design the information system based on the user's requirement to optimize Jakarta's tourism promotion. The data from the questionnaire will be the primary data of this research.

To obtain the primary data, there are some questions to ask. The first question is 'what', in recognizing what kinds of information do travelers need when preparing a vacation and what kinds of tools do they use to get the information. The second question is 'how', in identifying how people access the information they need. With these requirements, hopefully, there will be a good match between the promotion and what the people needs to prepare a vacation.

After collecting the data, the first step is to define the functional requirements to build the system and then analyze those requirements to design the system according to user's needs and the promotion optimization. System design is built to visualize those functional requirements. There will be an evaluation to check the compatibility of the system design and the users' requirements based on the collected data. The procedure of the research will be described in the following Figure 1.

### 2.1 Research Methodology

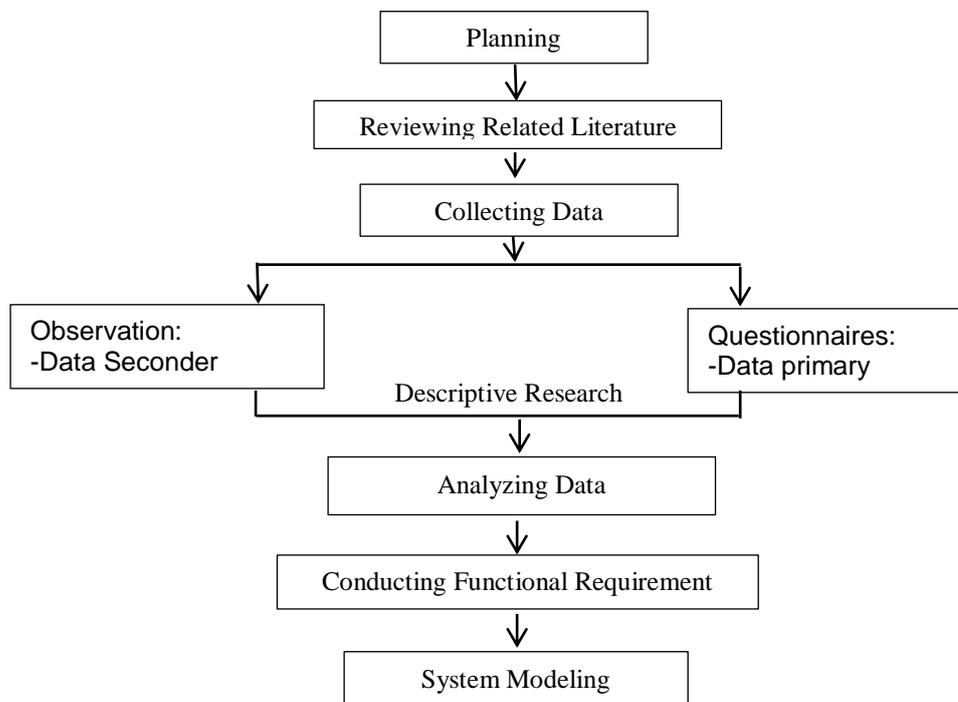


Figure 1. Research Methodology

2.2 Observation Study

The Central Bureau of Statistics (BPS) of DKI Jakarta has released a report about the number of foreign travelers in Jakarta in yearly basis, especially in 2014, 2015 and 2016 [1] [2]. From the reports, in February 2016, there were 171,533 foreign travelers entering Jakarta through Soekarno-Hatta airport, Halim Perdana Kusuma airport and Tanjung Priok port. This statistic shows 7.96% improvement compared to January 2016 which recorded 158.888 entries. On the other hand, if it is compared to the previous year, February 2015, the statistic showed 3.7% decrease which was 178.100 entries. The top ten foreign travelers in Jakarta on February 2016 were as follows: China (23,249 entries), Malaysia (22,161 entries), Japan (14,863 entries), Singapore (13,587 entries), Saudi Arabia (8,451 entries), South Korea (8,377 entries), US (6,066 entries), Taiwan (6,012 entries), India (5,689 entries) and Netherlands (4,592 entries) [2][3]. The recapitulation of foreign travelers in Jakarta during January 2014 until June 2017 are presented on Figure 2 and Figure 3 [2][3].

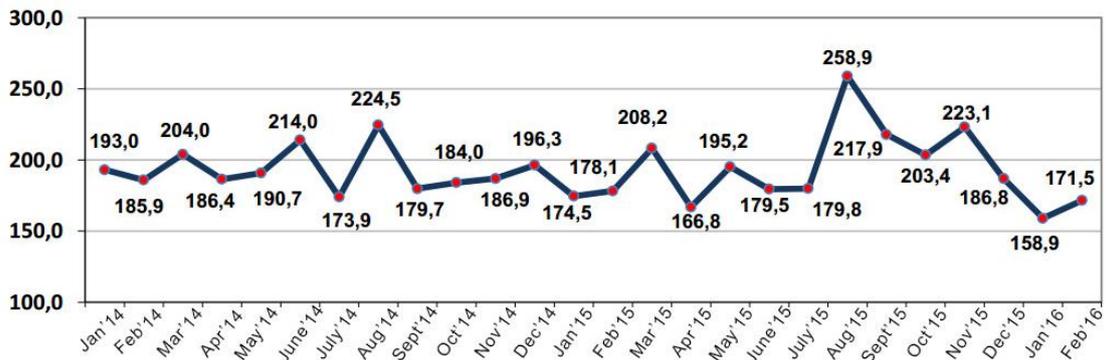


Figure 2. Number of Foreign Visitors to DKI Jakarta during January 2014 to February 2016 (source: jakarta.bps.go.id)

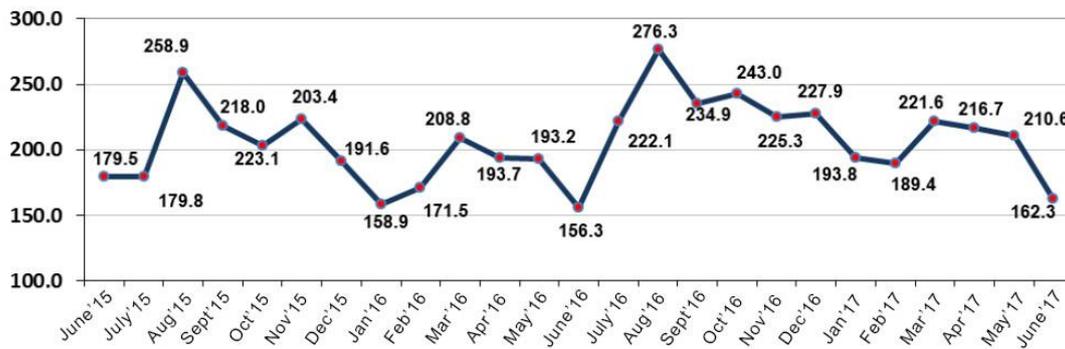


Figure 3. Number of Foreign Visitors to DKI Jakarta during June 2015 to June 2017 (source: jakarta.bps.go.id)

The graphics show that there is an improvement on the number of foreign travelers from 2014 until 2017. This study uses the data from 2014 until 2016, the last three years. These data show that there is a fluctuating trend in every month although generally it can be concluded that there is an improvement in yearly basis. In 2014, the number of foreign travelers visiting Jakarta was 2,319,300. Meanwhile, in 2015 there were 2,372,200 travelers, increasing by 52,900 travelers. In 2016, the number of visiting travellers increased accounted by 139.700 travelers. The number of foreign travelers was 2,511,900 [2][3].

From these data taken from Badan Pusat Statistik Jakarta, it can be said that there is a good enough development about the increasing of foreign travelers travelling to Jakarta because the number has been increasing each year. Even though there's an improvement, but the numbers were still below the number of travelers travelling to Kuala Lumpur, Singapore or Bangkok [4][5][6]. The number of foreign traveler's complete report from 2014 until 2016 can be seen in Table 1 and Figure 4.

The next step is to compare the data from Central Bureau of Statistics Jakarta with the data from Master Card Global Destination Cities Index, to know the difference of the number of foreign travelers visiting Jakarta compared to other ASEAN cities especially Kuala Lumpur, Singapore and Bangkok.

Table 1. Report of Foreign Visitors Visiting DKI Jakarta from 2014 to 2016 According to [www.jakarta.bps.go.id](http://www.jakarta.bps.go.id)

	2014	2015	2016
January	193,000	174,500	158,900
February	185,900	178,100	171,500
March	204,000	208,200	208,800
April	186,400	166,800	193,700
May	190,700	195,200	193,200
June	214,000	179,500	156,300
July	173,900	179,800	222,100
August	224,500	258,900	276,300
September	179,700	217,900	234,900
October	184,000	203,400	243,000
November	186,900	223,100	225,300
December	196,300	186,800	227,900
Total Visitors	2,319,300	2,372,200	2,511,900

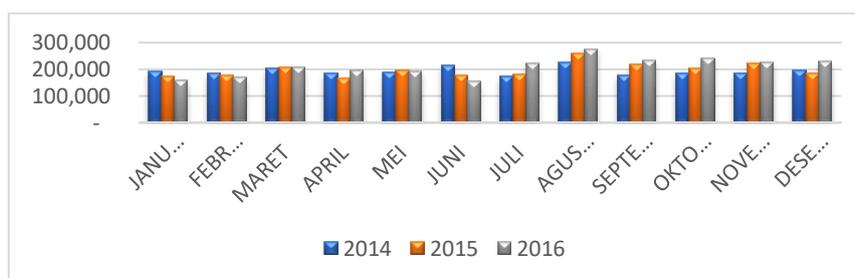


Figure 4. Graphical Report of Foreign Visitor Number Visiting DKI Jakarta from 2014 to 2016

### 2.2.1 The Number of Visitors Visiting DKI Jakarta Compared with Bangkok, Kuala Lumpur, and Singapore

The fact that Kuala Lumpur, Singapore and Bangkok have higher number of visitor compared to Jakarta indicated that Jakarta needs an innovation in tourism so that this city could compete with other cities from neighboring countries. According to the data from Master Card Global Destination Cities Index which is released every year, Jakarta has never entered the top 20 cities to be visited as a representative of Indonesia [4][5][6]. Although in 2016, Bali was ranked 8<sup>th</sup> in the most favorite destination for vacation in Asia Pacific with total of 7.8 million foreign tourists, under Phuket and Hongkong [6].

Bangkok, Singapore and Kuala Lumpur were the top 3 favorite destinations in Asia Pacific and of course in ASEAN. This means that Jakarta needs to try harder and find innovation to attract tourists. The number of foreign travelers travelling to Jakarta, Kuala Lumpur, Singapore and Bangkok was presented in Table 2 and Table 3, according to Master Card Global Destination Cities Index from 2014 until 2016 [4][5][6].

Table 2. Comparison of Visitor Number between Jakarta, Bangkok, Singapore, and Kuala Lumpur

City Name	2014	2015	2016
Jakarta	2,319,300	2,372,200	2,511,900
Bangkok	16,420,000	18,240,000	21,470,000
Kuala Lumpur	10,810,000	11,120,000	12,020,000
Singapore	12,470,000	11,880,000	12,110,000

Data sources: BPS DKI Jakarta and Master Card Global Destination Cities Index

Table 3. Comparison of Visitor Number between Jakarta vs. Bangkok, Jakarta vs. Kuala Lumpur, and Jakarta vs. Singapore

Year	JKT VS. BKK(%)	JKT VS. KL(%)	JKT VS. SING(%)
2014	14.12	21.46	18.60
2015	13.01	21.33	19.97
2016	11.70	20.90	20.74

Data Sources: BPS DKI Jakarta and Master Card Global Destination Cities Index

The tables show that in 2014, the number of visitors travelling to Jakarta was only 14.12% out of the total visitors travelling to Bangkok, 21.46% out of the total visitors travelling to Kuala Lumpur and 18.6% out of visitors travelling to Singapore. The same case happened in 2015 and 2016, in which Jakarta's total visitors were only 13.01% in 2015 and 11.7% in 2016 from Bangkok's total visitors. Compared to that of Kuala Lumpur, it was 21.33% in 2015 and 20.9% in 2016. Meanwhile, when compared to Singapore, it was 19.97% in 2015 and 20.74% in 2016 [2][3][4][5][6].

### 2.3 Questionnaire Distribution

There are two types of visitors are identified according to the motivation of their tourism activities [16]. The first group is a specialist – who is seeking the location of their relatives or friends to get the best tourism plan by getting some helps to accommodate their journey, for example getting best information related to the tourism destination to be visited. The second group is serendipity – who plans tourism activities by following the predefined itinerary. These types of visitors view that shopping and hunting some items or merchandises become one of their focuses in their tourism activities. There are some more motivations for the visitors in doing their tourism activities that need to be considered.

The distribution of the questionnaires was conducted by directly visiting some tourism spots in Jakarta and handled them in to 30 random visitors. The questionnaire purposed to know what information need to be found to support their travelling preparation. The types of information that were gathered are as follows:

1. Before visiting a tourism spot, what kinds of information do the people need to find?
2. How to get the information about the tourism spot?
3. Which media they use in obtaining the information?
4. Is there a need to get information about the locations of the spot through maps or guide signs?

In total, there were 30 questionnaires distributed to some tourists visiting several destinations such as Taman Mini Indonesia Indah (TMII), Tugu Monumen Nasional (Monas), and FTUMJ (Faculty of Engineering University of Muhammadiyah Jakarta) campus. The questions are related to the information before going to vacation and how people make use of GIS based application before preparing for a vacation.

The questionnaires were handled at May 27<sup>th</sup> 2017 in TMII, June 24<sup>th</sup> 2017 in Monas (National Monument) and July 30<sup>th</sup> 2017 in FTUMJ. The results are presented in Figure 5.

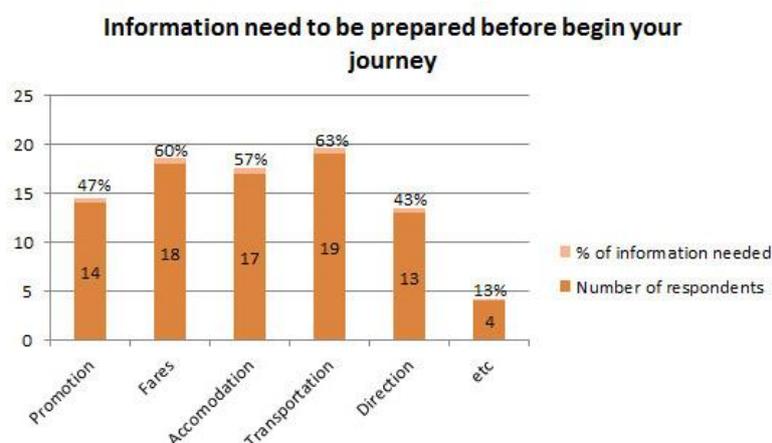


Figure 5. Required Information Before Embarking the Travelling Activities

The responses were based on the experience and the needed requirement of the respondent, which are as follows:

1. Promotion : 47%
2. Cost/Ticket : 60%
3. Accommodation : 57%
4. Transportation : 63%
5. Direction & Distance: 47%
6. Others : 13% (about cleanliness, comfortability and the type of tourism attractions).

### Information Accessing Line

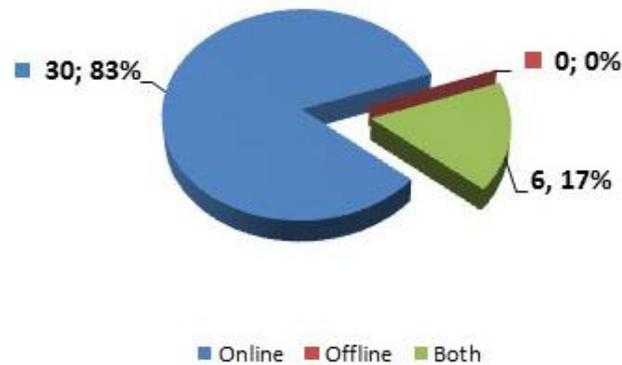


Figure 6. Current Access to the Information Commonly Used by Visitors in Preparing Their Travelling Activities

From Figure 6, it can be concluded that 83% of the tourists or travelers searches their journey information via online, 17% searches it online and offline and 0% searches their information solely offline.

### Media is commonly used to find tourism related information

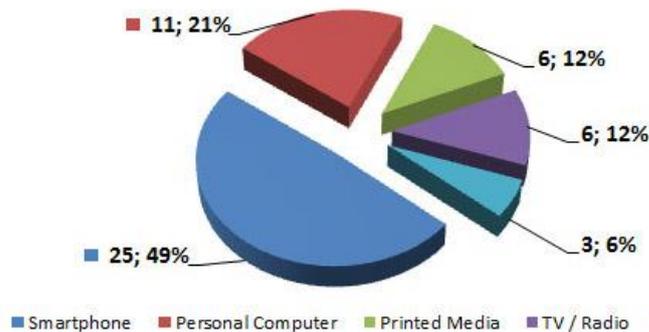


Figure 7. Media Used to Search the Tourism Related Information

Figure 7 shows a chart of which media the tourist uses frequently to get the information. 30 respondents have been evaluated:

1. Smartphone : 49%
2. Personal Computer : 21%
3. Printed Media : 12%
4. TV / Radio : 12%
5. Others : 6% of the respondent are still using conventional methods such as getting information from friends or relatives or colleagues.

**Necessarily used of maps in travelling preparation**

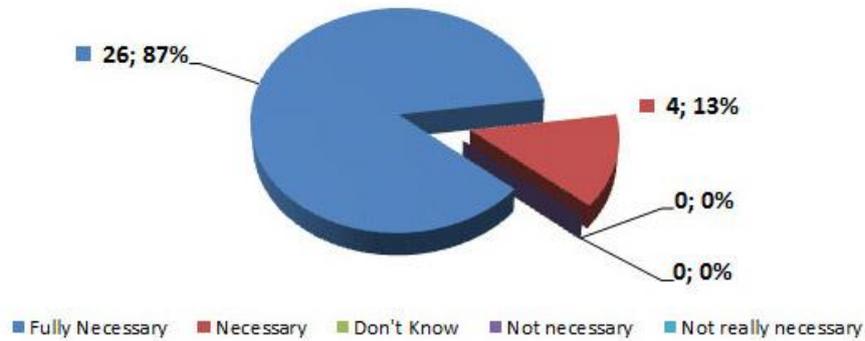


Figure 8. The importance of Using Maps in Supporting Visitor Travelling Activities

Figure 8 shows that 87% of the respondents thinks that a map is necessary for them to support their vacation activities.

**3. Design Functional Requirements**

Based on the requirement analysis, this research defines the needed functional requirements to optimize the promotion of tourism objects. These functional requirements are user oriented. The functional requirements sorted by priority are as follows:

1. Users get the information about transportation
2. Users get the information about fare or tickets
3. Users get the information about accommodation
4. Users get the information about direction and distance
5. Users get the information about the promotional events of various tourism destinations

After identifying the requirements, the following step is designing the functional requirements using case diagram as shown in Figure 9.

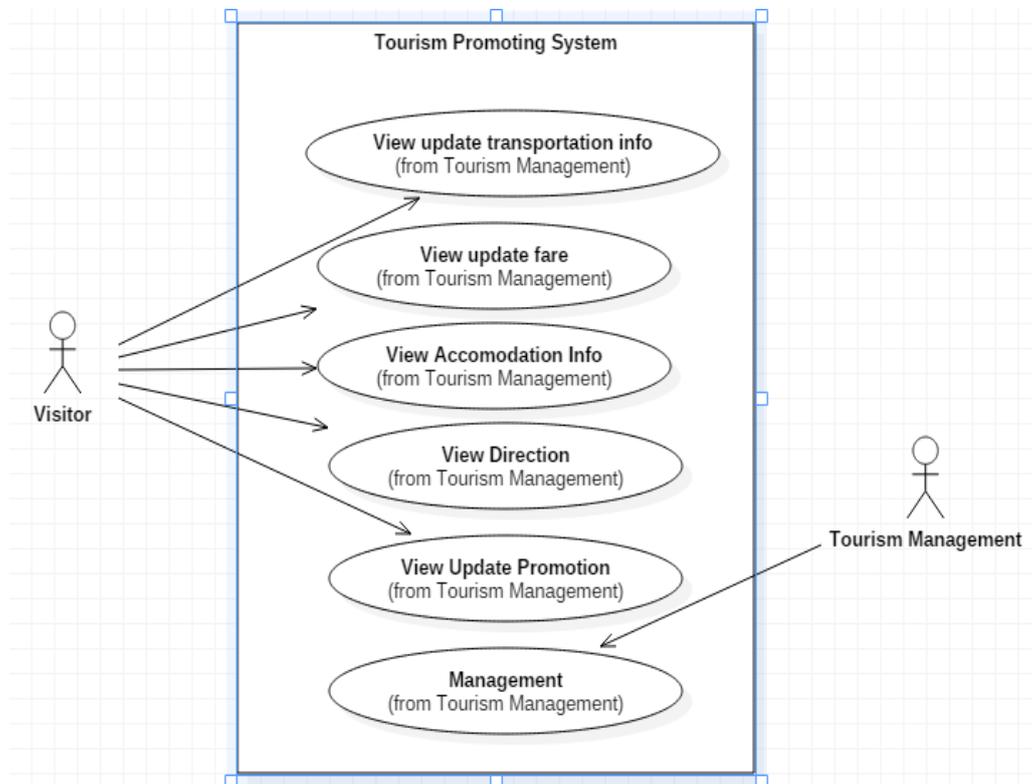


Figure 9. Functional Requirement of Tourism System to Optimize the Tourism Promotion

#### 4. Conclusion

This research obtains the data through document observation and questionnaire distribution. From the document observation, it can be said that Jakarta has never entered the top 20 destinations in Asia and far below other three cities in neighboring countries such as Bangkok, Kuala Lumpur and Singapore. Meanwhile, this research found that to prepare for a vacation, tourists or travelers need to know about the transportation, cost, accommodation, distance, direction and the ongoing promotion. According to the travelers' responses, it is found that 63% of travelers needs clear transportation information, 83% needs online access to the information, 70% of travelers has used smartphones and personal computers, and 87% of travelers need assistance related to direction or map to direct them to the addressed tourism destinations in DKI Jakarta. The user requirements need to be used as reference to build an information system to optimize the promotion of tourism destinations in Jakarta.

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