

APPLICATION DEVELOPMENT OF RECOMMENDATION AND ACCOMMODATION TOURISM OBJECT IN SUKABUMI CITY BASED ON ANDROID

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ABSTRACT

The city and regency of sukabumi have many tourist attractions, with the diversity of tourist attractions makes it difficult for tourists to choose tourist objects that fit the criteria of tourists.. The purpose of this research is to provide information on tourist recommendations and accommodations in the Android-based Sukabumi City. From the recommendations of this tourist attraction will provide information on the recommendations of the most popular attractions, while for public transport routes will provide information on public transport routes to tourists in accordance with the starting point of tourists to the tourist attraction. In this study using the electre method, where the electre method is one of the multicriteria decision making methods based on the concept of outranking using pairwise comparisons of alternatives based on each appropriate criterion. The results of this study provide convenience to tourists who come to Sukabumi to find information on tourist attractions and public transport routes. The drawback of this research is that there are still shortcomings in the making of programs, namely the feature of public transport routes cannot yet show the route if the tourist attraction is not passed by public transportation. Based on the results of black box testing and beta testing that has been done it can be concluded that this application has passed the test of functionality and is able to help tourists in getting recommendations and accommodation information on tourist attractions in the city of Sukabumi.

Keywords: attractions, public transportation, public transport route, recommendations ELECTRE

1. PRELIMINARY

Based on data from the Department of Tourism and Culture of Sukabumi has 21 attractions while Sukabumi has 50 attractions. Attraction is a place to help people refresh their minds of their daily activities. Attractions in Sukabumi is accessible by public transport, namely city transport. Based on data from the Department of Transportation in Sukabumi city transport there are 20 routes, and from some of

the existing city transport directly to where some are not travel straight to the tourist attractions. Sukabumi city has 29 hotels consisting of 1 4 star hotels, 3 star hotel 6, 9 jasmine jasmine 3 and 13 2 which can be used to stay by the tourists.

The questionnaire was conducted on 21 November 2018 against 60 respondents coming from inside and outside the city of Sukabumi, shows some of the problems faced by the respondents. Of the 60 respondents are 60% as many as 36 respondents who had difficulty getting information about attractions, and they do not know in detail the sights in the City and Sukabumi new they visit even they do not know the attraction of the most popular in the city and Sukabumi district.

Respondents who do travel by public transport as much as 60% as many as 36 respondents had difficulty in accessing the attraction if they have to use public transport. City transport in the city of Sukabumi nothing directly to tourist attractions, no one should walk before to the tourist attractions, there is also a traveler requires public transportation transit from one to the other public transportation.

Existing research is about the making of the application there are several different attractions and drawbacks. This deficiency makes the difference and researchers decided to add some of the criteria in the calculation of the most popular tourist attractions and add features in the applications to be built that features accommodation, city transport features, and features where souvenirs. Researchers also integrate applications to be built with the API tiket.com. Tiket.com are websites that provide hotel booking services, air tickets, train tickets, car rentals, concert tickets, attraction tickets, tickets for entertainment and event tickets based in Jakarta. Attraction applications to be built integrated with Tiket.com to facilitate the tourists looking for accommodation prices for hotels in Sukabumi.

Researchers create an information service that can be accessed through a variety of mobile devices with Internet services in it that can help local tourists from outside the region of Sukabumi in facilitating and accelerating the search for information about the attractions and accommodation in the city of Sukabumi.

Application development goals and accommodation recommendations attractions in the city of Sukabumi is as follows:

1. Help tourists get information and recommendation of the most popular attractions in the city of Sukabumi.
2. Helps tourists get information about routes and public transportation in the city of Sukabumi.

2. RESEARCH

2.1 Theoretical basis

The theoretical basis of this research will discuss the theories relating to the application and accommodation recommendations attractions in Sukabumi.

2.2.1 ELECTRE

Elimination method Et Choix Tradnissant la Reality adalah kepanjangan dari ELECTRE methods. ELECTRE method is one method outranking concept using pairwise comparison of alternatives based on any appropriate criteria. ELECTRE method can be used when a condition where the alternative is less in accordance with the criteria eliminated and suitable alternative can be generated. In other words, ELECTRE can be used for cases with a lot of alternatives, but only a few criteria involved.

Steps undertaken to solve the problem using ELECTRE method is as follows:

1. Normalizing the decision matrix

In this procedure, each attribute is converted into value comparable. Each normalization of the values x_{ij} can be done with the equation 2.1:

$$rij = \frac{x_{ij}}{\sqrt{\sum_{i=1}^m x_{ij}^2}} \text{ for } i = 1, 2, 3, \dots, m \text{ and } j = 1, 2, 3,$$

..., n

Thus obtained R result of normalization,

$$R = \begin{matrix} & r_{11} & r_{12} & \dots & r_{1n} \\ r_{21} & r_{21} & r_{22} & \dots & r_{2n} \\ \vdots & \vdots & \vdots & \ddots & \vdots \\ r_{m1} & r_{m1} & r_{m2} & \dots & r_{mN} \end{matrix}$$

R is the matrix normalized or so-called normalized decision matrix. Where m stated alternatives, n stated criteria and rij is the normalized measurement of the alternative choice to-i in conjunction with the criteria to-j.

2. Weighted normalized matrix.

Once normalized, each column of the matrix R multiplied by the weights (w_j) determined by the decision maker.

Thus, the normalized weighted matrix is $V = RW$ are written as equation 2.2

$$V = RW$$

Determining the set of concordance and discordance index

For each pair of alternatives k and l ($k, l = 1, 2, 3, \dots, m$ and $k \neq l$) A set of criteria is divided into two subsets, namely concordance and discordance. When a criteria in one alternative includes concordance is the equation 2.3:

$$CKL = \{j, V_{kj} \geq V_{lj}\}, \text{ for } j = 1, 2, 3, \dots, n$$

Instead, complementary subsets of concordance is set discordance, which is when the equation 2.4:

$$DKL = \{j, V_{kj} < V_{lj}\}, \text{ for } j = 1, 2, 3, \dots, n$$

3. Matrix arithmetic concordance and discordance

- a. Calculating the matrix concordance

To determine the value of the elements in concordance matrix is by adding weights are included in the set of concordance, it is a mathematical equation 2.5:

$$CKL = \sum_{j \in CKL} W_j$$

- b. Calculating the matrix discordance

To determine the value of the elements in the matrix discordance is the maximum share difference criteria included into subsets discordance with a maximum difference of the value of all the criteria, it is a mathematical equation 2.6:

$$DKL = \frac{\{\max(V_{kj} - V_{lj})\}; j \in DKL}{\{\max(V_{kj} - V_{lj})\}; V_j}$$

- c. Determine the dominant matrix of concordance and discordance.

- d. Concordance determine the dominant matrix.

The matrix F as dominant concordance matrix can be constructed with the aid of a threshold value, ie by comparing each value of the matrix element concordance with the threshold value.

$$CKL \geq c$$

With a threshold value (c) is the equation 2.7:

$$c = \frac{\sum_{k=1}^m \sum_{l=1}^m CKL}{m(m-1)}$$

So that the matrix elements F is determined as follows:

$$f_{kl} = 1, \text{ if } CKL = c \text{ and } f_{kl} = 0, \text{ if } CKL < c$$

- e. Calculating the dominant matrix discordance

The matrix G as the dominant matrix discordance can be built with the help of the threshold by using equation 2.8:

$$d = \frac{\sum_{k=1}^m \sum_{l=1}^m DKL}{m(m-1)}$$

And elements of the matrix G is determined as follows:

$$g_{kl} = 1, \text{ if } CKL = c \text{ and } g_{kl} = 0, \text{ if } CKL < c$$

- f. Determining aggregate matrix dominance.

The matrix E as aggregate dominance matrix is a matrix which each element is the product of the elements of the matrix F with the corresponding elements of the matrix G, in a way mathematically can be expressed by equation 2.9:

$$EKL = FKL * GKL$$

4. Elimination of the less favorable alternative.

The matrix E gives the order of selection of each alternative, ie when $EKL A_k = 1$ then the alternative is a better alternative than A_1 . Thus, rows in a matrix E which has a number of at least $EKL = 1$ can be eliminated. Thus, the best alternative is an alternative that dominates other alternatives. [4].

2.2.2 Mobile technology

A mobile communication technology, the technology has not put on the connecting cable (wireless) in the use of technology. Mobile communication technology called wireless network signal that the wearer wears liaison. Mobile technology is the development of wireless communication technology, which grew rapidly in its development. [5]

2.2.3 Android

Android is an operating system for Linux-based mobile devices that includes an operating system, middleware and applications. Android is a provider of an open platform for developers to create their applications. At its beginning, Google Inc. bought Android Inc. who is a newcomer to create software for mobile phone / smartphone. Later that Android can thrive, then formed the Open Handset Alliance, a consortium of 34 companies hardware, software, and telecommunications, including Google, Nvidia, Motorola, Intel, HTC, Qualcomm, and T-Mobile. [6]

2.2.4 GPS

Global Positioning System, Is an extension of the GPS is a navigation system using satellite teknologi that can receive signals and satellites. GPS uses 24 satellites to transmit signals to the micro glombang earth. This signal is received by a receiver or commonly called as the receiver in the earth's surface, where the information from the GPS satellites will be collected by GPS receivers, such as:

a. Time

Information received by the GPS receiver such as time from an atomic clock that has a very high level of accuracy.

b. locations

GPS provides location information in three dimensions:

1. Latitude
2. Longitude
3. elevation
- c. Speed

When on the move, the GPS can show the movement speed information.

d. Travel directions

GPS can show the direction of the goal.

e. Save Location

Places that have been or will be visited can be stored by the GPS receiver.

f. Data Komulasi

GPS receivers can keep track of information, such as the total of all trips that have been done, average speed, highest speed, lowest speed, time / hours to the destination, and other sebagainya. [8]

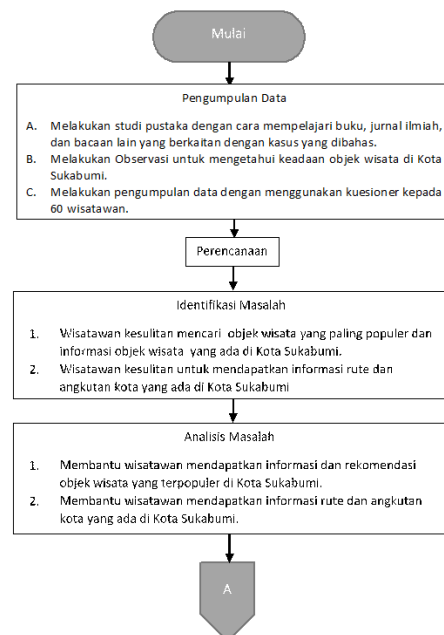
2.2.5 Google Maps

Google Maps is an online forum or open a map with online, it can be done easily via the free service from Google. In fact, this service provides an API (Application Programming Interface) which memungkinkan other developers to take advantage of this application in his application. Google Maps can be selected according to the needs of users, based on the original photo or image maps the route alone.

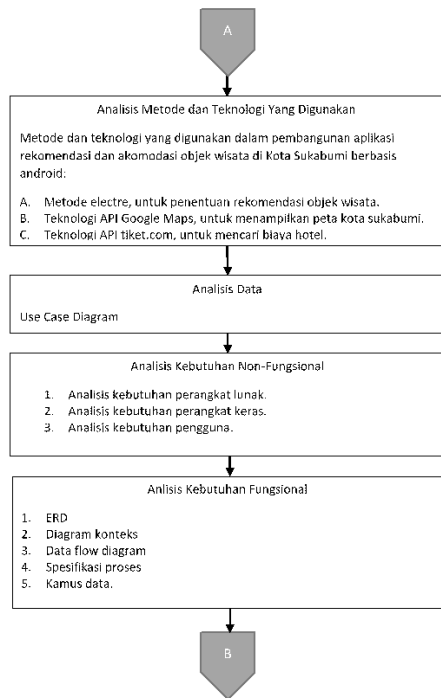
Google Maps is a free mapping service provided by Google and is very popular. Google Maps is a map of the world that we can use to view the map or the location of an area. Can be called that, Google Maps is an online map which can be viewed by us with how to use the browser and the Internet. We can add a Google Maps feature in the website or blog that we have made whether paid or free even with the help of Google Maps API. Google Maps API is a JavaScript library that air forms.

2.2 Research methods

The research methodology used in this research is descriptive research method combined with a quantitative approach. Descriptive research method is a method that aims to provide a systematic description of the object of study.



Picture 1 Research Methodology Flowchart



Picture 2 Research Methodology Flowchart

2.3 Results and Discussion

2.3.1 Problem analysis

Analysis of obtained based on background problems that have been described. Analysis of problems in this study were from outside the area wistawan Sukabumi difficult to find detailed information about attractions Sukabumi. The tourists also do not know a popular tourist attraction. In addition to some tourists did not know the route and public transportation in the city of Sukabumi. Based on the existing problems, the purpose of the final project that has been made is to build applications in Sukabumi town travel map to determine Attraction recommendations and provide information about the city transport service in the city of Sukabumi.

2.3.2 Analysis Recommendations Top Attractions

In the determination of the most popular tourist attractions this recommendation using the calculation method of ELECTRE. ELECTRE methods of calculation which will be built on this research data is needed criteria for the search feature on the most popular tourist attractions can be constructed appropriately. The criteria used in the attraction of Sukabumi namely: []

criteria SPK

1. Cost
2. Distance
3. Time
4. Natural beauty
5. Security

ELECTRE method considers all the criteria of an advantage, therefore, in this case, then all the criteria considered criteria for benefit provided that: [4]

1. Cost

1 = Cheap, 2 = Quite cheap, 3 = Average, 4 = Expensive, 5 = Very Expensive

2. Distance
1 = Close, 2 = Quite nearby, 3 = Average, 4 = Remote, 5 = Very Much
3. Time
1 = Fast, 2 = Fast Enough, 3 = Average, 4 = Lama, 5 = Very Old
4. Natural beauty
1 = Very Good, 2 = Good, 3 = Average, 4 = Pretty Good, 5 = Poor.
5. Security
1 = Very Safe, 2 = Safe, 3 = Average, 4 = Quite Safe, 5 = Not Safe.

Alternative and weight value is taken from the average rating given by tourists to attractions in the city of Sukabumi, alternative tables and weighting values can be seen in Table 1.

Table 1 Alternative Criteria and Weights

alternati ve / Tourist attractio n	Criteria				
	Co st	Distan ce	Tim e	Natur al beaut y	Securi ty
Kipahar e museum	1	3	3	5	1
Museum pawnsho p	1	3	3	5	1
Renggan is	3	2	2	3	2
Tirta Nirwana	3	3	3	3	2
Nismara	2	3	3	3	2
Cibiru	3	4	4	4	1
Taman Sari	3	3	3	4	2
Sport Garden	3	3	3	3	2
Ovis waterbo om	4	4	4	2	1
Bamyu Lestari	3	3	3	3	2

Once the table is an alternative and weight value is obtained, then converted into a decision matrix, decision matrix can be seen in the matrix below.

1	3	3	5	1
1	3	3	5	1
3	2	2	3	2
3	3	3	3	2
2	3	3	3	2

3	4	4	4	1
3	3	3	4	2
3	3	3	3	2
4	4	4	2	1
3	3	3	3	2

After that perform appropriate alternative income and weighting. W weighting value is as follows: []

$W = (5, 4, 3, 2, 1)$

The terms of the weight value W is 5 = very important, 4 = important, 3 = Quite important, 2 = less important, 1 = not important.

1. Normalizing the decision matrix

The matrix R obtained by using equation 2.1.

$$X_1 = \sqrt{1^2 + 1^2 + 3^2 + 3^2 + 2^2 + \dots + 4^2 + 3^2} = 20.3715$$

$$r_{11} = \frac{X_{11}}{|X_1|} = \frac{1}{20.3715} = 0.0491$$

$$r_{21} = \frac{X_{21}}{|X_1|} = \frac{1}{20.3715} = 0.0491$$

$$r_{31} = \frac{X_{31}}{|X_1|} = \frac{3}{20.3715} = 0.1473$$

$$r_{41} = \frac{X_{41}}{|X_1|} = \frac{3}{20.3715} = 0.1473$$

$$r_{51} = \frac{X_{51}}{|X_1|} = \frac{2}{20.3715} = 0.0982$$

So forth last obtained normalized decision matrix called R. matrix matrix R can be seen in the matrix below.

0.0491	0.0994	0.0994	0.2506	0.0606
0.0491	0.0994	0.0994	0.2506	0.0606
0.1473	0.0663	0.0663	0.1504	0.1213
0.1473	0.0994	0.0994	0.1504	0.1213
0.0982	0.0994	0.0994	0.1504	0.1213
0.1473	0.1325	0.1325	0.2005	0.0606
0.1473	0.0994	0.0994	0.2005	0.1213
0.1473	0.0994	0.0994	0.1504	0.1213
0.1964	0.1325	0.1325	0.1003	0.0606
0.1473	0.0994	0.0994	0.1504	0.1213

2. Weighted normalized matrix

After the normalized decision matrix, perform calculations weighting matrix R by using equation 2.2.

$$V_{11} = (5) (0.0491) = W_1 \cdot r_{11} = 0.2454$$

$$V_{12} = (4) (0.0994) = W_2 \cdot r_{12} = 0.3976$$

$$V_{13} = (3) (0.0994) = W_3 \cdot r_{13} = 0.2982$$

$$V_{14} = (2) (0.2506) = W_4 \cdot r_{14} = 0.5013$$

$$V_{15} = (1) (0.0606) = W_5 \cdot r_{15} = 0.0606$$

$$V_{21} = (5) (0.0491) = W_1 \cdot r_{21} = 0.2454$$

$$V_{22} = (4) (0.0994) = W_2 \cdot r_{22} = 0.3976$$

$$V_{23} = (3) (0.0994) = W_3 \cdot r_{23} = 0.2982$$

$$V_{24} = (2) (0.2506) = W_4 \cdot r_{24} = 0.5013$$

$$V_{25} = (1) (0.0606) = W_5 \cdot r_{25} = 0.0606$$

On until the matrix V, the matrix V is estimated by multiplying the weight of the matrix R. The matrix V can be seen in the matrix below.

0.2454	0.3976	0.2982	0.5013	0.0606
0.2454	0.3976	0.2982	0.5013	0.0606
0.7363	0.2651	0.1988	0.3008	0.1213
0.7363	0.3976	0.2982	0.3008	0.1213
0.4909	0.3976	0.2982	0.3008	0.1213
0.7363	0.5301	0.3976	0.401	0.0606
0.7363	0.3976	0.2982	0.401	0.1213
0.7363	0.3976	0.2982	0.3008	0.1213
0.9818	0.5301	0.3976	0.2005	0.0606
0.7363	0.3976	0.2982	0.3008	0.1213

3. Determining the set of concordance and discordance

a. The set of Concordance Index:

The set of concordance index is obtained by comparing the value of the matrix V using equation 2.3.

C12 =	{	12345	}
C13 =	{	234	}
C14 =	{	234	}
C15 =	{	234	}
C16 =	{	45	}
C17 =	{	234	}
C18 =	{	234	}
C19 =	{	45	}
C110 =	{	234	}

=

And so on until the calculation is completed.

b. The set Disordance Index:

The set of discordance index is obtained by comparing the value of the matrix V using equation 2.4.

D13 =	{	15	}
D14 =	{	15	}
D15 =	{	15	}
D16 =	{	123	}
D17 =	{	15	}
D18 =	{	15	}
D19 =	{	123	}
D110 =	{	15	}

And so on until the calculation is completed.

4. Matrix arithmetic concordance and discordance

a. Calculating Matrix Concordance

The matrix C is a matrix of concordance. The matrix C is obtained from the set of concordance with the added weight which is included in the set of concordance using equation 2.5.

C12 =	W1 + W2 + W3 + W4 + W5	=	15
C13 =	W2 + W3 + W4	=	9

$$\begin{aligned}
C14 &= W2 + W3 + W4 &= 9 \\
C15 &= W2 + W3 + W4 &= 9 \\
C16 &= W4 + W5 &= 3 \\
C17 &= W2 + W3 + W4 + W5 &= 9 \\
C18 &= W2 + W3 + W4 &= 9 \\
C19 &= W4 + W5 &= 3 \\
C110 &= W2 + W3 + W4 &= 9
\end{aligned}$$

And so on until the calculation is completed until the matrix C obtained.

-	15	6	13	4	13	13	13
15	-	6	13	13	13	13	13
9	9	-	15	10	14	15	15
9	9	8	-	10	14	15	15
9	9	8	15	-	14	15	15
3	3	6	6	1	-	8	6
9	9	6	13	8	14	-	13
9	9	8	15	10	14	15	-
3	3	3	3	3	14	3	3
9	9	8	15	10	14	15	15

b. Calculating Matrix Discordance

Matrix D is the discordance matrix. The matrix D is obtained from the set of discordance and calculated according to the equation 2.6.

-	0	0:4	0:4	0:2	0:4	0:4	0:4
		9	9	5	9	9	9
0	-	0:4	0:4	0:2	0:4	0:4	0:4
		9	9	5	9	9	9
0:4	0:4		0:1	0:2	0:2	0:1	0:1
9	9	-	3	5	7	3	3
0:4	0:4	0:1		0:2	0:1	0:1	0
9	9	3		5	3	0.1	0
0:2	0:2	0:2	0:2		0:2	0:2	0:2
5	5	5	5	-	5	5	5
0:4	0:4	0:2	0:1	0:2		0:1	0:1
9	9	7	3	5	-	3	3
0:4	0:4	0:1	0:1	0:2	0:1		0:1
9	9	3	0.1	5	3	-	0.1
0:4	0:4	0:1	0	0:2	0:1	0.1	-
9	9	3	0	5	3	0.1	-
0.74	0.74	0:2	0:2	0:4	0:2	0:2	0:2
		7	5	9	5	5	5
0:4	0:4	0:1	0	0:2	0:1	0.1	0
9	9	3	0	5	3	0.1	0

Once the matrix C and matrix D is obtained, then determine the dominant matrix or matrix F concordance and discordance dominant matrix or matrix G. In this section, the concordance matrix is compared with the threshold value c, for it must be calculated first threshold value using the equation 2.7. The threshold value is obtained from the sum of all values divided by the number of rows concordance matrix is multiplied by the number of matrix rows minus 1.

$$c = 31658 / (57 (57-1)) = 9,918$$

Having in mind the threshold value is then compared with the value of concordance matrix. If $C12 \geq c$, then the matrix M are given numbers 1, otherwise given the number 0.

-	1	0	1	0	1	1	1	1
1	-	0	1	1	1	1	1	1
0	0	-	1	1	1	1	1	1
0	0	0	-	1	1	1	1	1
0	0	0	1	-	1	1	1	1
0	0	0	0	0	-	0	0	1
0	0	0	1	0	1	-	1	1
0	0	0	1	1	1	1	-	1
0	0	0	0	0	1	0	0	-
0	0	0	1	1	1	1	1	-

Just like in the concordance dominant matrix, the matrix required discordance threshold value as a comparison using equation 2.8. The threshold value is obtained from the sum of all values divided by the number of discordance matrix matrix line matrix multiplied by the number of rows minus 1.

$$d = 1070.869 / (57 (57-1)) = 0.33548$$

having known the threshold value is then compared with the value of discordance matrix. If $D12 \geq d$, then the matrix G is given the number 1, on the contrary is given the number 0.

-	0	1	1	0	1	1	1	1
0	-	1	1	0	1	1	1	1
1	1	-	0	0	0	0	0	0
1	1	0	-	0	0	0	0	0
0	0	0	0	-	0	0	0	1
1	1	0	0	0	-	0	0	0
1	1	0	0	0	0	-	0	0
1	1	0	0	1	0	0	0	-
1	1	0	0	0	0	0	0	-

The next step is the aggregate dominance matrix by multiplying matrix M with a matrix G according to the equation 2.9. thus obtained matrix E.

-	0	0	1	0	1	1	1	1
0	-	0	1	0	1	1	1	1
0	0	-	0	0	0	0	0	0
0	0	0	-	0	0	0	0	0
0	0	0	0	-	0	0	0	1
0	0	0	0	0	-	0	0	0
0	0	0	0	0	0	-	0	0
0	0	0	0	0	0	0	-	0
0	0	0	0	0	0	0	0	-
0	0	0	0	0	0	0	0	-

5. The elimination of the less favorable alternative

The matrix E gives the order of selection of each alternative, ie when $E_{ij} = 1$, then the alternative A_{ij} is a better alternative than A_j . Line in the matrix E which has a number of at least $E_{ij} = 1$ can be eliminated.

In conclusion, judging from matiks E then have two rows with the number 1 most, namely Line E1 and E2. Based on the ELECTRE matrix E of the method can be concluded that the alternative E1 and

E2 or in this case E1 and E2 are Kipahare Museum is a museum Pawn preferred over other attractions.

2.3.3 Analysis These Public Transport

In determining the city's transportation route determination using a calculation using input data that already exists in that the data public transport, road node coordinate data, coordinate data and attractions. This calculation will be built on this research data is needed input to public transportation route search feature can be constructed appropriately.

1. Enter Data Analysis

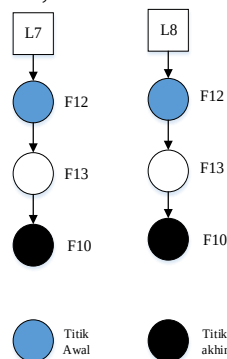
In determining the city's transportation route using data drawn from the Department of Transportation of Sukabumi and coordinate data taken from google maps. The data provided by the Department of Transportation in the town of Sukabumi is data transport in which there is a stretch code data, color, quantity, rate, urban transportation route trajectory.

2. process analysis

In the case study as an example of the direct route search, the researchers took a point by the position of the node (F12) Jl. Bhayangkara to the destination node (F10) Jl. AR Judge:

- Lookout Point Start Point (i) is the node (F12) Jl. bhayangkara
- And look for a point End Point (j) to the node (F10) as Jl. AR Hakim
- If the search point $i = j$ then there is no route planning services because they are in one location.
- If the trip i to $j = 1$ where the search condition to get an alternate path then continue the search.
- Looking Ln dititik Start Point which have $I = \text{Jl. Bhayangkara}$ and Ln dititik End Point which has $j = \text{Jl. AR Hakim}$
- Check all Ln obtained, if the point Start Point $F_n = 1$ is 1 and point End Point $F_n = j$ is 1 so he found the one transportation route directly.

To facilitate counting complexity without the transfer, the following are given examples of public transportation along these nodes track road path. can be seen in Figure 3, below.



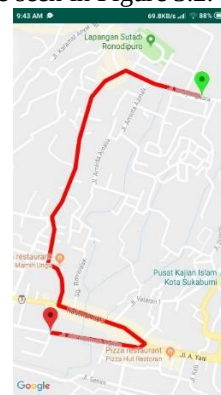
Picture 3 Biking City Transport Direct

Complexity obtained by the method of direct service solution which is obtained when determining public transportation or Ln passing through the point

i = Start point in Jl. Bhayangkara namely L7 and L8. Then search the point j = End Point of Jl. AR judge, in this case there are two alternatives of public transport that passes through the same point, then to get where public transport is the main alternative in which the main alternative is selected when These public transport has a few nodes are skipped until the end point and in this case L7 and L8 have in common is 3 then the main alternative is public transportation into Alternative L7 and L8.

3. Output Data Analysis

The data used is the data public transportation, the data latitude and longitude attractions, and tourist location coordinate data is located, can produce public transportation route specified by wistawan. Here's an example of the determination of the selected transport route destination city by tourist attractions can be seen in Figure 3.2.



Picture 4 Results Determination These City Transport

2.3.4 testing Systems

Tests are used to test the new system is a black box testing methods. Black box testing focused on testing the functional requirements of information systems. Testing will be done is to test the system constructed black box and beta. Testing application development and accommodation recommendations attractions in Sukabumi is based on android using test data based on some of the data that has been given.

Based on the results of testing with test cases that have been done to the conclusion that the process has not been as expected. Filtering process error message that appears in the form of not quite optimal. Functional system can not be considered to meet the expected demand.

Based on the beta testing has been carried out with the tourists it can be concluded that a system built to help travelers in search of information about the recommendation but did not provide information about attractions accommodation in the city and Sukabumi.

3. Cover

3.1 Conclusion

Based on the description discussion of analysis and testing that has been done, it can be drawn a conclusion on the application and accommodation

recommendations attractions in Sukabumi is as follows:

1. Determination on the most popular tourist attractions using ELECTRE method is quite helpful tourist attractions in determining the traveler will visit in accordance with the criteria that they want.
2. With the presence of these features on the system of public transport easier for tourists to get information about public transportation should they drive to get to the attractions they choose.
3. With the rating feature attraction on a rating system facilitate in providing an assessment of their own tourist attraction visit

3.2 Suggestion

Based on the results that have been achieved in building applications and accommodation recommendations attractions in the city of Sukabumi, things are expected in the future can be developed more widely, among others:

1. Attraction information about the data, public transport, where souvenirs, stations, terminals, the hotel can be developed into more specific and up to date, for example, provide information on the description of each data to allow tourists to be informed clearly that data.
2. Attraction display data information, public transport, where souvenirs, stations, terminals, can be made more attractive in order to appeal to a higher rating.

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