International Journal of Engineering Research & Technology (IJERT)
ISSN: 2278-0181
Vol. 6 Issue 02, February-2017

The Perception of the Society (Users), the Operator and the Government about the Existence of Pinang Baris Terminal of Medan in Terms of Effectiveness

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Abstract **- The purpose of this research is to gain a grounding votes Pinang Baris bus terminal that is effective and efficient in terms of both function and meeting facility space needs at the same time along with the technical requirements in terms of safety and comfort for the user terminal, the community, and terminal operation modes. Analyzes the factors that influence the effectiveness of Pinang Baris terminal functions as a terminal type A according to stakeholder assessment and treatment of existing conditions as a priority.**

Public transportation is a provider of passenger public transportation services that serve to be able to provide service convenience, comfort and security to the users of public transport services in travel. Therefore discuss a terminal is not in spite of the availability of public transport fleet and transport service users to conduct inter and intermodal transfer to different directions destinations. It is also that the terminal is a location for the gathering of various routes of public transport route. Thus the function of a terminal should actually provide a service of good transport providers to users of public transport services.

The method used in this research is the method of AHP (Analytical Hierarchy Process) with observation and interviews directly at the target study. Subjects were the stakeholders involved in the determination of the effectiveness of that terminal passenger (user), the government (regulator) and driver/ entrepreneur (operator). Observations and interviews were conducted at the terminal, the pool, the intersection near the terminal and the agent / office administration of the transport company and the number of subjects used were 72 people consisting of: 12 people representing the government, 30 of the passengers and 30 people on the drivers and public transport entrepreneurs, With interviews, data on criteria/factors that accommodates ineffectiveness use terminal. From the research that has been conducted at the terminal location can be concluded that the service is still not optimal due to the number of arrivals of public transport is not in accordance with the data obtained from the Department of Transportation and of the governing body of the freight terminal that must enter the terminal.

Based on the analysis, the results obtained authority weights for each component of the criteria that the passenger (user) 48.4%, the driver/ entrepreneur (operator) 30.4%, and the government (regulator) 21.2%. While local priority sub-criteria that need care priorities, namely environmental safety 23.65%, 22.36% level of service, accessibility of 22.20%, 21.84% of environmental comfort and terminal facilities 9.95%.

Keywords: Effectiveness Terminal, Terminal Priority, AHP.

I. INTRODUCTION

A. Background

According to Law No. 22 of 2009 on Traffic and Road Transportation, Terminal as road transportation infrastructure in its function as a place to pick up and drop off people or goods, a place to rest for the crew of the bus and the vehicle prior to re-start the journey, as well as organize the arrival and departure of public transport, which is a manifestation of the transport network nodes must be able to work optimally and efficiently, so as to support the mobility of people and traffic order. In addition, the terminal also serves as a means of supporting the increase in locally-generated revenue (LGR) from retribution sector. To fulfill this task, the Pinang Baris Terminal must be effective in order to meet the demand for the service as good as possible, where these services involve the views of the parties involved, namely the terminal manager in this case is the government (regulators) and the service users (operators and users).

The passenger terminal has the task to organize the comfort and safety of passengers traveling in order to facilitate the flow of goods and passengers. To fulfill this task, the passenger terminal should be able to meet the demands of the best service. This service is related to the views of the parties concerned, namely terminal manager (government) and the user of terminal services (passenger/user) and providers of transport services (operator).

Public transportation terminal of passengers is a provider of public transportation services which serve to be able to provide services with ease, comfort and safety to the users of public transportation services in travel. Therefore, discussion of a terminal is inseparable from the existence of the public transport fleet and transport service users to make the shift in intra-modal and inter-modal to various destinations. In addition, the terminal is also a gathering location for the routes of public transportation from the various arrivals. Thus, the function of a terminal must be to seriously give the provision of transport services that are good for users of public transport services.

Public transport as an urban system plays a role to support the mobilization of the urban community in performing their daily activities. These roles are highly strategic in the development and improvement of a city in the economic, social, cultural and educational sectors. Therefore, the existence of public transport should be handled properly. The highway public transport of course inseparable from the existence of public transport terminal.

International Journal of Engineering Research & Technology (IJERT)
ISSN: 2278-0181
Vol. 6 Issue 02, February-2017

Public transportation terminal is a road transport infrastructure which is a place for the provision of facilities for entry and exit for public transport, the transfer of passenger traffic from one mode to the other for ease and efficiency of movement.

"The current situation is the passenger and public transports are reluctant to enter into Pinang Baris Terminal", was the headline in one of the famous newspaper in Medan city, namely *Medan Bisnis*. The interest of the public to enter the Integrated Terminal of Pinang Baris (ITPB) to use public transport facilities has been very minimal. This is evident from the formation of mini terminal for a number of public transports at the junction of the Pinang Baris Street towards Kampung Lalang and Gator Subroto Street which is just near the traffic light.

Based on the results of field monitoring appears that public transport was stopped waiting for passengers to the right of the traffic light intersection and thereby aggravate congestion. Not only that, the buses towards Bahorok, Stabat and Aceh also stopped for a long time waiting for their passengers. "Any time, this road is always congested, especially during the morning and afternoon. Buses to the outside of the city also stopped at the intersection. Same is the case with public transportation to be towards the city of Medan, coupled with rickshaws," said Ramadan, a resident living near Pinang Baris Street of Medan to *Medan Bisnis* on Monday (24/3).

He said a lot of public transports and buses stopped for a long time in front of Mawar Bakery up to the intersection of Gatot Subroto Street of Medan. "Public transportation was stopped to wait for passengers in the right at the traffic light intersection in front of the police station. Other riders become often fooled by estimating that public transportation was stopped for a red light when it turns waiting for passengers", said people often pass on the road.

P. Purba, one of the drivers of public transportation towards Belawan, was told that he had to stop at that intersection because none of the passengers waiting for public transportation in the terminal. "We compete with other public transportation for passengers, because at this intersection we can get a little more passengers, while at the terminal no passengers at all", he says where he's been 5 years as drivers of public transportation.

As a driver of public transportation he admitted that together with the other drivers, they always go to Pinang Baris Terminal. But once inside, passengers do not exist and should be sought outside of the terminal. "People feel lazy to get into the terminal. So it is clear that outside of the terminal to be a place to get passengers," he said.

Head of Transportation Office of Medan, Renward Parapat, saying that government already regulate the public transport which is looking for passengers at an intersection because such actions cause congestion. "All the public transport indeed entrance to the terminal, but while outside the terminal they stopped again. That is a disease of the drivers of public transportation today. It has been put in order, but they were acting up again," he admitted.

In fact, Renward continue, not just public transportation or bus, rickshaws also busy to stop at that intersection for potential passengers. "There have been many rickshaws and public transportation was arrested by officers when policing is carried out, but in the days that followed they were back again. It looks like in Indonesia, public transportation is less disciplined everywhere", he asserted. For that reason, he explained, Medan City Government will accelerate the revitalization of the two integrated terminal Amplas and Pinang Baris with funds already budgeted in the Regional Budget of Income and Expenditure in 2014 in the amount of Rp 18 billion. With this revitalization is expected that passengers will automatically be willing to enter into the terminal to wait for public transport. Thus, the drivers of public transportation/bus will also return into the terminal to get the passengers and departs in accordance with the schedule that has been set up properly. "So 'wild terminal' is no longer exacerbates the urban planning of this third largest metropolitan in Indonesia. To curb this case is not only the duty of the government but the awareness of all parties", Renward concluded.

B. Formulation of the Problem

Based on the background described above, the functional effectiveness of the Pinang Baris Terminal as the terminal of type A can be reviewed on the factors that influence it namely in the form: Level of service, Accessibility, Terminal facilities, Comfort and Safety of the environment from the perspective of Public transportation users, Operators and the Government based on the existing conditions.

II. FRAMEWORK AND HYPOTHESIS

A. Framework

A.1. Stipulation of criteria for terminal effectiveness

Krishmono (1998) (in Renward, 2006) explains that the concept of the effectiveness of public services can be determined based on the purpose of the provision of facilities at the place of public services. Based on our review of effectiveness, the function of the terminal through the provision of facilities for public transport is based on:

1. The views of the various elements or components on the effectiveness of the terminal.
2. The criteria or factors that influence the effectiveness of the terminal, both internal and external of the terminal.
3. The proper method to establish the functional effectiveness of terminal as a benchmark of statements about the terminal's success in achieving its goals.

Assessment of the effectiveness of the provision of facilities in Pinang Baris Terminal as the passenger terminal is based on the function of the interests of service users (user and operator), and also the interests of the organizers (regulator). And this also refers to the criteria for the provision of the facilities in terms of the function of

International Journal of Engineering Research & Technology (IJERT)
ISSN: 2278-0181
Vol. 6 Issue 02, February-2017

the interests of users and the general concept of the terminal in the service of maximum. Thus concluded that the assessment of the functional effectiveness of the Pinang Baris Terminal can be reviewed, among other things, according to the following criteria:

1. Level of road service, the assessment criteria based on the existing physical conditions in and around the terminal with regard to geometry and the road surface on the stretch of road and intersection, and traffic flow conditions around the terminal.
2. Accessibility, criteria of assessment based on an ease of circulation of public transport to get in and out in the terminal and its surroundings, ease of circulation of safe and convenient for passengers to transit or transfer mode in accordance with the purpose of the trip at the terminal.
3. The facilities and management of the terminal, the assessment criteria are based on the availability and arrangement of the facility that is safe and convenient for pick up and drop off passengers according to the lane by destination of the bus, waiting sites, restaurants and shops, public telephones, prayer rooms, toilets, first aid, and so forth.
4. Environmental comfort, the assessment criteria based on the conditions in and around the terminal with respect to the comfort of the environment in terms of waste disposal of vehicles and passengers (used oil, garbage), noise and vibration, air quality that disturbing the surrounding environment (the smoke of vehicles, toilets and bathroom)
5. Environmental safety, the assessment criteria based on the environmental situation in the terminal that is safe from crime (pickpockets, muggings, murder, rape, etc.).

A.2. Analytical hierarchy process (AHP) method

According to Saaty (1983) analytical hierarchy process (AHP) was developed by Dr. Thomas L. Saaty of Warthon School of Business in 1970 for organizing information and judgment in selecting those alternatives most preferred. The issue of the decision of the AHP can be constructed as a multi-storey diagram that starts with a goal/target, then the first level criteria, sub-criteria, and so on down to the last level of those alternatives.

There are four axioms contained in the AHP model, namely:

1. *Reciprocal comparison*, decision-making should be able to load the comparison and declares preferences. These preferences must be eligible reciprocal i.e. if A is preferred over B with scale X, then B preferred over A with scale of 1/X.
2. *Homogeneity*, which means a person's preference, should be expressed in a limited scale or in other words, the elements can be compared with one another. If this axiom is not met, then the elements being compared are not homogeneous, the new cluster must be formed (group of elements).
3. *Independence*, perception is expressed by assuming that the criteria were not influenced by the existing alternatives but the overall object.
4. *Expectations*, for decision-making purposes. The structure of the hierarchy is assumed to be complete. If this assumption is not met then the decision is not using all the criteria or objective available will be required so that the decisions taken are considered incomplete.

A.3. AHP procedure

Basically the steps in the method of AHP include:

1. Defining the problem and determine the desired solution.
2. Creating a hierarchical structure that begins with a general purpose, followed by the selection of criteria and alternatives would want to be ranked.
3. Forming a pairwise comparison matrix that illustrates the relative contribution or influence of each element on each goal or criteria for the next level up. Comparisons are made by choice or judgment of the decision maker to assess the importance of an element compared with other elements.

origin Destination		C_1	C_2	….	C_n
	C_1	1	A_{12}	….	A_{1n}
A = (ai - j) =	C_2	1/a1-2	1	….	1/a1-n
	…….	…….	…….	….	…….
	C_n	1/a1-n	1/a2-n	….	1

4. Normalize the data by dividing the value of each element has a pair in the matrix with a total value of each column.
5. Calculating eigenvector of each pairwise comparison matrix. Value of eigenvector is the weight of each element. This step is to synthesize choice in the prioritization of the elements at the lowest level of the hierarchy until the goal is reached.
6. Repeat steps 3, 4 and 5 for all levels of the hierarchy.
7. Testing the consistency of the hierarchy. If this is not met with CR <0.100, then the assessment should be repeated.

A.4. Establishing priorities in AHP method

Determining the priority order of the elements is done by making paired comparisons by comparing all elements in the form of pairs for each sub-hierarchy. For example, there are n objects denoted by (A_1, A_2, A_3 ... A_n) which will be assessed based on the value of importance among others A_i, and A_j is presented in matrix Pairwise Comparison comparing every other element at every level of the hierarchy in pairs so that the value of importance of the elements are in qualitative opinion. Values and definition of qualitative opinion on a comparative scale of Saaty is as shown in Table 1.

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Table 1. Pairwise Comparison Matrix

	A_1	A_2	…….	A_n
A_1	A_{11}	A_{12}	…….	A_{1n}
A_2	A_{12}	A_{22}	…….	A_{2n}
…….	…….	…….	…….	…….
A_n	A_{n1}	A_{n2}	…….	A_{nn}

The value of A_{11} is the comparative value of the element A_1 (row) to A_1 (column) that states the relationship:

1. The extent to which the level of importance of A_1 (row) to the criterion C compared with A_1 (column) or
2. The extent to which the dominance of A_1 (row) to A_1 (column)
3. How much the nature of the criterion C is contained in A_1 (lines) compared to the A_1 (column).

A.5. Analytical model

Values of pairwise comparisons between A_i to A_j are represented in a square matrix:

$$Wi/Wj = [\ a\ (i, j)\ ],\ (i, j = 1, 2, ...,n.....(1)$$

Where, W_i = input weights in a row, and W_j = input weights in a column

After transferring the results of pairwise comparisons (Ai, Aj) into the element (i, j) in the matrix, the next problem is to determine the weight of A1, A2, ..., An become a value W1, W2, ..., Wn which reflecting the outcome of the judgment has been given. This condition can be solved in Table 2.

Table 2 Pairwise Comparison Matrix Intensity Interests

	W_1	W_2	….	W_n
W_1	W_1/W_1	W_1/W_2	….	W_1/W_n
W_2	W_2/W_1	W_2/W_2	….	W_2/W_n
….	….	….	….	….
….	….	….	….	….
W_n	W_n/W_1	W_n/W_2	….	W_n/W_n

Source : Saaty (1986)

Values Wi/Wj with i, j = 1,2, ..., n is explored by involving Respondents who have competence in the problem analyzed. Preference comparison matrix is processed by performing calculations in each row by using the formula:

$$Wi = \sqrt[n]{(ai1 \times ai2 \times ai3, \ldots \times ain)} .....(2)$$

Criteria weight or Eigen Vector is (Xi),

$$Xi = (Wi / \Sigma Wi) \ ….....(3)$$

With the largest value of the Eigen vector (λ max):

$$\lambda maks = \Sigma\ aij.Xj\ .....(4)$$

A.6. Testing the consistency of matrix

Deviation can occur due to inconsistent weighting so that the weight of a (i, j) deviates from the ideal weight. The magnitude of this deviation can be known from the magnitude of the deviation of the maximum Eigen value, which is obtained from the above equation of ideal Eigen value n, the deviation value is expressed by the Consistency Index (CI) as follows:

$$CI = \frac{\lambda\ maks - n}{n-1} ....(5)$$

Where, λ max = Value of Maximum Eigenvector, and n = size of the matrix

According to Saaty (1993), the result of a decision that can be accepted are those which have a comparison between CI and RI for a matrix in which the Consistency Ratio (CR) is defined smaller than or equal to 10%. Random matrix with a grading scale of 1 to 9 and its inverse as Random Index (RI) are as shown in Table 3 below.

Table 3. Random Index

Ordo Matriks	1	2	3	4	5	6	7	8	9	10
RI	0	0	0,58	0,90	1,12	1,24	1,32	1,41	1,45	1,49

Sourcer : Saaty (1986)

In AHP model, the comparison matrix can be received if value of consistency ratio not more than 10% or equal to 0.1.

$$CR = \frac{CI}{RI} \leq 0{,}1\ (OK) \qquad ……..……...(6)$$

B. Hypothesis

In this study the following hypothesis are tested:

1. The passengers as a component of the terminal system are very important to achieve the goals.
2. The government and the operator acts as the regulator of all activities in terminal.
3. The terminal facilities and management are the first priorities in handling implemented.

C. The Research Method

C.1. Type of the Study

This study aims to identify the criteria or factors that have an influence on the interests of each party and then arrange them in the form of a hierarchy of criteria for the functional effectiveness of the terminal. In addition, the identification is also carried out on the effect of the importance of the components of the terminal on the functional effectiveness of the Pinang Baris

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Terminal related to public transport services. Factors that influence on the functional effectiveness of Pinang Baris Terminal as a terminal type A is analyzed based on the assessment of the stakeholders and the existing conditions as a priority in the handling. Then the order of priority of the factors that affect the functional effectiveness of Pinang Baris Terminal of Medan is determined by the method of Analytical Hierarchy Process (AHP). Thus the type of research used in this study is descriptive-causal.

C.2. Method of collecting data

The collection of data is essentially done by obtaining primary data and secondary data that is both qualitative and quantitative.

Primary data includes:

1. The results of the review of the field on the existing conditions of Pinang Baris Terminal of Medan, the locations of pool, administrative offices of the public transport company, road conditions, traffic conditions, and intersections to the location of the terminal.
2. Results of raising opinions or information from the respondents, namely by unstructured (without questionnaire) and structured (with questionnaire) direct interviews to decision / policy makers in Government of Medan City, the users of public transport services and the providers of public transport services.

Secondary data includes:

1. Data on the number of routes of vehicles operating in Pinang Baris Terminal
2. Data on public transport operating in Pinang Baris Terminal
3. Data about the acts of criminality that occurred in the Pinang Baris Terminal
4. Picture of the layout of the Pinang Baris Terminal
5. The organizational structure at the Pinang Baris Terminal
6. Data on facilities belonging to Pinang Baris Terminal

C.3. The method of selecting respondents

Determination of the number of respondents in this study is done by using the approach of Pearman and Swanson (1990) and Renward (2006), which states that the minimum amount in a sample that can be used for the stated preference survey was 30, and recommended that the sample was taken in order 75-100 so that precise results are obtained. The regulator, operator and user objects that have been selected are:

1. From the Department of Transportation of Medan as many as 11 people
2. From the Regional Development Planning Agency of Medan 1 person.
3. Component operator, represented by the employer and the driver whose number 30 people, consisting of:
   a. Representing the big buses with route of inter-province inter-city as many as 10 people
   b. Representing the big buses ¾ with route of intra-province inter-city, urban transport as many as 15 people
   c. Representing operators in vehicle parts, counters, rates of vehicle into and out of terminal etc. as many as 5 people
4. The user component amounted to 30 people, consisting of public transport service users who were at the pool, the administrative offices of transport companies, and inside the terminal.

III. ANALYSIS AND DISCUSSION

Saaty (1993) stated that there is no definite procedure to identify the components of the system such as goals or activities that will be involved in a hierarchical system. For more details, division of the hierarchy of criteria development can be seen in the figure below.

A. Analysis of the Weighting of the Component Authority

In AHP, the authority weighting of each component was performed by analysis of quantitative data from interviews with government (regulator) using a questionnaire and then the data is analyzed by the following steps:

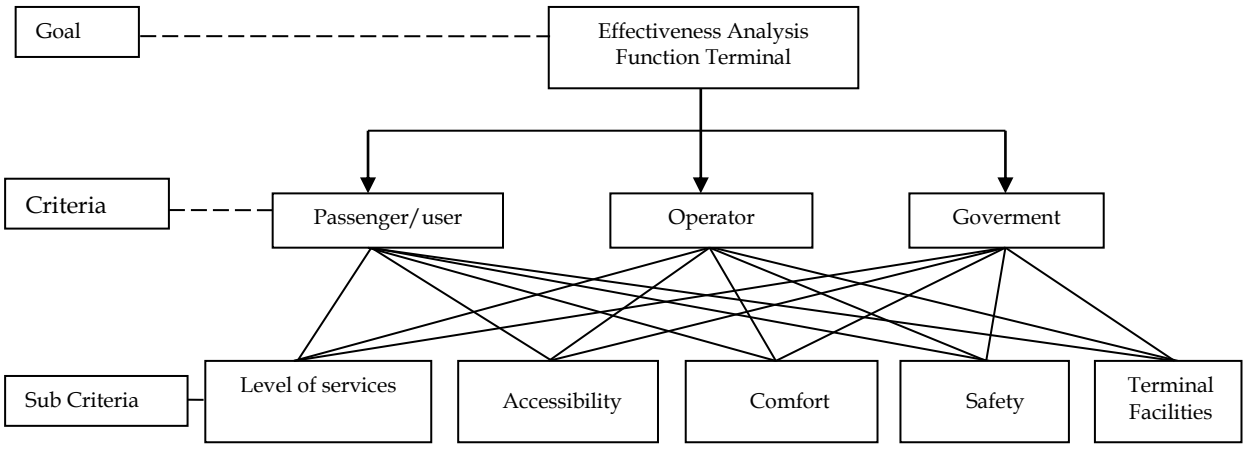

Figure 1. Structure Criteria Hierarchy Terminal

International Journal of Engineering Research & Technology (IJERT)
ISSN: 2278-0181
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A.1. Relative assessment by respondents

This assessment was given by the respondents to obtain the level of importance of each component. The first data from the respondent is incorporated into the comparison matrix. Then the data is processed to produce a relative assessment on the level of importance of each component.

- Step 1. Calculation of matrix for the level 2 (criteria)

Tabl 4. Scale Comparative Assessment of the Two Components, Namely The Criteria Normalized

Respondents	Scoring Scale				Respondents	Scoring Scale		
	A-B	A-C	B-C			A-B	A-C	B-C
Resp.1	7.000	5.000	7.000		Resp.16	0.142	5.000	0.333
Resp.2	0.167	4.000	0.167		Resp.17	1.000	1.000	1.000
Resp.3	1.000	0.250	1.000		Resp.18	2.000	0.333	5.000
Resp.4	1.000	1.000	0.111		Resp.19	5.000	1.000	2.000
Resp.5	3.000	0.167	5.000		Resp.20	0.333	1.000	2.000
Resp.6	3.000	5.000	5.000		Resp.21	7.000	2.000	0.111
Resp.7	4.000	0.333	4.000		Resp.22	0.141	0.250	0.111
Resp.8	0.250	0.167	4.000		Resp.23	4.000	3.000	2.000
Resp.9	0.141	0.142	4.000		Resp.24	2.000	1.000	2.000
Resp.10	0.111	4.000	2.000		Resp.25	0.250	0.142	0.167
Resp.11	0.142	4.000	2.000		Resp.26	0.333	0.333	0.333
Resp.12	4.000	0.240	2.000		Resp.27	1.000	1.000	1.000
Resp.13	9.000	5.000	0.111		Resp.28	1.000	1.000	1.000
Resp.14	2.000	7.000	0.111		Resp.29	0.111	0.111	0.111
Resp.15	1.000	0.250	0.125		Resp.30	0.250	0.250	0.250
ΣR	60.371	53.968	54.041					
ΣR/n	**2.012**	**1.799**	**1.801**					

Source: The Results of The Analysis in 2016

Further, the value used is the average value of the respondents (R/30). In the matrix, diagonal AA = BB = CC and then equal to 1, for comparison with the factors themselves are done. Based on Table 4 shows that the amount of the matrix of the average comparative assessment by dividing R by 30 respondents with scale ratings of A-B = 2.012, A-C = 1.799 and B-C = 1.801. Then, the inverse of a matrix value of the average comparison is determined which yields: B-A = 0.497, C-A = 0,556 and C-B = 0.555.

The results of the comparison matrix of scale mean and inverse matrix of average scale comparison for the component level-2 or criteria are arranged in a matrix form, namely the initial matrix that can be seen in Table 5 below.

Table 5 Matrix in Two Components, Namely Criteria

Kriteria	A	B	C
A	1.000	2.012	1.799
B	0.497	1.000	1.801
C	0.556	0.555	1.000
∑	2.053	3.568	4.600

Source: The Results of The Analysis in 2016

- Step 2, The Calculation of The Value of Eigen Vectors

Example calculation on line A

Number of lines A = Matrix AA x Matrix AB x Matrix AC

= 1.000 x 2.012 x 1.799 = 3.620

Determining magnitude wi; matrix size (3 x 3)

A line wi = $\sqrt[3]{3.620}$ = 1.535

Determining the value of vectors:

$$\text{Eigen Vector (Xi)} = \frac{wi}{\sum wi} = \frac{1.535}{3.175} = 0.484$$

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Table 6 Calculation of the value of Eigen Vectors 2 Components, Namely Criteria

Criteria	A	B	C	Sum	Wi	E.Vector
A	1.000	2.012	1.799	3.620	1.535	0.484
B	0.497	1.000	1.801	0.895	0.964	0.304
C	0.556	0.555	1.000	0.309	0.676	0.213
∑	2.053	3.568	4.600	4.824	3.175	1.000

Source: The Results of The Analysis in 2016

- *Step 3. Calculation of Maximum Eigen value*

Maximum eigen value is obtained from the matrix multiplied by eigenvalue of each matrix and then the results are summed up as follows:

	A	B	C		E.Vektor		Emax
A	1.000	2.012	1.799		0.484		1.477
B	0.497	1.000	1.801	X	0.304	=	0.927
C	0.556	0.555	1.000		0.213		0.650
						Λmax	3.055

Source: The Results of The Analysis in 2016

Maximum Eigen (λmax) = Σ aij*X*j = 3.055

- Step 4. Contorl of Consistensi Index (CI)

Consistensi Index (CI) = $\frac{\lambda \max - n}{n-1}$, for n = 3 x 3 matrix size

$$= \frac{3.055 - 3}{3-1} = 0.027$$

Ratio Consistensi (CR) = $\frac{CI}{RI}$;for n = 3 Then RI = 0.58 (Table 3)

$$= \frac{0.027}{0.58} = 0.047 < 0,1$$

(consistent)

Requirements: The value of consistency ratio (CR) mentioned above in accordance with the terms of the consistency that is smaller than 0.1 or less than 10%.

- *Step 5. Criteria weighting*

The weight of the element is derived from the value of e-vector expressed in percentages as shown in Table 7 below.

Table 7. Weights Component Terminal 2 Criteria Pinang Baris

No.	Criteria	Weight
1	Passenger/user	0.484
2	Operator	0.304
3	Goverment	0.212
Sum		1.000

Source: The Results of The Analysis in 2016

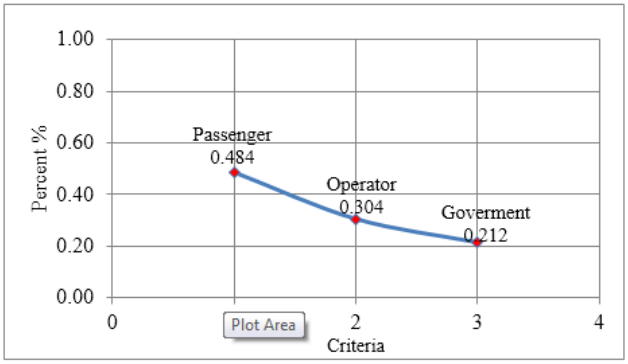

Figure 1: Effectiveness Criteria Componenet Weights Pinang Baris terminal

Based on Table 7 and Figure 1 above it can be represented that the assessment by the respondent based on Eigen value for each criterion indicates that the passenger factor is the most important criterion by weight of importance is 0.484 (48.4%), followed by the operator factor of the weight is 0.304 (30.4%), and then followed by the government factor of the weight is 0.212 (21.2%). That is, based on an assessment of the functional effectiveness of Pinang Baris Terminal by criteria component of the passengers, the government and the operators, according to the results of a questionnaire conducted on 30 respondents who provided an assessment of the three criteria above, it is known that the criteria passengers play a very important role in the operational process of the Pinang Baris Terminal activities. This is consistent with the observation at the location, where if the component criteria passengers no or less then the modes of vehicles operating inside the terminal will be reduced and will automatically lead to a reduction of region-generated revenue (RGR) which immediately indicates that activity in the terminal will not work effectively. Instead, based on criteria component of the government and the operator namely at the level of 0.516 (51.6%), it appears that the government and operator pay less attention to the condition of the passenger.

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ISSN: 2278-0181
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A.2. Analysis of the priority weighting of criteria components of passenger factor, government factor, and operator factor

Assessment of sub-criteria of the passenger, government and operator factors was done using the following alternatives: 1) level of road service; 2) accessibility; 3) comfort; 4) safety; and 5) the terminal facilities.

Subsequently the calculation of the level 3 (sub-criteria) is also conducted in stages as in the calculation of criteria level 2 above, ranging from the stage of the formation of the matrix, until the stage of weighting to the sub-criteria.

- The passenger factor

  The weighting factor of the element is derived from the value of eigenvector expressed in percentages as shown in Table 8 and Figure 2 below.

Table 8. The weight of The Component 3 Sub-Criteria Factors Pinang Baris Passenger Terminal

No.	Sub-Criteria	Weight
1	Level of Service	0.207
2	Accessibility	0.226
3	Comfort	0.234
4	Safety	0.238
5	Terminal Facilities	0.095
Sum	1.000	

Source: The Results of The Analysis in 2016

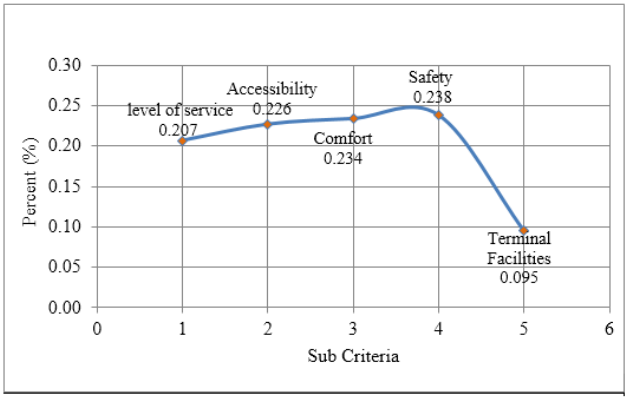

Figure 2: Sub Criteria Weight Factor Effectiveness Passenger Terminal Pinang Baris

In Table 8 and Figure 2 above is represented that the assessment by the respondent (passengers) on each sub-criterion indicates that the sub-criterion with most major importance to be addressed is the security of the terminal with the weight of 0.238 (23.8%), The next in succession is the convenience with a weight of 0.234 (23.4%), accessibility with a weight of 0.226 (22.6%), followed by the level of road service with a weight of 0.207 (20.7%) and lastly, terminal facilities with a weight of 0.095 (9.5%). More details can be seen below:

1. Sub-criteria of environmental safety with a weight of 23.8%, the meaning is that the dominance of the passenger as much as 23.8% consider the security of neighborhood around the terminal still needs to get very serious attention due to the persistence of pickpocketing, car theft, violence and thuggery in road and outside the terminal so as to make public or terminal service users feel insecure in wait or get into Pinang Baris terminal.
2. Sub-criteria of environmental comfort with a weight of 23.4%, the meaning is that the neighborhood convenience in the terminal location are also included that need attention in the management, i.e. maintaining the cleanliness of the terminal in terms of both the waiting room for passengers and operators, fix the shower so that terminal users and operators feel comfortable in the terminal location.
3. Sub-criteria of accessibility with a weight of 22.6%, the meaning is that the accessibility of entry into and exit from the terminal yet provide ease of movement of the passengers or experiencing congestion due to the presence of public transport/urban transport parked around the intersection of the terminal to pick up/dropping off passengers, so that inter-province inter-city buses and intra-province inter-city buses are have difficulty to get into and out of the terminal, and the lack of attention from operators who manage the traffic in regulating traffic movements of vehicles and people at the intersection of the terminal so Pinang Baris Terminal do not run effectively.
4. Sub-criterion of the level of road service with a weight of 20.7%, which means that the level of road service around the terminal location is still lacking, for example, in terms of lighting in the terminal, installation of traffic signs around the terminal and improvement of the road surface conditions at the terminal uneven, leading the road in the terminal location often muddy when it rains. This is the one that causes the user of terminal to feel uncomfortable in the terminal.
5. Sub-criteria of the terminal facilities, this gets the smallest weights at 0.095 (9.5%), in terms of facilities in Pinang Baris Terminal (waiting room for passengers and operators, bathrooms, counters, trash can) lead to ineffectiveness in function of Pinang Baris Terminal.

Thus, based on the assessment of functional effectiveness of terminal by the passengers known that sub-criteria of safety, convenience, accessibility and level of road service factors play a very important role in the operational process of Pinang Baris Terminal activities, while the terminal facilities not get the attention of passengers.

- *The government factor*

  The weight of the element is derived from the value of eigenvector expressed in percentages as shown in Table 9 and Figure 3 below.

Table 9. Weight of Components into Three Sub-Criteria Terminals Pinang Baris Goverment Factor

No	Sub- Criteria	Weight
1	Level of Service	0.241
2	Accessibility	0.220
3	Comfort	0.202
4	Safety	0.225
5	Terminal Facilities	0.112
Sum		1.000

Source: The Results of The Analysis in 2016

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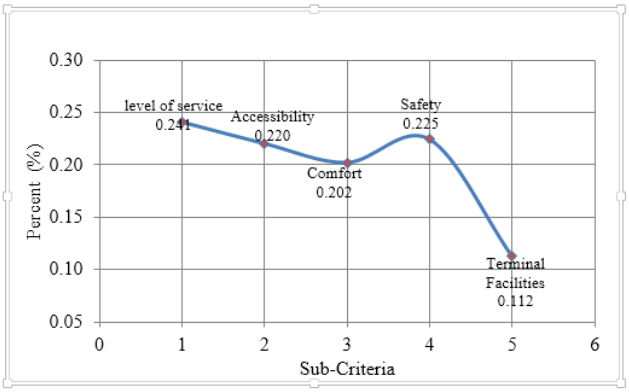

Figure 3: Sub Criteria Weight Factor Goverment Effectiveness Pinang Baris Terminal

From Table 9 and Figure 3 above is represented that the assessment by the respondent (government) on each sub-criterion indicates that the sub-criterion with the importance foremost to be addressed is the level of road service of the terminal with a weight of 0.241 (24.1%), followed successively by security with a weight of 0,225 (22.5%), accessibility with a weight of 0.220 (22.0%), convenience with a weight of 0.202 (20.2%), and lastly, the terminal facilities with a weight of 0.112 (11.2%). More details can be seen below:

1. Sub-criteria of the level of road service with a weight of 24.1%, the meaning is that the government considers the level of road service up to 24.1% in effecting the functional ineffectiveness of the terminal, namely the lighting, the installation of traffic signs and the condition of the road surface is uneven in the terminal as well as muddy when it rains as the reason why the terminal users feel uncomfortable inside the terminal itself.
2. Sub-criteria of environmental safety with a weight of 22.5%, meaning that the security environment is affecting 22.5% of the functional ineffectiveness of the terminal in the form of pickpocketing, car theft, violence and thuggery inside and outside the terminal, so that governments had difficulty attracting the public or service users of terminal get into the Pinang Baris Terminal.
3. Sub-criteria of accessibility with a weight of 22.0%, the meaning is that accessibility in the intersection get into and out of the terminal is often jammed due to the presence of public transport / urban transport parked around the junction of the terminal to pick up / drop off passengers so that the inter-province inter-city buses and intra-province inter-city buses are have difficulty to get into and out of the terminal and lack of operator directing traffic at the intersection of terminal so Pinang Baris Terminal is not operating effectively.
4. Sub-criteria of environmental comfort with a weight of 20.2%, meaning that the comfort of the environment has an influence of 20.2% in the terminal location that shows still need for attention in maintaining the cleanliness of the terminal in terms of waiting room for passengers and operators, fix the shower so that terminal users and operators feel comfortable in the terminal location.
5. Sub-criteria of the terminal facilities, while the terminal facilities received the smallest weight rating of only 11.2% where facilities in Pinang Baris Terminal is not a concern of passengers (waiting room for passengers and operators, bathrooms, counters, trash cans) which causes Pinang Baris Terminal ineffective.

Thus, in the assessment of the functional effectiveness of Pinang Baris Terminal today if viewed from the standpoint of the government is aimed at the level of road service, environmental safety, accessibility and comfort as well as terminal facilities. Especially for the terminal facilities in accordance with the results of interviews with one of the government officials who served in Pinang Baris Terminal mentioned that the terminal facilities have been met so that's not a concern of the government in evaluating the performance of the terminal as the existing terminal facilities are in accordance with applicable regulations.

- *The operator factor*
  The weight of the element is derived from the value of eigenvector expressed in percentages as shown in Table 10 and Figure 4 below.

Table 10. The Weight of Components into Three Sub-Criteria Factors Pinang Baris Terminal Operator

No.	Sub- Criteria	Weight
1	Level of Service	0.238
2	Accessibility	0.217
3	Comfort	0.205
4	Safety	0.243
5	Terminal Facilities	0.097
Sum		1.000

Source: The Results of The Analysis in 2016

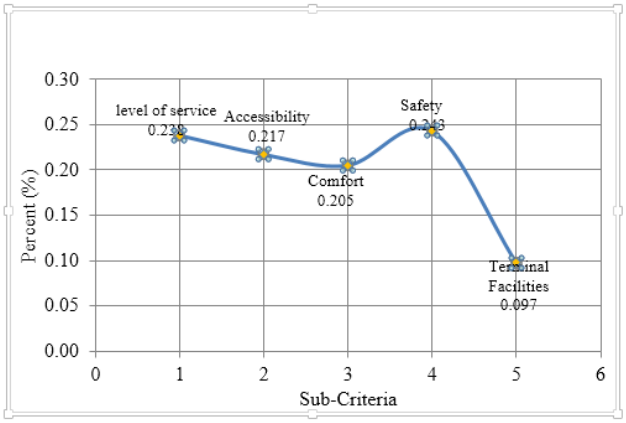

Figure 4: Weight Sub-Criteria factor Pinang Baris Terminal Operator Effectiveness

In Table 10 and Figure 4 above is presented that the assessment by the respondent (operator) of each sub-criterion indicates that the sub-criterion with the importance foremost to be addressed is the security terminal with a weight of 0,243 (24.3%), The next in succession is the level of road service with a weight of 0.238 (23.8%), accessibility with a weight of 0,217 (21.75%), followed by convenience with a weight of 0.205 (20.5%), and lastly, the terminal facilities with a weight of 0.097 (9.7%). More details can be seen below:

1. Sub-criteria of the environmental safety with a weight of 24.3%, it means that the security of environment around the terminal contributes to the ineffectiveness of the terminal amounted to 24.3% in the form of pickpocketing, car theft, acts of violence and thuggery inside and outside terminal so that operators feel insecure in performing their duties as operator of the terminal.
2. Sub-criteria of the level of road service with a weight of 23.8%, the meaning is that the level of road service around the terminal location is still low and contribute to the functional ineffectiveness of the terminal, for example, lighting, installation of traffic signs and uneven road conditions, so that the terminal is often muddy when it rains which cause the operator of the terminal are uncomfortable in managing the terminal itself.

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3. Sub-criteria of accessibility with a weight of 21.7%, the meaning is that accessibility has influence 21.7% in the intersection get into and out of the terminal are often jammed due to the existence of public transport is parked at the intersection of the terminal to pick up / drop off passengers so that inter-province buses inter-city and intra-city inter-province buses have difficulty to get into and out of the terminal, and the lack of operator directing traffic at the intersection of the terminal, causing the function of Pinang Baris Terminal ineffective.
4. Sub-criteria of environmental comfort with a weight of 20.5%, the meaning is that the comfort of the environment contributes 20.5% to the functional ineffectiveness of the terminal. According to the operator, what needs to be addressed is the maintenance of cleanliness of the terminal (the waiting room for passengers and operators, fix the shower so that the user terminal and the operator feels comfortable in the terminal location).
5. Sub-criteria of the terminal facilities, it appears that the terminal facilities got the smallest weight rating that is at 0.097 (9.7%), means that the facilities available at the Pinang Baris Terminal has very weak influence on the functional ineffectiveness of the terminal.

Thus, in the assessment of the functional effectiveness of Pinang Baris Terminal now, when viewed from the perspective of the operator is that the sub-criteria of the level of road service, security, and accessibility and convenience factors play a very important role in the operational process of Pinang terminal row, while the terminal facilities are not the concern of the operator. This makes sense, because the operator has not gained a good service so that passengers concluded that the effectiveness of Pinang Baris Terminal has not been fulfilled.

B. Factors that Affect the Functional Effectiveness of Pinang Baris Terminal

Figure 5 below present the differences in the weight of assessment of the three criteria based on sub-criteria, where the passenger factor prioritize environmental security as key factors in the performance of the terminal, while the government factor prioritize the level of road service and the operator factor prioritize security environment as the main factors that affect the performance of the Pinang Baris Terminal.

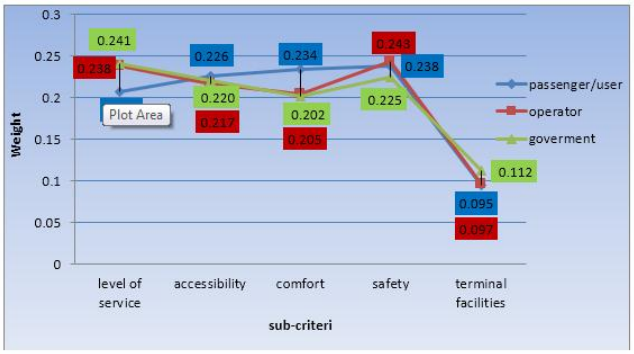

Figure 5: Relationship between Weight Against Sub-Criteria Pinang Baris Terminal

Furthermore, in Figure 5 above, we see clearly that the three graphs that are formed shows the characteristics of the passengers who provide different views to two other subjects (Government and operators). Operator is more inclined to follow the view of the government while society becomes the opposition. But for sub-criteria of accessibility, the three parties (passengers, operators and government) have very similar views with a weight ranging from 0.217 to 0.226.

B.1. Appraisal analysis of authority of criteria component

After assessing the relative by the respondents to obtain the importance of each authority of criteria component, to determine priorities of the factors that affect the functional effectiveness of Pinang Baris Terminal, Analytical Hierarchy Process (AHP) is then included in the calculation of the mathematical model by Brojonegoro (1991). Calculation of the priority analysis of factors affecting the functional effectiveness of Pinang Baris Terminal is done in accordance with the criteria component of all respondents.

$$Y = A(x1) + B (x2) + C (x3)$$

where:

Y = Priority analysis factors affecting Pinang Baris Terminal Function Effectiveness

A up to C = The weight of level 2 criteria (based on analysis of respondents)

x1, x2,…x5 = Weight of sub-criteria level 3 (based on analysis of respondents)

Passenger let A, Value A = 0,484

Let B operator, Value B = 0,304

Goverment eg. C, Value C = 0,212

B.2. Appraisal analysis of priority of sub-criteria

The same calculation as was done in the appraisal analysis of authority of the criteria component is performed on the stage of the appraisal analysis of priority of sub-criteria, starting from the relative assessment of the respondents, calculating the weight of each sub-criteria, the determination of a maximum eigenvalue, calculation of consistency index, and calculation of the ratio of consistency to determine the consistency of the answers obtained from each respondent.

Furthermore, the value of the sub-criteria is obtained from the calculation results of the respondents' answers to the priority analysis of factors affecting the functional effectiveness of Pinang Baris Terminal with AHP method. Then the average value of the sub-criteria component is obtained as shown in Table 11 below.

Tabel 11 Weight average priority sub-criteria

Criteria	Weight average priority sub-criteria				
	level of service	Accessibilities	Environmental comfort	Environtmental safety	Terminal Facilities
Passenger	0.207	0.226	0.234	0.238	0.095
Operator	0.238	0.217	0.205	0.243	0.097
Goverment	0.241	0.220	0.202	0.225	0.112

Source: The Results of The Analysis in 2016

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Level of road service, suppose: X1 = 0.207; X2 = 0.238 and X3 = 0.241

B.3. Analysis of local priority

Analysis of local priority is obtained from the analysis of multiplication and summation of the values of the criteria authority with the values of priority of sub-criteria divided by the number of respondents who were interviewed. Analysis of local priority was conducted to determine the value of each criterion having regard to the authority of each of the criteria that play a role in assessing the functional effectiveness of the terminal, and then proceed with the determination of the priority ranking of the local sub-criteria to determine the criteria most require attention in creating effectiveness of Pinang Baris Terminal. The value of the local priority is obtained through a system of mathematical equations according to Brojonegoro (1991) as follows.

$$Y = A(x1) + B (x2) + C (x3)$$
$$Y = 0.484 \times (0,241) + 0.304 \times (0,238) + 0.212 \times (0.207)$$
$$= 22,36\%$$

Furthermore, the results of the calculation of the mathematical model of the scale of assessment of priority of the factors that affect the functional effectiveness of Pinang Baris Terminal (Y) becoming priority in the assessment of the factors that influence the effectiveness of the Pinang Baris Terminal in Medan can be seen in Table 12 below.

Table 12 Scale Ratings Priority Factors That Influence The Effectiveness of The Function of The Terminal

No.	Sub-Criteria	Priority Rating Scale Y (%)	Description Rating
1	Level of Service	22,36	2
2	Accessibilities	22,20	3
3	Enveriontmental Comfort	21,84	4
4	Enveriontmental Safety	23,65	1
5	Terminal Facilities	9,95	5

Source: The Results of The Analysis in 2016

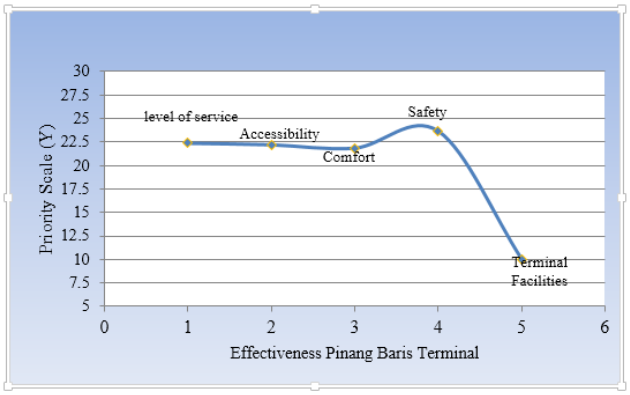

Figure 6: Priority Scale Factors Affecting Pinang Baris Terminal Function Effectiveness

In determining priority of factors that affect the terminal, two interdependence methods are used, namely the AHP (Analytical Hierarchy Process) method and the Mathematical Model of Priority Scale (Y). The AHP method is analyzed by the matrix for the results of the answers of each respondent in order to obtain the weights of criteria and sub-criteria to determine the functional effectiveness of the terminal. Meanwhile the mathematical model is used to rank the priority of the local sub-criteria to determine the criteria that most need attention in creating the effectiveness of Pinang Baris Terminal.

Figure 6 is a picture of a mathematical model of Priority Scale (Y) as in Table 12, which has a value priorities that is different, where a high priority is "security environment" with the scale of priorities 23.65%, while the low priority scale is " terminal facilities "with the scale of priorities 9.95%. According to the priority scale value above, then that determines the priority of the factors that influence the effectiveness of the terminal is a safety factor of environment. Thus, the security of environment is a major factor to consider in order Pinang Baris Terminal run effectively, while the terminal facilities is the last factor to be considered for the smooth functioning of the Pinang Baris Terminal activities.

Based on the reality of the results of the field observations the following analysis can be presented:

1. Sub-criteria of environmental safety with a weight of 23.65% indicates that the neighborhood safety in the vicinity of the terminal, still need to be considered because there remains incidence of severe and mild violence (20 cases in 2014 and 13 cases in 2015), vehicle theft (18 cases in 2014 and 14 cases in 2015), narcotics (5 cases in 2014 and three cases in 2015), extortion (7 cases in 2014 and 5 cases in 2015), gambling (4 cases in 2014 and three cases in 2015), fraud (7 cases in 2014 and four cases in 2015) and thuggery inside and outside the terminal so as to make community or terminal service users feel insecure in wait or get into Pinang Baris terminal.
2. Sub-criteria of the level of road service with a weight of 22.36% indicates that the level of road service around the terminal location is still very low, for example, in terms of lighting in the terminal, installation of traffic signs around the terminal, and improvement of the road surface conditions at the terminal is uneven, which makes the road at the site of the terminal is often muddy when it rains, therefore, this is also one reason why the terminal users feel uncomfortable inside the terminal itself.
3. Sub-criteria of accessibility with a weight of 22.20%, which shows that accessibility at the intersection of entry into and exit from the terminal is often jammed due to the presence of public transport/urban transport parked around the intersection of the terminal to pick up/drop off passengers so that the inter-province inter-city buses and the intra-city inter-province buses are having difficult to get into and out of the terminal, and the lack of operator directing traffic at the intersection of terminal so Pinang Baris Terminal is not operating effectively.
4. For the sub-criteria of environmental comfort with a weight of 21.84% it appears that environmental comfort in the terminal location is also still need to be considered in the form of maintaining the cleanliness of the terminal in terms of waiting room for passengers and operators, fix the shower

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so that terminal users and operators feel comfortable in the terminal location.

5. Sub-criteria of the terminal facilities are the smallest gain weight rating, which is 9.95% while the facilities at the Pinang Baris Terminal not meet the needs of passengers in terms of the waiting room for passengers and operators, bathrooms, counters, and the lack of trash cans that cause terminal looks dirty so that the user of the terminal are not comfortable in the terminal and this obviously causes ineffective functioning of the Pinang Baris Terminal.

CONCLUSIONS AND SUGGESTIONS

A. Conclusions

Based on the results of the analysis it can be concluded that the analysis of the authority of the determination of the functional effectiveness of Pinang Baris Terminal resulted in the importance of each the criteria component, i.e. 48.4% of passengers, operators and regulators 30.4% 21.2%. Meanwhile, the results of the analysis of local priorities of the criteria based on the results of the priority sub-criteria analysis of the component Opinion shows that the sequence of the most influential local criteria in the assessment of the functional effectiveness of Pinang Baris Terminal is security environment of 23.65%, the level of road service of 22.36%, the accessibility of 22.20%, comfort environment of 21.84%, and terminal facilities of 9.95%. This shows that the security environment, the level of road service, accessibility in the terminal, facilities and management of the terminal as well as comfort in the terminal are the main causes of the functional ineffectiveness of Pinang Baris Terminal. Ineffectiveness implies that Pinang Baris Terminal is unable to provide satisfactory service to customers (passenger) and employers / drivers of public transport (operator).

B. Suggestions

Government as terminal management need to consider some specific criteria in order to Pinang Baris Terminal can serve as traffic infrastructure to provide maximum services to the community of users of terminals, among other things, passenger and operator. Those criteria, among others, are:

1. Criteria of the terminal facilities that are by supplementing the inadequate facilities by providing or add to garbage dump, waiting rooms for passengers, room information on purchasing a ticket so that passengers and operator feel comfortable and Pinang Baris Terminal can run effectively.
2. The criteria of the environment safety of the terminal by placing the terminal officer in every area of the departure, waiting and arrival of public transport, providing the information and complaints station as a result of insecurity in the terminal area, supervision of the load factor for public transport to avoid standing passengers and lead to vulnerability to pickpocketing and good coordination with the police.
3. Criterion of the level of road service to carry out infrastructure improvements for pedestrians in vicinity of the intersection of Pinang Baris Terminal, installation of signs of traffic, improvement of road conditions at the intersection of Pinang Baris Terminal, curbing street vendors who sell around the intersection, curbing the behavior of the drivers of public transport.
4. The criteria of accessibility by carry out repairs on the road in the location of the terminal, the improvement of the layout of the location of stops and departures of public transport, inter-province inter-city, intra-province inter-city and urban transport, installation of information boards / clues on the direction and rates for the entire transport that provides services in Pinang Baris Terminal.

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