

Attributes of a Minimum Services Standard of Public Transport Terminal Infrastructure in Indonesia

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ABSTRACT

Determination of minimum service standards by the government of Indonesia as a commitment to serve the people in all development sectors including transport infrastructure, especially public transport terminal. A Public transport is a solution to solve transportation problems in Indonesia. The problems that the society not so interest to public transport. Terminal public transport is one of the transportation infrastructure greatly influence the success of public transport services. Public transport terminal for passengers in Indonesia now still not have a minimum service standard. Code, regulation, and other policies has not made more detailed and complete to provide guidance on terminal minimum service. This research suggests the determination of service attributes according to customer needs or voice of customers. Customers consist of the passengers who often and rarely use the terminal. Information was obtained by preliminary survey, interview technique, and distributing questionnaires. The results of data were presented by Visual Basic. This research resulted in 10 attributes of terminal services consist of reliability, availability, amenity, durability, responsiveness, comfort, assurance, frequency, performance, and esthetic. Top three attributes according to the users including public transport reliability, security and safety, and facilities availability. Thereby, the ten attributes can be used as a reference in the subsequent analysis.

Keywords: service attributes, minimum service standards, public transport terminals.

INTRODUCTION

The Government of Indonesia try to meet commitment to serve the people. The government establish policy of minimum service standards in all development sectors, including transport infrastructure for national and local area. Public transport terminal is one of the transport infrastructures still not have a minimum service standards. Government policies on the terminal such as codes, regulations, and other policies that have not been detailed and complete set up and provide guidance on terminal minimum service. Along with the declining in the performance and effectiveness of the terminal, public transport services are also low [1]. The problems to become more complex because of the high interest of the public on private vehicles, for example for the city of Surabaya, which is one of the major cities in Indonesia increased 455% use of private vehicles from 1976 to 1998 [2]. Most of passengers did not go into and use terminal after transit from public transport modal, but they prefer go down out site of terminal and move to another public transport modal [3]. That factors make terminal weren't effective and efficient. This conditions need improvement, because the transportation infrastructure effect on the macros transport system that are needed by the community [4]. The public transport terminal need guidance that is called a minimum service standard to develop and increase its services [5]. The previously study of existing terminal evaluated and designed the terminal use technical aspects only, without consider the needs and desires of customers. The attributes were determined by researcher and distributed to respondent without combining customer requirements. This research was motivated by the lack of service attributes for measuring the terminal performance. These attributes are used as attributes of Minimum Service Standards in the planning and development of terminals [6]. The determination of service attributes refers to Indonesia regulations, previous researches and preliminary survey. The purpose of this study was to determine and define attributes of a Minimum Service Standards according to the perception and the needs of customers that called voice of customer. Data of voice of customer need to be presented by using Visual Basic program. The program provide graph and table visualization to illustrate trend of customer requirement on transport terminal services.

MATERIALS AND METHODS

Determination of the framework of terminal minimum service standards is based on the concept of Performance Based Design of Buildings (PeBBu), Final Report Domain. CIBdf in the year of 2005 [7], that was

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providing the understanding and performance-based development by considering the similarity between the technical aspects of the terminal to the needs of customers who called voice of customer. Stages of research carried out by the preliminary survey to respondents and scoring the need for terminal service attributes. Preliminary survey consists of observation of terminal existing condition and distributing questionnaires to terminal customer as the respondent. Service attributes as a research variable is based on the attributes of a terminal rule in Indonesia, studies and previous research, and attributes according to customer needs. From the scoring process is derived rating level of service attributes requirements. Visualization program with a visual basic used to present quantitative data in tables and graphs. The final results of the research process were used as first references for further more detailed analysis. The research method development is shown in Figure 1.

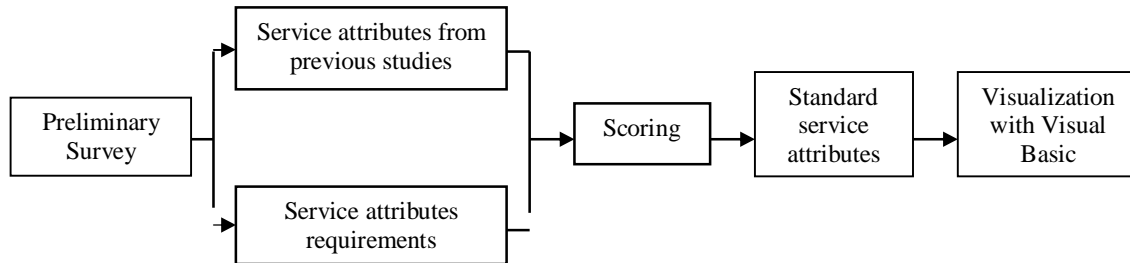


Figure 1 Research method development

The terminal of this research is the terminal type A and B as KM 31/1995 [8] which give the definition and classification of the terminal in Indonesia as follows:

1. Type A, has function to serve public transport for inter-city and inter-provincial transportation, state boundary transportation, transportation between cities in the province, and urban and rural transportation;
2. Type B, has function to serve public transport for transportation between cities in the province, and urban and rural transportation;

This study will assess terminal type A and B, because both terminals in Indonesia called main terminal. Many variables from previous researches is shown in Table 1. These variables are taken in accordance with the conditions in Indonesia and added to the variable that comes from the voice of customer.

The research location is three cities in Indonesia, namely Surabaya, Malang, and Kediri, with details such as the terminal type in Table 1 below.

Table 1 Terminal type A and B of three cities in Indonesia

No	City	Terminal	
		Type A	Type B
1	Surabaya	Purabaya	Joyoboyo
2	Malang	Arjosari	Tlogomas
3	Kediri	Tamanan	Pare

The respondents consist of a passenger terminal. Number of respondent were by taking a sample of at least 30 people [9], in order to obtain the 50 people to the terminal type A, and 50 people for the terminal type B.

The terminal service attributes that refers to previous researches are described in Table 2. Service attributes were adopted and adapted to the existing condition and location of the terminal.

Table 2 Variables from previous researches

No	Researcher	Year	Variables
1	Harsanto [10]	2007	Reliability, Responsiveness, Assurance, Empathy, and Tangible
2	Rini [11]	2007	Security, Availability of facilities and personnel services, parking management, bus services, ticketing, cleanliness and comfort, crossing road facility and access to bus stop, accessibility, safety, and public service operator.
3	Marliana [12]	2008	Employees capability, convenience, timeliness, employees accuracy in serving passengers, the number of shelter, the number of routes / bus lanes, shelter facilities, bus density, and facilities for the disabled
4	Purba [13]	2009	Facilities and management, accessibility, level of service roads, safety and environmental comfort.
5	Weningtyas [14]	2009	Reliability, the physical aspect, and responsiveness.
6	Pati [15]	2009	Time, flexibility for ticketing, safety of passengers and goods, and ease of telephone service
7	Saputra [16]	2010	Arrival and departure times, information systems for services, regularity of luggage workers and brokers, road conditions, and terminal facilities

RESULTS AND DISCUSSION

The result of the observations and documentation step that has been done on the existing terminal condition is shown in Table 3.

Table 3 The results of observation and documentation of six terminals in Indonesia

No	City and Terminal	Land area (m ²)	start of operacional time
1	Surabaya		
	a.Type A : Purabaya	124369	1991
	b.Type B : Joyoboyo	11134	1970
2	Malang		
	a.Type A : Arjosari	60030	1989
	b.Type B : Tlogomas	30457	1991
3	Kediri		
	a.Type A : Tamanan	27085	1992
	b.Type B : Pare	13854	1994

Table 3 shows the terminal which has the largest land area is Purabaya with 124.261 m², while the Joyoboyo terminal has the smallest land area with 11.134 m². The table shows the difference between the terminal type A to type B. Arjosari is the oldest terminal type A because it had been operate on 1989 and Joyoboyo is oldest terminal type B than the others, because Joyoboyo had been started of operational time on 1970. To determine the level of customer needs of service attributes for three terminals of type A can be seen in Table 4, where the attributes that got the highest score is security and safety (total score 537), while the availability of the facility to be rank-2 with a total score of 535. Two attributes have similar score the attributes are aesthetics and convenience (total score 520), and the attributes of responsibilities and frequency with total score 489. The terminal management abroad must prioritize the repair and improvement of service attributes according to the score rank of customer needs. Table 5 shows the score rank of service attributes for three terminals of type B.

Table 4 The Level of customer needs and service attributes rank of terminal type A

No	Terminal servicie Atributes	Terminal Type A			Score	Rank
		Arjosari	Purabaya	Tamanan		
1	Assurance in Security, safety, health, and availability of transport modes	177	191	169	537	1
2	Staff responsiveness in provision of care, responsiveness to problems, polite and friendly, and have good skills	162	159	168	489	7
3	Terminal facilities Performance include lighting, air circulation, parking lots, roads, waiting room, small mosque, stalls, kiosks, hall, corridors, toilet, sculpture, and waste management	164	166	163	493	6
4	Facilities aesthetics include waiting rooms, corridors, arrival and departure gate, parks, and landscaping	165	181	174	520	4
5	Amenity and Easy accessibility in location, circulation, tickets, prices, information, facilities, and no additional cost (extortion)	168	173	179	520	4
6	Reliability in arrivals and departures, waiting time, and public transportation ticketing service	179	174	181	534	3
7	Durability of public transport services and facilities	156	160	160	476	8
8	Frequency in passenger queues, overcrowding, and the level of traffic congestion	160	164	165	489	7
9	Convenience and comfort from cigarette smoke, fumes, odours, noise, glare, view, brokers, and gain terminal cleanliness and regularity	171	171	173	515	5
10	Availability of terminal facilities	184	177	174	535	2

Table 5 The Level of customer needs and service attributes rank of terminal type B

No	Terminal service Attributes	Terminal Type of B			Score	Rank
		Tlogomas	Joyoboyo	Pare		
1	Assurance in Security, safety, health, and availability of transport modes	116	126	117	359	2
2	Staff responsiveness in provision of care, responsiveness to problems, polite and friendly, and have good skills	110	116	110	336	7
3	Terminal facilities Performance include lighting, air circulation, parking lots, roads, waiting room, small mosque, stalls, kiosks, hall, corridors, toilet, sculpture, and waste management	112	110	112	334	8
4	Facilities aesthetics include waiting rooms, corridors, arrival and departure gate, parks, and landscaping	116	123	116	355	3
5	Amenity and Easy accessibility in location, circulation, tickets, prices, information, facilities, and no additional cost (extortion)	111	113	119	343	6
6	Reliability in arrivals and departures, waiting time, and public transportation ticketing service	123	119	123	365	1
7	Durability of public transport services and facilities	103	109	105	317	10
8	Frequency in passenger queues, overcrowding, and the level of traffic congestion	107	113	104	324	9
9	Convenience and comfort from cigarette smoke, fumes, odors, noise, glare, view, brokers, and gain terminal cleanliness and regularity	114	118	114	346	5
10	Availability of terminal facilities	119	114	119	352	4

Table 6 and 7 shows the service attributes of terminal facilities availability, can be defined with terminal facilities requirements by the customer. Availability includes amount, performance, and condition of facilities that serve the customer. Table 5 shows the score and level of requirements for terminal facilities of type A. From Table 6, the facility was the most requirement is a waiting room with score 552. The second and third rank are health aid centre (score 548) and ATM centre (score 545). Facility was that the lowest rank is a facility for travel information board with score 482.

Table 6 The level of requirement and availability rank of terminal type A facilities

No	Terminal Facilities	Terminal Type A			Score	Rank
		Arjosari	Purabaya	Tamanan		
1	Parking area for Bicycle and motorcycle	169	176	183	528	9
2	Parking area for car	174	178	176	528	9
3	Waiting room	186	186	180	552	1
4	Kiosks and retail	176	175	178	529	8
5	Waste management facilities	166	165	169	500	16
6	Rest area and lodging facilities	180	179	167	526	10
7	Canteens, restaurants and food shops	169	153	175	497	17
8	Travel information boards	163	153	166	482	19
9	Information and complaints centre	181	162	186	529	8
10	Goods repository	175	181	178	534	6
11	Tariffs board per route	176	185	179	540	4
12	Toilet	171	183	179	533	7
13	Religious facilities : place for pray	171	180	171	522	12
14	Religious facilities : mosque	159	178	159	496	18
15	Signs transportation routes	173	179	169	521	13
16	Telecommunication facilities (telephone, internet, TV)	176	183	179	538	5
17	Travel agent counters	176	175	174	525	11
18	Health aid centre	181	184	183	548	2
19	Bank	175	169	170	514	14
20	ATM centre	180	183	182	545	3
21	Money changer	161	177	163	501	15

Availability of facilities at the three terminals of type B are shown in Table 7. The highest score is information and complaints centre (score 369). The second rank is toilet and health aid centre with score 365, while third rank is the availability of canteens, restaurants and food stores (score 361). The lowest rank is money changer (score 301).

Table 7 The level of requirement and availability of terminal type B facilities

No	Terminal Facilities	Terminal Type A			Score	Rank
		Joyoboyo	Tlogomas	Pare		
1	Parking area for Bicycle and motorcycle	114	127	112	353	6
2	Parking area for car	114	118	117	349	8
3	Waiting room	117	124	112	353	6
4	Kiosks and retail	113	116	118	347	9
5	Waste management facilities	105	110	101	316	16
6	Rest area and lodging facilities	111	114	113	338	15
7	Canteens, restaurants and food shops	123	122	116	361	3
8	Travel information boards	113	117	119	349	8
9	Information and complaints centre	121	119	129	369	1
10	Goods repository	116	112	117	345	11
11	Tariffs board per route	113	119	118	350	7
12	Toilet	118	121	126	365	2
13	Religious facilities : place for pray	112	119	119	350	7
14	Religious facilities : mosque	118	114	114	346	10
15	Signs transportation routes	112	119	109	340	14
16	Telecommunication facilities (telephone, internet, TV)	121	120	113	354	5
17	Travel agent counters	115	113	113	341	13
18	Health aid centre	126	115	124	365	2
19	Bank	118	112	113	343	12
20	ATM centre	120	121	114	355	4
21	Money changer	101	106	94	301	17

The results showed differences in the level of customer demand to service attributes and the availability of terminal facilities. Information needs of service attributes and the availability of facilities obtained from respondents to the proportion of 45 people for terminal type A and 30 people for terminal type B. Required service attributes consist of Assurance, Responsiveness, Performance, Aesthetics, Ease, Reliability, Durability, Frequency, Comfort, and availability. Service attributes in the terminal type A as shown Table 3 shows that the highest are Assurance, Availability, and Reliability. This indicates that the security, safety, and health is very important for the customer. Besides a complete and adequate facilities and reliability of public transport services was as the second and third important requirement. The durability is the lowest score of service attributes. For terminal type B as shown in Table 4, the service attributes with high score consist of Reliability, Security, and Aesthetics. This shows that the attributes include reliability of public transport, security and safety, and aesthetic aspects to be repaired and develop. The same conditions as the terminal type B, where the attributes have the lowest score is as the durability of facility.

The Level of customer requirements for availability of terminal facilities consist of : 1). Main facilities (primary) is facilities that must be exist in terminal to support essential functions and important activities include: waiting rooms, parking area for transport, space for management, and visitor parking; 2). Supporting facilities (secondary) is facilities to support the additional activity other than the main facility and give convenience for customer include: cafeteria, kiosks, rest areas and lodging, goods repository, praying area and mosque, health centre, ATM centre, and telecommunications facilities. Table 5 shows the facilities score and rank of three-terminal type A, where the waiting room is the highest rank (score 552) and travel information boards is the lowest with score 482. Facilities that are needed attention by the management institution is waiting rooms, health aid centre, ATM centre, or tariffs board per route, telecommunication facilities, and bathroom. Table 6 shows the facilities score and rank of the three terminal type B. Information and complaints centre is the highest score with score 369, while the money changer facility is the lowest rank (score 301). The terminal management institution must pay attention to terminal facilities that are required by the customer including information and complaints centre, bathrooms, cafeteria, ATM centre, telecommunications facilities, waiting room, and praying area or mosque. This analysis can be increased to Importance Performance Analysis (IPA) and Quality Function Deployment (QFD) [17], so we get service attributes priority that is most important and essential role in terminal services.

To present the results in the form of score and rank of the customer requirement can be made visualization with Visual Basic as shown in Figure 2 and 3.

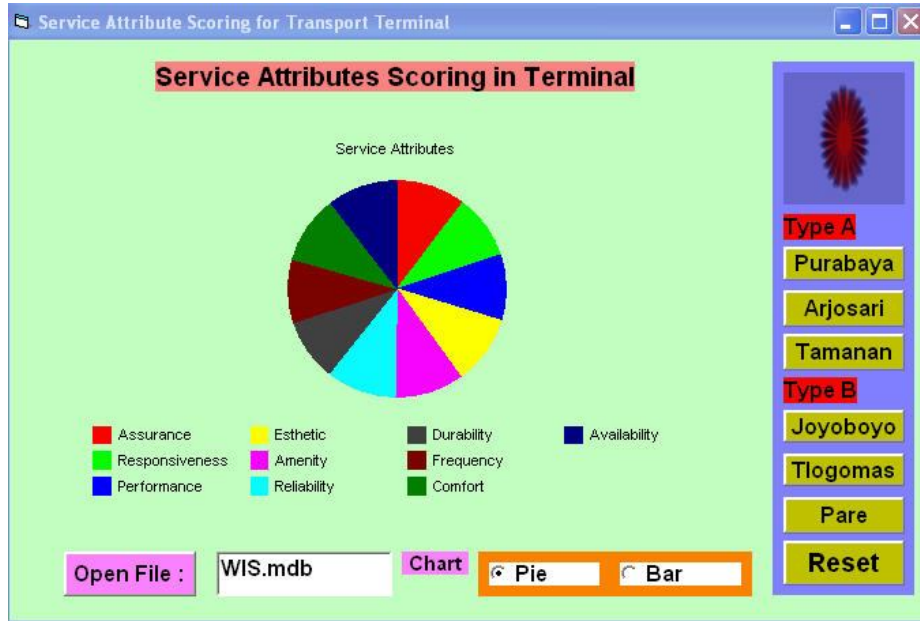


Figure 2 Visualization of Service Attributes Scoring with Pie Chart in Visual Basic

Visualization in Figure 2 with pie chart describe that the result data have ini database but still require to be presented graphically and quickly to be more communicative in presentation. From the visualization can be known and compared the respondent score to ten services attributes.

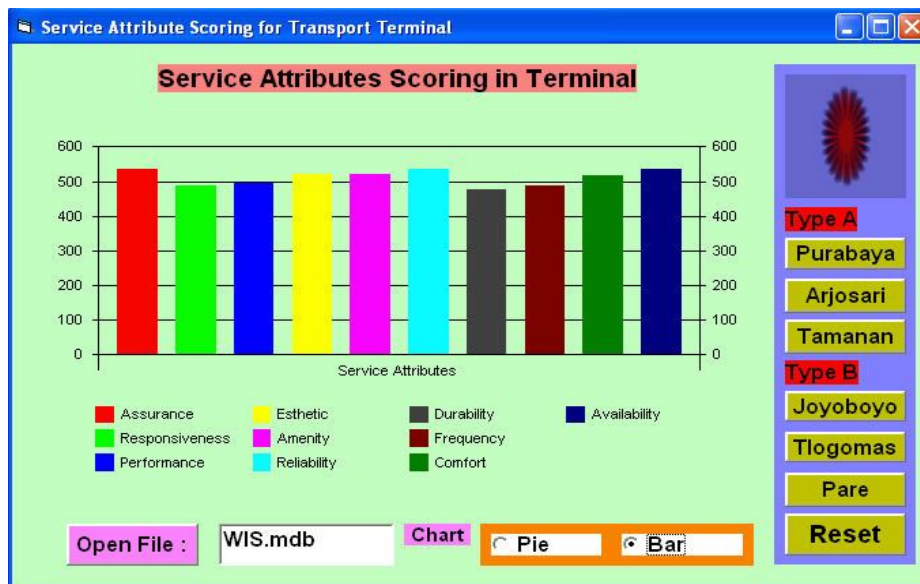


Figure 3. Visualization of Service Attributes Scoring with Bar Chart in Visual Basic

CONCLUSION

The Level of customer requirement of service attributes and availability of facilities are different between terminal type A to terminal type B for the three cities in Indonesia include Surabaya, Malang, and Kediri. It can be seen from the score and rank of requirement and existing facilities in the two types of terminal. There are 10 attributes that are needed by the customer, namely Assurance, Responsiveness, Performance, Aesthetics, Ease, Reliability, Durability, Frequency, Comfort, and availability of facilities. The most important service attributes in the terminal type A from the first to third rank are security and safety with score 537, terminal facilities with score 535, and the reliability of public transport with score 534. According to the customer of terminal type B, the most important service attributes such as first rank for reliability of public transport with score 365, second rank is security and safety attributes with score 359, and the third rank on the aesthetic attributes with score of

355. There are seven other attributes that are required by customer. The management institution to consider and evaluate the service attributes in accordance with the priority of customer needs. While in the availability of terminal type A facilities, the customer need waiting room with score 552, health aid centre with score 548, and ATM centre with score 545. The different case with customer requirement of terminal type B, where the most important facilities are information and complaints centre with score 369, health aid centre and bathroom with score 365, and canteens, restaurants and shops with score 361. The management must to improve performance and increase the availability of terminal facilities. There are 18 other facilities are also considered important by the customer, but have different ranks. Terminal facilities are classified into two categories according to function. The facilities consist of main facilities (primary) and supporting facilities (secondary).

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