

## The Perceived Image of TransJakarta Bus Rapid Transit

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### ABSTRACT

Public transport services provided by Bus Rapid Transit TransJakarta has been launched by the local government of DKI Jakarta as a mass and rapid transport mode that can attract the users of personal vehicle to use this mode of transport. Although the passengers are increasing, but the condition has not reached the optimum level yet. This study is done as an attempt to map the image perceived by the users, either *frequent users*, *occasional users*, or *non-frequent users*. The image projected by the users will depend on the experience degree and information each individual has. The method used here is descriptive analysis and reduction factor to obtain the dimensions of image in the respondents' mind toward TransJakarta bus. The result shows five dimensions that construct the image, namely affective dimension (Eigenvalue = 5,488, or 26% of all variances), dimension of vehicle aspects (Eigenvalue = 1,794, or 8.5% of all variances), dimension of service characteristic (Eigenvalue = 1,635, or 7.8% of all variances), dimension of impact on the trip (Eigenvalue = 1,348, or 6.4% of all variances), and dimension of impact on the user/other people (Eigenvalue = 1,088, or 5.1% of all variances).

**Keywords:** image, TransJakarta, Bus Rapid Transit, perception, transport

## Introduction

The local government of DKI Jakarta has developed a concept of Bus Rapid Transit (BRT) entitled Busway TransJakarta, a city bus service which is fast, safe, comfortable, and scheduled with all infrastructures available and well-organized, and its cost of implementation is lower than the other modes (Currie, 2005). In some developing countries, this program also give positive impacts. In Beijing, BRT is getting more popular, so that the more and more commuters move from their private vehicles (Deng & Nelson, 2011). Furthermore, in Lagos, BRT also gives improvement of life quality to the passengers as shown by the high level of user satisfaction (Adebambo, 2009). Even in Johannesburg, BRT is one of the South Africa government's program to decrease poverty through passenger mobilization from one place to another rapidly and massively (Vaz & Venter, 2012).

The transport mode of BRT can be considered as the bridge between the conventional bus system and transit train (Cain, Flynn, McCourt, and Reyes, 2009). This system runs on the road and uses the infrastructure of road with relatively low cost, such as priority traffic light, marked crossroad, scheduled *headway*, halts in special places so as to give advantages of speed and reliability if compared with the conventional bus system.

In order to increase the level of public transport use, today there are 13 corridors in all parts of Jakarta city that serve passengers from the inner city of Jakarta and the surrounding cities (Bekasi, Bogor, Tangerang) through an integration with feeder bus from those cities to the bus halts of TransJakarta. The efforts to expand the network and add the bus fleet are positive ones by the local government, in order to attract more passengers and move the users of private vehicle to public transport.

The image of BRT have an important

role as one of the determining factors in the movement of private vehicle users to public transport service. Scherer (2011) identifies that the perception, image, and trust to modes of transport are much varied, depending on the experience and location. Therefore, the users are classified based on their level of using a transport service that can be classified into three groups; namely *frequent users* (service users who often use), *occasional user* (users who are not routinely use), and *non frequent users* (users of a transport mode who are infrequently use).

This research is aimed at studying how far the three groups of users reveal the image of bus service delivered by TransJakarta, especially in corridor IX Pinang Ranti–Pluit and understanding and quantifying the *tangible* and *intangible* factors that propel the possibility of difference in the users' perception.

## Public Transport and Its Image

Up to now the image of public transport, especially public bus, is always in problem. Many people feel it can not be relied on, difficult to be accessed, uncomfortable, crowded, and dirty. Regarding the flexibility and comfort, especially in Jakarta where safety and security are not paid much attention by the public transport managers, then public transport is considered inferior compared to driving private vehicle (Sumaedi, Bakti and Yarmen, 2011). Therefore, the focus of public transport service system today moves to improving the monitoring process, prioritizing the scheme of development and reducing the dependence on private vehicle (Mahmoud, Hine, and Kashyap, 2011). This is in synergy with the basic attempt to improve the quality of public transport service which is well-integrated, especially the tangible and intangible ones. These two components construct the image of public transport, which in turn can encourage

someone to use public transport.

The high use of public transport provides significant benefits to a country. According to Texas Transportation Institute (2004), the benefits that can be taken from using public transport by people are the reduced traffic density, cost efficiency, and the availability of more sustainable work opportunities.

Here, there are several things determining that image has an important role in attracting people to take advantage of BRT services. In another word, someone's desire to take advantage of BRT services is much determined by the quality. Using BRT services, at least the quality of riding will be similar when they use their own vehicle (Evans and Pratt, 2003). In addition, the image of less reliable is perceived by those who do not take advantage of BRT services, whereas those in the category of user consider that the reliability of BRT has been satisfying (Cain and Flynn, 2009). The image of travel time is also perceived significantly enough by the users of private

cars. They consider the travel time is much longer than using private vehicle, whereas those taking advantage of BRT services consider the travel time of BRT has been satisfying since travel time is closely related to the existing schedule and its punctuality (van Exel and Rietveld, 2010). In another word, experience is closely related to the image construction. In his study about BRT and tram, Scherer (2011) states that the more frequently someone takes advantage of the services from both modes of transport the bigger difference of image will appear. Whereas if he or she never or rarely takes advantage of them, only few difference of service image will be in his or her perception.

*Image* is a concept reflected through someone's attitude toward a concept and measured by two methods that are commonly used, namely schematic method and semantic differential method. In this research, semantic differential method will be used to measure the attitude or faith in BRT TransJakarta based on the attributes used for that public transport service.

Table 1. Demographic Profile of Respondents (N = 182)

Demographic Aspect		N	%
Gender	Male	73	40.1%
	Female	109	59.9%
Age	≤20 years	62	34.6%
	21 – 30 years	54	30.2%
	31 – 40 years	32	17.9%
	40 – 50 years	21	11.7%
	≥ 51 years	10	5.6%
Education	Senior High School or equal	126	69.6%
	Diploma (1, 2, 3)	27	14.9%
	Strata 1 or equal	25	13.8%
	Postgraduate	3	1.7%
Job	Student	69	37.9%
	Civil Servant	10	5.5%
	Employee	64	35.2%
	Professional	4	2.2%
	Entrepreneur	11	6.0%
	Pensioner	21	11.5%
	Household	2	1.1%

Source: Primary Data (2013)

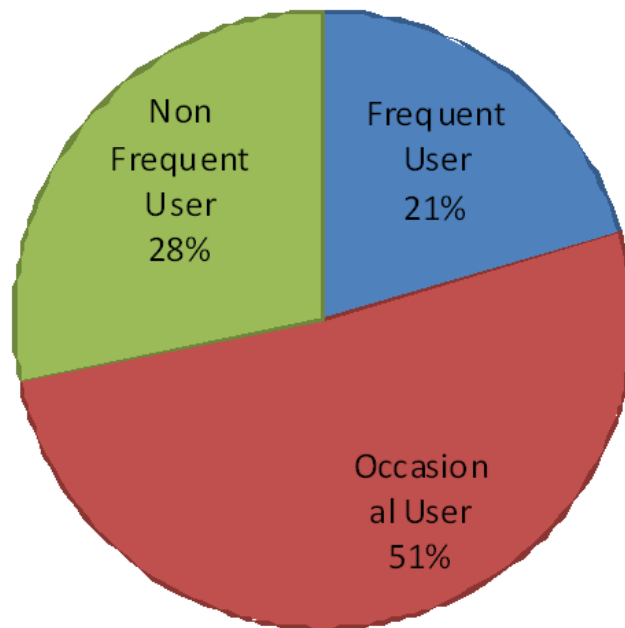


Figure 1. Types of TransJakarta Corridor IX Users  
Source: Primary data (2013)

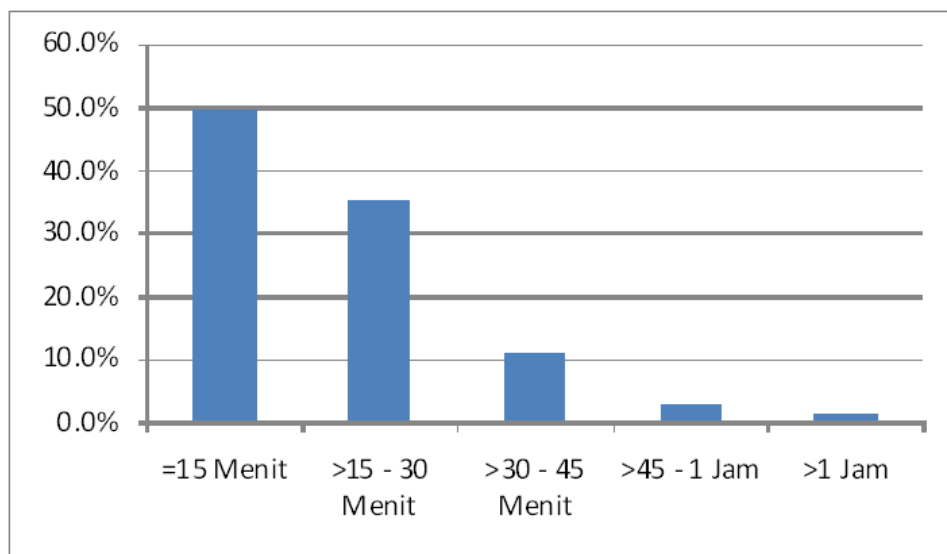


Figure 2. Travel Time from the Nearest Shelter to Office/Campus/School and Other Destinations  
Source: Primary data (2013)

The use of 5-level rating of Likert-Scale will also be analyzed in processing the data from the respondents who are asked to decide their position against an attribute or concept. Furthermore, this research will also use the attributes of public transport adapted from Scherer (2011) in the bipolar scale, and the research is carried out in

the period of July to November 2013 taking place in West Jakarta, exactly in the TransJakarta bus halt of Slipi Palmerah and the nearby.

**Result and Discussion**

**The Level of Using TransJakarta**

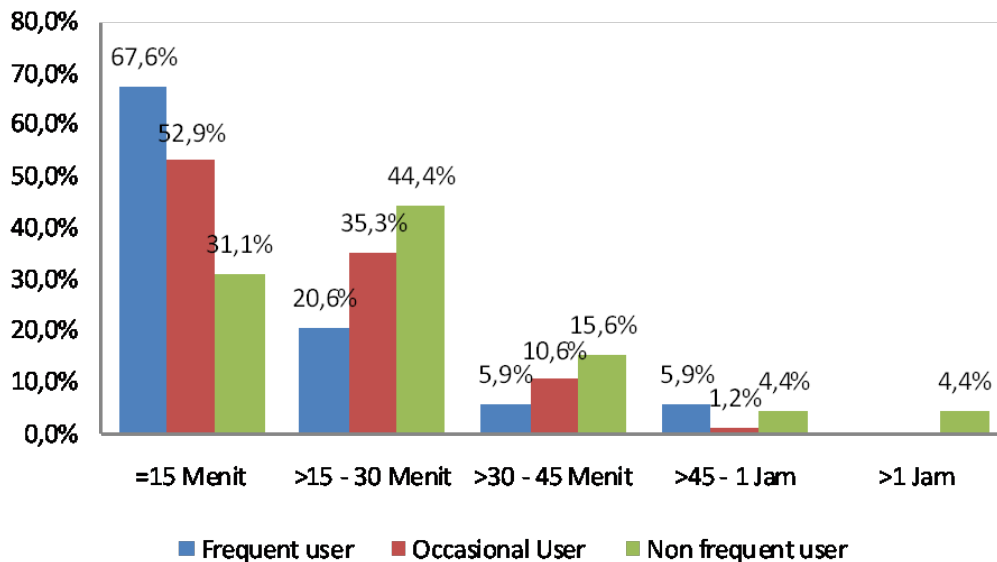


Figure 3. Types of Users and the Nearest Distance Shelter to Office/Campus/School/other Destination

Source: Primary data (2013)

### Service in Corridor IX

The result of research shows that the percentage comparison between *frequent users* and *non frequent users* is not far, that is 20.4% *frequent users* compared with 28.2% *non frequent users*. Furthermore, 51% of all respondents state that they are *occasional users* with non-routine use of TransJakarta services. This shows that 79% of all respondents in this research are not routine or regular users of TransJakarta service in corridor IX as seen in Figure 1.

By differentiating the types of BRT TransJakarta service users it is expected to get a more objective perspective of the TransJakarta bus users' perception, especially in corridor IX because the perceived image will be much influenced by the factors of information and experience which dominantly construct the conceptual framework of an object.

Travel time of the Nearest TransJakarta Shelter from Office/Campus/School/other Destinations

Among the respondents involved in this research as many as 50% (55

respondents) answer: the location of shelters from the workplace/campus/school and other destinations are in the same distance, less than 15 minutes walk. This shows that the shelters are possibly in the right position or in the comfortable distance for the users when they want to take on the bus or when they go to office or get back from office after taking advantage of TransJakarta. While about 34% (37 respondents) answer: they have to walk 15 to 30 minutes to reach the destination after getting out of the bus halt. The others, almost 15% (16 respondents) state that the halts of TransJakarta are relatively far from their office/campus/school.

Comparison among Travel Times of the Nearest Shelter for TransJakarta Corridor IX Users

One of the main factors that will naturally be taken into account by the users of BRT transport service provided by TransJakarta in corridor IX the easy access to the nearest halt regarding TransJakarta halts are only in certain points. Based on the visual observation, there are passengers who stop in the halt and immediately take

*mikrolet* (a kind of public transport) or *ojek* (a motorcycle used for public transport) to get the final destination. It means that the distance from the nearest halt to their office/campus/school is only several minutes. If the distance takes more than 30 minutes, then it will not be efficient so that they tend not to routinely use this transport, never use it, or even choose other alternatives.

In the group of *frequent user* respondents, the nearest shelter is maximum 15 minutes walk, dominated by 67% (15 respondents) while the nearest for other 6 respondents is 15 to 30 minutes and only a few with the distance more than 30 minutes walk. In the second group of respondents, *occasional user*, for more than half of them, the nearest shelter is 15 minutes walk or less, whereas those with the distance 15 to 30 minutes are about 35%, and the remaining respondents with the distance of more than 30 minutes walk. In the third group of respondents, *non frequent user*, the nearest shelter is dominantly 15 to 30 minutes walk. This is one of the factors why this group infrequently take advantage of TransJakarta services. Meanwhile, for the distance more than 15 minutes walk, the group of *non frequent users* dominates compared with the other groups of users. Therefore, it can be tentatively concluded that the distance of shelter is one of the factors influencing why they infrequently use TransJakarta corridor IX services.

### Attribute Assessment

*Frequent user* gives the highest average score for important attribute as 4.46 (close to five). This score means that the existence of TransJakarta bus service, especially in Corridor IX, is much needed by those routinely using this kind of public transport. Subsequently, the consecutive attributes are environment friendly and safe from accidents with the score respectively 4.11 and 4.08. The attributes negatively perceived by *frequent users* are the density

of the bus, long *headway* and the route that is considered “not to the point” (not directly to the final destination) or that the users should move to other buses in certain halts with the value of *mean* respectively 2.00, 2.19 and 2.76. For the attribute of speed in using TransJakarta, the respondents perceive not positive. In fact, the observation shows that the *headway* is much dependent on the traffic condition at that time, especially the factors of weather and rain. One observation shows, when it is raining the interval of inter-arrival reaches more than 30 minutes, meaning that the reality is so far from the *headway* standard of TransJakarta services, which is 5 minutes.

The respondents in the group of *occasional user*, in fact, give the attribute having same size with the highest score, i.e. interests and environment friendly, each gets 3.86—but still lower than the respondents of *frequent user*. For the two highest attributes, the respondents of this group place the attributes of *safe from accident* and *attractiveness* with the score respectively 3.70 and 3.63. Therefore, it is necessary to note that in average all attributes given by the group of *occasional user* tend to float so that no single attribute reaches the mean score 4. The attribute considered as the most negative according to the respondents of *occasional user* is the density of the bus. Even, Bahkan, the mean score given is lower than that is given by the first group of respondents, 1.84. The next two attributes given low score are the bus *headway* and bus *newness* with the score respectively 2.40 and 2.48. The same attribute given low score from *frequent users* and *occasional users* is the bus *headway*. The attribute with low score and has a difference between *occasional users* and *directness* is the bus *newness*. It seems that *occasional users* give higher score on *tangible* aspects, whereas the group of *frequent users* emphasize more on the *intangible* aspects or the utility.



Table 3. Attributes with the Highest and Lowest Image

Attribute	Frequent User	Occasional User	Non-frequent User
3 (three) highest attributes	Important – not important (4.46, std dev 0.605)	Important – not important (3.86, std dev. 1.050)	Important – not important (3.86, st dev.
	Environment friendly – not environment friendly (4.11, std dev. 0.932)	Environment friendly – not environment friendly (3.86, std dev. 1.030)	Environment friendly – not environment friendly (3.66, std dev.
	Safe from accidents – not safe from accident (4.08, std dev. 0.894)	Safe from accidents – not safe from accident (3.70, std dev. 1.003)	Safe from accidents – not safe from accident (3.57, std dev.
3 (three) lowest attributes	Direct route – indirect route (2.76, std dev. 1.256)	New bus – old bus (2.48, std dev. 1.332)	Modern bus model – old bus model bus (3.26, std dev. 1.139)
	Fast headway – slow headway (2.19, std dev. 1.126)	Fast headway – slow headway (2.40, std dev. 1.223)	Fast headway – slow headway (2.50, std dev. 1.199)
	Void – crowded (2.00, 1.247)	Void – crowded (1.84, std dev. 1.046)	Void – crowded (1.90, std dev. 1.015)

Source: Primary data (2013)

Table 4. Means for Each Type of User

Type of User	Mean	Std Deviation	N	Sig
Frequent user	3.39	0.46	37	0.000
Occasional user	3.26	0.60	93	0.000
Non frequent user	3.18	0.58	50	0.000

Source: Primary data (2013)

The group of *non frequent users* also gives high scores to the same attribute with what is given by the group of *frequent users*, i.e. the attributes of interests, environment friendliness and safe from accidents with respective score 3.68, 3.66, and 3.57. Although it gives the same order of attributes, but the group of *non frequent users* tend to give lower score than the group of *frequent user* (3.68 compared with 4.46; 3.66 compared with 4.11; and 3.57 compared with 4.08). Furthermore, this research also explains the consistency of the attribute that is always low score by all groups of TransJakarta transport users, especially in corridor IX, including *non frequent user*, i.e. the crowded bus and the long headway. *Non frequent users* also give score which is almost as low as the score from the group of *occasional users*, 1.90. However, for the long headway, the

group of *non frequent users* give score 2.50, still higher than the score given by the respondents of *frequent users* (2.19). This research also identifies the sameness between the respondents of *non frequent users* with the *occasional users* concerning the attribute that they give low score, i.e. the physical attribute of the bus. Here the *non frequent users* as well as the *occasional users* give low score to the aspect of bus modernity. Of course, it is different from the group of *frequent users* who do not give low score to this aspect.

Semantic assessment on the attribute is also done by making two conflicting poles, positive and negative, using the range of score from 5 (positive) to 1 (negative). The implication is that the higher score an attribute gets the more positive it will be.

In total, from the scale of value 5 =

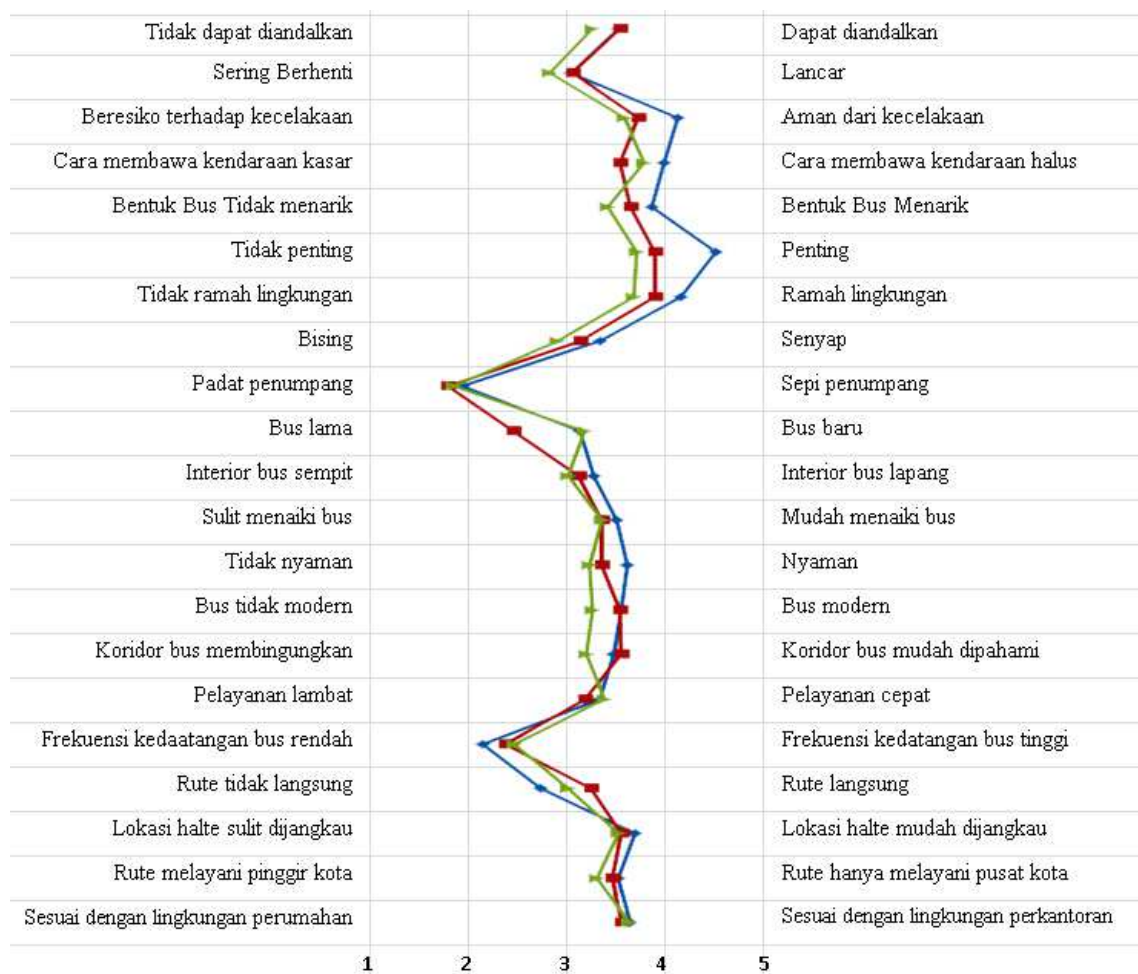
very positive to 1 = very negative, it has found the calculataion for the group of *frequent user* respondents, i.e. *Mean* = 3.39 with standard deviation 0.46. For the group of *occasional user* respondents, the *mean* value is 3.26 and standard deviation 0.60. For the last group of respondents, the value of *mean* obtained is 3.18 and standard deviation 0.58.

Seeing Table 4.1, it can be described that *frequent users* have a more positive opinion than the *occasional users*, while

*non frequent users* have the lowest value of *mean* among all groups of user. Thus, globally the image of TransJakarta bus is that *frequent users* > *occasional users* > *non frequent users*.

### The Perceived Image of TransJakarta Bus

By using five attributal dimensions of perceived image on public transport proposed by Schecter (2011), the



- frequent user
- occasional user
- non frequent user

Gambar 4. Image in a Whole  
Source: Primary data (2013)



attributal dimensions that are different from transportation service provided by TransJakarta are affective dimension, dimension of vehicle aspects, dimension of service characteristics, dimension of the impact on the other user, and dimension of the impact on the trip itself. However, in Figure 4 we can see how the perceived image of TransJakarta bus service, especially in corridor IX, is based on each type of user, namely *frequent users*,

*occasional users* and *non frequent users*. Globally, the image that appears is the sameness of image pattern from all groups of respondents. In addition, according to the respondents, only several attributes that have low score. In Accordingly, in total, there are more dimensions and attributes assessed in this research are in the range of 3 to 4. It indicates the sameness of perceived image in almost all attributal dimensions of TransJakarta bus.

Table 5. Value of Loading Factor per Attribution

Attribution	Factor/Component				
	F1	F2	F3	F4	F5
<b>Eigenvalue</b>	<i>E</i> = 5.488	<i>E</i> = 1.794	<i>E</i> = 1.635	<i>E</i> = 1.348	<i>E</i> = 1.088
<b>% of variance</b>	26.135%	8.541%	7.784%	6.417%	5.180%
Reliability	.273	.373	.258	.056	-.275
Smoothness	.099	.513	.348	-.257	-.200
Safety	<b>.755</b>	.033	.005	.133	.079
The way the driver rides	<b>.524</b>	.075	.442	.385	.002
Attractiveness	<b>.633</b>	.391	-.111	.080	.018
Interests	<b>.579</b>	.350	-.207	.272	-.029
Environment friendly	<b>.670</b>	.132	-.075	.066	.064
Noise	.488	.012	.337	-.118	.103
Density	-.099	.154	.488	-.312	.202
Bus model	.074	<b>.602</b>	.057	.033	.039
Interior	.175	<b>.594</b>	.255	.114	.198
Ease of use	<b>.577</b>	.200	.104	-.078	.225
Comfort	<b>.646</b>	.217	.289	-.044	.140
Modernity	.349	<b>.728</b>	-.091	.186	.100
Route clarity	.338	.024	.218	.297	<b>.580</b>
Service	.167	.336	<b>.556</b>	.365	.099
Level of headway	-.077	.145	<b>.536</b>	.384	.252
Route directness	.118	-.015	.248	-.026	<b>.787</b>
Halt accessibility	.287	.463	-.157	.045	<b>.591</b>
Downtown orientation	-.054	.273	-.159	<b>.698</b>	.187
Congeniality with environment	.138	.017	.105	<b>.735</b>	-.046

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 17 iterations.

Source: Primary data (2013)

In order to obtain the latent dimension of TransJakarta bus service, especially in corridor IX based on the attribution rated by respondents, factor analysis is carried out to simplify the so-complex dimensions and variables into a few sets of dimensions considered as representing all the attributes assessed. This method is useful for seeing how the rating given by respondents can be simplified and grouped based on their closeness in grouping the image.

The dimensions taken are the factors with Eigenvalues more than one. It is obtained by doing a rotation using Varimax method. The result of rotation will reduce the attributes into a few factors accompanied with *loading factor* that will determine in which dimension they will be grouped.

The first factor constructed has the higher *loading* value for safety and then followed by congeniality with environment. The first element shows that safety consistently becomes a priority, and what is beyond prediction is how ecology friendly can become the second ranked factor. In another word, the awareness of the management in delivering BRT TransJakarta bus service in Corridor IX, really influences the users' perception. This is in line with the reality that almost all the bus fleet of TransJakarta use gas as the more-efficient and environment-friendly fuel. The next attribute given high score for affective dimension is comfort. In the next positions are respectively attractiveness, interests, and ease of use. This affective image dimension contributes more than 26% of the image constructed for TransJakarta bus, especially in corridor IX.

The second image dimension constructed is the vehicle aspect of TransJakarta bus. The attribute that has the highest score for *loading* is the aspect of bus modernity with 7.28. Subsequently, it is followed respectively by interior

design and the model of TransJakarta bus. This dimension contributes 8.5% of the image constructed. TransJakarta service in corridor IX, according to visual observation, operates the buses that can be considered new and consists of two types, namely *single bus* and *articulated bus*. This regards that Corridor IX is the longest route: from Pinang Ranti to Pluit (approximately more than 30 km). In addition, corridor IX also serves the fringe area in Pinang Ranti, Gatot Subroto street with offices along it, shopping area in Grogol and Pluit, as well as residential areas of Pluit and Pantai Indah Kapuk.

Although it has the score *loading* relatively lower than other attributes, the third constructed dimension of image is the attribute that has the aspects of service and *headway* level. It shows this dimension is still lower than the other dimensions. Although the respondents consider it important, *headway* has a relatively low *Mean* if faces the reality as they give response in the questionnaire. Furthermore, the attribute of service is also low in this dimension, meaning that generally the attribute of service has not become a dominant dimension in building the perceived image of TransJakarta corridor IX. This dimension contributes 7.8% of all the image constructed.

Subsequently, the fourth dimension constructed is *the impact on the way* with all attributes in it; that corridor IX service is congenial with the environment or area it serves and it is oriented to downtown—congeniality with the environment or area it serves is given fairly high score for *loading*, respectively 0.735 and 0.698. This positive image shows that respondents give response in line with the aim of BRT TransJakarta service, in order to make movement from using private vehicle to public transport, especially TransJakarta. The image constructed in this dimension contributes 6.4% of the total image.

The last dimension of image contributing 5.1% of the total image is the impact on the user or other people with all attributes in it; the highest has *factorloading* 0.787 of all attributes, i.e. the route directness provided, followed by the halt accessibility and the route clarity with *loading* respectively 0.591 and 0.580.

In general, from the five dimensions constructed based on the group of factor obtained from the rotation, it can be stated that the perceived image owned by the users of BRT TransJakarta transport service especially in corridor IX, is an image that consists of various dimensions having different weights. The affective aspect gives the highest contribution to what makes the users describe the concept constructed in their mind, and the dimension of the impact on the user or other people is ranked the last (lowest) in the image construction of BRT TransJakarta transport service.

## Conclusion

In general there are different images projected by the user groups of TransJakarta transport service; namely from *frequent user*, *occasional user* and *non frequent user* respondents.

The groups of *frequent users* and *occasional users* have a similarity in terms of important dimension, namely the aspect of functionality as seen from the attribute with low score for the perception they have, i.e. interests. Whereas for the group of *non frequent users*, they tend to give low score for the physical aspect of the bus.

There are also 5 (five) dimensions of image projected by various groups of BRT TransJakarta transport service users: affective dimension, vehicle aspect dimension, service characteristic dimension, dimension of the impact on the trip/ride, and dimension of the impact on the users and other people which respectively reflects the rank of elements that dominate

the image projection.

Affective-emotional aspect is the dimension of image that contribute the most to the respondents' image projection in this research, whereas the dimension of the impact on the users and other people becomes the least dimension that contributes to this image construction.

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