Calculation Method to Analize The Concordance Between Supply and Demand of Bus Public Transport For Morning Commuter Trip at Gubeng Station

Jos Oktarina Pratiwi[1], Hitapriya Suprayitno[1]

Abstract - Surabaya is the center of activity for the province of East Java and eastern Indonesia. Commuting to Surabaya is very high. Thus, the concordance between supply and demand of public transport for commuter trip must be evaluated. For this purpose a calculation method has to be developed. The research objective has been achieved. The method calculation based on special matrix technics for overlay calculation.

Term Index - public transport, MAT origin destination, overlay, concordance.

INTRODUCTION

The city has an important role and function in the economy and regional development, bot regionally and internationally [1] [2]. Surabaya developed into a city trade and service, this requires the availability of the ease and speed of access, especially for transportation infrastructure. Surabaya as a business destination.

Commuting to the Surabaya is very higt with different travel destinations. In fact, on the main road that connects with hinterland is always crowded in the morning for trip to Surabaya and afternoon for trip out Surabaya.

Urban trafic transport has a role and an important function as facilities to support the implementation of the relationship and interaction between parts of the mobility of residents of the town [3] [4]. This networt integration to promote the establishment of increased production and productivity of the population in various activities [5] [6].

Mass transit such as trains is one alternative that connects trip to Surabaya. To reach the destination followed by public transport. But between the demand and supply of public transport routes need to know for concordance. This study assesses the concordance of the demand and suplyof public transport route by looking at the original matrix trip destinations, the provision of the existing public transports routes, demand for publict transport service, and assessment concordance between the demand and supply of public transport routes.

METHOD

Preparation phase for method is carried about this :

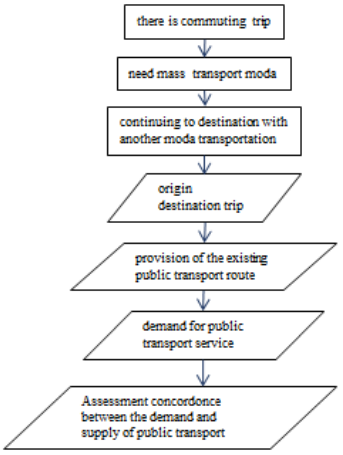

Figure 1. Preparation phase.

A. *Special Matrix Analysis [7] [8]*

Table 1. Basic form matrix.

m.B	1	2	3	4	5
1	m11	m12	...	...	m15
2	m21	m22	...	...	m25
3	...	...	...	...	...
4	...	...	...	...	...
5	m51	...	...	...	m55

Sumber: Suprayitno, 2014

B. *Overlay Analysis*

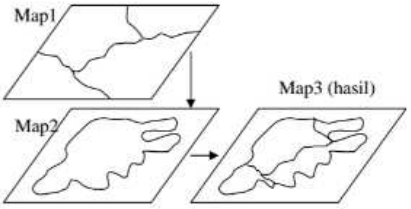

Figure 2. Overlay Analysis.

[1]Jos Oktarina Pratiwi, and Hitapriya Suprayitno are with Department of Civil Engineering Department, Faculty of Civil Engineering and Planning, Institut Teknologi Sepuluh Nopember, Surabaya. Email : oktarinajos13@email.com; suprayitno.hita@email.com

RESULT AND DISCUSSION

C. *Origin Destination Matrix*

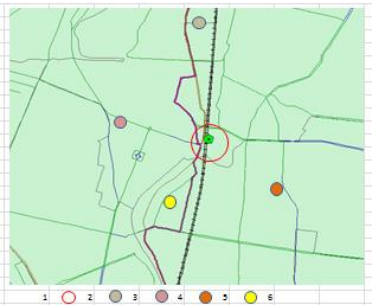

Figure 3. Ilustration Trip Distribution.

Tabel 2. Origin Destination Matrix.

Sampel MAT	1	2	3	4	5	6	TP i	
1	0	4	20	11	14	30	79	
TA i	0	4	20	11	14	30	79	79
		5%	25%	14%	18%	38%	1	

D. *Provision Of The Existing Public Transports Routes*

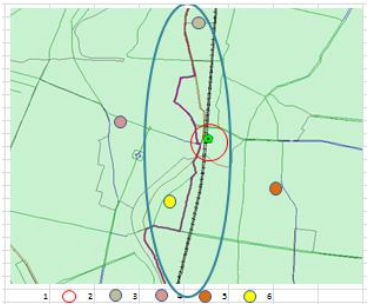

Figure 4. Ilustration Route Public Transport.

E. *Demand for Publict Transport Service*

Table 3. Matrix trip no need to served by AUT.

MAT tdk perlu dilayani AUT	1	2	3	4	5	6	TP i
1	0	4	0	0	0	0	4
TA i	0	4	0	0	0	0	4
perjalanan yg tidak perlu dilayani AUT		5%					

Table 4. Matrik trip need to served by AUT.

MAT perlu dilayani AUT	1	2	3	4	5	6	TP i
1	0	0	20	11	14	30	75
TA i	0	0	20	11	14	30	75
perjalanan yg perlu dilayani AUT			25%	14%	18%	38%	

F. *Assessment concordance between the demand and supply*

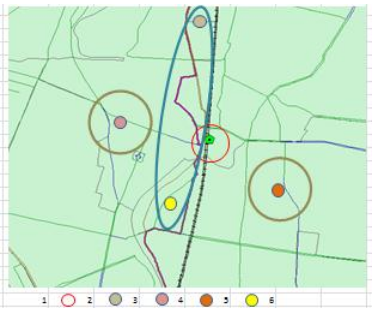

Figure 5. Ilustration The Corcordance.

CONCLUSSION

The research objective has been successfully fulfilles. The most important thing is that a calculation method which can be executed by using spread-sheet type program has been developoed. The advantage of spread-sheet can be utilized in maximum by creating special matrix calculation.

REFERENCES

[1] Adisasmita, Raharjo. *Mananjemen Transportasi Darat.* Yogyakarta: Graha Ilmu, 2011.

[2] Sadyohutomo, Mulyono. *Manajemen Kota dan Wilayah.* Jakarta: Bumi AKsara, 2008.

[3] Adisasmita, Sakti Adji. *Jaringan Transportasi.* Yogyakarta: Graha Ilmu, 2011.

[4] Miro, Fidel. *Pengantar Sistem Transportasi.* Jakarta: Erlangga, 2012.

[5] Nasution, Nur. *Manajemen Transportasi.* Jakarta: Penerbit Ghalia Indonesia, 2004

[6] Tamin, Ofyar. *Perencanaan dan Permodelan Transportasi.* Bandung: ITB, 2000.