



Effect of School Clustering Policy on Travel Distance of Urban School Children

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Abstract

Normatively travel distance to elementary school should be within walking distance. However, the facts in several major cities in Indonesia showed that many school children travel beyond walking distance to reach their schools. The purpose of this study was to identify the influence of school clustering policy on travel distance of urban school children. The study is conducted by using respondents of elementary school children in Bandung. The results of this study indicated that if school clustering policy is applied, the total travel distance could be reduced as many as 6,285 meters per student in average.

Keywords: travel distance, school clustering policy, urban school children

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1.0 Introduction

Phenomenon happened in Indonesia related to travel behavior of urban school children nowadays is travel distance of urban school children is beyond their walking distance and use motorized mode of transport. Normatively, elementary school in urban area should be located within walking distance (Gallion, 1986; Chapin, 1965).

Travel behavior of urban school children is influenced by several factors, both physical and non-physical factors (McMillan 2005, McDonald 2008, Shokoohi et al, 2011). Physical factors are related with urban form, whereas non-physical factors are related with social and economic factors, as well as policy. This study is related to non-physical factors. The purpose of this study was to identify the influence of school clustering policy on travel distance of urban school children.

2.0 Methodology

In this study, data collection was done by survey. The number of respondents in this study was 200 students. Population in this study was defined as students from favourite schools and their travel distance was beyond walking distance. The questionnaire were distributed to the students at schools in City of Bandung and filled by their parents. Favourite schools were chosen because usually the students at this schools came from location outside the service area of the respective school. Favourite schools were identified based on data from Office of National Education Bandung Municipality. Respondents were asked about the location of existing schools, the reason for selecting the school, and trip characteristics of the student, which include travel time, travel distance, and mode choice, and family socioeconomic characteristics. Respondents were also asked about the possibility (P), willingness (W), and ability (A) of selecting schools within walking distance if clustering policy applied. Proportion of respondents shifting from existing school location to the nearest one or within walking distance was defined as:

$$P \times W \times A \tag{1}$$

Travel distance reduction (TDR) as a consequence of school clustering policy was defined as the difference between existing distance /%34 between home to school and normative walking distance /N347 which was defined as :00 meters. The formula to calculate travel distance reduction was defined as follows:

$$TDR = ED - ND \tag{2}$$

3.0 Results And Discussions

3.1 Socio Economic and Travel Characteristics of Urban School Children in Bandung

More than 50% of households' income of respondents were more than Rp 570007000. This

classification of income is the highest in this study. The next were between Rp 2,000,000 to Rp 3,000,000. The distribution of households' income of respondents can be seen in Table 1.

Table 1: Distribution of Households' Income of Respondents

Income Group (Rp)	Percentage (%)
< 1,000,000	3
1,000,000 to < 2,000,000	18
2,000,000 to < 3,000,000	19,5
3,000,000 to < 4,000,000	15
4,000,000 to <5,000,000	12,5
>= 5,000,000	28,5
Others	3,5

As stated before, all of the respondents in this study were students who travel distance to school beyond walking distance. The reason for selecting the existing school mainly because of education quality (53%), and image of the school (22%). Related to the existence of schools within walking distance, most of respondents stated that actually there were schools within walking distance /FH%47 but the schools did not fulfill their requirements, such as the quality aspect.

Travel distance of respondents is 6,564.29 meters in average. The minimum value of travel distance is 1,500 meters and the maximum value is 25 kilometers. The minimum value of travel distance showed that it was beyond walking distance⁷ which was defined as :00-800 meters. The reasons for this fact was correlated to the reasons for choosing the location of school. This fact is based on recent condition of education facilities in City of Bandung which is different in term of quality. School with good education program and complete facilities mainly are chosen by middle to high income community. In this case distance is not an important factor.

According to travel time to and from school, it was known that in average travel time to school was 29.05 minutes, and from school was 32.40 minutes. Private mode was the most mode used to reach the school. It was chosen by 71.6% of respondents. The rest 28.4% of respondents used public mode of transport. Mode of transport of respondents can be seen in Table 2.

The use of motorized mode of transport actually has a relationship with the distance to school. It can be concluded that the longer distance to school, the higher choice of motorized mode. Distance and mode choice are correlated significantly. The high use of motorized mode is also influenced by the socioeconomic characteristic of respondents, which was mainly high income group.

Table 2: Mode of Transport of Respondents

Mode of Transport	Percentage (%)
Private	
Car	27.1
Motorcycle	44.5
Public	
Shuttle bus	15.6
Public Transport	11.5
Others	1.4

3.2 Effect of School Clustering Policy on Travel Distance

There were 804 elementary school in the city of Bandung spread in all districts of the city of Bandung. Based on the standard for the provision of education facility (Minister of Settlement and Regional Infrastructure Decree No. 534/KPTS/M/2001), the provision of elementary school facility is 1 (one) unit for every 6,000 supporting population. Furthermore, the facilities should be clean, accessible, noise free, far from the sources of diseases, garbage, and other polluters. In reality, this standard does not regulate the distribution of the elementary school facilities. Another standard that regulates the provision of education infrastructure is Ministerial Decree No. 24 year 2007. This standard indicated that there should be at least 1 (one) unit of elementary school facility for each sub-district. It also indicated in detail the quantity and quality of the infrastructure that should be provided at the education facilities from basic education (Elementary School/*Madrasah Ibtidaiyah*) to secondary education (High School/*Madrasah Aliyah*). These two standards have different criteria regarding the provision of facilities for elementary school. In addition, these two standards have not indicated a regulation regarding the services distribution.

Based on the standard for the provision of education facility (Minister of Settlement and Regional Infrastructure Decree No. 534/KPTS/M/2001), the fulfillment of basic education facility in Bandung actually is oversupply (see Table 3). All districts in Bandung had a ratio of supply and demand of over 100%. Although the ratio of supply and demand was over 100%, the distribution of elementary school was concentrated in the western part of the city /see Figure 14. This shows that there is no specific regulation regarding the location of elementary school facilities, especially in city of Bandung. The allocation of this facility will influence the travel behavior of the elementary school children.

Table 3: Supply-Demand Ratio of Elementary School in City of Bandung

No	District	Numbers of Population	Demand on Elementary School	Existing Supply on Elementary School	Supply-Demand Ratio (%)
1	Bandung Kulon	125,929	21	50	238
2	Babakan Ciparay	127,151	21	23	109
3	Bojongloa Kaler	118,948	20	36	182
4	Bojongloa Kidul	74,626	12	17	137
5	Astana Anyar	73,992	12	27	219
6	Regol	78,690	13	36	274
7	Lengkong	74,621	12	24	193
8	Bandung Kidul	50,119	8	18	215
9	Margacinta	118,299	20	41	208
10	Rancasari	64,659	11	16	148
11	Cibiru	79,968	13	38	285
12	Ujungberung	77,096	13	28	218
13	Arcamanik	62,777	10	33	315
14	Cicadas	97,561	16	40	246
15	Kiaracondong	125,600	21	34	162
16	Batununggal	121,650	20	40	197
17	Sumur Bandung	40,594	7	22	325
18	Andir	95,447	16	45	283
19	Cicendo	102,139	17	46	270
20	Bandung Wetan	33,404	6	24	431
21	Cibeunying Kidul	109,337	18	32	176
22	Cibeunying Kaler	70,546	12	16	136
23	Coblong	122,161	20	52	255
24	Sukajadi	100,943	17	27	160
25	Sukasari	77,750	13	21	162
26	Oldadap	46,962	8	18	230
Total			378	804	-

Source: BPS-Statistics Indonesia, 2005

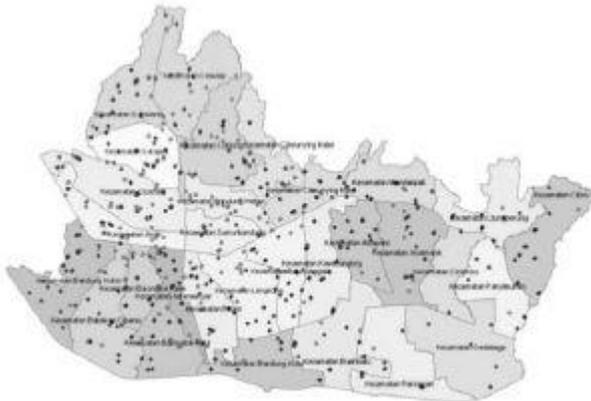


Figure1: Distribution of Elementary School in City of Bandung

Based on the distribution of facility and the range of service of elementary school facilities, there is an overlapping of service area among facilities. According to the normative standard, the range of service area of elementary school facility is 400 to 800 meters. This is possible because of the oversupply, location that is close among the facilities, and location of facilities within the administrative boundary of district or sub-district. This can be seen on Figure 2 below.



Figure 2: Service Area of Elementary School in City of Bandung

The distribution of elementary school as shown in Figure 1 and the existence of elementary school within walking distance as shown Figure 2 indicates inefficiency in the facilities services. This is due to the lack of regulation on the location of elementary school facilities. The existing regulation on elementary school facilities only deals with the number of infrastructure supporting the teaching and learning activities. In addition, the existing policy does not have the tendency to equalizing the quality of education at the elementary

school level.

Issue regarding the lack of policy of utilization of elementary school within its service distance and issue on the differences of elementary school quality will have an impact on the minimum orientation of the internal orientation of the internal movement for elementary school education. Travel distance which mostly beyond the walking distance, has caused a greater use of motorized mode, because non-motorized mode is sensitive toward long travel distance.

School clustering policy is a policy which arranges service area of one school. Within the framework of this policy, a school can only serve student in its service area. Based on the reason of school location choice mentioned above, the policy should also be complemented by equalizing school quality standard. The possibility, willingness, and ability of respondents to select school located within walking distance is explained as follows.

Possibility (P). Most of respondents (92%) stated that there was a possibility to select school within walking distance. The respondents who stated that there was a possibility to select school within walking distance mainly were non working mother or working parent but prefer to select school within walking distance. The respondents who stated that there was no possibility to choose school within walking distance mainly were working parents who preferred to select school near their working places.

Willingness (W). From 92% respondents who stated that there was a possibility to select school within walking distance, 70, 49% among them stated that they will select school within walking distance. Nevertheless, some of them stated that there were limitation in selecting school within walking distance, among others are education quality, education infrastructure, school image, and cost of education.

Ability (A). If limitation stated before can be eliminated, as many as 92,25% of respondents who stated possible and willing to select school within walking distance, able to select school within walking distance.

Based on the condition of possibility (P), willingness (W), and ability (A), the proportion of respondents who will select school within walking distance was 0,595 or 59,5% (see formula 1). It means that if school clustering policy is applied there will be 59,5% of respondents who will shift the location of school from existing location, which was beyond walking distance to nearest school. According to formula 2, if the policy is applied, the travel distance could be reduced as many as 6,265 meters per student in average.

4.0 Conclusion

Based on the standard of the basic education facility service provision, there was oversupply of facility in the city of Bandung.

Based on the normative standard of the maximum distance of basic education facility in the urban area (Chapin, 1965; Chiara and Koppelman, 1975; Gallion, 1986), there was an overlapping of service area of elementary school in the city of Bandung. This is the result of an oversupply in the provision of the facility and the absence of regulation on the location of elementary school facility.

Travel distance to school that exceeds the standard walking distance indicates that most school children were not utilizing the school within the walking distance. This is significantly influenced by the reason for school location choice, i.e. school quality. The school location choice is significantly has a correlation with the level of income⁷ so that there is a market segmentation of basic school facilities. This segmentation is indicated by differences in education service shown by the difference in education cost and type of facility provided by each elementary school.

School clustering policy should not only be focused on forming cluster based on the location, but also emphasized on effort to equalize education quality. School clustering policy accompanied by effort to equalize education policy can influence respondents which used school beyond walking distance. As many as 59,5% of respondents using school beyond walking distance will used nearest school if clustering policy is applied. As consequence of the policy, travel distance could be reduce as 6,265 meters per student in average.

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