

The Influence of Urban Accessibility in Determining Average Indicated Land Values for the Region.

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Keyword: Accessibility, AILV, LBT, SVTO, spatial analysis, statistical analysis

SUMMARY

Land value is an information which necessary for The Land and Building Taxation (LBT). The land values information generally can be applied as component for determinating the Sale Value of Taxation Object (SVTO) which is normally used for base of land and building taxation in Indonesia. According Decree No.533 the year 2000 it is mentioned that the method is applied for calculating value per m² in comparison method with Average Indicated Land value (AILV) at certain region, with the one of variable, the urban accessibility. The Urban Accessibility interpreted as concept merging governing system to arrange the geographical land use connected to urban transport system. Where the accessibility is a procedural comfort scale or amenity of location arranges for urban land use interaction one to another and difficult factor of the location to be reached through transportation system. The Accessibility is very often to be related to travelled distance. If one place nearby to the other place, it can be told the accessibility between both places is height. On the contrary, if both the places so far, then the accessibility between both places are low.

Development of transportation science, travelled distance factor is not the only factor determining level of accessibility. There are some other factor of which can determine the level of accessibility, where time factor is a real determined with availability of transportation infrastructure, cost factor, factor of intensity arranges usage and earnings factor of man who is doing travelling.

In this research to analyse variables influence from accessibility to urban land value. Some variable to be used on this research are: travelling time, road class, public transport route and fleet's volume. For data analysis are using spatial analysis and statistical method. The result of analysis indicates that travelling time, road class, number of public transport routes and fleet's volume, gave a strong influence to the average indicated land value (AILV). Based on spatial analysis and regression analysis, the travelling time gave a negative influence, with regression coefficient value $- 284.712,567$; the road class gave a positive influence, with regression coefficient value $13.640,423$; the variable number of public transport routes gave a negative influence, with regression coefficient value $- 246.300,890$; The fleet's volume variable also gave a positive influence, with regression coefficient value $244.041,576$.

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BACKGROUND

Land price is information which necessary for the Land and Building Taxation (LBT). Information of land price is applied as component of determination Sale Value of Taxation Object (SVTO) which is setting basis LBT. SVTO defined as the price of average of from transaction of sales happened to the manner born and when there are no transaction of sales, SVTO is determined by comparison of the price of with conspecific other object, or new provision value, or value sells substitution tax object (Law No. 12 the year 1994). Equally, SVTO is result of estimation of market value from a property, either in the form of soil;land;ground and also building.

In SVTO is not only applied for determination basis of tax, but utilized also for various importances, between it for compilation of district asset scale, calculation indemnation, determination of level of loan credit by banking, and others (Suharno, 2003). Hope that SVTO can express excelsior market value, because market value is principal reference in strategic decision making, in transacting or information of management.

According To Decree No-533 the year 2000 it is mentioned that method applied in calculation the price of per m² is comparison method with AILV (Average Indicated Land Value) at certain zone, with variable : accessibility, transaction time, data type, landuse, elevation, front breadth (especially for commercial object), land form, land right type and others.

Accessibility interpreted as concept merging governing system to arrange land use geographically with transportation tissue system connecting it (Black, 1981). Accessibility is a procedural comfort scale or amenity of location arranges interaction land use one another and 'easy' or 'his of the location is reached by through transportation system. Akbar (2001) express that accessibility is a concept closest a plot of land to major road in that district. Various building types having the character of commercial mostly having contiguity by way of principal causing results plot of land around major road to have high investment value and automatically land value becomes very height. While major road at one particular determinable region passed frequency through transportation infrastructure of public transport, state of physical of road, function of road. Here in after is told that accessibility always is related to travelled distance. If a place nearby other place, told accessibility between both the places is height. On the contrary, if both the places hardly, accessibility between both low.

With development of transportation science, distance factor is not the only factor determining level of accessibility. There are some other factor of which can determine height the low of

aksesibilitas, between of time factor go through a real determined with availability of transportation infrastructure, cost factor, factor of intensity arranges usage and earnings factor of man who is doing voyage (Miro, 2005).

Research Objectives

The objectives of this research :

- a) To knows accessibilty variable influence, such as : time travelled, number of public transport routes, road class and fleed's volume to urban land AILV
- b) To analysis accessibilty variable influence, such as: time travelled, number of public transport routes passing a certain joint streets, road class and fleed's volume to urban land AILV

Study scope

To focuss the research in:

- Time travelled was time to go through by using four wheel fleed without stopping in trafficligh.
- Fleed's volume mean number and average speed of fleets based on name of the road
- Class road applied is road class based on its function.
- In this research assumed that all roads used have two current directions.
- Public transport is type permitted line transportation route by City Transportation Office.
- Central Business District (CBD) which applied is single CBD of Bandung City, that is called Alun-alun.

METHODS / IMPLIMENTATION

Research is implemented in Bandung city.

Material and equipments

Data applied as component of research consisted of data spasial in the form of digital map of area LBT and scale road (1:1000) with coordinative systems Universal Transverse Mercator (UTM) zone 48 Southern Hemispere at Datum WGS'84. While the attribute data is object data coming from System Information Manajemen of Taxation Object (SISMIOP) LBT the year 2005, Fleed's volumemean velocity data (km/jam), public transport route and volume kendaraan (smp/jam) the year 2005, Road class data obtained from Dinas Bina Marga Kota Bandung the year 2005. Road class applied is road on the function. Equipments applied by computer and printer, with software MS Word, MS EXCEL, SPSS, ARCVIEW and MapInfo.

Determination of estimated transportation variable had an effect to urban land AILV, the variable is done by referring from research and literature review which adapted for research condition. According To Decree No.533 The year 2000, there are some variable influencing SVTO. At this research selected four independent variables that is : (1) time

travelled to/from CBD, (2) road class, (3) number of public transport routes, and (4) fleet's volume..

Making of Time Zone

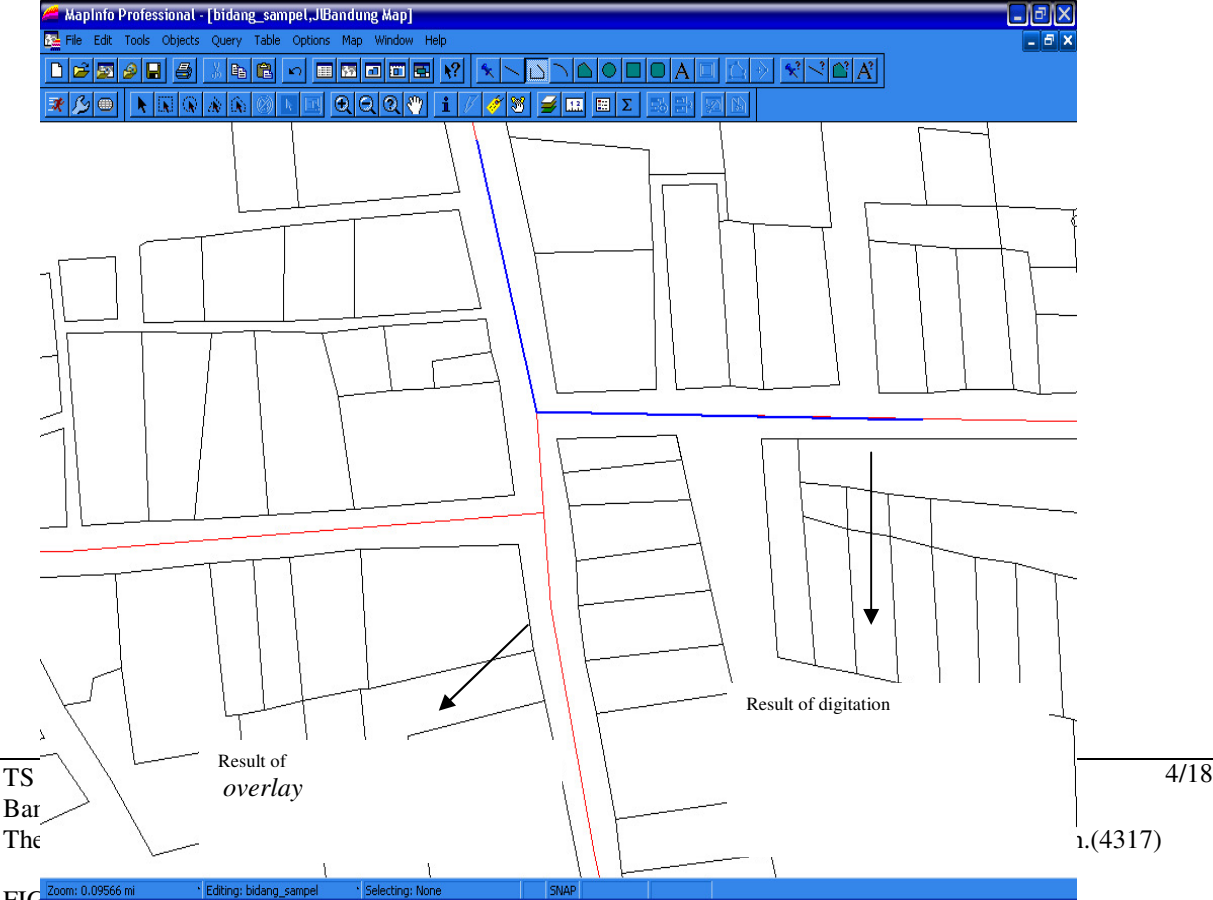
Steps process of time zone is :

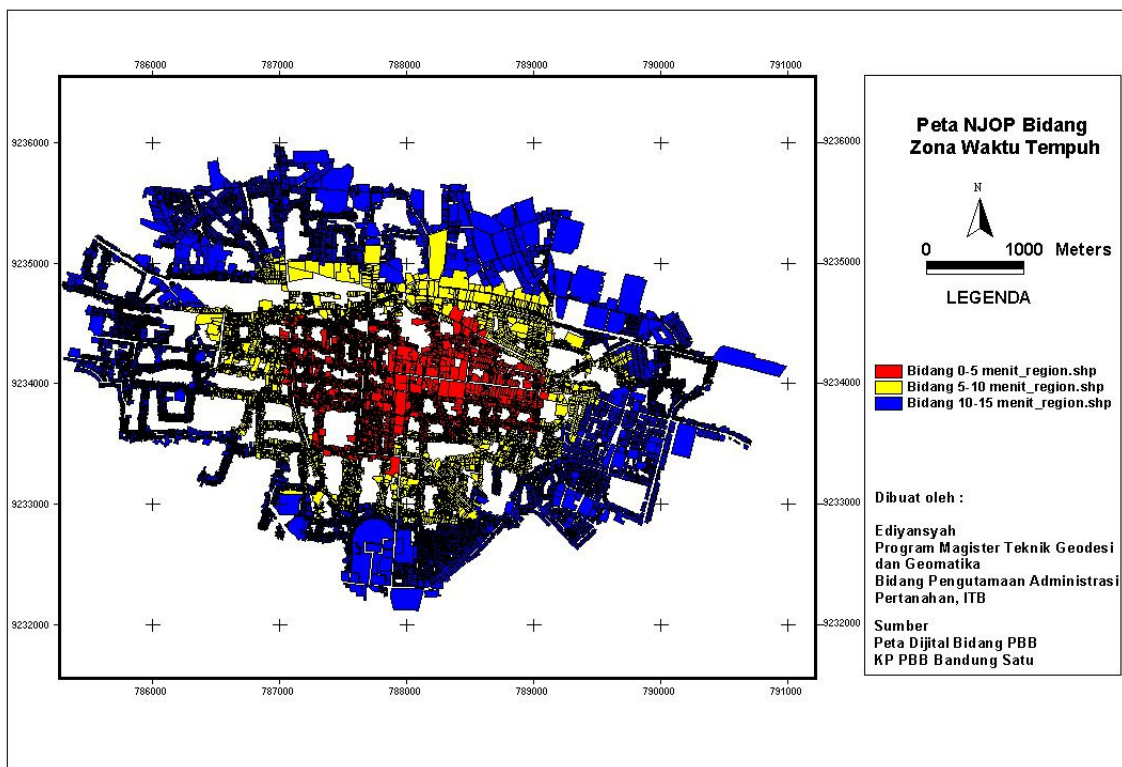
1. Counting of travelled distance from CBD, as according to zones which will be made (zone 0-5 minutes, zone 5-10 minutes and zone 10-15 minutes). Before all is done process overlay between road maps with digital map of LBT by using software MapInfo. Measurement of distance go through based on formula :

$$D = V.t \dots\dots\dots(3.1)$$

Where : D = distance travelling
 V = speed go through
 t = time

2. Distance yielded, hereinafter is measured by using facility rules at MapInfo and then is based on map result of overlay road map with digital map of area LBT.
3. After obtained by distance at each joint streets, hereinafter is done buffering with radius 25 meters.
4. Time zone buffer map went through which has been formed then is overlay with digital map of area LBT
5. To obtain sample areas, done query SQL select at MapInfo between digital maps of LBT with time zone buffer map went through





Picture IV.2. Area result of query at time zone went through

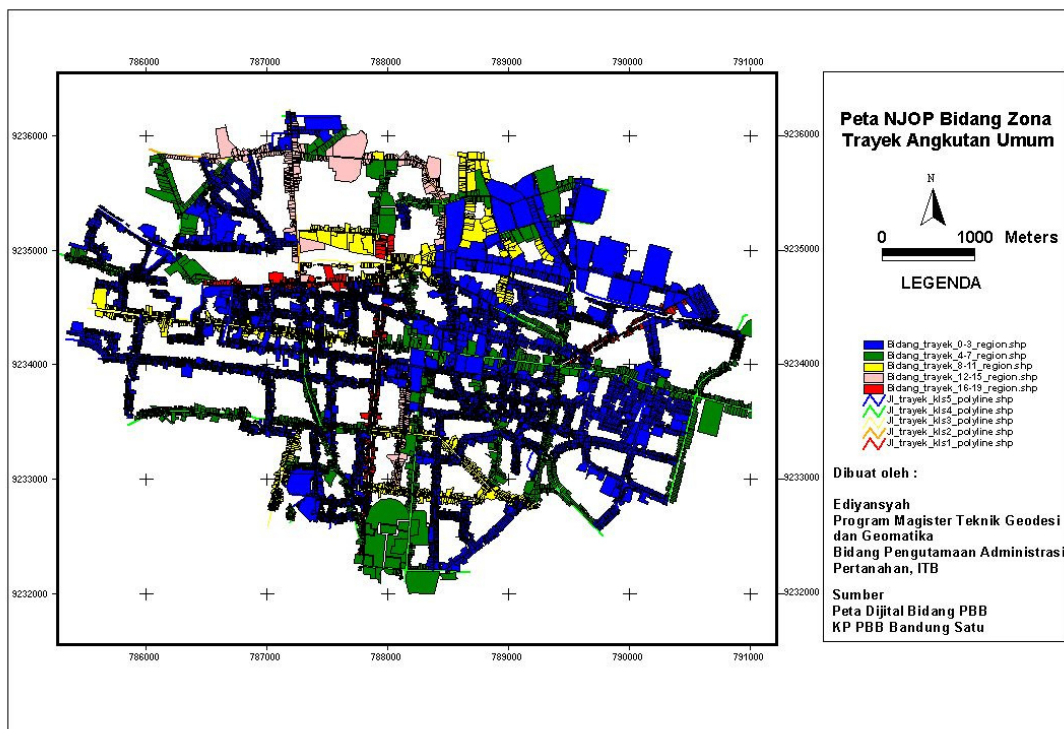
Making of public transport route zone

Steps of public transportation route zone is as follows :

1. Public transportation route data which in format . xls dissociated based on joint the way.
2. After accomodated by route data with joint the way, hereinafter is calculated the many routes passing at every joint road. From result of calculation obtained number of maximum routes passing joint road at sample area is 19 routes.
3. After route class map based on, hereinafter is done digitasi at sample area joint roads as according to its, so that is formed public transport route zone map
4. Then the public transport route zone map buffering and overlay with sample area map. To get the sample areas, done query SQL select with operation intersect (picture IV3)

	Class	Number of Trajects
1	1	16 - 19 trajects
2	2	12 - 15 trajects
3	3	8 - 11 trajects
4	4	4 - 7 trajects
5	5	0 - 3 trajects

$$C = \frac{X_n - X_1}{k} \dots\dots\dots(4.1)$$

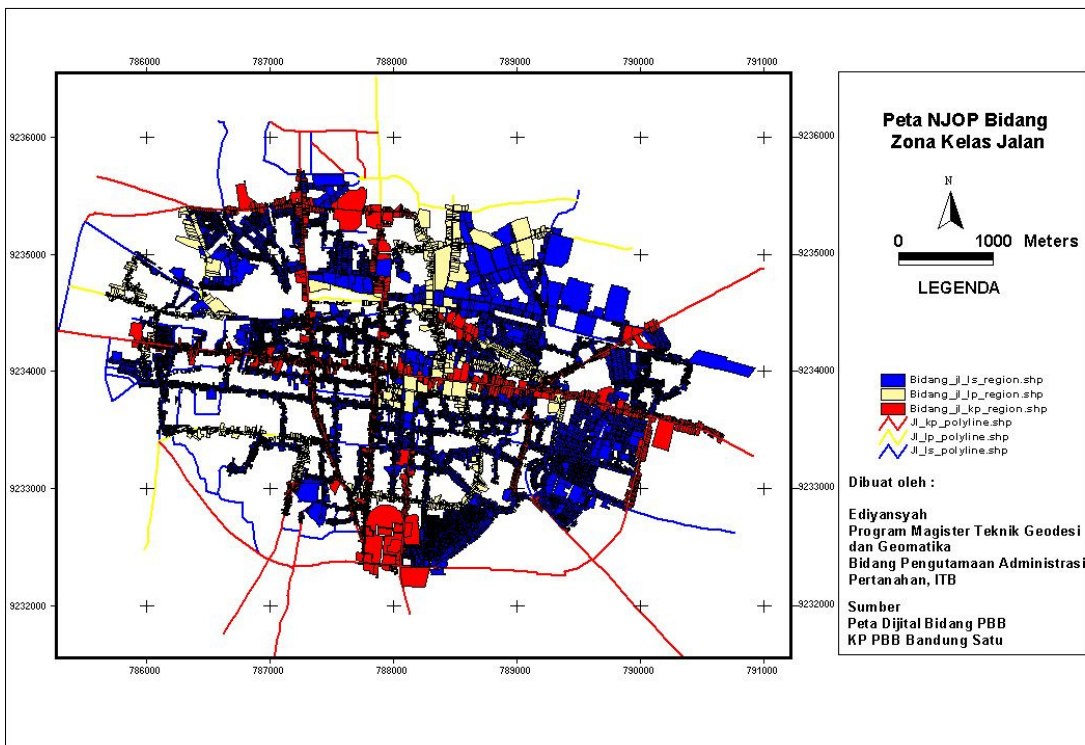


Picture IV.3. Area result of query public transport route zone

Making of Class Road Zone

Steps of road class /road zone as follows:

1. Classifies road class based on the function at each roads. Result of classification of road class is ls (local of secondary), lp (local of primary) and kp (primary collector)
2. The road then is digitasi, causing is obtained road class map.
3. Road class map which has been formed then is done buffering.

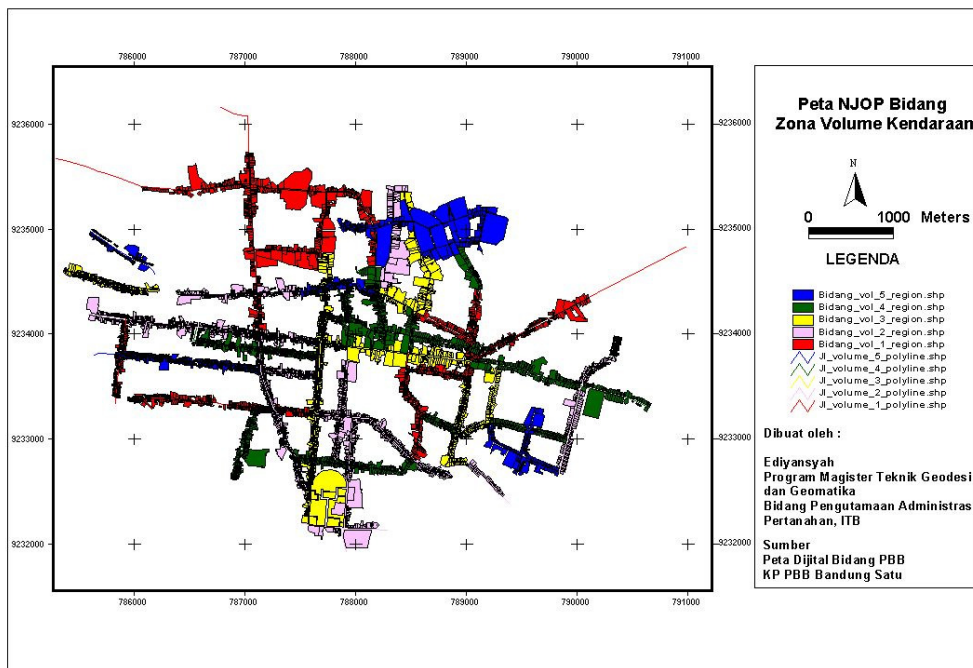


Picture IV.4. Area result of query road class zone

Making of Flead's volume Zone

steps of fleed's volume zone as follows :

1. Flead's volume attribute data obtained in format.xls. From the data is obtained by information that fleed's volum of a minimum of 935 smp/jam and highest 3862 smp/jam.
2. Then fleed's volume class digitizing at sample area map as according to roads
3. Map result of digitize then is made the buffer and overlay with population map of area
4. To get areas at fleed's volume zone is done by query SQL select with operation intersect



Making of Urban land AILV Class

From data SISMIOP from LBT office Bandung-Satu, obtained information of low AILV in Kota Bandung Rp. 200000/m², and highest Rp. 5.625.000/m².

Class	AILV /m ²
1	200.000 – 1.300.000
2	1.300.001 – 2.400.001
3	2.400.002 – 3.500.002
4	3.500.003 – 4.600.003
5	4.600.004 – 5.700.004

Statistical analysis

a. Correlation analysis

According To Singgih Santoso (2002), in principle correlation procedure aim to know two things at relation between dependent variables with independent variable :

1. Is both the variables of course has connection signifikan
2. If proven of connection is significant, how direction the relation and how strong the connection.

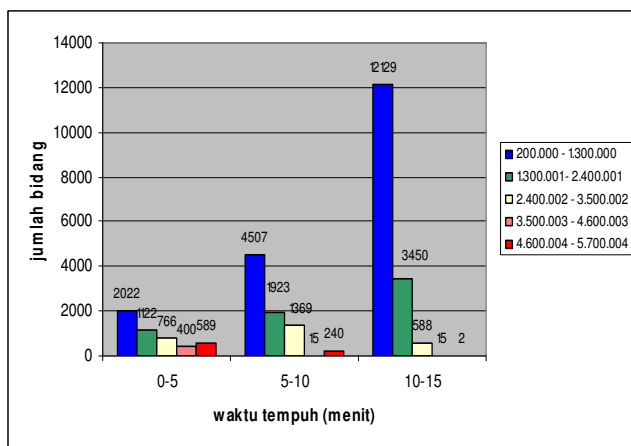
b. Regression analysis

Analysis is done with dependent variables be land AILV and independent variable be variables fourth zone. All independent variables in set of percentage (%) number of areas. While assessing land AILV (Y) in set of Rp/m².

RESULTS AND SOLUTION

Analysed land AILV at time zone

Time zone went through divided to three zones, that is zone 0-5 minutes, zone 5-10 minutes and zone 10-15 minutes.

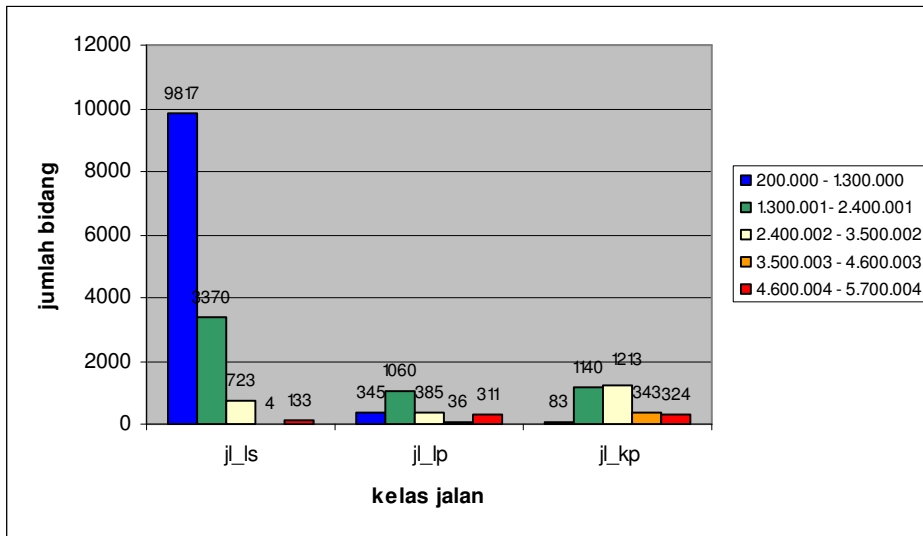


From picture V1 seen that low land AILV class (Rp200.000 – Rp1.300,000/m²) and AILV class enough low (Rp1.300.001 – Rp2.400.001/m²) many met at time zone to go through 10-15 minutes (12.129 and 3.450 areas). While for land AILV class enough heights (Rp3.500.003 – Rp4.600.003/m²) and highlands value class (Rp4.600.004 – Rp5.700.004/m²) many there is at time zones went through 0-5 minutes (400 and 589 areas). Highlands value class areas located in Jl. Jend. Sudirman, Jl Asia Afrika, Jl. Banceuy and Jl. Dalem Kaum.

Based on result of overlay with map landuse is obtained by that zona 10-15 minutes had broader area compared to time zona to go through 0-5 minutes and time zona go through 10-15 minutes. At zona 0-5 minutes pattern area of predominated by housing (36,80%) and white colars (32,92%). At zona 5-10 minutes predominated by area of housing (39,01%) and shop (39,05%). While at zona 10-15 minutes predominated by housing (49,59%) and shop (29,21%).

Urban Land AILV analysis at road class zone

From result of data processing, road(street class formed from road(street class zone there are three classes, that is : local road(street class of secondary (ls), local road(street class of primary (lp) and primary collector road class (kp). Description from soil;land;ground value at visible road(street class zone at picture V2.

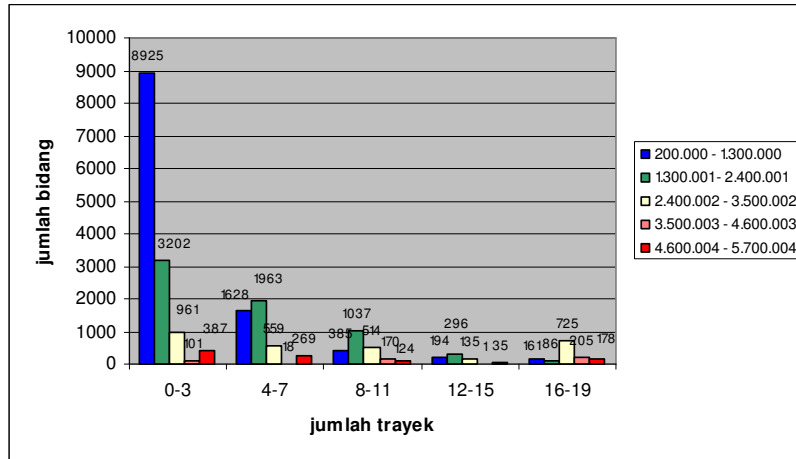


From picture V2 seen that low soil;land;ground value class (Rp200.000 – Rp.1.300.000/m²) and land class enough low (Rp1.300.001 – Rp2.400.001/m²), many there is in local road(street classes of secondary (9,817 areas and 3,370 areas). This areas lays in taking the air in district, like Jl. Adibrata, Jl Samoja Dalam, and others. While class is assessing land enough heights (Rp3.500.003 – Rp.4.600.003/m²) and highlands value class (Rp.4.600.004 – Rp.5.700.004/m²) many there is at local road classes of primary (36 areas and 311 areas) and primary collector (343 areas and 324 areas). This thing is as according to research pickings relating to assessment of soil;land;ground, what arises that road class compares straight with land AILV per m². Thereby can be that class excelsior the way, hence excelsior also the land AILV.

Based on result of overlay with map landuse is obtained at road class zona ls pattern area of predominated by area of housing (47,14%) and shop (31,23%). At road class zona lp predominated by area of housing (37,88%) and shop (19,37%). While at road class zona kp predominated by area of housing (57,34%) and shop (9,37%).

UrbanLand AILV analysis at public transportation route zone

From result of data processing, public transport route class in for to five classes. Description from land AILV at visible public transport route zone at picture V3.

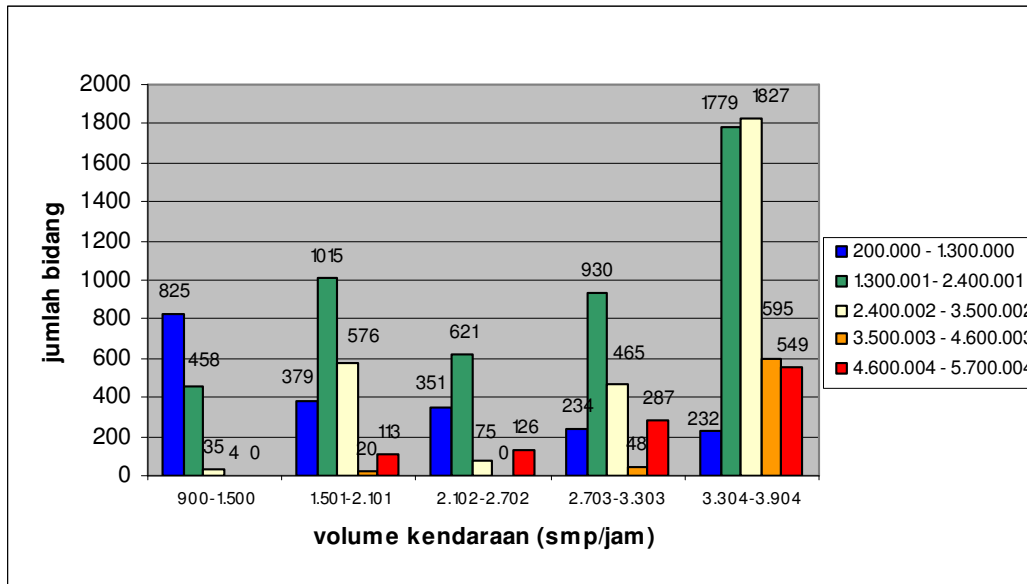


From picture V3 seen that low land AILV class (Rp200,000 – Rp1,300,000/m²) and land AILV class enough low (Rp1.300.001 – Rp2.400.001/m²) many there is at classes number of routes 0-3 (8,925 and 3,202 areas). But in this route class also there is highlands values (Rp.4.600.004 – Rp.5.700.004/m²) (387 areas) especially land areas which located in Jl. Braga and Jl. ABC, which is not is passed [by] public transport. Besides highlands value areas at class number of routes 0-3 also there is at Jl. Dalem Kaum, what passed two public transport routes. Thereby inferential that increasing of public transport route amounts doesn't guarantee that the land AILV becomes rising.

Based on result of overlay with map landuse is obtained at route zona 0-3 patterns of predominated by type area of housing (48,04%) and shop (26,60%). Route zona 4-7 predominated by type area of housing (45,83%) and shop (27,21%). At route zona 8-11 predominated by type area of housing (57,00%) and shop (18,52%). At route zona 12-15 predominated by type area of housing (55,21%) and education building (15,10%). At route zona 16-19 predominated by type area of housing (59,74%) and shop (22,51%).

Urban Land AILV analysis at fled's volumevolume zone

Description from land AILV at visible public transport route zone at picture V4.



From picture V4 seen at seen that low land AILV class land AILV class (Rp.200.000 – Rp1.300.000/m²) more there is at fled's volumevolume class 900-1500 (825 areas). On the contrary land AILV class enough heights (Rp3.500.003 – Rp.4.600.003/m²) and highlands value class (Rp.4.600.004 – Rp.5.700.004/m²) many there is at fled's volumevolume classes 3.304-3.904 (595 and 549), especially land areas which located in Jl. Asia Africa and Jl. Jend. Sudirman. Thereby inferential that its(the fled's volumevolume excelsior, hence excelsior also the land AILV. On the contrary, increasingly low fled's volumevolume, hence increasingly low also the land AILV.

Based on result of overlay with map landuse is obtained at zona vk 900-1500 patterns area of predominated by type area of housing (40,72%). Zona vk 1.501-2.101 predominated by type area of housing (44,10 %) and shop (28,68 %). At zona vk 2.102-2.702 predominated by type area of white colars (28,56 %), housing (27,11 %) and shop (26,66 %). At zona zona vk 2.703-3.303 predominated by type area of housing (40,13 %) and white colars (37,16%). At zona vk 3.304-3.904 predominated by type area of housing (35,80 %) and white colars (26,14 %).

ANALYSIS VARIABLE INFLUENCE WITH STATISTICAL MODEL

Correlation analysis

Correlation analysis aim to look for relation between independent variable (time went through ,land class, number of public transport routes and fled's volumevolume) to the dependent variables land AILV and how strong the connection. Correlation between land AILVs with his free variables is visible at Tabel. V1.

Tables V1. Result of correlation analysis

Variabel independent	N_T
WT	-0.651**
JL	0.424**
TR	-0.435**
VK	0.319*

From Tables V1, seen that independent variable WT (time went through), JL (road class), TR (number of public transport routes) and VK (flead's volumevolume) has significant to land AILV. Time variable went through, road class and number of public transport routes influential very significant to land AILV.

Direction of Positive correlation shows connection to compare straight with the dependent variables. On the contrary direction of negative correlation shows the relation of inversely proportional with the dependent variables. Conclusion which can be taken, as follows :

- (1) At time zone, longer time it there are tendency of the land AILV is increasingly low;
- (2) At road class zone, class excelsior the way there are tendency of the land AILV high;
- (3) At public transport route zone, more and more the route amounts there are tendency of the land AILV is increasingly low;
- (4) At flead's volumevolume zone, flead's volumevolume excelsior of there are tendency of the land;ground value high.

Regression analysis

If at analysis correlation will be analysed are there relation between two variables and how height level of the connection, hence at regression analysis will be searched how big influence a variable to other variable (Santoso, 2002).

From regression analysis can be interpreted as follows:

- (1) If all variables observed not to change or equal to null, hence average of soil;land;ground value is equal to Rp 2.810.814,630/ m²;
- (2) Independent Variable WT (time) has negative influence to land AILV with value 284.712,567, is meaning every addition of 1 minute time go through, hence will reduce land AILV value equal to Rp 284.712,567 with assumption of not other variable changed;

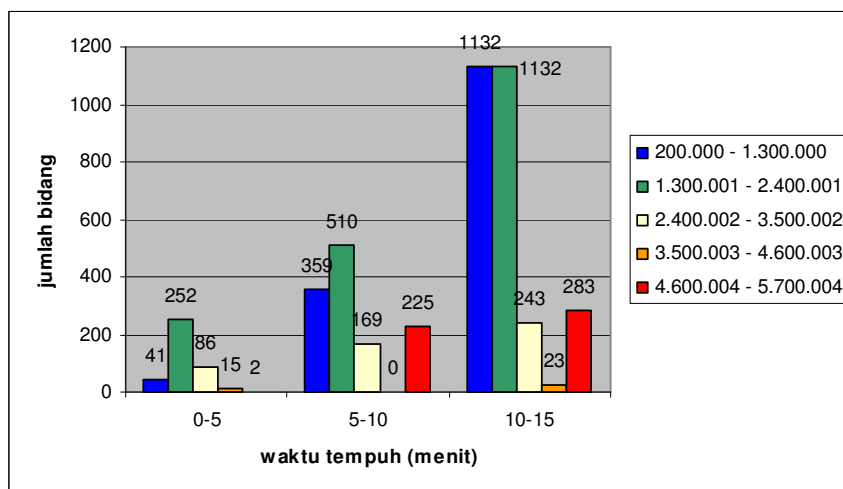
- (3) Independent Variable JL (road class) has positive influence to land AILV with value 13.640,423, is meaning every increase of 1 level of road class, hence will boost up land AILV equal to Rp 13.640,423 with assumption of not other variable changed;

	B	Std. Error	Beta
	2810814.630	412489.938	
WT	-284712.567	252925.995	-.418
JL	13640.423	204565.477	.018
TR	-246300.890	436358.954	-.295
VK	244041.576	126423.429	.445

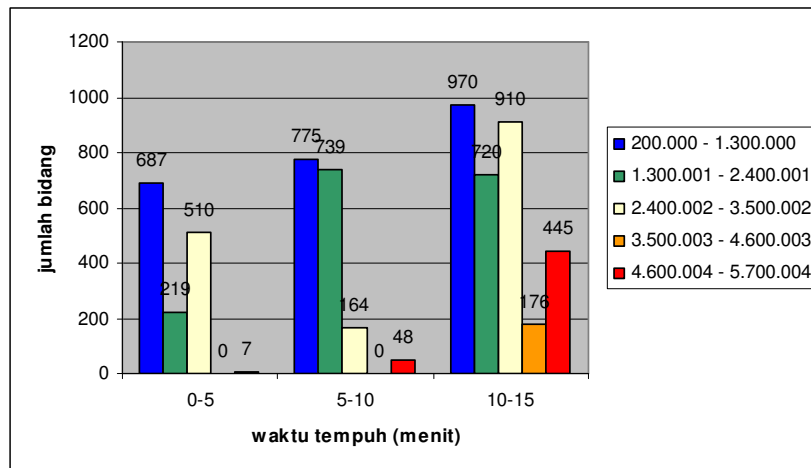
- (4) Independent Variable TR (public transport route) has negative influence to land AILV with value 246.300,890, is meaning every addition of 1 public transport route, hence will reduce land AILV equal to Rp 246.300,890 with assumption of not other variable changed;
- (5) Independent Variable VK (fleet's volumevolume) has positive influence to land AILV with value 244.041,576, is meaning every addition of 1 smp carriage, hence will boost up land AILV in the area equal to Rp 244,041576 with assumption of not other variable changed;

Other CBD influence analysis to Urban land AILV

Areas residing in at time zone to go through is population area of other zone. From data SISMIOP and thematic map of population of soil;land;ground area, obtained information that there are two fairly not located other CBD far from great waves. CBD is complex Kosambi which located in Jl. A. Yani, and Bandung Indah Plaza (BIP) which located in Jl. Merdeka.



Picture IV3 indicates that land areas with highlands value class (Rp.4.600.004 – Rp.5.700.004/m²), many there is at time zones went through 10-15 minutes (445 areas) is meaning comes near CBD Alun-alun, with composition number of areas that is much higher is compared to found on zone 5-10 minutes (48 areas). This thing means that CBD Kosambi fairly not has an in with land AILV found on region CBD square



Picture IV14 indicates that land areas with highlands value class (Rp.4.600.004 – Rp5,700,004/m²), many there is when go through 5-10 minutes and time go through 10-15 minutes with composition number of areas that is is too not differs in. This thing means that many areas with highlands value laying between CBD BIP with CBD Alun-alun. Existence of CBD BIP in this case enough has an in with area land AILV CBD Alun-alun.

CONCLUSION

1. Based on result of time variable regression analysis went through, road class, number of public transport routes and vehicle volume, doesn't have an effect on manifestly to AILV
2. Based on result of analysis spasial at time zona went through, AILV tended to low longerly time go through it (influential negativity), with regression coefficient value equal – 284.712,567.
3. Based on result of analysis spasial at road class zona, AILV tends to height increasinglyly height of land class (influential positive), with regression coefficient value 13.640,423
4. Based on result of analysis spasial at zona number of public transport routes, AILV low with increasing of number of routes (influential negativity), with regression coefficient value equal – 246.300,890.

5. Based on result of analysis spasial at vehicle volume zona, AILV tends to height along with increasing of vehicle volume (influential positive), with regression coefficient value 244.041,576.
6. Based on result of analysis spasial map land covered at time zona to go through, time zona went through 0-5 minutes pattern of predominated by housing (36,80%), at zona 5-10 minutes predominated by shop (39,05%) and by 10-15 minutes predominated by housing (49,59 %). Based on result of analysis spasial map land covers at road class zona, local road class zona of secondary (ls) pattern of predominated by housing (47,14%), local road class zona of primary (lp) pattern of predominated by housing (37,88%) and primary collector road class zona (kp) pattern area of predominated by housing (57,34%).
7. Based on result of analysis spasial map land covers at public transport route zona, public transport route zona 0-3 patterns of predominated by housing (48,04%), public transport route zona 4-7 predominated by housing (45,83%), public transport route zona 8-11 predominated by housing (57,00%), public transport route zona 12-15 predominated by housing (57,21%), and public transport route zona 16-19 predominated by housing (59,74%).
8. Based on result of analysis spasial map land covers at vehicle volume zona, vehicle volume zona of 900-1500 smp/jam pattern of predominated by shop (40,72%), vehicle volume zona of 1.501-2.101 smp/jam predominated by housing (44,10%), vehicle volume zona of 2.102-2.702 smp/jam predominated by white colars (28,56%), vehicle volume zona of 2.703-3.03 smp/jam predominated by housing (40,13%), and vehicle volume zona of 3.304-3.904 smp/jam predominated by housing (35,80%).

SUGGESTION

1. addition of Independent variable, for example condition of road and road wide.
2. Direction walked, cessation time in trafficlight and usage of multi CBD.

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