

04. Parameters Affecting the Land Value in The Perspective of Experts and Institutions Related to Land Valuation

By I Nyoman Dita Pahang Putra

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**Parameters Affecting the Land Value
in The Perspective of Experts and Institutions
Related to Land Valuation**

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ABSTRACT

Abstrak - There are varieties of criteria and parameter that affect the land value. Therefore, the research focusing on determination of parameters that affect the land value is needed, in which it will give positive contribution for academic and practical. This study begins by identifying the parameters that is based on previous researches. Furthermore parameters are analyzed to result the nominal of the mean and standard deviation based on the questionnaire result from the perspective of experts and institutions related to land valuation. This research results the parameters affecting the land value that are categorized into 4 quadrants in Cartesius diagram. Parameters that most influence the land value in quadrant I, consist of: scarcity, geography, distance from CBD, time to CBD, class road, form of land, land condition, topography, comparison with the surrounding property, shopping complex, network, environmental cleanliness, land use, legal status, regulation, rate of return, lease price. The parameters that most influence can be determined by using the method of interviews with experts to establish the parameters that most influence in each quadrant or Pearson correlation and Cronbach's alpha reliability analysis or confirmatory factor analysis that use maximum likelihood estimation method.

Key word: Land value, parameter, mean, standard deviation

INTRODUCTION

The land use change in a zone will affect the market value of land in an area [1]. The tendency of the physical changes associated land use essentially can be divided into two changes, namely changes in land use and use of building [2]. Changes in land use in the city indicated a change from agricultural land, vacant land and green belt into area of residential, trading, services and residential. This condition will also affect the change in the value of land [3].

Based on the reality of the above conditions, the value of land is expected to accommodate the attributes of the development of physical and urban infrastructures more comprehensively, thus the value of land can represent a reasonable condition and can be estimated according to the development that is influenced by multiple attributes (discrete and continuous), both spatial and non-spatial.

One element that affects the value of the land is a geographical element. Density and the development of the residential areas and business areas affect the value of the surrounding land. This is particularly relevant to the research that has been done before [4], in the study stated that the land value is strongly influenced by the accessibility, distance to the city center, land use, zoning, density and spatial gradient effect. Similarly, described by [5] that the value of land is affected with the geographical location. Conditions of Surabaya city is relatively diverse, both from the effect of geographical, social and cultural. The analysis model that considers the geographical effects is important to be applied in the land valuation. Analysis model that considers the geographical effects, need to more attention to the variables that will be used [6].

Based on some empirical review above, can be identified various criteria and parameters that can affect the land value. Therefore, research that focuses on the determination of parameters that affect the land value is very necessary, so that can make a positive contribution to the academic and practical.

MATERIALS AND METHODS

Parameters that influence land value are arranged in the form of tabulations with the criteria of supply, demand and highest best use. The criteria of highest and best use consisting of physical, environmental, legal, social, financial feasibility, economic, productivity and public and private boundaries. Overall there are 83 parameters that affect land value.

The influence of parameters can be categorized with 4 perceptions, namely: (4) very influential, (3) influential, (2) not influential and (1) very not influential. The questionnaire is structured, then distributed to 31 respondents who consist of experts in the assessment of the land, specifically: Academic, Tax Office, Directorate General of Taxation, Agency of Income and Financial Management, Association of Real Estate and Brokerage, Land Office, Center of Accountant Development and Appraiser Services - Ministry of Finance, Office of Public Appraiser Services.

Results of 35 questionnaire are calculated with mean and standard deviation. Afterwards, this result is graphed with the mean on the x-axis and standard deviation on the y-axis into Cartesius diagram. Thereafter, distribution of mean and standard deviation for each parameter is cut with an average of mean and average of standard deviation [7].

Based on these intersections, the distribution of the mean and standard deviation can be clustered into 4 quadrants and can be known parameters included in quadrant I, II, III and IV. Quadrant I represents the mean and standard deviation is greatest, so that the quadrant I can represent parameters that are very influential in the assessment of the land.

RESULTS AND DISCUSSION

14 The results of questionnaire recapitulation of the mean value and standard deviation (SD) for each parameter can be seen in Table 1.

TABLE 1
RECAPITULATION OF THE MEAN AND STANDARD DEVIATION FOR EACH PARAMETER

No	Parameter	Mean	SD	No	Parameter	Mean	SD
1	Utility	3,6452	0,6607	43	Transportation	3,4194	0,6204
2	Scarcity	3,7419	0,4448	44	Volume of vehicle	3,0323	0,6046
3	Desirability	3,4839	0,6768	45	Cutter	2,8710	0,5623
4	Effective Purchasing Power	3,3548	0,6607	46	Building coverage	3,1290	0,7184
5	Geography	3,7097	0,5287	47	Floor area ratio	3,1935	0,7033
6	Distance from CBD	3,6129	0,5584	48	Water contamination	3,2581	0,6816
7	Distance to Public Facility	3,2581	0,6816	49	Air contamination	3,1613	0,6878
8	Climate	2,4516	0,6239	50	Voice contamination	3,0323	0,7063
9	Accessibility	3,7742	0,6170	51	Environmental comfort	3,3871	0,6152
10	Time to CBD	3,3871	0,5584	52	Environmental cleanliness	3,1613	0,5829
11	Class roads	3,5161	0,5080	53	View	3,0000	0,5164
12	Land area	3,3226	0,6525	54	Building density	3,1613	0,7347
13	Building floor area	2,8710	0,7634	55	Population density	3,0968	0,5975
14	Building position	2,7742	0,7169	56	Population character	2,9677	0,6575
15	Life of the build	2,6129	0,7154	57	Flooding	3,5806	0,6720
16	Advertisement	2,3871	0,6672	58	Quake	3,0968	0,7463
17	Elevation	3,1290	0,4995	59	Hurricane	2,9355	0,7273
18	Form of land	3,3226	0,5408	60	Zoning	3,5806	0,7199
19	Land condition	3,2581	0,4448	61	Heritage	3,4194	0,7199
20	Fertility	2,6452	0,6082	62	Land use	3,8065	0,4016
21	Adaptability	2,5806	0,6720	63	Tax	2,9355	0,6290
22	Topography	3,1935	0,5428	64	Legal status	3,7419	0,4448
23	Geology	2,6452	0,6082	65	Amount of tax	3,0000	0,6325
24	Drainage	3,0645	0,5736	66	Regulation	3,4516	0,5059
25	Land capacity	3,0968	0,4729	67	Population growth	3,0968	0,6509
26	Type and land orientation	3,0000	0,5164	68	Age	2,6452	0,6082
27	Leveling	3,0645	0,4424	69	Behavior to the law	2,9032	0,5975
28	Filling	3,1290	0,4995	70	Discipline	3,0645	0,6800
29	Compaction	2,9677	0,4819	71	Dignity	2,8710	0,5623
30	Paving	2,7742	0,6170	72	Level of crime	3,2258	0,7169
31	Pedestrian	2,8065	0,5428	73	Level of education	2,8065	0,7492
32	Streetlight	2,5484	0,5680	74	Rate of return	3,5806	0,5642
33	Park area	2,8710	0,6187	75	Net operating income	3,4839	0,6256
34	Comparison with the surrounding property	3,3871	0,5584	76	Lease price	3,7097	0,4614
35	Education facility	3,0323	0,6575	77	Level of income	3,5161	0,6256
36	Shopping complex	3,3226	0,4752	78	Region growth	3,6129	0,6152
37	Garden	2,8710	0,4995	79	Construction trend	3,2258	0,6688
38	Worship	2,7742	0,6170	80	Level of productivity	3,1613	0,7347
39	Hospital	2,7419	0,6816	81	Public zone	3,2258	0,6170
40	Entertainment	2,7419	0,6308	82	Property tax	3,0645	0,6800
41	Government facility	2,7097	0,5884	83	Private zone	3,1935	0,6542
42	Network facility	3,2581	0,5755				

The average of mean is 3.1403 and an average of standard deviation is 0.6092 for all parameters. The result of clustering that is divided in 4 quadrants can be seen in figure 1. All figures and tables below are the results of the command output window Matlab 7.8.0 and microsoft excel 2010.

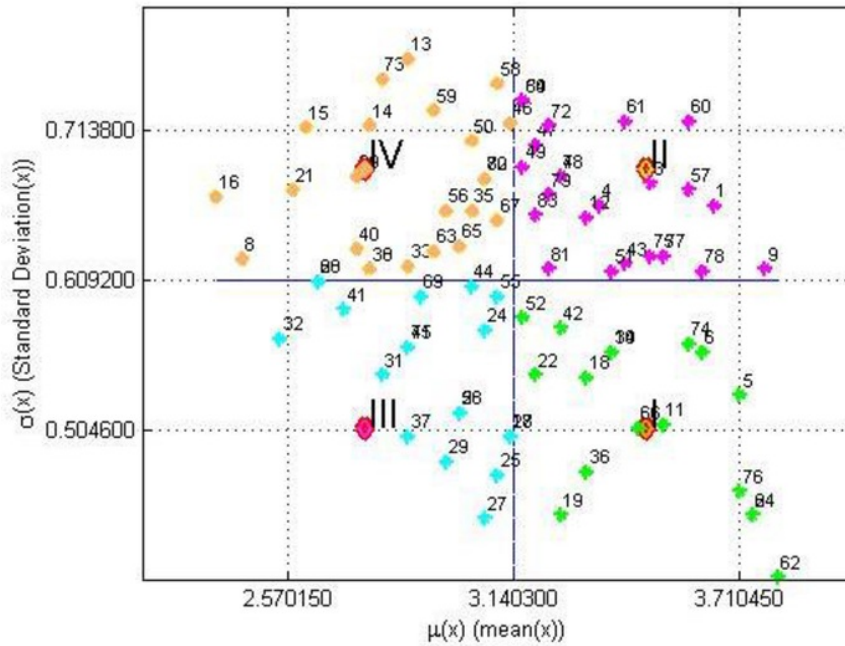


Fig.1. 4 quadrants of the parameters distribution in Cartesius diagram

Each of the parameters that is entered in quadrant I, II, III and IV, as can be seen in table 2 and table 3 below. The parameters are included in quadrant I are parameters that greatly affect the land value.

TABLE 2
QUADRANT I and II

Parameter Name	Parameter Name
Parameter 2	Scarcity - supply
Parameter 5	geography
Parameter 6	distance CBD
Parameter 10	time to CBD
Parameter 11	class roads
Parameter 18	forms of land
Parameter 19	land condition
Parameter 22	topography
Parameter 34	comparison prop
Parameter 36	shopping comp
Parameter 42	network
Parameter 52	env cleanliness
Parameter 62	land use
Parameter 64	legal status
Parameter 66	regulation
Parameter 74	rate of return
Parameter 76	lease price

17 parameters in quadrant I

Parameter Name	Parameter Name
Parameter 1	Utility
Parameter 3	Desirability
Parameter 4	Effective Purch P
Parameter 7	distance p fas
Parameter 9	accessibility
Parameter 12	land area
Parameter 43	transportation
Parameter 47	floor area ratio
Parameter 48	water cont
Parameter 49	air cont
Parameter 51	env comfort
Parameter 54	building density
Parameter 57	flooding
Parameter 60	zoning
Parameter 61	heritage
Parameter 72	level of crime
Parameter 75	net op income
Parameter 77	level of income
Parameter 78	region growth
Parameter 79	construction tr
Parameter 80	level of prod
Parameter 81	public zone
Parameter 83	private zone

23 parameters in quadrant II

The result of the analysis is based on the mean of each parameter in the quadrant I and II can be seen in figure.2.

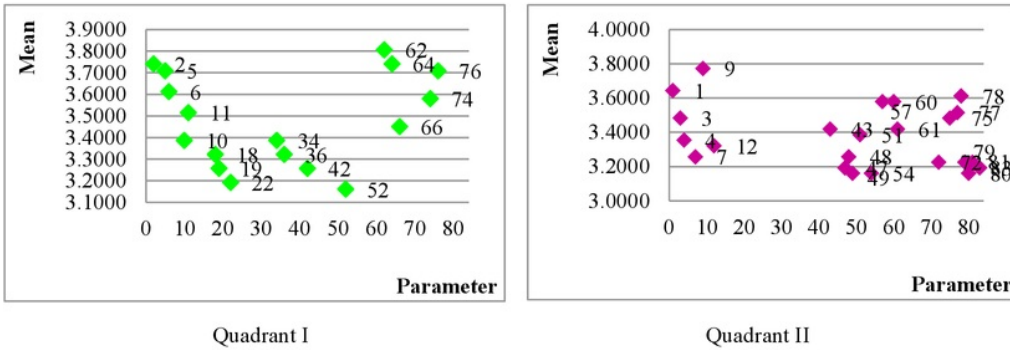


Fig.2. Mean of each parameter in the quadrant I and II

TABLE 3
QUADRANT III and IV

Parameter Name	
Parameter 17	elevation
Parameter 20	fertility
Parameter 23	geology
Parameter 24	drainage
Parameter 25	land capacity
Parameter 26	land orientation
Parameter 27	leveling
Parameter 28	filling
Parameter 29	compaction
Parameter 31	pedestrian
Parameter 32	streetlight
Parameter 37	garden
Parameter 41	government fas
Parameter 44	volume of vehicle
Parameter 45	gutter
Parameter 53	view
Parameter 55	pop density
Parameter 68	age
Parameter 69	behavior to the law
Parameter 71	dignity

20 parameters in quadrant III

Parameter Name	
Parameter 8	climate
Parameter 13	building fl area
Parameter 14	building postn
Parameter 15	life of the build
Parameter 16	advertisement
Parameter 21	adaptability
Parameter 30	paving
Parameter 33	park area
Parameter 35	education fas
Parameter 38	worship
Parameter 39	hospital
Parameter 40	entertainment
Parameter 46	building coverage
Parameter 50	voice cort
Parameter 56	pop character
Parameter 58	quake
Parameter 59	hurricane
Parameter 63	tax
Parameter 65	amount of tax
Parameter 67	pop growth
Parameter 70	discipline
Parameter 73	level of education
Parameter 82	property tax

23 parameters in quadrant IV

The result of the analysis is based on the mean of each parameter in the quadrant III and IV can be seen in figure 3.

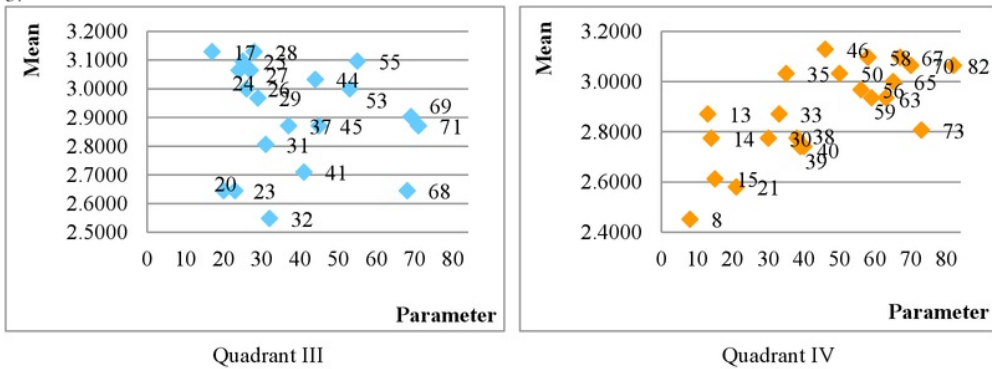


Fig.3. Mean of each parameter in the quadrant III and IV

Johnson and Wade [4] show the geographical location, distance from the central business district (CBD), the density of buildings and population density affect land value. Previous research assessment of land use that affected land had been carried out by [8], [9], [10]. Lean and Goodall [11] show the value of land is affected by the utility, scarcity, desirability and effective purchasing power. Shenkel [12] shows the level of productivity affects the value of the land. American Institute of Real Estate Appraisers [13] shows the geographic location, accessibility, size or land area, elevation, soil conditions, environmental, zoning, land use, and legal status affect the land value.

Bolen et al [14] describe the distance from the CBD, parks, building coverage, floor area ratio, comfort and scenic environment affect land value. Betts and Ely [15] show the parameters that affect the value of the land, namely: geographical location, accessibility, size or area of land, land forms, soil conditions, adaptability, topography, geology, drainage, soil type and orientation, leveling, filling, compaction, paving, pedestrian, street lights, parking facilities, comparisons with other properties, network facilities, transportation, environmental comfort, flood, earthquake, zoning, rules of cultural heritage, legal status, rate of return, net operating income, the level of productivity, public restrictions, property taxes and private boundaries. Suyudi [16] shows parameters distance from the CBD, network facilities, zoning, land use and legal status affect the value of the land. Hubacek and Vazquez [17] describe the utility, scarcity, desirability and effective purchasing power affect the value of the land. Putra [18] shows that the parameters geographic location, accessibility, size or land area, elevation, soil conditions, environmental comfort, zoning, land use and legal status affect the value of the land.

Carr et al [19] show the utility, scarcity, desirability and effective purchasing power affect the value of the land. Oshiro [20] shows desirability, distance from the CBD, transport, regulation and income levels affect land value. Sutawijaya [21] describes the parameters that affect the value of the land are the distance from the CBD, accessibility, class roads, transportation, population density and flooding.

Wolcott [22], the parameters that affect land values are utility, scarcity, geographic location, climate, accessibility, fertility, topography, educational facilities, parks, facilities network, transport, sewerage, water pollution, air pollution, sound pollution, zoning, land use, type of tax, the amount of tax, regulatory, population growth, age, attitudes towards law, order, dignity, crime rate, education level, income level, growth and development of the construction area. Parameters affecting land value are geographic location, accessibility, soil conditions, topography, educational facilities, shopping malls, parks, places of worship, a place of health, entertainment places, government offices, network facilities, population density, regulation, order and income levels [23].

Hamid and Dila [24] show geographic location parameters, the distance from the CBD, or the size of the land area, floor area of the building, the position of the building, land use and legal status affect the value of the land. The analysis of the land value parameters that is influenced by distance from public facilities on land values have been done by [25]. Kahonde and Whittal [26] describe the land value is affected by the parameters of the sights. Subagiyo [27] shows the range of public facilities and building density affect land value.

The effect of distance from the CBD, road grade and size of land will affect the value of land [28]. Rahayu [29] describes the parameters of the distance from public facilities, accessibility and size of area of land or affect the value of the land. Distance parameters of public facilities, the size of land, building floor area, building age, place of education and parks affect the value of land [30].

Dunn [31] describes the parameters of utility, scarcity, desirability and effective purchasing power also affects the value of the land. In an article written by Leksono et al [32] described the parameters of travel time to the CBD, class roads, transportation and traffic volume affect land value. Kok et al [33] show the value of the land is affected by the parameters of its geographical location, distance from the CBD, accessibility, elevation, topography and population characteristics. Harjanto [34] show the geographic location, the size of land, the width of the front side, elevation, land form and land use affect land value.

Olawande [35] describes the parameters affecting the value of land are utility, scarcity, desirability, geographical location and accessibility. Gwartney [36] describes that land value is affected by the utility, scarcity, geographic location, climate, accessibility, fertility, topography, educational facilities, parks, network facilities, transportation, sewers, water pollution, air pollution, pollution sound, zoning, land use, type of tax, the amount of tax, regulatory, population growth, age, attitudes towards law, order, dignity, crime rate, education level, income level, growth and development of the construction area. Baranzini and Schaerer [37] show that the parameters of the climate, view and land use affect land value.

In this study has not been able to set the parameter that most influence in each quadrant. The parameters most influential in each quadrant can be determined only by the mean or the standard deviation alone. The parameters

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that most influence cannot be determined by using the mean and standard deviation simultaneously. This is caused the relationship between the mean and the standard deviation is not linear.

CONCLUSION

This study can analyze parameters that influence the value of land by using the analysis of the mean and standard deviation that is based on the questionnaire results from the perspective of experts and institutions related to land valuation. Analysis of this study can describe and generate parameters that are included in quadrant 1, 2, 3 and 4. The parameters that most influence the land value in quadrant 1, consist of: scarcity, geography, distance from CBD, time to CBD, class road, form of land, land condition, topography, comparison with the surrounding property, shopping complex, network, environmental cleanliness, land use, legal status, regulation, rate of return, lease price.

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ORIGINALITY REPORT

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