THE HOUSING PRICES OF BUSINESS CITY IN SURABAYA AND BANDUNG

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Abstract
This research attempts to analyze the factors of the determination of housing prices. Demand of house estates is high caused the housing prices are increasing. Surabaya and Bandung are the objects of observation because both are metropolitan cities. The high purchasing power requires consideration of the selling price, land area, building area, distance of the house to the highway, distance of the house to shopping center and the like. The purposes of this study are (1) to find out the variables significantly effect on selling prices of the houses. (2) to find out the comparison between selling prices of houses in Surabaya and in Bandung. Estimated selling prices in Surabaya and Bandung used the multiple linear regression models. It will analyze the comparison between existing home prices in Surabaya and Bandung using Minitab. Classical assumptions are the requirements should be met on multiple linear regressions models. The data used in this research is 100 houses sales each 50 houses in Surabaya and 50 houses in Bandung. The results of this study are variables of electrical, LSF, bathroom, Water Supply Company significantly effect on selling price in Surabaya. Then the variables that significantly effect on selling price in Bandung are electrical, LSF, and BSF. While the comparison of the selling price of houses in Surabaya and Bandung by using Google Trend, the city of Bandung is higher than those interested in buying a Surabaya home.
Keywords: *Surabaya houses selling prices, Bandung houses selling prices, multiple linear regressions.*

Abstrak
Permintaan akan rumah semakin meningkat sehingga menyebabkan harga rumah meningkat. Hal inilah menjadi alasan peneliti ini karena Kota Surabaya dan Bandung merupakan kota metropolitan. Daya beli yang tinggi ini membutuhkan pertimbangan dari harga jual, luas tanah, luas bangunan, jarak rumah ke jalan raya, jarak rumah ke tempat-tempat belanja dan lain sebagainya. Tujuan dari penelitian ini adalah mengetahui perbandingan harga jual rumah di Kota Surabaya dan Bandung. Estimasi harga jual yang ada di kota Surabaya dan Bandung menggunakan Model *multiple linear regression* ini akan menganalisis perbandingan harga rumah yang ada di Kota Surabaya dengan Kota Bandung dengan menggunakan minitab. *multiple linear regression* memiliki syarat yang harus terpenuhi yaitu asumsi klasik. Data dalam penelitia ini adalah rumah yang ada di Surabaya 50 dan di Bandung 50 jadi total keseluruhan 100 rumah. Hasil penelitian ini adalah variabel electrical, LSF, bathroom, Air PDAM berpengaruh signifikan terhadap harga jual di kota Surabaya. Begitu juga dengan variabel yang berpengaruh signifikan di Kota Bandung adalah electrical, LSF, dan BSF. Sedangkan perbandingan harga jual rumah di Surabaya dan Bandung dengan menggunakan *google trend* adalah Kota Bandung lebih tinggi dibandingkan peminat untuk membeli rumah Surabaya.
Kata Kunci: Harga jual rumah Surabaya, harga jual rumah Bandung, *multiple linear regression*.

INTRODUCTION

The development of the housing business in Indonesia has greatly increased. especially in the city of Surabaya and Bandung. This is related to the city of Surabaya as the largest city after Jakarta. In addition, Surabaya has become a metprolical city with a population of around 3.057 million. Surabaya is known as a business and property investment destination for community from Balikpapan, Banjarmasin, Manado, Makassar, Ambon, Palu, and Papua. "Even from Jakarta, Medan and other regions in West Indonesia also invest their money in Surabaya, the housing market (landed house) is still the strongest (liputan6.com). It is different from the housing estates development in Bandung. The development of population in Bandung is quite high around 1.9 million, with that considerable amount the need for housing will increase. This housing demand resulted the housing development in suburbs of Surabaya and Bandung.

Basically, the price of houses varies partially in terms of cities / geographies such as environment, education, income level, population density and graphic effects. Each house has different characteristics. Several previous studies stated that housing facilities and infrastructure have a dominant effect on consumers in choosing desirable housing (Zhang and Yi 2018; Damen, Vastmans, and Buyst 2016; Kajuth, Knetsch, and Pinkwart 2016; Worku 2017). The problem of determining the selling price is determined by several factors, i.e. land area, building area, electrical and the like. House is a basic need that must be fulfilled by humans.

Consumer theory (Lancaster, 1966) stated consumers in assessing a house based on its properties or mostly its characteristics. Based on the theory consumers are currently very interested in investing on houses, it could be 1 person has more than 1 house. Research is conducted by (Everaers, 1994) stated the higher the wealth the more the chance to move into a new house.

Many factors are considered to choose a house including the selling price, land area, building area, distance of the house to the highway, distance of the house to places of shopping and the like. Several studies examined the determinants of house price levels such as (Mahalik and Mallick 2011). Ironically, the price of houses that are close to the highway tends to be expensive. Vice versa houses that are suitable in terms of price, size and location, but there are no places of worship close to the house complex or housing estate. However, sometimes, one factor is fulfilled but the other is not (Rahmawati, Ekwarso, 2017; Prayogo, Kwanda, and Rahardjo, n.d.; Fasa et al. 2005; Fahirah F, Armin Basong 2003).

Estimated selling prices in Surabaya and Bandung used regression model. This multiple linear regression model will analyze the comparison between existing home prices in Surabaya and in Bandung. The requirement of multiple linear regressions is classical assumptions. Classical assumptions are between multiple linear regression normality, heteroscedasticity, multicollinearity and autocorrelation (Gujarati, 2009). Comparison between the selling prices of houses in Surabaya and in Bandung with the same criteria in its variable will show trends of consumers' interesting in purchasing house. Surabaya and Bandung are both metropolitan cities

with high mobility. According to research conducted by (Dieleman, Clark, and Deurloo 2000) houses located in metropolitan areas will have an impact on their geographical location so they have a high turnover rate which will have an impact on market prices.

Problem statements of this study are (1) what are variables significantly effect on selling price of houses in Surabaya and Bandung? (2) How is house prices in Surabaya and Bandung compared with multiple linear regression models? The purposes of this study are (1) to find out the variables significantly effect on selling prices of the houses. (2) to find out the comparison between selling prices of houses in Surabaya and in Bandung.

METHODOLOGY

The data used in this study is data 100 houses sales each 50 houses in Surabaya and Bandung. This research used minitab 18. There are several stages in managing those data. The stages are as follows:

a. Data collecting used data on existing home sales on the site www.olx.co.id both houses in Surabaya and Bandung.

b. Filter the incomplete data such as blank, double, using point/ comma on numbering and the like.

c. The filtered data is transformed in mini tab by looking at the matrix plot.

d. Data will be showed in the matrix. Then it is tested for correlation checking the relationship of each variable.

e. Data were tested by regression analysis.

f. Tested data used regression analysis will show the coefficient and p-value of 1%, 5%, and 10%.

$$Y = a + b_1 X_1 + b_2 X_2 + b_3 X_3 + b_4 X_4 ... equation\ 1$$

$$Y = a + b_1 X_1 + b_2 X_2 + b_3 X_3 ....equation\ 2$$

Whereby:

Y = is the house price, a is constant,

b_1 = bn is the independent variable coefficient X1 - Xn.

X_1 = electrical

X_2 = LSF (Land area),

X_3 = Bathroom,

X_4 = Water Supply Company. X1 electrical, X2 LSF (Land Squase Feet), X3 BSF (Building Squase Feet) for equation 2.

RESULT & ANALYSIS
Data Analysis in Surabaya

Data must be normally distributed by looking at residual variables. This residual is to see the difference between the dependent variable or Y predictions. The result for Surabaya could be found in the Figure 1 below.
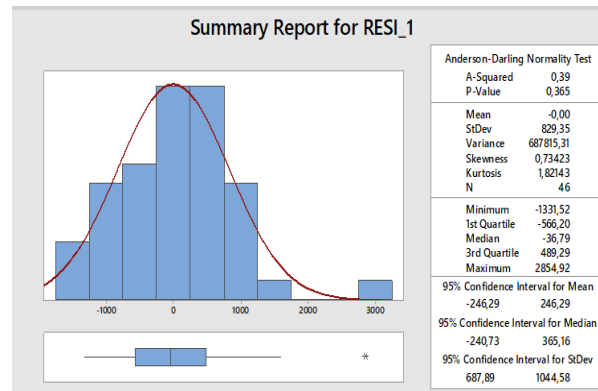
Figure 1: Summary Report

Based on the Figure 1 above could be concluded that the residuals are stated to be normally distributed by looking at a P-value of 0.365. After the data is normally distributed, it is tested by regression analysis used the following equation:

Selling Prices = 1 – 0,1823Electrical + 20,73 LSF + 220 Bathroom – 934 Water Supply Company

Term	Coef	SE Coef	T-Value	P-Value	VIF
Constant	1	564	0,00	0,998	
Electrical (kwh)	-0,1823	0,0936	-1,95	0,058	1,36
LSF(m2)	20,73	1,88	11,01	0,000	1,76
Bathroom	220	126	1,75	0,088	1,38
air PDAM					
1	-934	382	-2,44	0,019	1,12

Table 1 coeffcients

Electrical

Based on the table above, it shows that electrical has a negative effect on selling prices. This could be seen from the coefficient value of -0.182 or significant at the 10% level. The higher the wattage energy the cheaper house prices. The reason is because consumers will not buy houses that have high electrical because it will charge them when paying electricity every month. Consumers will choose 900VA electricity because of their simple life. Instead, too much power is a waste due to the high cost of electricity, except for the house being used for business or production.

Land Square Feet (LSF)

Based on the table above, it shows that LSF has a positive effect on selling prices. This is seen from the coefficient of 20.73 or significant at the level of 1%. The more land owned, the higher the price of the house. Houses with large tracts of land will be more expensive because land prices will increase every year and will never decrease. In Surabaya the price of land should increase so it will also affect the selling price of houses. Homeowners could also use land as a factor of production, farming land, and various other uses.

Bathroom

Based on the table above, it shows that a house with more bathrooms have a positive effect on selling prices. This could be seen from the coefficient value of 220 or significant at the 10% level. The more bathrooms the house has, the higher the price of the houses, moreover there is a room with a bathroom in it. Bathroom is privacy room for homeowners so with more bathrooms the house will increase the attractiveness of consumers to buy it.

Water Supply Company

Based on the table above, it shows that if the house does not have a Water Supply, the selling price is getting cheaper. This is seen from the coefficient value of -934 or significant of 5%. Clean water available with a minimum capacity of 60 It / day / person (b) Water quality must meet the health requirements of clean water and drinking water in accordance with applicable laws and regulations.

Clean water sourced from wells is rarely found in Surabaya because it is not feasible for use, dark in color and smell due to population density and housing resulting in contaminated the water such as septic tank, and fast-growing industries with minimal Amdal which results in waste from the production process dumped in rivers and polluting groundwater. Using the Water Supply could minimize intrusion of sea water inland.

Data Analysis in Bandung

Data in Bandung was also tested for normality. The result could be found in the Figure 2 below.
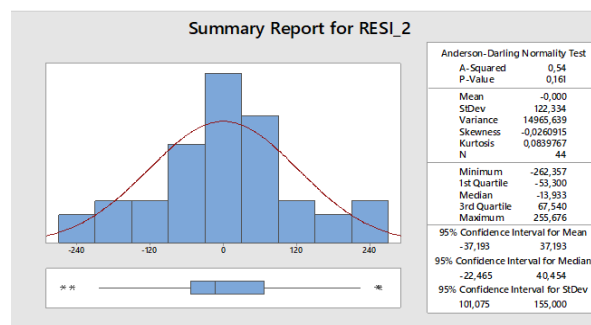

Figure 2 : Summary Report

The residuals above are normally distributed because the histogram resembles a bell facing upwards, this is indicated by a p-value of 0.164 so this data could be followed by a regression analysis. The equation is below.

Selling Prices = - 396 + 0,1657Electrical + 8,154LSF +4,498 BSF

From the above equation could be seen the coefficient of the variables significantly effect on selling prices of houses in Bandung.

Term	Coef	SE Coef	T-Value	P-Value	VIF
Constant	-396,0	91,6	-4,32	0,000	
Electrical (kwh)	0,1657	0,0573	2,89	0,006	1,62
LSF(m2)	8,154	0,885	9,21	0,000	3,19
BSF(m2)	4,498	0,867	5,19	0,000	2,32

Table 2: Coeffienct

Based on the table above could be concluded that:

Electrical

Based on the table above, it shows that electrical has a positive effect on selling prices. This could be seen from the coefficient value of 0.162 or significant at the level of 1%. The higher the wattage energy the cheaper house prices. The reason is consumers will not buy a house that has electricity. In addition, the current availability of electricity networks is very important because almost all human needs and activities are inseparable from the use of electrical energy. So a house must provide a good electricity network.

LSF

Based on the table above, it shows that LSF has a positive effect on selling prices. This is seen from the coefficient of 8.154 or significant at the level of 1%. The more land owned, the higher the price of the house. Land will gradually become increasingly scarce according to economics that scarce goods will be more expensive.

Due to the scarcity of land, the price of land is expensive in urban areas, which prevents people or community members from obtaining housing, and/ or buying a house because of the high level of house prices, especially with the minimum floor area requirement of 36 square meters; Land prices in developing countries in Asia are much higher compared to other countries, including developed countries (Constitutional Court, 2012)

Building Square Feet (BSF)

Based on the table above, it shows that the building area has a positive effect on the selling prices. This could be seen from the coefficient value of 4.498 or significant at the level of 1%. The more extensive the building is the more expensive the house. Buildings are objects that are very useful for people due to various activities.

Based on the results of the above analysts both in Surabaya and Bandung could be concluded that the variables effect on selling price of houses are the electrical, LSF, Bathroom and Water Supply Company. In Bandung, the variables that effect on selling price of houses are the electrical, LSF and BSF. The first question is significantly supported by each variable.

Comparative Analysis of House Prices in Surabaya and Bandung

Based on the second question to see the comparison of house prices in Surabaya and Bandung could be tested to see Google Trend. Google Trend is used for

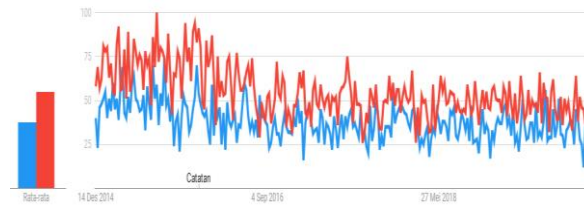forecasting or prediction. It could be seen in the following Figure 3.

Figure 3: Google Trend

The trend above showed the prices of houses in Surabaya are lower than the prices in Bandung for the past five years. Surabaya is blue colored 13% while the red colored for Bandung is 22%. Location is an important factor for choosing a house as a place to live. The housing in Surabaya will be clearly different from the housing in Bandung.

This could be seen with the existing phenomenon that environment is one of factors that influence consumers to choose a place to live / home. The houses in Surabaya are too densely populated and as a metropolitan, the noise level is too high. While Bandung is a city has many various destinations and hangouts and the air is still beautiful and comfortable. So consumers will tend to choose Bandung as an investment or as a home compared to Surabaya.

CONCLUSION

Research on the comparison of house prices in Surabaya and Bandung using the multiple linear regression model could be concluded that the variable of electrical, LSF, bathroom, and Water Supply Company have a significant effect on the selling prices in Surabaya. Whereas variables that have a significant effect on selling prices in Bandung are electrical, LSF, and BSF.

While the comparison of the selling price of houses in Surabaya and Bandung by using Google Trend, consumers tend to buy houses in Bandung compared to Surabaya.

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