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Penulis : Rahmat Saleh (Program Studi Ekonomi Pembangunan, Fakultas Ekonomi dan Bisnis, Universitas Ahmad Dahlan. e-mail rahmat@ep.uad.ac.id)
Dini Yuniarti (Program Studi Ekonomi Pembangunan, Fakultas Ekonomi dan Bisnis, Universitas Ahmad Dahlan. e-mail dini.yuniarti@uad.ac.id)

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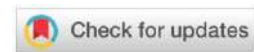
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4 **ANALYSIS OF THE DYNAMICS OF PROPERTY VALUE**
5 **FLUCTUATIONS IN THE SPECIAL REGION OF**
6 **YOGYAKARTA**

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9 **Rahmat Saleh^{1*}, Dini Yuniarti^{1b*}**

10 ¹ Ekonomi Pembangunan/Fakultas Ekonomi dan Bisnis, Universitas Ahmad Dahlan, Indonesia
11 *email: rahmat@ep.uad.ac.id

12 *Note: Write (*) after correspondent name and write down your email (institution email is preferred)*
13 *and erase this writing after*

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ABSTRACT

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The purpose of this study is to determine and identify the influence of physical property characteristics such as land area and building area; property legal characteristics in the form of property ownership rights; environmental characteristics in the form of designation zones on property values in D.I.Yogyakarta and apply the best equation method model in determining the value of large quantities of property in addition to the market approach method and cost and income approach. Access to research observation data in the form of primary data obtained in several ways, namely telephone interviews, personal interviews directly with property owners, and secondary data accessed by desk research of the DJTR spatial plan of the Ministry of ATR BPN, data access using purposive sampling models with non-probability sampling techniques, the number of observations as much as 135 data used. The research method uses multiple regression analysis ordinary least square method with Eviews 10 analysis tools, the form of the research regression model function using the selection of statistical criteria, applying the positivism paradigm with quantitative data in the form of Analytical survey, Identification of linear relationship behavior using the Mac Kinnon Test, and White Davidson MWD, Statistical criteria test in the form of F test, t-test, Determination Coefficient Test (R²), Economic criteria test is applied to compare between the estimated parameter coefficients by economic theory, Classical Assumption Test using Normality, Linearity, Multicollinearity, and Heteroscedasticity Test.

The results showed that the findings of property characteristics simultaneously or simultaneously on the variables of land area, building area, ownership rights, and designation zone significantly affect property values with a coefficient of determination level of 68.69%. Partially or individually, the findings revealed the influence of the characteristics of land area, building area, ownership rights, and designation zone positively and significantly on property values. Selection of the best model of the regression function equation, applying the log-log regression equation model in determining property value.

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INTRODUCTION

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The acceleration of economic growth is one aspect among various indicators of the welfare of a country's regional area. Inter-regional comparison assessment, as a measure of the results of the development of one region with other regions, is public information showing each regional area's accelerated development (Oh & Shin, 2023). The Central Bureau of Statistics stated that after two years of the COVID-19 pandemic, several provinces in Indonesia experienced acceleration and delay in developing various regions. D.I.Yogyakarta Province, according to statistics on the aspect of economic growth, experienced the lowest growth on the island of Java at 5.13% after Banten Province. Efforts to improve welfare have become the concern of all parties, including the government, in carrying out the role of development policy steps in various aspects of the field, both long-term and short-term development dimensions (Saleh, 2022).

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The increase in the economic growth rate in the Special Region of Yogyakarta Province is the contribution of gross value added from the activities of various business sectors. Among them, the real estate or property business sector contributes significantly to the economic growth rate of D.I.Yogyakarta. Supported by the perception of the desire to settle and live in Yogyakarta, it places the most desirable position among other provinces in Indonesia. In addition to being identical as a place of cultural diversity, Yogyakarta is identical to a tourist spot and a place to study. This can create a gap between the increasing demand for land and the limited supply of land providers in the property sector. Indicated by the findings of abuse in the utilization of property in the form of village treasury land in various locations, D.I.Yogyakarta noted the findings as a significant criminal act increased significantly.

25

The economic report of Yogyakarta, according to Bank Indonesia's regional macro data in 2022, shows that Yogyakarta's economic growth is significantly supported by the growth of the principal investment component, namely the ongoing National Strategic Project (PSN) supporting the airport including the construction of the Jogja-Solo and

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1 Jogja-Bawen toll roads and triggered by investment growth from the construction of the
2 South Cross Road (JJLS) which is still ongoing, the leading investment performance grew
3 positively by 4.97%. There is a condition of limited land, based on the need for the use
4 of other interests, in addition to the development of the public sector, there is a need for
5 land use from the interests of the private / private side as a commercial designation (Reite,
6 2023). As confirmed by banking financing indicators, according to Bank Indonesia data,
7 there was significant growth in property loans by 11.85% and real estate loans by 12.28%.

8 Changes in land use have the potential to be massive due to limited land area, such
9 as several findings of the use of rice fields into residential houses that are not by the
10 regulations of the Regional Spatial Plan (RTRW), the designation of land that is not
11 suitable certainly has an economic and social environmental impact (Hilbrandt &
12 Dimitrakou, 2022), starting from the potential for pollution, namely the lack of land for
13 household waste management and the decline in groundwater quality for the
14 sustainability of life.

15 Regional spatial planning to maximize these regional assets urges the establishment
16 of optimal spatial zones ranging from industrial and trade to residential areas for settlers
17 (Anna, 2020). Although the reality of its designation is still a source of abuse that is not
18 yet appropriate, data from the Yogyakarta Provincial High Prosecutor's Office in 2023
19 states that the state loss is around four billion rupiahs by naming several perpetrators,
20 starting from village government implementing officials and investors
21 (companies/private parties) as suspects in cases of allegedly receiving bribes or gratuities.

22 DIY Governor Regulation Number 34 of 2017 concerning Village Land Utilization
23 in the section on provisions for non-agricultural use (shops, tourist objects, restaurants)
24 or other commercial leases, states that the amount of rent or value figures must be based
25 on the results of an assessment conducted by an Independent Appraiser or Public
26 Appraiser profession. The issue of differences in value opinion in determining the value
27 of a property often occurs because the understanding of developers, communities, and
28 banks is still limited to referring to the Tax Object Sale Value (NJOP); the discrepancy
29 in value opinion often leads to lawsuits by value users (Chen et al., 2023). The level of
30 uncertainty is getting higher in the primary and secondary property markets; it is
31 challenging to create a fair sale and purchase transaction of an asset because the weak
32 supply side is not comparable to the demand side of property assets, making price
33 opinions in the community increasingly biased (Liapis et al., 2015).

34 Based on the formulation of the problem above, it is essential that research on this
35 topic be carried out related to the analysis of the process of assessing a property market
36 value in DIY Province in general, is still understood using traditional methods manually
37 and even tends to be subjective and limited to the approach of referring to NJOP, the

1 urgency of research in addition to this is first, the understanding of the community or the
2 user of the value related to the resulting value or price/transaction of a property is not
3 only influenced by the land area of the building but needs to consider several legal
4 characteristics of the property in the form of property ownership rights and environmental
5 characteristics in the form of designation zones. Second, there are advantages to the best
6 equation model using regression analysis; it is hoped that this model will be a potential
7 benefit for assessing large quantities of property quickly and economically and estimating
8 property determinants from various characteristics. This study aims to determine and
9 identify the influence of property characteristic variables on property value to ensure
10 fluctuations in market value in DIY province and apply the best equation method model
11 in determining property value.

12 Value is understood as the strength or exchangeability of a commodity against other
13 commodities. The development of property valuation insights explains that the notion of
14 value is bound by more specific terms in its use; other meanings of value do not stand
15 alone, such as market value, rental value, residual value, and so on (Buitrago-Mora &
16 Garcia-López, 2023). The discrepancy in understanding the notion of the term value needs
17 to be uniform to respond to differences in the use of the terms cost, price, and value both
18 in concept and application in the practice of an appraisal (Boterenbrood, 2023).

19 According to research (Gholipour et al., 2023) cost is the money spent to obtain or
20 produce a commodity. Price is the amount requested, offered, or paid in a transaction to
21 obtain commodity rights. Value is understood as the amount of money worth receiving at
22 this time (present worth) for various benefits or benefits obtained in the future (future
23 benefits). The components of value needed to support the creation of a property value
24 include the criteria of desirability, usefulness, scarcity, and transferability (Kreppmeier et
25 al., 2023).

26 Research (Clapp & Lindenthal, 2022) developed a new approach to estimating
27 urban land values. The study extended the AMM theory by adding the assumption of
28 partial irreversibility, implying that land values with structure can evolve differently from
29 values other than market values, developing a hybrid model with a land residue method,
30 and developing a novelty test of predictive accuracy. The house price index generated
31 market value is used to estimate the hybrid economic structure and land value. The
32 applied model shows the importance of identifying the building structure for HBU at the
33 date of construction; the existing market balance is essential for identifying the selling
34 price of the related property.

35 Research (Lin et al., 2023) addresses the valuation of ground hydrogen geological
36 storage options for commercial development. The study applied a net present value
37 (NPV) evaluation framework to evaluate asset value storage by integrating updated

1 digital economic data analysis and market value-based operations. The research utilizes
2 the CAPM and WACC models to determine the risk-adjusted calculation rate in building
3 the NPV evaluation framework. The results show that there is a price spread between the
4 acquisition and the marketed prices, significant property market information of the site
5 development, and asset maintenance costs are the top three factors that most affect NPV
6 and IRR.

7 According to research (Zakaria & Fatine, 2021) on valuation models and
8 determinants of real estate property prices in Morocco proposing a new approach to
9 modeling the real estate price index. Based on the regression approach, the basic idea of
10 this study is to verify the importance of real estate characteristics in real estate prices in
11 the market, and estimate a regression model that takes into account spatial
12 autocorrelation. The findings of the research results generally indicate the identification
13 that the land surface area and location of real estate with commercial residential
14 neighborhoods, villas and apartments around have a significant influence on the value of
15 property prices.

16 Research conducted (Gautier et al., 2023) studied the transaction price and time of
17 sale or offer of new digitally accessed real estate agents in the Netherlands. Identifying
18 the competition of property transaction registered platforms with low-cost classification.
19 Using a dataset of residential real estate transactions, the study found strong evidence that
20 sellers who use secondary market digital platforms will obtain higher prices and sell
21 faster, although there is still a tendency to switch to traditional markets. The results show
22 consistently that property sellers benefit from the secondary market transactions of
23 various digital platform agents by optimizing property demand market information, the
24 research findings strengthen the conjecture that real estate agents have significant market
25 power.

26 Based on the results of empirical research and several scientific theoretical
27 foundations, there are conjectures or temporary answers (hypotheses) developed against
28 the background of this study, the variables of land area and building area according to
29 research (Boterenbrood, 2023), (Oh & Shin, 2023), (Reite, 2023), (Chen et al., 2023),
30 (Clapp & Lindenthal, 2022), (Zakaria & Fatine, 2021) mention a positive and significant
31 effect on property value and according to (Saleh, 2022) show a negative effect of land
32 area on property value. His book (Wyatt, 2014) on property valuation explains that the
33 size and physical form of the land area of a property is a concern in determining the
34 convenience and economic aspects of the activities carried out on it to support the
35 attractiveness of a property.

36 However, this only applies to the conditions of specific properties such as
37 agricultural land; the more comprehensive the land size has the effect of decreasing value

1 due to increasingly complex management and maintenance problems; this situation has
2 reduced demand for large enough land areas. The characteristics of the building area are
3 determined by various things, including the design of the building, which is adjusted to
4 the type of use according to the tastes of property users; the mismatch of building design
5 and taste will potentially reduce the value of a building, just as when the building design
6 is by the use and even follows the trend of user tastes will create an increase in the value
7 of the property. Hypotheses that can be concluded referring to the theoretical basis and
8 some previous research are as follows.

9 1. H_A : Land area positively and significantly affects property value.

10 2. H_A : Building area positively and significantly affects property value.

11 Variables of property legal characteristics in the form of property ownership rights
12 and environmental characteristics in the form of designation zones, according to research
13 findings (Hilbrandt & Dimitrakou, 2022), (Anna, 2020), (Gautier et al., 2023) mention a
14 positive and significant influence on property value. According to (Harjanto & Hidayati,
15 2019) in his book, the basic concepts of property valuation explain the importance of
16 estimating the market value of property by considering the highest and best use analysis
17 (HBU) for the identification of the most likely and possible uses of property to create
18 optimization of profits from competitive property permitted. The principle of alternative
19 HBU analysis is applied to meet several main criteria: physically possible, legally
20 permissible, financially feasible, and maximally productive. Part of the legally
21 permissible aspect is, of course, in addition to the permitted regulations, related to the
22 necessity of the condition of the ownership rights to the property and the suitability of the
23 designation zone of a property. The hypothesis contains conclusions for development
24 referring to the theoretical basis as follows.

25 3. H_A : Land ownership rights have a negative effect on property values.

26 4. H_A : The designation zone has a positive and significant effect on property value.

27 The research road map shows the stages that will be carried out, starting from
28 accessing primary data related to the use of research variables, namely data on physical
29 property characteristics such as land area and building area; property legal characteristics
30 in the form of property ownership rights; environmental characteristics in the form of
31 designation zones and identifying the analysis of the influence of property characteristics
32 on property values in D.I.Yogyakarta and revealing the analysis of discussions in an
33 economic approach.

34 **METHOD**

35 This research data collection uses a purposive sampling model with non-probability
36 sampling techniques from the population with a sample of unique characteristics

1 according to the research objectives, namely properties with transactions (sold/bought) or
2 is in the offering stage that occur with a maximum of 18 months from the valuation date.
3 Researchers realize that it is difficult to access market data from the population of
4 property objects studied as a whole, so the research considers limited costs and aspects
5 of time and human resources so that research observations use the Slovin formula based
6 on data obtained from primary and secondary data available in D.I.Yogyakarta as many
7 as 111 observation samples of property offers and transactions.

8 The research data collection technique uses primary data obtained in several ways,
9 namely telephone interviews, personal interviews directly with property owners, and
10 secondary data accessed by desk research of the DJTR spatial plan of the Ministry of
11 ATR BPN and access to additional information from other agencies such as MAPPI and
12 the Central Bureau of Statistics. The data collection process is carried out by paying
13 attention to the suitability of the data, ensuring its reasonableness and feasibility, and
14 ensuring that it can be accounted for. According to the time dimension, the research used
15 cross-section data totaling 111 data observation samples in DIY Province.

16 The research design applies the positivism paradigm with quantitative data. An
17 analytical survey is applied to determine whether or not there is a correlation between
18 physical property characteristics in the form of land area and building area, legal property
19 characteristics in the form of property ownership rights, and environmental characteristics
20 in the form of designation zones as independent variables and property market value as
21 the dependent variable.

22 This study uses multiple regression analysis, the ordinary least square method, with
23 the Eviews software analysis tool. From the function of the best regression model, they
24 use statistical criteria to identify linear relationship behavior using the Mac Kinnon Test
25 and White Davidson MWD. Statistical criteria test is used to test the accuracy of the
26 selected model in the form of an F test, t-test, and determination coefficient test (R²). The
27 economic criteria test is applied to compare the estimated parameter coefficients by
28 economic theory. Classical Assumption Test to determine whether the estimation model
29 meets the classical assumption criteria, namely using Normality, Linearity,
30 Multicollinearity, and Heteroscedasticity Tests.

34 **RESULTS AND DISCUSSION**

36 Data acquisition in the research process amounted to 111 samples of observations of
37 property offers and transactions scattered in the Special Region of Yogyakarta Province;
38 the observation data paid attention to specific characteristics that were adjusted to a
39 maximum of 18 months from the assessment date. The approach to obtaining data in the
40 implementation is adjusted to the research planning schedule in January by adjusting the
41 nature and sources of reliable information from the acquisition through direct information,
42 communication tools, or written verification, which is carried out reasonably so that the
43 information data is assumed to be correct.

44 The detailed observation data applied to the research is data on sale and purchase
45 transactions and property offers from developers/agents or owners by paying attention to
46 the specificity of the adjusted property value, including land area, building area, land
47 ownership rights, and designation zone.

The description of the data analysis results in descriptive statistics shows an overview of the data applied in the study in detail. The descriptive statistical description contains information on the average, median, highest, and lowest values of the independent and dependent variables applied in the study as follows.

Table 1. Statistical Descriptive Data

Variable	Mean	Median	Maximum	Minimum
Property Value	1.796.649.116	1.320.000.000	10.564.680.000	231.240.000
Land Area	690	400	5102	54
Building Area	117	0	1949	0
Ownership Rights	0.86	1	1	0
Designation Zone	0.57	1	1	0

Source: primary data, processed (2024)

Based on Table 1, it is found that the property value in Yogyakarta Special Province has the highest value of IDR 10,564,680,000 with the lowest property value of IDR 231,240,000 and an average property value of IDR 1,796,649,116. These figures place the potential for a reasonably high property value gap condition electorally between districts and cities. The land and building area figures show the highest land area figure of 5102 m² with the highest building area figure of 1949 m², the lowest land area figure of 54 m² with the lowest building area figure of 0 m², and the average land area figure of 690 m² with an average building area figure of 117 m², the variable land and building area figures in the study indicate the existence of assets in the form of land buildings that have been developed both commercial and other designations are more dominant than assets that have not been developed. The variable of land ownership rights shows an average number of 0.86 with a median of 1, revealing that the data of the assets studied in the form of SHM in ownership rights still dominates over other ownership rights. The designation zone variable has an average number of 0.57 and a median of 1, indicating that the research assets in the service trade designation zone are still more dominant in the property market.

The selection of the best model proposed according to the formulation of statistical regression equations, in the form of a statistical criteria test approach and a Mackinnon, White & Davidson (MWD) test, revealed that the log-log model can be applied. The regression results of the function model showed a significant R-squared (R²) value of 0.68697 (68.69%), and the research regression equation is as follows.

$$\text{LOGNP} = 7,829070 + 0,282960\text{LOGLT} + 0,143956\text{LOGLB} + 0,330197\text{HK} + 0,209867\text{ZP}$$

$$t\text{-Statistic} = (55,58901) (5,320390) (7,657179) (5,513919) (5,151977)$$

$$R\text{-Squared} = 0,686972$$

$$Ajd R^2 = 0,675160$$

1

2 The application of the linear regression model function estimation in the study
3 shows that the explanation of the variation of the independent variables of building land
4 area, ownership rights, and designation zone used on the dependent variable of property
5 value is 68.69%.

6 Test the fulfillment of statistical criteria in the study to show the accuracy of the
7 model applied and the ability of the model to explain the formulation of research
8 problems. First, in partial or individual testing of each independent variable (land area,
9 building area, ownership rights, and designation zone) on the dependent variable (property
10 value), according to the research regression results as follows.

11

Table 2. T-test results

Variable	Coefficient	t-Statistic	t-table	Prob,
Constant	7.829070	55.58901	1,982	0.0000
Land Area	0.282960	5.320390	1,982	0.0000
Building Area	0.143956	7.657179	1,982	0.0000
Ownership Rights	0.330137	5.513919	1,982	0.0000
Designation Zone	0.209867	5.151977	1,982	0.0000

12

Source: primary data, processed (2024)

13

14 Based on the results of the t-test in Table 2, the results reveal that the variable land
15 area (5.3204), building area (7.6572), ownership rights (5.5139), and designation zone
16 (5.1519) have a positive and significant effect on the property value variable. First, the
17 practical meaning of the regression results can be understood that property value is
18 influenced by land area significantly by a coefficient of 0.2829 so that changes in the land
19 area there an increase or expansion of 1 m² will affect the increase in property value by
20 0.2829% the regression estimation results prove the hypothesis is accepted, namely the
land area has a positive and significant effect on property value.

21

22 Second, the building area significantly has a coefficient of 0.1439 on property
23 value; if there is an increase of 1 m² in the building area, it will affect the increase in
24 property value by 0.1439% with these results showing that the hypothesis is accepted,
namely the building area has a positive and significant effect on property value.

25

26 Third, the ownership rights variable significantly, with a coefficient of 0.3301,
27 affects property value practically. An increase or improvement in the change in ownership
28 rights to 1 certificate of ownership rights (SHM) will affect the increase in property value
29 by 0.3301%. The regression estimation results prove that the hypothesis is accepted,
30 namely that the ownership rights letter positively and significantly affects the property's
value.

31

32 Fourth, the designation zone variable significantly, with a coefficient of 0.2098,
33 affects property value. A change or increase in asset conditions in the form of 1 service
trade designation zone will increase property value by 0.2098%. The estimation results

1 show that the hypothesis is accepted: the designation zone has a positive and significant
2 effect on property value.

3 Test the fulfillment of statistical criteria simultaneously or simultaneously on the
4 variables of land area, building area, ownership rights, and designation zone on property
5 value. The study applies a confidence level of 98.5% or significant using (a) 0.025 degree
6 of freedom (df) numerator = $k-1 = 111-5 = 106$, the estimated value obtained F-statistic
7 of $58.15708 > F$ -table of 2.89. The research regression estimation results are as follows.

8 **Table 3.** F-Test Results

Variable	F- statistics	F-table	Description
Land Area			
Building Area	58,15708	2,89	Significant Impact
Ownership Rights			
Designation Zone			

9 Source: primary data, processed (2024)

10 The results of the F test in Table 3 reveal a simultaneous influence together on the
11 variables of land area, building area, ownership rights, and designation zone significantly
12 on the variable property value.

13 The regression estimate of the coefficient of determination in the form of R-
14 squared (R^2) on statistics with a value of 0.68697 so that the model of applying the
15 variation of independent variables in the study on the ability to explain its effect on the
16 dependent variable is 68.70%. The remaining value of 31.30% of the variation of the
17 dependent variable can be determined by other independent variables that are not applied
18 in this research model.

19 The application of the economic criteria fulfillment test in the study to ensure the
20 adjustment of the estimated parameter coefficients with economic theory is expected to
21 show whether or not the test criteria pass the direction of the estimated parameter
22 relationship to economic theory; the economic criteria estimation results are as follows.

23

24 **Table 4.** Economic Criteria Fulfillment Test Results

Variable	Economic Theory	Estimation Results	Description
Land Area	+/-	+	Appropriate
Building Area	+/-	+	Appropriate
Ownership Rights	+	+	Appropriate
Designation Zone	+	+	Appropriate

25 Source: primary data, processed (2024)

The criteria for the aspects of land and building area show conformity with economic theory; the market approach to the land area of the property area has a specific type of segment suitability so that the expected expansion of the land designation will be significant to the property's value. The building area in the market approach reveals suitability; optimizing the building area's development affects increasing the property's value. The aspect of property characteristics on ownership rights is that, based on the estimation results, the existence of property offers or transactions with conditions of ownership certificates outside property rights tends to cause a decrease in property value. The estimation results of the designation zone aspect show conformity; the property market in the service trade zone tends to cause an increase in the value of a property.

Applying the classical assumption test fulfills the statistical estimation model of normality testing to determine the normal distribution of the applied estimation model. Statistically, applying the observation sample with a distribution of more than $N = 30$ is considered normal. The estimation results show Normality Test-JB $2.5799 < \text{Chi-Square}$ of 11.1433. These results are concluded to be normally distributed.

Table 5. Normality Test Results JB

Normality Test-JB	Chi Square	Prob	Description
2,5799	11,1433	0,2753	Normally Distributed

Source: primary data, processed (2024)

To ensure that the research model applied is unbiased and consistent, it is necessary to know whether there is a relationship between the two variables, so linearity testing with the Ramsey RESET Test estimation model is applied in the study. The linearity test regression estimate shows that the applied model function is statistically linear based on the value (probability = 0.0335 > significance = 0.025).

Table 6. Ramsey Test Results

F-statistics	Prob	Significance	Description
4,6425	0,0335	0,025	linear

Source: primary data, processed (2024)

The application of independent variables in the study needs to ascertain whether there is a strong relationship or correlation between the independent variables used. The multicollinearity test estimate in the form of a correlation matrix between independent variables shows the correlation value of each variable is not more than 0.686972 (R^2). These results reveal that the research data does not occur in multicollinearity.

The estimation results show that the VIF value of the independent variables used in the study is not more than 10 VIF, so each independent variable does not occur in multicollinearity. The results of the regression estimation of Variance Inflation factors are as follows.

Table 7. Correlation Matrix

Variable	Centered VIF < 10	Description
Land Area	1,3148	Non-Multikolinieritas
Building Area	1,3703	Non-Multikolinieritas
Ownership Rights	1,2189	Non-Multikolinieritas
Designation Zone	1,1848	Non-Multikolinieritas

Source: primary data, processed (2024)

This study ensures the inequality of variance of a residual for all observations of the linear model used; the heteroscedasticity test applies estimation. The results of the estimated value obtained Obs*R-Squared 10.22423 < than the Chi-square table of 11.1433 and the prob chi-square value ($p = 0.0368 > @ 0.025$) states that the research residuals are homoscedasticity accepted, the research model does not experience heteroscedasticity.

Table 8. Heteroscedasticity Result

F- statistics	Obs*R-Squared	prob Chi-square	Table Chi square
2,6885	10,22423	0,0368	11,1433

Source: primary data, processed (2024)

CONCLUSSION

The study's results summarize the findings, are precise and transparent regarding the problems that have been formulated, and answer matters related to the research objectives. It shows the existence of property characteristics simultaneously or simultaneously on the variables of land area, building area, ownership rights, and designation zone, which significantly affect property value with a coefficient of determination of 68.69%. Partially or individually, it reveals the influence of the characteristics of land area, building area, ownership rights, and allotment zones positively and significantly on property values.

Selection of the best model of the regression function equation, applying a log-log regression equation model in determining property values in the Special Region of Yogyakarta Province as follows.

$$\text{LOGNP} = 7,829070 + 0,282960\text{LOGLT} + 0,143956\text{LOGLB} + 0,330197\text{HK} + 0.209867\text{ZP}$$

Description :

$$\text{LOGNP} = \text{Property value (IDR)}$$

$$\text{LOGLT} = \text{Land area (m}^2\text{)}$$

LOGLB	=	Building area (m ²)
HK	=	Ownership rights (SHM=1, other than SHM=0)
ZP	=	Zone designation (Service Trade Zone=1, other than ZPJ=0)

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**2. Bukti konfirmasi pra-review dan
Hasil pra-review pertama
(07 April 2024)**

[BLC] Notifikasi baru dari BALANCE: Economic, Business, Management and Accounting Journal

1 pesan

Marista Oktaviani <journal@um-surabaya.ac.id>

7 April 2024 pukul 12.22

Balas Ke: Nurulaili Mauliddah <balance@um-surabaya.ac.id>

Kepada: Rahmat Saleh <rahmat@ep.uad.ac.id>

Anda memperoleh satu notifikasi baru dari BALANCE: Economic, Business, Management and Accounting Journal

Anda dimasukkan ke diskusi berjudul "Hasil pengujian plagiasi" berkenaan dengan naskah "ANALISIS DINAMIKA FLUKTUASI NILAI PROPERTI DAERAH ISTIMEWA YOGYAKARTA".

Tautan: <https://journal.um-surabaya.ac.id/balance/authorDashboard/submission/22203>

Nurulaili Mauliddah

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Management and Accounting Journal <http://journal.um-surabaya.ac.id/index.php/balance>

ANALYSIS OF THE DYNAMICS OF PROPERTY VALUE FLUCTUATIONS IN THE SPECIAL REGION OF YOGYAKARTA

by Rizal muttaqin Muttaqin rizal

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ABSTRACT

The purpose of this study is to determine and identify the influence of physical property characteristics such as land area and building area; property legal characteristics in the form of property ownership rights; environmental characteristics in the form of designation zones on property values in D.I.Yogyakarta and apply the best equation method model in determining the value of large quantities of property in addition to the market approach method and cost and income approach. Access to research observation data in the form of primary data obtained in several ways, namely telephone interviews, personal interviews directly with property owners, and secondary data accessed by desk research of the DJTR spatial plan of the Ministry of ATR BPN, data access using purposive sampling models with non-probability sampling techniques, the number of observations as much as 135 data used. The research method uses multiple regression analysis ordinary least square method with Eviews 10 analysis tools, the form of the research regression model function using the selection of statistical criteria, applying the positivism paradigm with quantitative data in the form of Analytical survey, Identification of linear relationship behavior using the Mac Kinnon Test, and White Davidson MWD. Statistical criteria test in the form of F test, t-test, Determination Coefficient Test (R²), Economic criteria test is applied to compare between the estimated parameter coefficients by economic theory, Classical Assumption Test using Normality, Linearity, Multicollinearity, and Heteroscedasticity Test. The results showed that the findings of property characteristics simultaneously or simultaneously on the variables of land area, building area, ownership rights, and designation zone significantly affect property values with a coefficient of determination level of 68.69%. Partially or individually, the findings revealed the influence of the characteristics of land area, building area, ownership rights,

and designation zone positively and significantly on property values. Selection of the best model of the regression function equation, applying the log-log regression equation model in determining property value.

INTRODUCTION

The acceleration of economic growth is one aspect among various indicators of the welfare of a country's regional area. Inter-regional comparison assessment, as a measure of the results of the development of one region with other regions, is public information showing each regional area's accelerated development (Oh & Shin, 2023). The Central Bureau of Statistics stated that after two years of the COVID-19 pandemic, several provinces in Indonesia experienced acceleration and delay in developing various regions. D.I.Yogyakarta Province, according to statistics on the aspect of economic growth, experienced the lowest growth on the island of Java at 5.13% after Banten Province. Efforts to improve welfare have become the concern of all parties, including the government, in carrying out the role of development policy steps in various aspects of the field, both long-term and short-term development dimensions (Saleh, 2022).

The increase in the economic growth rate in the Special Region of Yogyakarta Province is the contribution of gross value added from the activities of various business sectors. Among them, the real estate or property business sector contributes significantly to the economic growth rate of D.I. Yogyakarta. Supported by the perception of the desire to settle and live in Yogyakarta, it places the most desirable position among other provinces in Indonesia. In addition to being identical as a place of cultural diversity, Yogyakarta is identical to a tourist spot and a place to study. This can create a gap between the increasing demand for land and the limited supply of land providers in the property sector. Indicated by the findings of abuse in the utilization of property in the form of village treasury land in various locations, D.I. Yogyakarta noted the findings as a significant criminal act increased significantly.

The economic report of Yogyakarta, according to Bank Indonesia's regional macro data in 2022, shows that Yogyakarta's economic growth is significantly supported by the growth of the principal investment component, namely the ongoing National Strategic Project (PSN) supporting the airport including the construction of the Jogja-Solo and Jogja-Bawen toll roads and triggered by investment growth from the construction of the South Cross Road (JLS) which is still ongoing, the leading investment performance grew positively by 4.97%. There is a condition of limited land, based on the need for the use of other interests, in addition to the development of the public sector, there is a need for land use from the interests of the private / private side as a commercial designation (Reite,

2023). As confirmed by banking financing indicators, according to Bank Indonesia data, there was significant growth in property loans by 11.85% and real estate loans by 12.28%.

Changes in land use have the potential to be massive due to limited land area, such as several findings of the use of rice fields into residential houses that are not by the regulations of the Regional Spatial Plan (RTRW), the designation of land that is not suitable certainly has an economic and social environmental impact (Hilbrandt & Dimitrakou, 2022), starting from the potential for pollution, namely the lack of land for household waste management and the decline in groundwater quality for the sustainability of life.

Regional spatial planning to maximize these regional assets urges the establishment of optimal spatial zones ranging from industrial and trade to residential areas for settlers (Anna, 2020). Although the reality of its designation is still a source of abuse that is not yet appropriate, data from the Yogyakarta Provincial High Prosecutor's Office in 2023 states that the state loss is around four billion rupiahs by naming several perpetrators, starting from village government implementing officials and investors (companies/private parties) as suspects in cases of allegedly receiving bribes or gratuities.

DIY Governor Regulation Number 34 of 2017 concerning Village Land Utilization in the section on provisions for non-agricultural use (shops, tourist objects, restaurants) or other commercial leases, states that the amount of rent or value figures must be based on the results of an assessment conducted by an Independent Appraiser or Public Appraiser profession. The issue of differences in value opinion in determining the value of a property often occurs because the understanding of developers, communities, and banks is still limited to referring to the Tax Object Sale Value (NJOP); the discrepancy in value opinion often leads to lawsuits by value users (Chen et al., 2023). The level of uncertainty is getting higher in the primary and secondary property markets; it is challenging to create a fair sale and purchase transaction of an asset because the weak supply side is not comparable to the demand side of property assets, making price opinions in the community increasingly biased (Liapis et al., 2015).

Based on the formulation of the problem above, it is essential that research on this topic be carried out related to the analysis of the process of assessing a property market value in DIY Province in general, is still understood using traditional methods manually and even tends to be subjective and limited to the approach of referring to NJOP, the urgency of research in addition to this is first, the understanding of the community or the user of the value related to the resulting value or price/transaction of a property is not only influenced by the land area of the building but needs to consider several legal characteristics of the property in the form of property ownership rights and environmental characteristics in the form of designation zones. Second, there are advantages to the best

equation model using regression analysis; it is hoped that this model will be a potential benefit for assessing large quantities of property quickly and economically and estimating property determinants from various characteristics. This study aims to determine and identify the influence of property characteristic variables on property value to ensure fluctuations in market value in DIY province and apply the best equation method model in determining property value.

Value is understood as the strength or exchangeability of a commodity against other commodities. The development of property valuation insights explains that the notion of value is bound by more specific terms in its use; other meanings of value do not stand alone, such as market value, rental value, residual value, and so on (Buitrago-Mora & Garcia-López, 2023). The discrepancy in understanding the notion of the term value needs to be uniform to respond to differences in the use of the terms cost, price, and value both in concept and application in the practice of an appraisal (Boterenbrood, 2023).

According to research (Gholipour et al., 2023) cost is the money spent to obtain or produce a commodity. Price is the amount requested, offered, or paid in a transaction to obtain commodity rights. Value is understood as the amount of money worth receiving at this time (present worth) for various benefits or benefits obtained in the future (future benefits). The components of value needed to support the creation of a property value include the criteria of desirability, usefulness, scarcity, and transferability (Kreppmeier et al., 2023).

Research (Clapp & Lindenthal, 2022) developed a new approach to estimating urban land values. The study extended the AMM theory by adding the assumption of partial irreversibility, implying that land values with structure can evolve differently from values other than market values, developing a hybrid model with a land residue method, and developing a novelty test of predictive accuracy. The house price index generated market value is used to estimate the hybrid economic structure and land value. The applied model shows the importance of identifying the building structure for HBU at the date of construction; the existing market balance is essential for identifying the selling price of the related property.

Research (Lin et al., 2023) addresses the valuation of ground hydrogen geological storage options for commercial development. The study applied a net present value (NPV) evaluation framework to evaluate asset value storage by integrating updated digital economic data analysis and market value-based operations. The research utilizes the CAPM and WACC models to determine the risk-adjusted calculation rate in building the NPV evaluation framework. The results show that there is a price spread between the acquisition and the marketed prices, significant property market information of the site

development, and asset maintenance costs are the top three factors that most affect NPV and IRR.

According to research (Zakaria & Fatine, 2021) on valuation models and determinants of real estate property prices in Morocco proposing a new approach to modeling the real estate price index. Based on the regression approach, the basic idea of this study is to verify the importance of real estate characteristics in real estate prices in the market, and estimate a regression model that takes into account spatial autocorrelation. The findings of the research results generally indicate the identification that the land surface area and location of real estate with commercial residential neighborhoods, villas and apartments around have a significant influence on the value of property prices.

Research conducted (Gautier et al., 2023) studied the transaction price and time of sale or offer of new digitally accessed real estate agents in the Netherlands. Identifying the competition of property transaction registered platforms with low-cost classification. Using a dataset of residential real estate transactions, the study found strong evidence that sellers who use secondary market digital platforms will obtain higher prices and sell faster, although there is still a tendency to switch to traditional markets. The results show consistently that property sellers benefit from the secondary market transactions of various digital platform agents by optimizing property demand market information, the research findings strengthen the conjecture that real estate agents have significant market power.

Based on the results of empirical research and several scientific theoretical foundations, there are conjectures or temporary answers (hypotheses) developed against the background of this study, the variables of land area and building area according to research (Boterenbrood, 2023), (Oh & Shin, 2023), (Reite, 2023), (Chen et al., 2023), (Clapp & Lindenthal, 2022), (Zakaria & Fatine, 2021) mention a positive and significant effect on property value and according to (Saleh, 2022) show a negative effect of land area on property value. His book (Wyatt, 2014) on property valuation explains that the size and physical form of the land area of a property is a concern in determining the convenience and economic aspects of the activities carried out on it to support the attractiveness of a property.

However, this only applies to the conditions of specific properties such as agricultural land; the more comprehensive the land size has the effect of decreasing value due to increasingly complex management and maintenance problems; this situation has reduced demand for large enough land areas. The characteristics of the building area are determined by various things, including the design of the building, which is adjusted to the type of use according to the tastes of property users; the mismatch of building design

and taste will potentially reduce the value of a building, just as when the building design is by the use and even follows the trend of user tastes will create an increase in the value of the property. Hypotheses that can be concluded referring to the theoretical basis and some previous research are as follows.

1. H_A : Land area positively and significantly affects property value.
2. H_A : Building area positively and significantly affects property value.

Variables of property legal characteristics in the form of property ownership rights and environmental characteristics in the form of designation zones, according to research findings (Hilbrandt & Dimitrakou, 2022), (Anna, 2020), (Gautier et al., 2023) mention a positive and significant influence on property value. According to (Harjanto & Hidayati, 2019) in his book, the basic concepts of property valuation explain the importance of estimating the market value of property by considering the highest and best use analysis (HBU) for the identification of the most likely and possible uses of property to create optimization of profits from competitive property permitted. The principle of alternative HBU analysis is applied to meet several main criteria: physically possible, legally permissible, financially feasible, and maximally productive. Part of the legally permissible aspect is, of course, in addition to the permitted regulations, related to the necessity of the condition of the ownership rights to the property and the suitability of the designation zone of a property. The hypothesis contains conclusions for development referring to the theoretical basis as follows.

3. H_A : Land ownership rights have a negative effect on property values.
4. H_A : The designation zone has a positive and significant effect on property value.

The research road map shows the stages that will be carried out, starting from accessing primary data related to the use of research variables, namely data on physical property characteristics such as land area and building area; property legal characteristics in the form of property ownership rights; environmental characteristics in the form of designation zones and identifying the analysis of the influence of property characteristics on property values in D.I.Yogyakarta and revealing the analysis of discussions in an economic approach.

METHOD

This research data collection uses a purposive sampling model with non-probability sampling techniques from the population with a sample of unique characteristics according to the research objectives, namely properties with transactions (sold/bought) or is in the offering stage that occur with a maximum of 18 months from the valuation date. Researchers realize that it is difficult to access market data from the population of property objects studied as a whole, so the research considers limited costs and aspects of time and human resources so that research observations use the Slovin formula based

on data obtained from primary and secondary data available in D.I.Yogyakarta as many as 111 observation samples of property offers and transactions.

The research data collection technique uses primary data obtained in several ways, namely telephone interviews, personal interviews directly with property owners, and secondary data accessed by desk research of the DJIR spatial plan of the Ministry of ATR/BPN and access to additional information from other agencies such as MAPPI and the Central Bureau of Statistics. The data collection process is carried out by paying attention to the suitability of the data, ensuring its reasonableness and feasibility, and ensuring that it can be accounted for. According to the time dimension, the research used cross-section data totaling 111 data observation samples in DIY Province.

The research design applies the positivism paradigm with quantitative data. An analytical survey is applied to determine whether or not there is a correlation between physical property characteristics in the form of land area and building area, legal property characteristics in the form of property ownership rights, and environmental characteristics in the form of designation zones as independent variables and property market value as the dependent variable.

This study uses multiple regression analysis, the ordinary least square method, with the EViews software analysis tool. From the function of the best regression model, they use statistical criteria to identify linear relationship behavior using the Mac Kinnon Test and White Davidson MWD. Statistical criteria test is used to test the accuracy of the selected model in the form of an F test, t-test, and determination coefficient test (R²). The economic criteria test is applied to compare the estimated parameter coefficients by economic theory. Classical Assumption Test to determine whether the estimation model meets the classical assumption criteria, namely using Normality, Linearity, Multicollinearity, and Heteroscedasticity Tests.

RESULTS AND DISCUSSION

Data acquisition in the research process amounted to 111 samples of observations of property offers and transactions scattered in the Special Region of Yogyakarta Province; the observation data paid attention to specific characteristics that were adjusted to a maximum of 18 months from the assessment date. The approach to obtaining data in the implementation is adjusted to the research planning schedule in January by adjusting the nature and sources of reliable information from the acquisition through direct information, communication tools, or written verification, which is carried out reasonably so that the information data is assumed to be correct.

The detailed observation data applied to the research is data on sale and purchase transactions and property offers from developers/agents or owners by paying attention to the specificity of the adjusted property value, including land area, building area, land ownership rights, and designation zone.

The description of the data analysis results in descriptive statistics shows an overview of the data applied in the study in detail. The descriptive statistical description contains information on the average, median, highest, and lowest values of the independent and dependent variables applied in the study as follows.

Table 1. Statistical Descriptive Data

Variable	Mean	Median	Maximum	Minimum
Property Value	1.796.549.116	1.320.000.000	10.564.680.000	231.240.000
Land Area	690	400	5102	54
Building Area	117	0	1949	0
Ownership Rights	0,86	1	1	0
Designation Zone	0,57	1	1	0

Source: primary data, processed (2024)

Based on Table 1, it is found that the property value in Yogyakarta Special Province has the highest value of IDR 10,564,680,000 with the lowest property value of IDR 231,240,000 and an average property value of IDR 1,796,649,116. These figures place the potential for a reasonably high property value gap condition electorally between districts and cities. The land and building area figures show the highest land area figure of 5102 m² with the highest building area figure of 1949 m², the lowest land area figure of 54 m² with the lowest building area figure of 0 m², and the average land area figure of 690 m² with an average building area figure of 117 m², the variable land and building area figures in the study indicate the existence of assets in the form of land buildings that have been developed both commercial and other designations are more dominant than assets that have not been developed. The variable of land ownership rights shows an average number of 0.86 with a median of 1, revealing that the data of the assets studied in the form of SHM in ownership rights still dominates over other ownership rights. The designation zone variable has an average number of 0.57 and a median of 1, indicating that the research assets in the service trade designation zone are still more dominant in the property market.

The selection of the best model proposed according to the formulation of statistical regression equations, in the form of a statistical criteria test approach and a Mackinnon, White & Davidson (MWD) test, revealed that the log-log model can be applied. The regression results of the function model showed a significant R-squared (R²) value of 0.68697 (68.69%), and the research regression equation is as follows.

$$\text{LOGNP} = 7,829070 + 0,282960\text{LOGLT} + 0,143956\text{LOGLB} + 0,330197\text{HK} + 0,209867\text{ZP}$$

$$t\text{-Statistic} = (55,58901) (5,320390) (7,657179) (5,513919) (5,151977)$$

$$R\text{-Squared} = 0,686972$$

$$Adj R^2 = 0,675160$$

The application of the linear regression model function estimation in the study shows that the explanation of the variation of the independent variables of building land

area, ownership rights, and designation zone used on the dependent variable of property value is 68.69%.

Test the fulfillment of statistical criteria in the study to show the accuracy of the model applied and the ability of the model to explain the formulation of research problems. First, in partial or individual testing of each independent variable (land area, building area, ownership rights, and designation zone) on the dependent variable (property value), according to the research regression results as follows.

Table 2. T-test results

Variable	Coefficient	t-Statistic	t-table	Prob,
Constant	7.829070	55.58901	1.982	0.0000
Land Area	0.282960	5.320390	1.982	0.0000
Building Area	0.143956	7.657179	1.982	0.0000
Ownership Rights	0.330137	5.513919	1.982	0.0000
Designation Zone	0.209867	5.151977	1.982	0.0000

Source: primary data, processed (2024)

Based on the results of the t-test in Table 2, the results reveal that the variable land area (5.3204), building area (7.6572), ownership rights (5.5139), and designation zone (5.1519) have a positive and significant effect on the property value variable. First, the practical meaning of the regression results can be understood that property value is influenced by land area significantly by a coefficient of 0.2829 so that changes in the land area there an increase or expansion of 1 m² will affect the increase in property value by 0.2829% the regression estimation results prove the hypothesis is accepted, namely the land area has a positive and significant effect on property value.

Second, the building area significantly has a coefficient of 0.1439 on property value; if there is an increase of 1 m² in the building area, it will affect the increase in property value by 0.1439% with these results showing that the hypothesis is accepted, namely the building area has a positive and significant effect on property value.

Third, the ownership rights variable significantly, with a coefficient of 0.3301, affects property value practically. An increase or improvement in the change in ownership rights to 1 certificate of ownership rights (SHM) will affect the increase in property value by 0.3301%. The regression estimation results prove that the hypothesis is accepted, namely that the ownership rights letter positively and significantly affects the property's value.

Fourth, the designation zone variable significantly, with a coefficient of 0.2098, affects property value. A change or increase in asset conditions in the form of 1 service trade designation zone will increase property value by 0.2098%. The estimation results show that the hypothesis is accepted; the designation zone has a positive and significant effect on property value.

Test the fulfillment of statistical criteria simultaneously or simultaneously on the variables of land area, building area, ownership rights, and designation zone on property value. The study applies a confidence level of 98.5% or significant using (a) 0.025 degree of freedom (df) numerator = $k-1 = 111-5 = 106$, the estimated value obtained F-statistic of 58.15708 > F-table of 2.89. The research regression estimation results are as follows.

Table 3. F-Test Results

Variable	F- statistics	F-table	Description
Land Area			
Building Area	58,15708	2,89	Significant Impact
Ownership Rights			
Designation Zone			

Source: primary data, processed (2024)

The results of the F test in Table 3 reveal a simultaneous influence together on the variables of land area, building area, ownership rights, and designation zone significantly on the variable property value.

The regression estimate of the coefficient of determination in the form of R-squared (R^2) on statistics with a value of 0.68697 so that the model of applying the variation of independent variables in the study on the ability to explain its effect on the dependent variable is 68.70%. The remaining value of 31.30% of the variation of the dependent variable can be determined by other independent variables that are not applied in this research model.

The application of the economic criteria fulfillment test in the study to ensure the adjustment of the estimated parameter coefficients with economic theory is expected to show whether or not the test criteria pass the direction of the estimated parameter relationship to economic theory; the economic criteria estimation results are as follows.

Table 4. Economic Criteria Fulfillment Test Results

Variable	Economic Theory	Estimation Results	Description
Land Area	+/-	+	Appropriate
Building Area	+/-	+	Appropriate
Ownership Rights	+	+	Appropriate
Designation Zone	+	+	Appropriate

Source: primary data, processed (2024)

The criteria for the aspects of land and building area show conformity with economic theory: the market approach to the land area of the property area has a specific

type of segment suitability so that the expected expansion of the land designation will be significant to the property's value. The building area in the market approach reveals suitability; optimizing the building area's development affects increasing the property's value. The aspect of property characteristics on ownership rights is that, based on the estimation results, the existence of property offers or transactions with conditions of ownership certificates outside property rights tends to cause a decrease in property value. The estimation results of the designation zone aspect show conformity; the property market in the service trade zone tends to cause an increase in the value of a property.

Applying the classical assumption test fulfills the statistical estimation model of normality testing to determine the normal distribution of the applied estimation model. Statistically, applying the observation sample with a distribution of more than $N = 30$ is considered normal. The estimation results show Normality Test-JB $2.5799 < \text{Chi-Square}$ of 11.1433. These results are concluded to be normally distributed.

Table 5. Normality Test Results JB

Normality Test-JB	Chi Square	Prob	Description
2,5799	11,1433	0,2753	Normally Distributed

Source: primary data, processed (2024)

To ensure that the research model applied is unbiased and consistent, it is necessary to know whether there is a relationship between the two variables, so linearity testing with the Ramsey RESET Test estimation model is applied in the study. The linearity test regression estimate shows that the applied model function is statistically linear based on the value (probability = $0.0335 > \text{significance} = 0.025$).

Table 6. Ramsey Test Results

F-statistics	Prob	Significance	Description
4,6425	0,0335	0,025	linear

Source: primary data, processed (2024)

The application of independent variables in the study needs to ascertain whether there is a strong relationship or correlation between the independent variables used. The multicollinearity test estimate in the form of a correlation matrix between independent variables shows the correlation value of each variable is not more than 0.686972 (R^2). These results reveal that the research data does not occur in multicollinearity.

The estimation results show that the VIF value of the independent variables used in the study is not more than 10 VIF, so each independent variable does not occur in multicollinearity. The results of the regression estimation of Variance Inflation factors are as follows.

Table 7. Correlation Matrix

Variable	Centered VIF < 10	Description
Land Area	1,3148	Non-Multikolinieritas
Building Area	1,3703	Non-Multikolinieritas
Ownership Rights	1,2189	Non-Multikolinieritas
Designation Zone	1,1848	Non-Multikolinieritas

Source: primary data, processed (2024)

This study ensures the inequality of variance of a residual for all observations of the linear model used; the heteroscedasticity test applies estimation. The results of the estimated value obtained Obs²R-Squared 10,22423 < than the Chi-square table of 11,1433 and the prob chi-square value ($p = 0,0368 > @ 0,025$) states that the research residuals are homoscedasticity accepted, the research model does not experience heteroscedasticity.

Table 8. Heteroscedasticity Result

F- statistics	Obs ² R-Squared	prob Chi-square	Table Chi square
2,6885	10,22423	0,0368	11,1433

Source: primary data, processed (2024)

CONCLUSION

The study's results summarize the findings, are precise and transparent regarding the problems that have been formulated, and answer matters related to the research objectives. It shows the existence of property characteristics simultaneously or simultaneously on the variables of land area, building area, ownership rights, and designation zone, which significantly affect property value with a coefficient of determination of 68.69%. Partially or individually, it reveals the influence of the characteristics of land area, building area, ownership rights, and allotment zones positively and significantly on property values.

Selection of the best model of the regression function equation, applying a log-log regression equation model in determining property values in the Special Region of Yogyakarta Province as follows:

$$\text{LOGNP} = 7,829070 + 0,282960\text{LOGLT} + 0,143956\text{LOGLB} + 0,330197\text{HK} + 0,209867\text{ZP}$$

Description :

LOGNP = Property value (IDR)

LOGLT = Land area (m²)

LOGLB = Building area (m²)

HK	= Ownership rights (SHM=1, other than SHM=0)
ZP	= Zone designation (Service Trade Zone=1, other than ZPJ=0)

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ANALYSIS OF THE DYNAMICS OF PROPERTY VALUE FLUCTUATIONS IN THE SPECIAL REGION OF YOGYAKARTA

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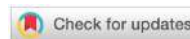
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ANALYSIS OF THE DYNAMICS OF PROPERTY VALUE FLUCTUATIONS IN THE SPECIAL REGION OF YOGYAKARTA

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ABSTRACT

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The purpose of this study is to determine and identify the influence of physical property characteristics such as land area and building area; property legal characteristics in the form of property ownership rights; environmental characteristics in the form of designation zones on property values in D.I.Yogyakarta and apply the best equation method model in determining the value of large quantities of property in addition to the market approach method and cost and income approach. Access to research observation data in the form of primary data obtained in several ways, namely telephone interviews, personal interviews directly with property owners, and secondary data accessed by desk research of the DJTR spatial plan of the Ministry of ATR BPN, data access using purposive sampling models with non-probability sampling techniques, the number of observations as much as 135 data used. The research method uses multiple regression analysis ordinary least square method with Eviews 10 analysis tools, the form of the research regression model function using the selection of statistical criteria, applying the positivism paradigm with quantitative data in the form of Analytical survey, Identification of linear relationship behavior using the Mac Kinnon Test, and White Davidson MWD, Statistical criteria test in the form of F test, t-test, Determination Coefficient Test (R²), Economic criteria test is applied to compare between the estimated parameter coefficients by economic theory, Classical Assumption Test using Normality, Linearity, Multicollinearity, and Heteroscedasticity Test. The results showed that the findings of property characteristics simultaneously or simultaneously on the variables of land area, building area, ownership rights, and designation zone significantly affect property values with a coefficient of determination level of 68.69%. Partially or individually, the findings revealed the influence of the characteristics of land area, building area, ownership rights,

and designation zone positively and significantly on property values. Selection of the best model of the regression function equation, applying the log-log regression equation model in determining property value.

INTRODUCTION

The acceleration of economic growth is one aspect among various indicators of the welfare of a country's regional area. Inter-regional comparison assessment, as a measure of the results of the development of one region with other regions, is public information showing each regional area's accelerated development (Oh & Shin, 2023). The Central Bureau of Statistics stated that after two years of the COVID-19 pandemic, several provinces in Indonesia experienced acceleration and delay in developing various regions. D.I.Yogyakarta Province, according to statistics on the aspect of economic growth, experienced the lowest growth on the island of Java at 5.13% after Banten Province. Efforts to improve welfare have become the concern of all parties, including the government, in carrying out the role of development policy steps in various aspects of the field, both long-term and short-term development dimensions (Saleh, 2022).

The increase in the economic growth rate in the Special Region of Yogyakarta Province is the contribution of gross value added from the activities of various business sectors. Among them, the real estate or property business sector contributes significantly to the economic growth rate of D.I.Yogyakarta. Supported by the perception of the desire to settle and live in Yogyakarta, it places the most desirable position among other provinces in Indonesia. In addition to being identical as a place of cultural diversity, Yogyakarta is identical to a tourist spot and a place to study. This can create a gap between the increasing demand for land and the limited supply of land providers in the property sector. Indicated by the findings of abuse in the utilization of property in the form of village treasury land in various locations, D.I.Yogyakarta noted the findings as a significant criminal act increased significantly.

The economic report of Yogyakarta, according to Bank Indonesia's regional macro data in 2022, shows that Yogyakarta's economic growth is significantly supported by the growth of the principal investment component, namely the ongoing National Strategic Project (PSN) supporting the airport including the construction of the Jogja-Solo and Jogja-Bawen toll roads and triggered by investment growth from the construction of the South Cross Road (JJLS) which is still ongoing, the leading investment performance grew positively by 4.97%. There is a condition of limited land, based on the need for the use of other interests, in addition to the development of the public sector, there is a need for land use from the interests of the private / private side as a commercial designation (Reite,

2023). As confirmed by banking financing indicators, according to Bank Indonesia data, there was significant growth in property loans by 11.85% and real estate loans by 12.28%.

Changes in land use have the potential to be massive due to limited land area, such as several findings of the use of rice fields into residential houses that are not by the regulations of the Regional Spatial Plan (RTRW), the designation of land that is not suitable certainly has an economic and social environmental impact (Hilbrandt & Dimitrakou, 2022), starting from the potential for pollution, namely the lack of land for household waste management and the decline in groundwater quality for the sustainability of life.

Regional spatial planning to maximize these regional assets urges the establishment of optimal spatial zones ranging from industrial and trade to residential areas for settlers (Anna, 2020). Although the reality of its designation is still a source of abuse that is not yet appropriate, data from the Yogyakarta Provincial High Prosecutor's Office in 2023 states that the state loss is around four billion rupiahs by naming several perpetrators, starting from village government implementing officials and investors (companies/private parties) as suspects in cases of allegedly receiving bribes or gratuities.

DIY Governor Regulation Number 34 of 2017 concerning Village Land Utilization in the section on provisions for non-agricultural use (shops, tourist objects, restaurants) or other commercial leases, states that the amount of rent or value figures must be based on the results of an assessment conducted by an Independent Appraiser or Public Appraiser profession. The issue of differences in value opinion in determining the value of a property often occurs because the understanding of developers, communities, and banks is still limited to referring to the Tax Object Sale Value (NJOP); the discrepancy in value opinion often leads to lawsuits by value users (Chen et al., 2023). The level of uncertainty is getting higher in the primary and secondary property markets; it is challenging to create a fair sale and purchase transaction of an asset because the weak supply side is not comparable to the demand side of property assets, making price opinions in the community increasingly biased (Liapis et al., 2015).

Based on the formulation of the problem above, it is essential that research on this topic be carried out related to the analysis of the process of assessing a property market value in DIY Province in general, is still understood using traditional methods manually and even tends to be subjective and limited to the approach of referring to NJOP, the urgency of research in addition to this is first, the understanding of the community or the user of the value related to the resulting value or price/transaction of a property is not only influenced by the land area of the building but needs to consider several legal characteristics of the property in the form of property ownership rights and environmental characteristics in the form of designation zones. Second, there are advantages to the best

equation model using regression analysis; it is hoped that this model will be a potential benefit for assessing large quantities of property quickly and economically and estimating property determinants from various characteristics. This study aims to determine and identify the influence of property characteristic variables on property value to ensure fluctuations in market value in DIY province and apply the best equation method model in determining property value.

Value is understood as the strength or exchangeability of a commodity against other commodities. The development of property valuation insights explains that the notion of value is bound by more specific terms in its use; other meanings of value do not stand alone, such as market value, rental value, residual value, and so on (Buitrago-Mora & García-López, 2023). **he** discrepancy in understanding the notion of the term value needs to be uniform to respond to differences in the use of the terms cost, price, and value both in concept and application in the practice of an appraisal (Boterenbrood, 2023).

According to research (Gholipour et al., 2023) cost is the money spent to obtain or produce a commodity. Price is the amount requested, offered, or paid in a transaction to obtain commodity rights. Value is understood as the amount of money worth receiving at this time (present worth) for various benefits or benefits obtained in the future (future benefits). The components of value needed to support the creation of a property value include the criteria of desirability, usefulness, scarcity, and transferability (Kreppmeier et al., 2023).

Research (Clapp & Lindenthal, 2022) developed a new approach to estimating urban land values. The study extended the AMM theory by adding the assumption of partial irreversibility, implying that land values with structure can evolve differently from values other than market values, developing a hybrid model with a land residue method, and developing a novelty test of predictive accuracy. The house price index generated market value is used to estimate the hybrid economic structure and land value. The applied model shows the importance of identifying the building structure for HBU at the date of construction; the existing market balance is essential for identifying the selling price of the related property.

Research (Lin et al., 2023) addresses the valuation of ground hydrogen geological storage options for commercial development. The study applied a net present value (NPV) evaluation framework to evaluate asset value storage by integrating updated digital economic data analysis and market value-based operations. The research utilizes the CAPM and WACC models to determine the risk-adjusted calculation rate in building the NPV evaluation framework. The results show that there is a price spread between the acquisition and the marketed prices, significant property market information of the site

development, and asset maintenance costs are the top three factors that most affect NPV and IRR.

According to research (Zakaria & Fatine, 2021) on valuation models and determinants of real estate property prices in Morocco proposing a new approach to modeling the real estate price index. Based on the regression approach, the basic idea of this study is to verify the importance of real estate characteristics in real estate prices in the market, and estimate a regression model that takes into account spatial autocorrelation. The findings of the research results generally indicate the identification that the land surface area and location of real estate with commercial residential neighborhoods, villas and apartments around have a significant influence on the value of property prices.

Research conducted (Gautier et al., 2023) studied the transaction price and time of sale or offer of new digitally accessed real estate agents in the Netherlands. Identifying the competition of property transaction registered platforms with low-cost classification. Using a dataset of residential real estate transactions, the study found strong evidence that sellers who use secondary market digital platforms will obtain higher prices and sell faster, although there is still a tendency to switch to traditional markets. The results show consistently that property sellers benefit from the secondary market transactions of various digital platform agents by optimizing property demand market information, the research findings strengthen the conjecture that real estate agents have significant market power.

Based on the results of empirical research and several scientific theoretical foundations, there are conjectures or temporary answers (hypotheses) developed against the background of this study, the variables of land area and building area according to research (Boterenbrood, 2023), (Oh & Shin, 2023), (Reite, 2023), (Chen et al., 2023), (Clapp & Lindenthal, 2022), (Zakaria & Fatine, 2021) mention a positive and significant effect on property value and according to (Saleh, 2022) show a negative effect of land area on property value. His book (Wyatt, 2014) on property valuation explains that the size and physical form of the land area of a property is a concern in determining the convenience and economic aspects of the activities carried out on it to support the attractiveness of a property.

However, this only applies to the conditions of specific properties such as agricultural land; the more comprehensive the land size has the effect of decreasing value due to increasingly complex management and maintenance problems; this situation has reduced demand for large enough land areas. The characteristics of the building area are determined by various things, including the design of the building, which is adjusted to the type of use according to the tastes of property users; the mismatch of building design

and taste will potentially reduce the value of a building, just as when the building design is by the use and even follows the trend of user tastes will create an increase in the value of the property. Hypotheses that can be concluded referring to the theoretical basis and some previous research are as follows.

1. H_A : Land area positively and significantly affects property value.
2. H_A : Building area positively and significantly affects property value.

Variables of property legal characteristics in the form of property ownership rights and environmental characteristics in the form of designation zones, according to research findings (Hilbrandt & Dimitrakou, 2022), (Anna, 2020), (Gautier et al., 2023) mention a positive and significant influence on property value. According to (Harjanto & Hidayati, 2019) in his book, the basic concepts of property valuation explain the importance of estimating the market value of property by considering the highest and best use analysis (HBU) for the identification of the most likely and possible uses of property to create optimization of profits from competitive property permitted. The principle of alternative HBU analysis is applied to meet several main criteria: physically possible, legally permissible, financially feasible, and maximally productive. Part of the legally permissible aspect is, of course, in addition to the permitted regulations, related to the necessity of the condition of the ownership rights to the property and the suitability of the designation zone of a property. The hypothesis contains conclusions for development referring to the theoretical basis as follows.

3. H_A : Land ownership rights have a negative effect on property values.
4. H_A : The designation zone has a positive and significant effect on property value.

The research road map shows the stages that will be carried out, starting from accessing primary data related to the use of research variables, namely data on physical property characteristics such as land area and building area; property legal characteristics in the form of property ownership rights; environmental characteristics in the form of designation zones and identifying the analysis of the influence of property characteristics on property values in D.I.Yogyakarta and revealing the analysis of discussions in an economic approach.

METHOD

This research data collection uses a purposive sampling model with non-probability sampling techniques from the population with a sample of unique characteristics according to the research objectives, namely properties with transactions (sold/bought) or is in the offering stage that occur with a maximum of 18 months from the valuation date. Researchers realize that it is difficult to access market data from the population of property objects studied as a whole, so the research considers limited costs and aspects of time and human resources so that research observations use the Slovin formula based

on data obtained from primary and secondary data available in D.I.Yogyakarta as many as 111 observation samples of property offers and transactions.

The research data collection technique uses primary data obtained in several ways, namely telephone interviews, personal interviews directly with property owners, and secondary data accessed by desk research of the DJTR spatial plan of the Ministry of ATR BPN and access to additional information from other agencies such as MAPPI and the Central Bureau of Statistics. The data collection process is carried out by paying attention to the suitability of the data, ensuring its reasonableness and feasibility, and ensuring that it can be accounted for. According to the time dimension, the research used cross-section data totaling 111 data observation samples in DIY Province.

The research design applies the positivism paradigm with quantitative data. An analytical survey is applied to determine whether or not there is a correlation between physical property characteristics in the form of land area and building area, legal property characteristics in the form of property ownership rights, and environmental characteristics in the form of designation zones as independent variables and property market value as the dependent variable.

This study uses multiple regression analysis, the ordinary least square method, with the Eviews software analysis tool. From the function of the best regression model, they use statistical criteria to identify linear relationship behavior using the Mac Kinnon Test and White Davidson MWD. Statistical criteria test is used to test the accuracy of the selected model in the form of an F test, t-test, and determination coefficient test (R²). The economic criteria test is applied to compare the estimated parameter coefficients by economic theory. Classical Assumption Test to determine whether the estimation model meets the classical assumption criteria, namely using Normality, Linearity, Multicollinearity, and Heteroscedasticity Tests.

RESULTS AND DISCUSSION

Data acquisition in the research process amounted to 111 samples of observations of property offers and transactions scattered in the Special Region of Yogyakarta Province; the observation data paid attention to specific characteristics that were adjusted to a maximum of 18 months from the assessment date. The approach to obtaining data in the implementation is adjusted to the research planning schedule in January by adjusting the nature and sources of reliable information from the acquisition through direct information, communication tools, or written verification, which is carried out reasonably so that the information data is assumed to be correct.

The detailed observation data applied to the research is data on sale and purchase transactions and property offers from developers/agents or owners by paying attention to the specificity of the adjusted property value, including land area, building area, land ownership rights, and designation zone.

The description of the data analysis results in descriptive statistics shows an overview of the data applied in the study in detail. The descriptive statistical description contains information on the average, median, highest, and lowest values of the independent and dependent variables applied in the study as follows.

Table 1. Statistical Descriptive Data

Variable	Mean	Median	Maximum	Minimum
Property Value	1.796.649.116	1.320.000.000	10.564.680.000	231.240.000
Land Area	690	400	5102	54
Building Area	117	0	1949	0
Ownership Rights	0.86	1	1	0
Designation Zone	0.57	1	1	0

Source: primary data, processed (2024)

Based on Table 1, it is found that the property value in Yogyakarta Special Province has the highest value of IDR 10,564,680,000 with the lowest property value of IDR 231,240,000 and an average property value of IDR 1,796,649,116. These figures place the potential for a reasonably high property value gap condition electorally between districts and cities. The land and building area figures show the highest land area figure of 5102 m² with the highest building area figure of 1949 m², the lowest land area figure of 54 m² with the lowest building area figure of 0 m², and the average land area figure of 690 m² with an average building area figure of 117 m², the variable land and building area figures in the study indicate the existence of assets in the form of land buildings that have been developed both commercial and other designations are more dominant than assets that have not been developed. The variable of land ownership rights shows an average number of 0.86 with a median of 1, revealing that the data of the assets studied in the form of SHM in ownership rights still dominates over other ownership rights. The designation zone variable has an average number of 0.57 and a median of 1, indicating that the research assets in the service trade designation zone are still more dominant in the property market.

The selection of the best model proposed according to the formulation of statistical regression equations, in the form of a statistical criteria test approach and a Mackinnon, White & Davidson (MWD) test, revealed that the log-log model can be applied. The regression results of the function model showed a significant R-squared (R²) value of 0.68697 (68.69%), and the research regression equation is as follows.

$$\text{LOGNP} = 7,829070 + 0,282960\text{LOGLT} + 0,143956\text{LOGLB} + 0,330197\text{HK} + 0,209867\text{ZP}$$

$$t\text{-Statistic} = (55,58901) (5,320390) (7,657179) (5,513919) (5,151977)$$

$$R\text{-Squared} = 0,686972$$

$$Adj R^2 = 0,675160$$

The application of the linear regression model function estimation in the study shows that the explanation of the variation of the independent variables of building land

area, ownership rights, and designation zone used on the dependent variable of property value is 68.69%.

Test the fulfillment of statistical criteria in the study to show the accuracy of the model applied and the ability of the model to explain the formulation of research problems. First, in partial or individual testing of each independent variable (land area, building area, ownership rights, and designation zone) on the dependent variable (property value), according to the research regression results as follows.

Table 2. T-test results

Variable	Coefficient	t-Statistic	t-table	Prob,
Constant	7.829070	55.58901	1,982	0.0000
Land Area	0.282960	5.320390	1,982	0.0000
Building Area	0.143956	7.657179	1,982	0.0000
Ownership Rights	0.330137	5.513919	1,982	0.0000
Designation Zone	0.209867	5.151977	1,982	0.0000

Source: primary data, processed (2024)

Based on the results of the t-test in Table 2, the results reveal that the variable land area (5.3204), building area (7.6572), ownership rights (5.5139), and designation zone (5.1519) have a positive and significant effect on the property value variable. First, the practical meaning of the regression results can be understood that property value is influenced by land area significantly by a coefficient of 0.2829 so that changes in the land area there an increase or expansion of 1 m² will affect the increase in property value by 0.2829% the regression estimation results prove the hypothesis is accepted, namely the land area has a positive and significant effect on property value.

Second, the building area significantly has a coefficient of 0.1439 on property value; if there is an increase of 1 m² in the building area, it will affect the increase in property value by 0.1439% with these results showing that the hypothesis is accepted, namely the building area has a positive and significant effect on property value.

Third, the ownership rights variable significantly, with a coefficient of 0.3301, affects property value practically. An increase or improvement in the change in ownership rights to 1 certificate of ownership rights (SHM) will affect the increase in property value by 0.3301%. The regression estimation results prove that the hypothesis is accepted, namely that the ownership rights letter positively and significantly affects the property's value.

Fourth, the designation zone variable significantly, with a coefficient of 0.2098, affects property value. A change or increase in asset conditions in the form of 1 service trade designation zone will increase property value by 0.2098%. The estimation results show that the hypothesis is accepted: the designation zone has a positive and significant effect on property value.

Test the fulfillment of statistical criteria simultaneously or simultaneously on the variables of land area, building area, ownership rights, and designation zone on property value. The study applies a confidence level of 98.5% or significant using (a) 0.025 degree of freedom (df) numerator = $k-1 = 111-5 = 106$, the estimated value obtained F-statistic of $58.15708 > F$ -table of 2.89. The research regression estimation results are as follows.

Table 3. F-Test Results

Variable	F- statistics	F-table	Description
Land Area			
Building Area	58,15708	2,89	Significant Impact
Ownership Rights			
Designation Zone			

Source: primary data, processed (2024)

The results of the F test in Table 3 reveal a simultaneous influence together on the variables of land area, building area, ownership rights, and designation zone significantly on the variable property value.

The regression estimate of the coefficient of determination in the form of R-squared (R^2) on statistics with a value of 0.68697 so that the model of applying the variation of independent variables in the study on the ability to explain its effect on the dependent variable is 68.70%. The remaining value of 31.30% of the variation of the dependent variable can be determined by other independent variables that are not applied in this research model.

The application of the economic criteria fulfillment test in the study to ensure the adjustment of the estimated parameter coefficients with economic theory is expected to show whether or not the test criteria pass the direction of the estimated parameter relationship to economic theory; the economic criteria estimation results are as follows.

Table 4. Economic Criteria Fulfillment Test Results

Variable	Economic Theory	Estimation Results	Description
Land Area	+/-	+	Appropriate
Building Area	+/-	+	Appropriate
Ownership Rights	+	+	Appropriate
Designation Zone	+	+	Appropriate

Source: primary data, processed (2024)

The criteria for the aspects of land and building area show conformity with economic theory; the market approach to the land area of the property area has a specific

type of segment suitability so that the expected expansion of the land designation will be significant to the property's value. The building area in the market approach reveals suitability; optimizing the building area's development affects increasing the property's value. The aspect of property characteristics on ownership rights is that, based on the estimation results, the existence of property offers or transactions with conditions of ownership certificates outside property rights tends to cause a decrease in property value. The estimation results of the designation zone aspect show conformity; the property market in the service trade zone tends to cause an increase in the value of a property.

Applying the classical assumption test fulfills the statistical estimation model of normality testing to determine the normal distribution of the applied estimation model. Statistically, applying the observation sample with a distribution of more than $N = 30$ is considered normal. The estimation results show Normality Test-JB $2.5799 < \text{Chi-Square}$ of 11.1433. These results are concluded to be normally distributed.

Table 5. Normality Test Results JB

Normality Test-JB	Chi Square	Prob	Description
2,5799	11,1433	0,2753	Normally Distributed

Source: primary data, processed (2024)

To ensure that the research model applied is unbiased and consistent, it is necessary to know whether there is a relationship between the two variables, so linearity testing with the Ramsey RESET Test estimation model is applied in the study. The linearity test regression estimate shows that the applied model function is statistically linear based on the value (probability = $0.0335 > \text{significance} = 0.025$).

Table 6. Ramsey Test Results

F-statistics	Prob	Significance	Description
4,6425	0,0335	0,025	linear

Source: primary data, processed (2024)

The application of independent variables in the study needs to ascertain whether there is a strong relationship or correlation between the independent variables used. The multicollinearity test estimate in the form of a correlation matrix between independent variables shows the correlation value of each variable is not more than 0.686972 (R²). These results reveal that the research data does not occur in multicollinearity.

The estimation results show that the VIF value of the independent variables used in the study is not more than 10 VIF, so each independent variable does not occur in multicollinearity. The results of the regression estimation of Variance Inflation factors are as follows.

Table 7. Correlation Matrix

Variable	Centered VIF < 10	Description
Land Area	1,3148	Non-Multikolinieritas
Building Area	1,3703	Non-Multikolinieritas
Ownership Rights	1,2189	Non-Multikolinieritas
Designation Zone	1,1848	Non-Multikolinieritas

Source: primary data, processed (2024)

This study ensures the inequality of variance of a residual for all observations of the linear model used; the heteroscedasticity test applies estimation. The results of the estimated value obtained Obs*R-Squared 10.22423 < than the Chi-square table of 11.1433 and the prob chi-square value (p = 0.0368 > @ 0.025) states that the research residuals are homoscedasticity accepted, the research model does not experience heteroscedasticity.

Table 8. Heteroscedasticity Result

F- statistics	Obs*R-Squared	prob Chi-square	Table Chi square
2,6885	10,22423	0,0368	11,1433

Source: primary data, processed (2024)

Commented [A1]: the discussion does not explain the research results, please add to the discussion

CONCLUSION

The study's results summarize the findings, are precise and transparent regarding the problems that have been formulated, and answer matters related to the research objectives. It shows the existence of property characteristics simultaneously or simultaneously on the variables of land area, building area, ownership rights, and designation zone, which significantly affect property value with a coefficient of determination of 68.69%. Partially or individually, it reveals the influence of the characteristics of land area, building area, ownership rights, and allotment zones positively and significantly on property values.

Selection of the best model of the regression function equation, applying a log-log regression equation model in determining property values in the Special Region of Yogyakarta Province as follows.

Commented [A2]: should be placed in the research results

$$\text{LOGNP} = 7,829070 + 0,282960\text{LOGLT} + 0,143956\text{LOGLB} + 0,330197\text{HK} + 0.209867\text{ZP}$$

Description :

LOGNP = Property value (IDR)

LOGLT = Land area (m²)

LOGLB = Building area (m²)

HK	=	Ownership rights (SHM=1, other than SHM=0)
ZP	=	Zone designation (Service Trade Zone=1, other than ZPJ=0)

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**4. Bukti konfirmasi submit revisi pertama, respon
kepada reviewer, dan artikel yang diresubmit
(18 Mei 2024)**

► Terima kasih atas Review naskah penelitian kami, berikut kami lampirkan draft naskah revisi nya.

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PM

 Naskah Edit Revisi Review_I-ANALYSIS OF THE DYNAMICS OF PROPERTY
VALUE FLUCTUATIONS.docx

 Response to Editor-Revisi_Review_I.docx

Dear Ibu Nurullaili Mauliddah and Marista Oktaviani

Editor in Chief of BALANCE: Economic, Business, Management and Accounting Journal

Greetings from Yogyakarta and wishing you a great day with happiness and healthy condition.

First of all, I would like to thank you for allowing me to submit our revised manuscript entitled Analysis of The Dynamics of Property Value Fluctuations In The Special Region of Yogyakarta to BALANCE: Economic, Business, Management and Accounting Journal. We really appreciate the time and effort that you and the reviewers have dedicated to providing your valuable feedback on my manuscript. We are grateful to the reviewers for their insightful comments on my paper.

Furthermore, we have been revised the manuscript based on the reviewers' comments, suggestions, and remarks, such as more information in the Result and Discussion, comprehensive improvement in conclusion and references of the study. We resume in the table for responding to reviewers' comment, as follows;

Section	Reviewer's Comment	Respond to Reviewer
Result and discussion	the discussion does not explain the research results, please add to the discussion	we have adjusted
Conclusion	should be placed in the research results Kesimpulan sebaiknya tidak perlu memunculkan hasil uji statistik, cukup dibuat secara naratif saja. Kesimpulan mesti memuat ringkasan hasil, keterbatasan dan kontribusi untuk penelitian berikutnya.	we have adjusted
References	Referensi masih kurang banyak, minimal 25 referensi, karena penelitian ini tidak juga sedikit yg sudah menelitinya.	we have adjusted

Lastly, we do hope that this article can be published in BALANCE: Economic, Business, Management and Accounting Journal to contribute our research results to your journal. Once again, thank you very much for your cooperation, help, and kindness. We do really appreciate your time and look forward to seeing your response.

Best wishes,
Rahmat Saleh

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ANALYSIS OF THE DYNAMICS OF PROPERTY VALUE FLUCTUATIONS IN THE SPECIAL REGION OF YOGYAKARTA

DOI: <https://doi.org/10.31603/bisnisekonomi.v16i2.2602>



ABSTRACT

Keywords:

*Real estate,
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The purpose of this study is to determine and identify the influence of physical property characteristics such as land area and building area; property legal characteristics in the form of property ownership rights; environmental characteristics in the form of designation zones on property values in D.I.Yogyakarta and apply the best equation method model in determining the value of large quantities of property in addition to the market approach method and cost and income approach. Access to research observation data in the form of primary data obtained in several ways, namely telephone interviews, personal interviews directly with property owners, and secondary data accessed by desk research of the DJTR spatial plan of the Ministry of ATR BPN, data access using purposive sampling models with non-probability sampling techniques, the number of observations as much as 135 data used. The research method uses multiple regression analysis ordinary least square method with Eviews 10 analysis tools, the form of the research regression model function using the selection of statistical criteria, applying the positivism paradigm with quantitative data in the form of Analytical survey, Identification of linear relationship behavior using the Mac Kinnon Test, and White Davidson MWD, Statistical criteria test in the form of F test, t-test, Determination Coefficient Test (R²), Economic criteria test is applied to compare between the estimated parameter coefficients by economic theory, Classical Assumption Test using Normality, Linearity, Multicollinearity, and Heteroscedasticity Test. The results showed that the findings of property characteristics simultaneously or simultaneously on the variables of land area, building area, ownership rights, and designation zone significantly affect property values with a coefficient of determination level of 68.69%. Partially or individually, the findings revealed the influence of the characteristics of land area, building area, ownership rights, and designation zone positively and significantly on property values.

Selection of the best model of the regression function equation, applying the log-log regression equation model in determining property value.

1
2 **INTRODUCTION**

3 The acceleration of economic growth is one aspect among various indicators of the
4 welfare of a country's regional area. Inter-regional comparison assessment, as a measure
5 of the results of the development of one region with other regions, is public information
6 showing each regional area's accelerated development (Oh & Shin, 2023). Regional
7 Original Revenue of each regional area is a source of regional income derived from the
8 region's economic activities (Khoirudin & Khasanah, 2018). Each region must strive to
9 increase the source of local revenue, both by increasing existing local revenue and by
10 exploring new sources of local revenue through existing provisions and by maintaining
11 the potential of economists (Kumoro & Ariesanti, 2017). The higher economic growth
12 reflects better development and financial activities in the country's territory (Nasir et al.,
13 2021). The Central Bureau of Statistics stated that after two years of the COVID-19
14 pandemic, several provinces in Indonesia experienced acceleration and delay in
15 developing various regions. With the implementation of social distancing, PSBB, and
16 PPKM, the wheels of the economy began to move slowly; the impact was that the system
17 was not running correctly (Nasir et al., 2022). The Covid-19 pandemic has caused the
18 economy to contract (Yuniarti & Sukarniati, 2021). D.I.Yogyakarta Province, according
19 to statistics on the aspect of economic growth, experienced the lowest growth on the
20 island of Java at 5.13% after Banten Province. Efforts to improve welfare have become
21 the concern of all parties, including the government, in carrying out the role of
22 development policy steps in various aspects of the field, both long-term and short-term
23 development dimensions (Saleh, 2022).

24 The increase in the economic growth rate in the Special Region of Yogyakarta
25 Province is the contribution of gross value added from the activities of various business
26 sectors. Among them, the real estate or property business sector contributes significantly
27 to the economic growth rate of D.I.Yogyakarta. Supported by the perception of the desire
28 to settle and live in Yogyakarta, it places the most desirable position among other
29 provinces in Indonesia. In addition to being identical as a place of cultural diversity,
30 Yogyakarta is identical to a tourist spot and a place to study. This can create a gap between
31 the increasing demand for land and the limited supply of land providers in the property
32 sector. Land is limited, and it can't keep pace with the increase in urban development,
33 resulting in an intensification of land use in the downtown area and uncontrolled
34 expansion of developed land in the suburbs (Khoirudin et al., 2021). Indicated by the
35 findings of abuse in the utilization of property in the form of village treasury land in

1 various locations, D.I.Yogyakarta noted the findings as a significant criminal act
2 increased significantly.

3 The economic report of Yogyakarta, according to Bank Indonesia's regional macro
4 data in 2022, shows that Yogyakarta's economic growth is significantly supported by the
5 growth of the principal investment component, namely the ongoing National Strategic
6 Project (PSN) supporting the airport including the construction of the Jogja-Solo and
7 Jogja-Bawen toll roads and triggered by investment growth from the construction of the
8 South Cross Road (JJLS) which is still ongoing, the leading investment performance grew
9 positively by 4.97%. There is a condition of limited land, based on the need for the use
10 of other interests, in addition to the development of the public sector, there is a need for
11 land use from the interests of the private / private side as a commercial designation (Reite,
12 2023). As confirmed by banking financing indicators, according to Bank Indonesia data,
13 there was significant growth in property loans by 11.85% and real estate loans by 12.28%.

14 Changes in land use have the potential to be massive due to limited land area, such
15 as several findings of the use of rice fields into residential houses that are not by the
16 regulations of the Regional Spatial Plan (RTRW), the designation of land that is not
17 suitable certainly has an economic and social environmental impact (Hilbrandt &
18 Dimitrakou, 2022), starting from the potential for pollution, namely the lack of land for
19 household waste management and the decline in groundwater quality for the
20 sustainability of life.

21 Regional spatial planning to maximize these regional assets urges the establishment
22 of optimal spatial zones ranging from industrial and trade to residential areas for settlers
23 (Anna, 2020). Although the reality of its designation is still a source of abuse that is not
24 yet appropriate, data from the Yogyakarta Provincial High Prosecutor's Office in 2023
25 states that the state loss is around four billion rupiahs by naming several perpetrators,
26 starting from village government implementing officials and investors
27 (companies/private parties) as suspects in cases of allegedly receiving bribes or gratuities.

28 DIY Governor Regulation Number 34 of 2017 concerning Village Land Utilization
29 in the section on provisions for non-agricultural use (shops, tourist objects, restaurants)
30 or other commercial leases, states that the amount of rent or value figures must be based
31 on the results of an assessment conducted by an Independent Appraiser or Public
32 Appraiser profession. The issue of differences in value opinion in determining the value
33 of a property often occurs because the understanding of developers, communities, and
34 banks is still limited to referring to the Tax Object Sale Value (NJOP); the discrepancy
35 in value opinion often leads to lawsuits by value users (Chen et al., 2023). The level of
36 uncertainty is getting higher in the primary and secondary property markets; it is
37 challenging to create a fair sale and purchase transaction of an asset because the weak

1 supply side is not comparable to the demand side of property assets, making price
2 opinions in the community increasingly biased (Liapis et al., 2015). Inflation fluctuations
3 will impact real estate sector investment. When inflation increases, monetary authorities
4 tend to increase interest rates, which can lead to an increase in property sector costs
5 (Kurniawan et al., 2023).

6 Based on the formulation of the problem above, it is essential that research on this
7 topic be carried out related to the analysis of the process of assessing a property market
8 value in DIY Province in general, is still understood using traditional methods manually
9 and even tends to be subjective and limited to the approach of referring to NJOP, the
10 urgency of research in addition to this is first, the understanding of the community or the
11 user of the value related to the resulting value or price/transaction of a property is not
12 only influenced by the land area of the building but needs to consider several legal
13 characteristics of the property in the form of property ownership rights and environmental
14 characteristics in the form of designation zones. Second, there are advantages to the best
15 equation model using regression analysis; it is hoped that this model will be a potential
16 benefit for assessing large quantities of property quickly and economically and estimating
17 property determinants from various characteristics. This study aims to determine and
18 identify the influence of property characteristic variables on property value to ensure
19 fluctuations in market value in DIY province and apply the best equation method model
20 in determining property value.

21 Value is understood as the strength or exchangeability of a commodity against other
22 commodities. The development of property valuation insights explains that the notion of
23 value is bound by more specific terms in its use; other meanings of value do not stand
24 alone, such as market value, rental value, residual value, and so on (Buitrago-Mora &
25 Garcia-López, 2023). **he** discrepancy in understanding the notion of the term value needs
26 to be uniform to respond to differences in the use of the terms cost, price, and value both
27 in concept and application in the practice of an appraisal (Boterenbrood, 2023).

28 According to research (Gholipour et al., 2023) cost is the money spent to obtain or
29 produce a commodity. Price is the amount requested, offered, or paid in a transaction to
30 obtain commodity rights. Value is understood as the amount of money worth receiving at
31 this time (present worth) for various benefits or benefits obtained in the future (future
32 benefits). The components of value needed to support the creation of a property value
33 include the criteria of desirability, usefulness, scarcity, and transferability (Kreppmeier et
34 al., 2023).

35 Research (Clapp & Lindenthal, 2022) developed a new approach to estimating
36 urban land values. The study extended the AMM theory by adding the assumption of
37 partial irreversibility, implying that land values with structure can evolve differently from

1 values other than market values, developing a hybrid model with a land residue method,
2 and developing a novelty test of predictive accuracy. The house price index generated
3 market value is used to estimate the hybrid economic structure and land value. The
4 applied model shows the importance of identifying the building structure for HBU at the
5 date of construction; the existing market balance is essential for identifying the selling
6 price of the related property.

7 Research (Lin et al., 2023) addresses the valuation of ground hydrogen geological
8 storage options for commercial development. The study applied a net present value
9 (NPV) evaluation framework to evaluate asset value storage by integrating updated
10 digital economic data analysis and market value-based operations. The research utilizes
11 the CAPM and WACC models to determine the risk-adjusted calculation rate in building
12 the NPV evaluation framework. The results show that there is a price spread between the
13 acquisition and the marketed prices, significant property market information of the site
14 development, and asset maintenance costs are the top three factors that most affect NPV
15 and IRR.

16 According to research (Zakaria & Fatine, 2021) on valuation models and
17 determinants of real estate property prices in Morocco proposing a new approach to
18 modeling the real estate price index. Based on the regression approach, the basic idea of
19 this study is to verify the importance of real estate characteristics in real estate prices in
20 the market, and estimate a regression model that takes into account spatial
21 autocorrelation. The findings of the research results generally indicate the identification
22 that the land surface area and location of real estate with commercial residential
23 neighborhoods, villas and apartments around have a significant influence on the value of
24 property prices.

25 Research conducted (Gautier et al., 2023) studied the transaction price and time of
26 sale or offer of new digitally accessed real estate agents in the Netherlands. Identifying
27 the competition of property transaction registered platforms with low-cost classification.
28 Using a dataset of residential real estate transactions, the study found strong evidence that
29 sellers who use secondary market digital platforms will obtain higher prices and sell
30 faster, although there is still a tendency to switch to traditional markets. The results show
31 consistently that property sellers benefit from the secondary market transactions of
32 various digital platform agents by optimizing property demand market information, the
33 research findings strengthen the conjecture that real estate agents have significant market
34 power.

35 Based on the results of empirical research and several scientific theoretical
36 foundations, there are conjectures or temporary answers (hypotheses) developed against
37 the background of this study, the variables of land area and building area according to

1 research (Boterenbrood, 2023), (Oh & Shin, 2023), (Reite, 2023), (Chen et al., 2023),
2 (Clapp & Lindenthal, 2022), (Zakaria & Fatine, 2021) mention a positive and significant
3 effect on property value and according to (Saleh, 2022) show a negative effect of land
4 area on property value. His book (Wyatt, 2014) on property valuation explains that the
5 size and physical form of the land area of a property is a concern in determining the
6 convenience and economic aspects of the activities carried out on it to support the
7 attractiveness of a property.

8 However, this only applies to the conditions of specific properties such as
9 agricultural land; the more comprehensive the land size has the effect of decreasing value
10 due to increasingly complex management and maintenance problems; this situation has
11 reduced demand for large enough land areas. The characteristics of the building area are
12 determined by various things, including the design of the building, which is adjusted to
13 the type of use according to the tastes of property users; the mismatch of building design
14 and taste will potentially reduce the value of a building, just as when the building design
15 is by the use and even follows the trend of user tastes will create an increase in the value
16 of the property. Hypotheses that can be concluded referring to the theoretical basis and
17 some previous research are as follows.

18 1. H_A : Land area positively and significantly affects property value.

19 2. H_A : Building area positively and significantly affects property value.

20 Variables of property legal characteristics in the form of property ownership rights
21 and environmental characteristics in the form of designation zones, according to research
22 findings (Hilbrandt & Dimitrakou, 2022), (Anna, 2020), (Gautier et al., 2023) mention a
23 positive and significant influence on property value. According to (Harjanto & Hidayati,
24 2019) in his book, the basic concepts of property valuation explain the importance of
25 estimating the market value of property by considering the highest and best use analysis
26 (HBU) for the identification of the most likely and possible uses of property to create
27 optimization of profits from competitive property permitted. The principle of alternative
28 HBU analysis is applied to meet several main criteria: physically possible, legally
29 permissible, financially feasible, and maximally productive. Generally, every company
30 wants to expand its business, requiring much additional capital (Khoirudin, 2017). Part
31 of the legally permissible aspect is, of course, in addition to the permitted regulations,
32 related to the necessity of the condition of the ownership rights to the property and the
33 suitability of the designation zone of a property. The hypothesis contains conclusions for
34 development referring to the theoretical basis as follows.

35 3. H_A : Land ownership rights have a negative effect on property values.

36 4. H_A : The designation zone has a positive and significant effect on property value.

1 The research road map shows the stages that will be carried out, starting from
2 accessing primary data related to the use of research variables, namely data on physical
3 property characteristics such as land area and building area; property legal characteristics
4 in the form of property ownership rights; environmental characteristics in the form of
5 designation zones and identifying the analysis of the influence of property characteristics
6 on property values in D.I.Yogyakarta and revealing the analysis of discussions in an
7 economic approach.

8 **METHOD**

9 This research data collection uses a purposive sampling model with non-probability
10 sampling techniques from the population with a sample of unique characteristics
11 according to the research objectives, namely properties with transactions (sold/bought) or
12 is in the offering stage that occur with a maximum of 18 months from the valuation date.
13 Researchers realize that it is difficult to access market data from the population of
14 property objects studied as a whole, so the research considers limited costs and aspects
15 of time and human resources so that research observations use the Slovin formula based
16 on data obtained from primary and secondary data available in D.I.Yogyakarta as many
17 as 111 observation samples of property offers and transactions.

18 The research data collection technique uses primary data obtained in several ways,
19 namely telephone interviews, personal interviews directly with property owners, and
20 secondary data accessed by desk research of the DJTR spatial plan of the Ministry of
21 ATR BPN and access to additional information from other agencies such as MAPPI and
22 the Central Bureau of Statistics. The data collection process is carried out by paying
23 attention to the suitability of the data, ensuring its reasonableness and feasibility, and
24 ensuring that it can be accounted for. According to the time dimension, the research used
25 cross-section data totaling 111 data observation samples in DIY Province.

26 The research design applies the positivism paradigm with quantitative data. An
27 analytical survey is applied to determine whether or not there is a correlation between
28 physical property characteristics in the form of land area and building area, legal property
29 characteristics in the form of property ownership rights, and environmental characteristics
30 in the form of designation zones as independent variables and property market value as
31 the dependent variable.

32 This study uses multiple regression analysis, the ordinary least square method, with
33 the Eviews software analysis tool. From the function of the best regression model, they
34 use statistical criteria to identify linear relationship behavior using the Mac Kinnon Test
35 and White Davidson MWD. Statistical criteria test is used to test the accuracy of the
36 selected model in the form of an F test, t-test, and determination coefficient test (R²). The
37 economic criteria test is applied to compare the estimated parameter coefficients by
38 economic theory. Classical Assumption Test to determine whether the estimation model
39 meets the classical assumption criteria, namely using Normality, Linearity,
40 Multicollinearity, and Heteroscedasticity Tests.

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1 RESULTS AND DISCUSSION

2
3 Data acquisition in the research process amounted to 111 samples of observations of
4 property offers and transactions scattered in the Special Region of Yogyakarta Province;
5 the observation data paid attention to specific characteristics that were adjusted to a
6 maximum of 18 months from the assessment date. The approach to obtaining data in the
7 implementation is adjusted to the research planning schedule in January by adjusting the
8 nature and sources of reliable information from the acquisition through direct information,
9 communication tools, or written verification, which is carried out reasonably so that the
10 information data is assumed to be correct.

11 The detailed observation data applied to the research is data on sale and purchase
12 transactions and property offers from developers/agents or owners by paying attention to
13 the specificity of the adjusted property value, including land area, building area, land
14 ownership rights, and designation zone.

15 The description of the data analysis results in descriptive statistics shows an
16 overview of the data applied in the study in detail. The descriptive statistical description
17 contains information on the average, median, highest, and lowest values of the
18 independent and dependent variables applied in the study as follows.

19 **Table 1.** Statistical Descriptive Data

Variable	Mean	Median	Maximum	Minimum
Property Value	1.796.649.116	1.320.000.000	10.564.680.000	231.240.000
Land Area	690	400	5102	54
Building Area	117	0	1949	0
Ownership Rights	0.86	1	1	0
Designation Zone	0.57	1	1	0

20 Source: primary data, processed (2024)

21 Based on Table 1, it is found that the property value in Yogyakarta Special
22 Province has the highest value of IDR 10,564,680,000 with the lowest property value of
23 IDR 231,240,000 and an average property value of IDR 1,796,649,116. These figures
24 place the potential for a reasonably high property value gap condition electorally between
25 districts and cities. The land and building area figures show the highest land area figure
26 of 5102 m² with the highest building area figure of 1949 m², the lowest land area figure
27 of 54 m² with the lowest building area figure of 0 m², and the average land area figure of
28 690 m² with an average building area figure of 117 m², the variable land and building
29 area figures in the study indicate the existence of assets in the form of land buildings that
30 have been developed both commercial and other designations are more dominant than
31 assets that have not been developed. The variable of land ownership rights shows an
32 average number of 0.86 with a median of 1, revealing that the data of the assets studied in
33 the form of SHM in ownership rights still dominates over other ownership rights. The
34 designation zone variable has an average number of 0.57 and a median of 1, indicating

1 that the research assets in the service trade designation zone are still more dominant in the
 2 property market.

3 The selection of the best model proposed according to the formulation of statistical
 4 regression equations, in the form of a statistical criteria test approach and a Mackinnon,
 5 White & Davidson (MWD) test, revealed that the log-log model can be applied. The
 6 regression results of the function model showed a significant R-squared (R^2) value of
 7 0.68697 (68.69%), and the research regression equation is as follows.

$$\text{LOGNP} = 7,829070 + 0,282960\text{LOGLT} + 0,143956\text{LOGLB} + 0,330197\text{HK} + 0.209867\text{ZP}$$

$$t\text{-Statistic} = (55,58901) (5,320390) (7,657179) (5,513919) (5,151977)$$

$$R\text{-Squared} = 0,686972$$

$$Adj R^2 = 0,675160$$

Description:

LOGNP = Property value (IDR)

LOGLT = Land area (m²)

LOGLB = Building area (m²)

HK = Ownership rights (SHM=1, other than SHM=0)

ZP = Zone designation (Service Trade Zone=1, other than ZPJ=0)

8

9 The application of the linear regression model function estimation in the study
 10 shows that the explanation of the variation of the independent variables of building land
 11 area, ownership rights, and designation zone used on the dependent variable of property
 12 value is 68.69%.

13 The application of the economic criteria fulfillment test in the study to ensure the
 14 adjustment of the estimated parameter coefficients with economic theory is expected to
 15 show whether or not the test criteria pass the direction of the estimated parameter
 16 relationship to economic theory; the economic criteria estimation results are as follows.

17 **Table 4.** Economic Criteria Fulfillment Test Results

Variable	Economic Theory	Estimation Results	Description
Land Area	+/-	+	Appropriate
Building Area	+/-	+	Appropriate
Ownership Rights	+	+	Appropriate
Designation Zone	+	+	Appropriate

18 Source: primary data, processed (2024)

19 The criteria for the aspects of land and building area show conformity with
 20 economic theory; the market approach to the land area of the property area has a specific

1 type of segment suitability so that the expected expansion of the land designation will be
 2 significant to the property's value. The building area in the market approach reveals
 3 suitability; optimizing the building area's development affects increasing the property's
 4 value. The aspect of property characteristics on ownership rights is that, based on the
 5 estimation results, the existence of property offers or transactions with conditions of
 6 ownership certificates outside property rights tends to cause a decrease in property value.
 7 The estimation results of the designation zone aspect show conformity; the property
 8 market in the service trade zone tends to cause an increase in the value of a property.

9 Applying the classical assumption test fulfills the statistical estimation model of
 10 normality testing to determine the normal distribution of the applied estimation model.
 11 Statistically, applying the observation sample with a distribution of more than $N = 30$ is
 12 considered normal. The estimation results show Normality Test-JB $2.5799 < \text{Chi-Square}$
 13 of 11.1433. These results are concluded to be normally distributed.

14 **Table 5.** Normality Test Results JB

Normality Test-JB	Chi Square	Prob	Description
2,5799	11,1433	0,2753	Normally Distributed

15 Source: primary data, processed (2024)

16 To ensure that the research model applied is unbiased and consistent, it is necessary
 17 to know whether there is a relationship between the two variables, so linearity testing with
 18 the Ramsey RESET Test estimation model is applied in the study. The linearity test
 19 regression estimate shows that the applied model function is statistically linear based on
 20 the value (probability = 0.0335 > significance = 0.025).

21 **Table 6.** Ramsey Test Results

F-statistics	Prob	Significance	Description
4,6425	0,0335	0,025	linear

22 Source: primary data, processed (2024)

23 The application of independent variables in the study needs to ascertain whether
 24 there is a strong relationship or correlation between the independent variables used. The
 25 multicollinearity test estimate in the form of a correlation matrix between independent
 26 variables shows the correlation value of each variable is not more than 0.686972 (R2).
 27 These results reveal that the research data does not occur in multicollinearity.

28 The estimation results show that the VIF value of the independent variables used in
 29 the study is not more than 10 VIF, so each independent variable does not occur in
 30 multicollinearity. The results of the regression estimation of Variance Inflation factors are
 31 as follows.

32 **Table 7.** Correlation Matrix

Variable	Centered VIF < 10	Description
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Land Area	1,3148	Non-Multikolinieritas
Building Area	1,3703	Non-Multikolinieritas
Ownership Rights	1,2189	Non-Multikolinieritas
Designation Zone	1,1848	Non-Multikolinieritas

1 Source: primary data, processed (2024)

2 This study ensures the inequality of variance of a residual for all observations of the
 3 linear model used; the heteroscedasticity test applies estimation. The results of the
 4 estimated value obtained Obs*R-Squared 10.22423 < than the Chi-square table of 11.1433
 5 and the prob chi-square value ($p = 0.0368 > @ 0.025$) states that the research residuals
 6 are homoscedasticity accepted, the research model does not experience heteroscedasticity.

7 **Table 8.** Heteroscedasticity Result

F- statistics	Obs*R-Squared	prob Chi-square	Table Chi square
2,6885	10,22423	0,0368	11,1433

8 Source: primary data, processed (2024)

9 The results of heteroscedasticity indicate that this study is observationally a linear
 10 model free from inequality of variance of errors for all observations of each independent
 11 variable in the research model.

12 Test the fulfillment of statistical criteria simultaneously or simultaneously on the variables
 13 of land area, building area, ownership rights, and designation zone on property value. The
 14 study applies a confidence level of 98.5% or significant using (a) 0.025 degree of freedom
 15 (df) numerator = $k-1 = 111-5 = 106$, the estimated value obtained F-statistic of 58.15708
 16 > F-table of 2.89. The research regression estimation results are as follows.

17 **Table 3.** F-Test Results

Variable	F- statistics	F-table	Description
Land Area			
Building Area	58,15708	2,89	Significant Impact
Ownership Rights			
Designation Zone			

18 Source: primary data, processed (2024)

19 The results of the F test in Table 3 reveal a simultaneous influence together on the
 20 variables of land area, building area, ownership rights, and designation zone significantly
 21 on the variable property value.

22 The regression estimate of the coefficient of determination in the form of R-
 23 squared (R^2) on statistics with a value of 0.68697 so that the model of applying the

1 variation of independent variables in the study on the ability to explain its effect on the
 2 dependent variable is 68.70%. The remaining value of 31.30% of the variation of the
 3 dependent variable can be determined by other independent variables that are not applied
 4 in this research model.

5 Test the fulfillment of statistical criteria in the study to show the accuracy of the
 6 model applied and the ability of the model to explain the formulation of research
 7 problems. First, in partial or individual testing of each independent variable (land area,
 8 building area, ownership rights, and designation zone) on the dependent variable (property
 9 value), according to the research regression results as follows.

10 **Table 2.** T-test results

Variable	Coefficient	t-Statistic	t-table	Prob,
Constant	7.829070	55.58901	1,982	0.0000
Land Area	0.282960	5.320390	1,982	0.0000
Building Area	0.143956	7.657179	1,982	0.0000
Ownership Rights	0.330137	5.513919	1,982	0.0000
Designation Zone	0.209867	5.151977	1,982	0.0000

11 Source: primary data, processed (2024)

12 Based on the results of the t-test in Table 2, the results reveal that the variable land
 13 area (5.3204), building area (7.6572), ownership rights (5.5139), and designation zone
 14 (5.1519) have a positive and significant effect on the property value variable. First, the
 15 practical meaning of the regression results can be understood that property value is
 16 influenced by land area significantly by a coefficient of 0.2829 so that changes in the land
 17 area there an increase or expansion of 1 m² will affect the increase in property value by
 18 0.2829% the regression estimation results prove the hypothesis is accepted, namely the
 19 land area has a positive and significant effect on property value.

20 Second, the building area significantly has a coefficient of 0.1439 on property
 21 value; if there is an increase of 1 m² in the building area, it will affect the increase in
 22 property value by 0.1439% with these results showing that the hypothesis is accepted,
 23 namely the building area has a positive and significant effect on property value.

24 Third, the ownership rights variable significantly, with a coefficient of 0.3301,
 25 affects property value practically. An increase or improvement in the change in ownership
 26 rights to 1 certificate of ownership rights (SHM) will affect the increase in property value
 27 by 0.3301%. The regression estimation results prove that the hypothesis is accepted,
 28 namely that the ownership rights letter positively and significantly affects the property's
 29 value.

30 Fourth, the designation zone variable significantly, with a coefficient of 0.2098,
 31 affects property value. A change or increase in asset conditions in the form of 1 service
 32 trade designation zone will increase property value by 0.2098%. The estimation results

1 show that the hypothesis is accepted: the designation zone has a positive and significant
2 effect on property value.

3 **CONCLUSION**

4 The study's results summarize the findings, are precise and transparent regarding
5 the problems that have been formulated, and answer matters related to the research
6 objectives. It shows the existence of property characteristics simultaneously or
7 simultaneously on the variables of land area, building area, ownership rights, and
8 designation zone, which significantly affect property value with a coefficient of
9 determination of 68.69%. Partially or individually, it reveals the influence of the
10 characteristics of land area, building area, ownership rights, and allotment zones
11 positively and significantly on property values.

12 Researchers have limitations in the implementation of research, but these limitations
13 are not an obstacle. The first limitation related to collecting property information data
14 during the interview process is that the resource person, as the subject of observation, is
15 not willing to provide information virtually because they want a direct physical meeting.
16 The positive benefits should be if the researcher does not experience this, namely allowing
17 property information in the sample to be accessed more accurately and fulfilled. The
18 second limitation of researchers is that they are limited in time and cost so that each city
19 district is limited to collecting sample property information data; if there is the ability of
20 researchers to expand the research location area around such as central Java, which is
21 adjusted to the formulation of the problem, it will increase objectivity based on the
22 representation of broader observation data.

23 There are practical implications, namely the contribution of research findings to
24 strengthening practitioners and theorists regarding the development of existing scientific
25 theories. First, there is a need for the expansion of diverse property objects such as
26 commercial properties as well as agriculture and plantations with more realistic property
27 characteristics, and a large number of property valuation models need to be carried out in
28 comparative studies in terms of efficiency and application. The second contribution of
29 research findings is that public insight regarding the formation of a property's value or
30 purchase and sale price needs to be provided by educating the public about property
31 correctly so that the public applies the knowledge that property value is not only
32 influenced by land and building area. The government is expected to make a policy on the
33 community's property value insight education program.

34

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**5. Bukti konfirmasi review, hasil review kedua
(24 Mei 2024)**

[BLC] Notifikasi baru dari BALANCE: Economic, Business, Management and Accounting Journal

1 pesan

Marista Oktaviani <journal@um-surabaya.ac.id>
Balas Ke: Nurullaili Mauliddah <balance@um-surabaya.ac.id>
Kepada: Rahmat Saleh <rahmat@ep.uad.ac.id>

24 Mei 2024 pukul 04.22

Anda memperoleh satu notifikasi baru dari BALANCE: Economic, Business, Management and Accounting Journal:

Terdapat aktivitas baru dalam diskusi berjudul "hasil review" berkenaan dengan naskah "ANALISIS DINAMIKA FLUKTUASI NILAI PROPERTI DAERAH ISTIMEWA YOGYAKARTA".

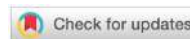
Tautan: <https://journal.um-surabaya.ac.id/balance/authorDashboard/submission/22203>

Nurullaili Mauliddah

BALANCE: Economic, Business,
Management and Accounting Journal <http://journal.um-surabaya.ac.id/index.php/balance>

ANALYSIS OF THE DYNAMICS OF PROPERTY VALUE FLUCTUATIONS IN THE SPECIAL REGION OF YOGYAKARTA

DOI: <https://doi.org/10.31603/bisnisekonomi.v16i2.2602>



ABSTRACT

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The purpose of this study is to determine and identify the influence of physical property characteristics such as land area and building area; property legal characteristics in the form of property ownership rights; environmental characteristics in the form of designation zones on property values in D.I.Yogyakarta and apply the best equation method model in determining the value of large quantities of property in addition to the market approach method and cost and income approach. Access to research observation data in the form of primary data obtained in several ways, namely telephone interviews, personal interviews directly with property owners, and secondary data accessed by desk research of the DJTR spatial plan of the Ministry of ATR BPN, data access using purposive sampling models with non-probability sampling techniques, the number of observations as much as 135 data used. The research method uses multiple regression analysis ordinary least square method with Eviews 10 analysis tools, the form of the research regression model function using the selection of statistical criteria, applying the positivism paradigm with quantitative data in the form of Analytical survey, Identification of linear relationship behavior using the Mac Kinnon Test, and White Davidson MWD, Statistical criteria test in the form of F test, t-test, Determination Coefficient Test (R²), Economic criteria test is applied to compare between the estimated parameter coefficients by economic theory, Classical Assumption Test using Normality, Linearity, Multicollinearity, and Heteroscedasticity Test. The results showed that the findings of property characteristics simultaneously or simultaneously on the variables of land area, building area, ownership rights, and designation zone significantly affect property values with a coefficient of determination level of 68.69%. Partially or individually, the findings revealed the influence of the characteristics of land area, building area, ownership rights,

and designation zone positively and significantly on property values. Selection of the best model of the regression function equation, applying the log-log regression equation model in determining property value.

INTRODUCTION

The acceleration of economic growth is one aspect among various indicators of the welfare of a country's regional area. Inter-regional comparison assessment, as a measure of the results of the development of one region with other regions, is public information showing each regional area's accelerated development (Oh & Shin, 2023). Regional Original Revenue of each regional area is a source of regional income derived from the region's economic activities (Khoirudin & Khasanah, 2018). Each region must strive to increase the source of local revenue, both by increasing existing local revenue and by exploring new sources of local revenue through existing provisions and by maintaining the potential of economists (Kumoro & Ariesanti, 2017). The higher economic growth reflects better development and financial activities in the country's territory (Nasir et al., 2021). The Central Bureau of Statistics stated that after two years of the COVID-19 pandemic, several provinces in Indonesia experienced acceleration and delay in developing various regions. With the implementation of social distancing, PSBB, and PPKM, the wheels of the economy began to move slowly; the impact was that the system was not running correctly (Nasir et al., 2022). The Covid-19 pandemic has caused the economy to contract (Yuniarti & Sukarniati, 2021). D.I.Yogyakarta Province, according to statistics on the aspect of economic growth, experienced the lowest growth on the island of Java at 5.13% after Banten Province. Efforts to improve welfare have become the concern of all parties, including the government, in carrying out the role of development policy steps in various aspects of the field, both long-term and short-term development dimensions (Saleh, 2022).

The increase in the economic growth rate in the Special Region of Yogyakarta Province is the contribution of gross value added from the activities of various business sectors. Among them, the real estate or property business sector contributes significantly to the economic growth rate of D.I.Yogyakarta. Supported by the perception of the desire to settle and live in Yogyakarta, it places the most desirable position among other provinces in Indonesia. In addition to being identical as a place of cultural diversity, Yogyakarta is identical to a tourist spot and a place to study. This can create a gap between the increasing demand for land and the limited supply of land providers in the property sector. Land is limited, and it can't keep pace with the increase in urban development, resulting in an intensification of land use in the downtown area and uncontrolled expansion of developed land in the suburbs (Khoirudin et al., 2021). Indicated by the

findings of abuse in the utilization of property in the form of village treasury land in various locations, D.I.Yogyakarta noted the findings as a significant criminal act increased significantly.

The economic report of Yogyakarta, according to Bank Indonesia's regional macro data in 2022, shows that Yogyakarta's economic growth is significantly supported by the growth of the principal investment component, namely the ongoing National Strategic Project (PSN) supporting the airport including the construction of the Jogja-Solo and Jogja-Bawen toll roads and triggered by investment growth from the construction of the South Cross Road (JJLS) which is still ongoing, the leading investment performance grew positively by 4.97%. There is a condition of limited land, based on the need for the use of other interests, in addition to the development of the public sector, there is a need for land use from the interests of the private / private side as a commercial designation (Reite, 2023). As confirmed by banking financing indicators, according to Bank Indonesia data, there was significant growth in property loans by 11.85% and real estate loans by 12.28%.

Changes in land use have the potential to be massive due to limited land area, such as several findings of the use of rice fields into residential houses that are not by the regulations of the Regional Spatial Plan (RTRW), the designation of land that is not suitable certainly has an economic and social environmental impact (Hilbrandt & Dimitrakou, 2022), starting from the potential for pollution, namely the lack of land for household waste management and the decline in groundwater quality for the sustainability of life.

Regional spatial planning to maximize these regional assets urges the establishment of optimal spatial zones ranging from industrial and trade to residential areas for settlers (Anna, 2020). Although the reality of its designation is still a source of abuse that is not yet appropriate, data from the Yogyakarta Provincial High Prosecutor's Office in 2023 states that the state loss is around four billion rupiahs by naming several perpetrators, starting from village government implementing officials and investors (companies/private parties) as suspects in cases of allegedly receiving bribes or gratuities.

DIY Governor Regulation Number 34 of 2017 concerning Village Land Utilization in the section on provisions for non-agricultural use (shops, tourist objects, restaurants) or other commercial leases, states that the amount of rent or value figures must be based on the results of an assessment conducted by an Independent Appraiser or Public Appraiser profession. The issue of differences in value opinion in determining the value of a property often occurs because the understanding of developers, communities, and banks is still limited to referring to the Tax Object Sale Value (NJOP); the discrepancy in value opinion often leads to lawsuits by value users (Chen et al., 2023). The level of uncertainty is getting higher in the primary and secondary property markets; it is

challenging to create a fair sale and purchase transaction of an asset because the weak supply side is not comparable to the demand side of property assets, making price opinions in the community increasingly biased (Liapis et al., 2015). Inflation fluctuations will impact real estate sector investment. When inflation increases, monetary authorities tend to increase interest rates, which can lead to an increase in property sector costs (Kurniawan et al., 2023).

Based on the formulation of the problem above, it is essential that research on this topic be carried out related to the analysis of the process of assessing a property market value in DIY Province in general, is still understood using traditional methods manually and even tends to be subjective and limited to the approach of referring to NJOP, the urgency of research in addition to this is first, the understanding of the community or the user of the value related to the resulting value or price/transaction of a property is not only influenced by the land area of the building but needs to consider several legal characteristics of the property in the form of property ownership rights and environmental characteristics in the form of designation zones. Second, there are advantages to the best equation model using regression analysis; it is hoped that this model will be a potential benefit for assessing large quantities of property quickly and economically and estimating property determinants from various characteristics. This study aims to determine and identify the influence of property characteristic variables on property value to ensure fluctuations in market value in DIY province and apply the best equation method model in determining property value.

Value is understood as the strength or exchangeability of a commodity against other commodities. The development of property valuation insights explains that the notion of value is bound by more specific terms in its use; other meanings of value do not stand alone, such as market value, rental value, residual value, and so on (Buitrago-Mora & Garcia-López, 2023). **he** discrepancy in understanding the notion of the term value needs to be uniform to respond to differences in the use of the terms cost, price, and value both in concept and application in the practice of an appraisal (Boterenbrood, 2023).

According to research (Gholipour et al., 2023) cost is the money spent to obtain or produce a commodity. Price is the amount requested, offered, or paid in a transaction to obtain commodity rights. Value is understood as the amount of money worth receiving at this time (present worth) for various benefits or benefits obtained in the future (future benefits). The components of value needed to support the creation of a property value include the criteria of desirability, usefulness, scarcity, and transferability (Kreppmeier et al., 2023).

Research (Clapp & Lindenthal, 2022) developed a new approach to estimating urban land values. The study extended the AMM theory by adding the assumption of

partial irreversibility, implying that land values with structure can evolve differently from values other than market values, developing a hybrid model with a land residue method, and developing a novelty test of predictive accuracy. The house price index generated market value is used to estimate the hybrid economic structure and land value. The applied model shows the importance of identifying the building structure for HBU at the date of construction; the existing market balance is essential for identifying the selling price of the related property.

Research (Lin et al., 2023) addresses the valuation of ground hydrogen geological storage options for commercial development. The study applied a net present value (NPV) evaluation framework to evaluate asset value storage by integrating updated digital economic data analysis and market value-based operations. The research utilizes the CAPM and WACC models to determine the risk-adjusted calculation rate in building the NPV evaluation framework. The results show that there is a price spread between the acquisition and the marketed prices, significant property market information of the site development, and asset maintenance costs are the top three factors that most affect NPV and IRR.

According to research (Zakaria & Fatine, 2021) on valuation models and determinants of real estate property prices in Morocco proposing a new approach to modeling the real estate price index. Based on the regression approach, the basic idea of this study is to verify the importance of real estate characteristics in real estate prices in the market, and estimate a regression model that takes into account spatial autocorrelation. The findings of the research results generally indicate the identification that the land surface area and location of real estate with commercial residential neighborhoods, villas and apartments around have a significant influence on the value of property prices.

Research conducted (Gautier et al., 2023) studied the transaction price and time of sale or offer of new digitally accessed real estate agents in the Netherlands. Identifying the competition of property transaction registered platforms with low-cost classification. Using a dataset of residential real estate transactions, the study found strong evidence that sellers who use secondary market digital platforms will obtain higher prices and sell faster, although there is still a tendency to switch to traditional markets. The results show consistently that property sellers benefit from the secondary market transactions of various digital platform agents by optimizing property demand market information, the research findings strengthen the conjecture that real estate agents have significant market power.

Based on the results of empirical research and several scientific theoretical foundations, there are conjectures or temporary answers (hypotheses) developed against

the background of this study, the variables of land area and building area according to research (Boterenbrood, 2023), (Oh & Shin, 2023), (Reite, 2023), (Chen et al., 2023), (Clapp & Lindenthal, 2022), (Zakaria & Fatine, 2021) mention a positive and significant effect on property value and according to (Saleh, 2022) show a negative effect of land area on property value. His book (Wyatt, 2014) on property valuation explains that the size and physical form of the land area of a property is a concern in determining the convenience and economic aspects of the activities carried out on it to support the attractiveness of a property.

However, this only applies to the conditions of specific properties such as agricultural land; the more comprehensive the land size has the effect of decreasing value due to increasingly complex management and maintenance problems; this situation has reduced demand for large enough land areas. The characteristics of the building area are determined by various things, including the design of the building, which is adjusted to the type of use according to the tastes of property users; the mismatch of building design and taste will potentially reduce the value of a building, just as when the building design is by the use and even follows the trend of user tastes will create an increase in the value of the property. Hypotheses that can be concluded referring to the theoretical basis and some previous research are as follows.

1. H_A : Land area positively and significantly affects property value.
2. H_A : Building area positively and significantly affects property value.

Variables of property legal characteristics in the form of property ownership rights and environmental characteristics in the form of designation zones, according to research findings (Hilbrandt & Dimitrakou, 2022), (Anna, 2020), (Gautier et al., 2023) mention a positive and significant influence on property value. According to (Harjanto & Hidayati, 2019) in his book, the basic concepts of property valuation explain the importance of estimating the market value of property by considering the highest and best use analysis (HBU) for the identification of the most likely and possible uses of property to create optimization of profits from competitive property permitted. The principle of alternative HBU analysis is applied to meet several main criteria: physically possible, legally permissible, financially feasible, and maximally productive. Generally, every company wants to expand its business, requiring much additional capital (Khoirudin, 2017). Part of the legally permissible aspect is, of course, in addition to the permitted regulations, related to the necessity of the condition of the ownership rights to the property and the suitability of the designation zone of a property. The hypothesis contains conclusions for development referring to the theoretical basis as follows.

3. H_A : Land ownership rights have a negative effect on property values.
4. H_A : The designation zone has a positive and significant effect on property value.

The research road map shows the stages that will be carried out, starting from accessing primary data related to the use of research variables, namely data on physical property characteristics such as land area and building area; property legal characteristics in the form of property ownership rights; environmental characteristics in the form of designation zones and identifying the analysis of the influence of property characteristics on property values in D.I.Yogyakarta and revealing the analysis of discussions in an economic approach.

METHOD

This research data collection uses a purposive sampling model with non-probability sampling techniques from the population with a sample of unique characteristics according to the research objectives, namely properties with transactions (sold/bought) or is in the offering stage that occur with a maximum of 18 months from the valuation date. Researchers realize that it is difficult to access market data from the population of property objects studied as a whole, so the research considers limited costs and aspects of time and human resources so that research observations use the Slovin formula based on data obtained from primary and secondary data available in D.I.Yogyakarta as many as 111 observation samples of property offers and transactions.

The research data collection technique uses primary data obtained in several ways, namely telephone interviews, personal interviews directly with property owners, and secondary data accessed by desk research of the DJTR spatial plan of the Ministry of ATR BPN and access to additional information from other agencies such as MAPPI and the Central Bureau of Statistics. The data collection process is carried out by paying attention to the suitability of the data, ensuring its reasonableness and feasibility, and ensuring that it can be accounted for. According to the time dimension, the research used cross-section data totaling 111 data observation samples in DIY Province.

The research design applies the positivism paradigm with quantitative data. An analytical survey is applied to determine whether or not there is a correlation between physical property characteristics in the form of land area and building area, legal property characteristics in the form of property ownership rights, and environmental characteristics in the form of designation zones as independent variables and property market value as the dependent variable.

This study uses multiple regression analysis, the ordinary least square method, with the Eviews software analysis tool. From the function of the best regression model, they use statistical criteria to identify linear relationship behavior using the Mac Kinnon Test and White Davidson MWD. Statistical criteria test is used to test the accuracy of the selected model in the form of an F test, t-test, and determination coefficient test (R²). The economic criteria test is applied to compare the estimated parameter coefficients by economic theory. Classical Assumption Test to determine whether the estimation model meets the classical assumption criteria, namely using Normality, Linearity, Multicollinearity, and Heteroscedasticity Tests.

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RESULTS AND DISCUSSION

Data acquisition in the research process amounted to 111 samples of observations of property offers and transactions scattered in the Special Region of Yogyakarta Province; the observation data paid attention to specific characteristics that were adjusted to a maximum of 18 months from the assessment date. The approach to obtaining data in the implementation is adjusted to the research planning schedule in January by adjusting the nature and sources of reliable information from the acquisition through direct information, communication tools, or written verification, which is carried out reasonably so that the information data is assumed to be correct.

The detailed observation data applied to the research is data on sale and purchase transactions and property offers from developers/agents or owners by paying attention to the specificity of the adjusted property value, including land area, building area, land ownership rights, and designation zone.

The description of the data analysis results in descriptive statistics shows an overview of the data applied in the study in detail. The descriptive statistical description contains information on the average, median, highest, and lowest values of the independent and dependent variables applied in the study as follows.

Table 1. Statistical Descriptive Data

Variable	Mean	Median	Maximum	Minimum
Property Value	1.796.649.116	1.320.000.000	10.564.680.000	231.240.000
Land Area	690	400	5102	54
Building Area	117	0	1949	0
Ownership Rights	0.86	1	1	0
Designation Zone	0.57	1	1	0

Source: primary data, processed (2024)

Based on Table 1, it is found that the property value in Yogyakarta Special Province has the highest value of IDR 10,564,680,000 with the lowest property value of IDR 231,240,000 and an average property value of IDR 1,796,649,116. These figures place the potential for a reasonably high property value gap condition electorally between districts and cities. The land and building area figures show the highest land area figure of 5102 m² with the highest building area figure of 1949 m², the lowest land area figure of 54 m² with the lowest building area figure of 0 m², and the average land area figure of 690 m² with an average building area figure of 117 m², the variable land and building area figures in the study indicate the existence of assets in the form of land buildings that have been developed both commercial and other designations are more dominant than assets that have not been developed. The variable of land ownership rights shows an average number of 0.86 with a median of 1, revealing that the data of the assets studied in the form of SHM in ownership rights still dominates over other ownership rights. The designation zone variable has an average number of 0.57 and a median of 1, indicating

that the research assets in the service trade designation zone are still more dominant in the property market.

The selection of the best model proposed according to the formulation of statistical regression equations, in the form of a statistical criteria test approach and a Mackinnon, White & Davidson (MWD) test, revealed that the log-log model can be applied. The regression results of the function model showed a significant R-squared (R^2) value of 0.68697 (68.69%), and the research regression equation is as follows.

$$\text{LOGNP} = 7,829070 + 0,282960\text{LOGLT} + 0,143956\text{LOGLB} + 0,330197\text{HK} + 0.209867\text{ZP}$$

$$t\text{-Statistic} = (55,58901) (5,320390) (7,657179) (5,513919) (5,151977)$$

$$R\text{-Squared} = 0,686972$$

$$Adj R^2 = 0,675160$$

Description:

LOGNP = Property value (IDR)

LOGLT = Land area (m²)

LOGLB = Building area (m²)

HK = Ownership rights (SHM=1, other than SHM=0)

ZP = Zone designation (Service Trade Zone=1, other than ZPJ=0)

The application of the linear regression model function estimation in the study shows that the explanation of the variation of the independent variables of building land area, ownership rights, and designation zone used on the dependent variable of property value is 68.69%.

The application of the economic criteria fulfillment test in the study to ensure the adjustment of the estimated parameter coefficients with economic theory is expected to show whether or not the test criteria pass the direction of the estimated parameter relationship to economic theory; the economic criteria estimation results are as follows.

Table 4. Economic Criteria Fulfillment Test Results

Variable	Economic Theory	Estimation Results	Description
Land Area	+/-	+	Appropriate
Building Area	+/-	+	Appropriate
Ownership Rights	+	+	Appropriate
Designation Zone	+	+	Appropriate

Source: primary data, processed (2024)

The criteria for the aspects of land and building area show conformity with economic theory; the market approach to the land area of the property area has a specific

type of segment suitability so that the expected expansion of the land designation will be significant to the property's value. The building area in the market approach reveals suitability; optimizing the building area's development affects increasing the property's value. The aspect of property characteristics on ownership rights is that, based on the estimation results, the existence of property offers or transactions with conditions of ownership certificates outside property rights tends to cause a decrease in property value. The estimation results of the designation zone aspect show conformity; the property market in the service trade zone tends to cause an increase in the value of a property.

Applying the classical assumption test fulfills the statistical estimation model of normality testing to determine the normal distribution of the applied estimation model. Statistically, applying the observation sample with a distribution of more than $N = 30$ is considered normal. The estimation results show Normality Test-JB $2.5799 < \text{Chi-Square}$ of 11.1433 . These results are concluded to be normally distributed.

Table 5. Normality Test Results JB

Normality Test-JB	Chi Square	Prob	Description
2,5799	11,1433	0,2753	Normally Distributed

Source: primary data, processed (2024)

To ensure that the research model applied is unbiased and consistent, it is necessary to know whether there is a relationship between the two variables, so linearity testing with the Ramsey RESET Test estimation model is applied in the study. The linearity test regression estimate shows that the applied model function is statistically linear based on the value (probability = $0.0335 > \text{significance} = 0.025$).

Table 6. Ramsey Test Results

F-statistics	Prob	Significance	Description
4,6425	0,0335	0,025	linear

Source: primary data, processed (2024)

The application of independent variables in the study needs to ascertain whether there is a strong relationship or correlation between the independent variables used. The multicollinearity test estimate in the form of a correlation matrix between independent variables shows the correlation value of each variable is not more than 0.686972 (R^2). These results reveal that the research data does not occur in multicollinearity.

The estimation results show that the VIF value of the independent variables used in the study is not more than 10 VIF, so each independent variable does not occur in multicollinearity. The results of the regression estimation of Variance Inflation factors are as follows.

Table 7. Correlation Matrix

Variable	Centered VIF < 10	Description
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Land Area	1,3148	Non-Multikolinieritas
Building Area	1,3703	Non-Multikolinieritas
Ownership Rights	1,2189	Non-Multikolinieritas
Designation Zone	1,1848	Non-Multikolinieritas

Source: primary data, processed (2024)

This study ensures the inequality of variance of a residual for all observations of the linear model used; the heteroscedasticity test applies estimation. The results of the estimated value obtained $Obs \cdot R\text{-Squared} = 10.22423 < \text{Table Chi square} = 11.1433$ and the prob chi-square value ($p = 0.0368 > @ 0.025$) states that the research residuals are homoscedasticity accepted, the research model does not experience heteroscedasticity.

Table 8. Heteroscedasticity Result

F- statistics	Obs*R-Squared	prob Chi-square	Table Chi square
2,6885	10,22423	0,0368	11,1433

Source: primary data, processed (2024)

The results of heteroscedasticity indicate that this study is observationally a linear model free from inequality of variance of errors for all observations of each independent variable in the research model.

Test the fulfillment of statistical criteria simultaneously or simultaneously on the variables of land area, building area, ownership rights, and designation zone on property value. The study applies a confidence level of 98.5% or significant using (a) 0.025 degree of freedom (df) numerator = $k-1 = 111-5 = 106$, the estimated value obtained F-statistic of 58.15708 > F-table of 2.89. The research regression estimation results are as follows.

Table 3. F-Test Results

Variable	F- statistics	F-table	Description
Land Area			
Building Area	58,15708	2,89	Significant Impact
Ownership Rights			
Designation Zone			

Source: primary data, processed (2024)

The results of the F test in Table 3 reveal a simultaneous influence together on the variables of land area, building area, ownership rights, and designation zone significantly on the variable property value.

The regression estimate of the coefficient of determination in the form of R-squared (R^2) on statistics with a value of 0.68697 so that the model of applying the

variation of independent variables in the study on the ability to explain its effect on the dependent variable is 68.70%. The remaining value of 31.30% of the variation of the dependent variable can be determined by other independent variables that are not applied in this research model.

Test the fulfillment of statistical criteria in the study to show the accuracy of the model applied and the ability of the model to explain the formulation of research problems. First, in partial or individual testing of each independent variable (land area, building area, ownership rights, and designation zone) on the dependent variable (property value), according to the research regression results as follows.

Table 2. T-test results

Variable	Coefficient	t-Statistic	t-table	Prob,
Constant	7.829070	55.58901	1,982	0.0000
Land Area	0.282960	5.320390	1,982	0.0000
Building Area	0.143956	7.657179	1,982	0.0000
Ownership Rights	0.330137	5.513919	1,982	0.0000
Designation Zone	0.209867	5.151977	1,982	0.0000

Source: primary data, processed (2024)

Based on the results of the t-test in Table 2, the results reveal that the variable land area (5.3204), building area (7.6572), ownership rights (5.5139), and designation zone (5.1519) have a positive and significant effect on the property value variable. First, the practical meaning of the regression results can be understood that property value is influenced by land area significantly by a coefficient of 0.2829 so that changes in the land area there an increase or expansion of 1 m² will affect the increase in property value by 0.2829% the regression estimation results prove the hypothesis is accepted, namely the land area has a positive and significant effect on property value.

Second, the building area significantly has a coefficient of 0.1439 on property value; if there is an increase of 1 m² in the building area, it will affect the increase in property value by 0.1439% with these results showing that the hypothesis is accepted, namely the building area has a positive and significant effect on property value.

Third, the ownership rights variable significantly, with a coefficient of 0.3301, affects property value practically. An increase or improvement in the change in ownership rights to 1 certificate of ownership rights (SHM) will affect the increase in property value by 0.3301%. The regression estimation results prove that the hypothesis is accepted, namely that the ownership rights letter positively and significantly affects the property's value.

Fourth, the designation zone variable significantly, with a coefficient of 0.2098, affects property value. A change or increase in asset conditions in the form of 1 service trade designation zone will increase property value by 0.2098%. The estimation results

show that the hypothesis is accepted: the designation zone has a positive and significant effect on property value.

CONCLUSION

The study's results summarize the findings, are precise and transparent regarding the problems that have been formulated, and answer matters related to the research objectives. It shows the existence of property characteristics simultaneously or simultaneously on the variables of land area, building area, ownership rights, and designation zone, which significantly affect property value with a coefficient of determination of 68.69%. Partially or individually, it reveals the influence of the characteristics of land area, building area, ownership rights, and allotment zones positively and significantly on property values.

Researchers have limitations in the implementation of research, but these limitations are not an obstacle. The first limitation related to collecting property information data during the interview process is that the resource person, as the subject of observation, is not willing to provide information virtually because they want a direct physical meeting. The positive benefits should be if the researcher does not experience this, namely allowing property information in the sample to be accessed more accurately and fulfilled. The second limitation of researchers is that they are limited in time and cost so that each city district is limited to collecting sample property information data; if there is the ability of researchers to expand the research location area around such as central Java, which is adjusted to the formulation of the problem, it will increase objectivity based on the representation of broader observation data.

There are practical implications, namely the contribution of research findings to strengthening practitioners and theorists regarding the development of existing scientific theories. First, there is a need for the expansion of diverse property objects such as commercial properties as well as agriculture and plantations with more realistic property characteristics, and a large number of property valuation models need to be carried out in comparative studies in terms of efficiency and application. The second contribution of research findings is that public insight regarding the formation of a property's value or purchase and sale price needs to be provided by educating the public about property correctly so that the public applies the knowledge that property value is not only influenced by land and building area. The government is expected to make a policy on the community's property value insight education program.

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ANALYSIS OF THE DYNAMICS OF PROPERTY VALUE FLUCTUATIONS IN THE SPECIAL REGION OF YOGYAKARTA

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ABSTRACT

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The purpose of this study is to determine and identify the influence of physical property characteristics such as land area and building area; property legal characteristics in the form of property ownership rights; environmental characteristics in the form of designation zones on property values in D.I.Yogyakarta and apply the best equation method model in determining the value of large quantities of property in addition to the market approach method and cost and income approach. Access to research observation data in the form of primary data obtained in several ways, namely telephone interviews, personal interviews directly with property owners, and secondary data accessed by desk research of the DJTR spatial plan of the Ministry of ATR BPN, data access using purposive sampling models with non-probability sampling techniques, the number of observations as much as 135 data used. The research method uses multiple regression analysis ordinary least square method with Eviews 10 analysis tools, the form of the research regression model function using the selection of statistical criteria, applying the positivism paradigm with quantitative data in the form of Analytical survey, Identification of linear relationship behavior using the Mac Kinnon Test, and White Davidson MWD, Statistical criteria test in the form of F test, t-test, Determination Coefficient Test (R²), Economic criteria test is applied to compare between the estimated parameter coefficients by economic theory, Classical Assumption Test using Normality, Linearity, Multicollinearity, and Heteroscedasticity Test. The results showed that the findings of property characteristics simultaneously or simultaneously on the variables of land area, building area, ownership rights, and designation zone significantly affect property values with a coefficient of determination level of 68.69%. Partially or individually, the findings revealed the influence of the characteristics of land area, building area, ownership rights, and designation zone positively and significantly on property values.

Selection of the best model of the regression function equation, applying the log-log regression equation model in determining property value.

1
2 **INTRODUCTION**

3 The acceleration of economic growth is one aspect among various indicators of the
4 welfare of a country's regional area. Inter-regional comparison assessment, as a measure
5 of the results of the development of one region with other regions, is public information
6 showing each regional area's accelerated development (Oh & Shin, 2023). Regional
7 Original Revenue of each regional area is a source of regional income derived from the
8 region's economic activities (Khoirudin & Khasanah, 2018). Each region must strive to
9 increase the source of local revenue, both by increasing existing local revenue and by
10 exploring new sources of local revenue through existing provisions and by maintaining
11 the potential of economists (Kumoro & Ariesanti, 2017). The higher economic growth
12 reflects better development and financial activities in the country's territory (Nasir et al.,
13 2021). The Central Bureau of Statistics stated that after two years of the COVID-19
14 pandemic, several provinces in Indonesia experienced acceleration and delay in
15 developing various regions. With the implementation of social distancing, PSBB, and
16 PPKM, the wheels of the economy began to move slowly; the impact was that the system
17 was not running correctly (Nasir et al., 2022). The Covid-19 pandemic has caused the
18 economy to contract (Yuniarti & Sukarniati, 2021). D.I.Yogyakarta Province, according
19 to statistics on the aspect of economic growth, experienced the lowest growth on the
20 island of Java at 5.13% after Banten Province. Efforts to improve welfare have become
21 the concern of all parties, including the government, in carrying out the role of
22 development policy steps in various aspects of the field, both long-term and short-term
23 development dimensions (Saleh, 2022).

24 The increase in the economic growth rate in the Special Region of Yogyakarta
25 Province is the contribution of gross value added from the activities of various business
26 sectors. Among them, the real estate or property business sector contributes significantly
27 to the economic growth rate of D.I.Yogyakarta. Supported by the perception of the desire
28 to settle and live in Yogyakarta, it places the most desirable position among other
29 provinces in Indonesia. In addition to being identical as a place of cultural diversity,
30 Yogyakarta is identical to a tourist spot and a place to study. This can create a gap between
31 the increasing demand for land and the limited supply of land providers in the property
32 sector. Land is limited, and it can't keep pace with the increase in urban development,
33 resulting in an intensification of land use in the downtown area and uncontrolled
34 expansion of developed land in the suburbs (Khoirudin et al., 2021). Indicated by the
35 findings of abuse in the utilization of property in the form of village treasury land in

1 various locations, D.I.Yogyakarta noted the findings as a significant criminal act
2 increased significantly.

3 The economic report of Yogyakarta, according to Bank Indonesia's regional macro
4 data in 2022, shows that Yogyakarta's economic growth is significantly supported by the
5 growth of the principal investment component, namely the ongoing National Strategic
6 Project (PSN) supporting the airport including the construction of the Jogja-Solo and
7 Jogja-Bawen toll roads and triggered by investment growth from the construction of the
8 South Cross Road (JJLS) which is still ongoing, the leading investment performance grew
9 positively by 4.97%. There is a condition of limited land, based on the need for the use
10 of other interests, in addition to the development of the public sector, there is a need for
11 land use from the interests of the private / private side as a commercial designation (Reite,
12 2023). As confirmed by banking financing indicators, according to Bank Indonesia data,
13 there was significant growth in property loans by 11.85% and real estate loans by 12.28%.

14 Changes in land use have the potential to be massive due to limited land area, such
15 as several findings of the use of rice fields into residential houses that are not by the
16 regulations of the Regional Spatial Plan (RTRW), the designation of land that is not
17 suitable certainly has an economic and social environmental impact (Hilbrandt &
18 Dimitrakou, 2022), starting from the potential for pollution, namely the lack of land for
19 household waste management and the decline in groundwater quality for the
20 sustainability of life.

21 Regional spatial planning to maximize these regional assets urges the establishment
22 of optimal spatial zones ranging from industrial and trade to residential areas for settlers
23 (Anna, 2020). Although the reality of its designation is still a source of abuse that is not
24 yet appropriate, data from the Yogyakarta Provincial High Prosecutor's Office in 2023
25 states that the state loss is around four billion rupiahs by naming several perpetrators,
26 starting from village government implementing officials and investors
27 (companies/private parties) as suspects in cases of allegedly receiving bribes or gratuities.

28 DIY Governor Regulation Number 34 of 2017 concerning Village Land Utilization
29 in the section on provisions for non-agricultural use (shops, tourist objects, restaurants)
30 or other commercial leases, states that the amount of rent or value figures must be based
31 on the results of an assessment conducted by an Independent Appraiser or Public
32 Appraiser profession. The issue of differences in value opinion in determining the value
33 of a property often occurs because the understanding of developers, communities, and
34 banks is still limited to referring to the Tax Object Sale Value (NJOP); the discrepancy
35 in value opinion often leads to lawsuits by value users (Chen et al., 2023). The level of
36 uncertainty is getting higher in the primary and secondary property markets; it is
37 challenging to create a fair sale and purchase transaction of an asset because the weak

1 supply side is not comparable to the demand side of property assets, making price
2 opinions in the community increasingly biased (Liapis et al., 2015). Inflation fluctuations
3 will impact real estate sector investment. When inflation increases, monetary authorities
4 tend to increase interest rates, which can lead to an increase in property sector costs
5 (Kurniawan et al., 2023).

6 Based on the formulation of the problem above, it is essential that research on this
7 topic be carried out related to the analysis of the process of assessing a property market
8 value in DIY Province in general, is still understood using traditional methods manually
9 and even tends to be subjective and limited to the approach of referring to NJOP, the
10 urgency of research in addition to this is first, the understanding of the community or the
11 user of the value related to the resulting value or price/transaction of a property is not
12 only influenced by the land area of the building but needs to consider several legal
13 characteristics of the property in the form of property ownership rights and environmental
14 characteristics in the form of designation zones. Second, there are advantages to the best
15 equation model using regression analysis; it is hoped that this model will be a potential
16 benefit for assessing large quantities of property quickly and economically and estimating
17 property determinants from various characteristics. This study aims to determine and
18 identify the influence of property characteristic variables on property value to ensure
19 fluctuations in market value in DIY province and apply the best equation method model
20 in determining property value.

21 22 **LITERATUR REVIEW**

23 Value is understood as the strength or exchangeability of a commodity against other
24 commodities. The development of property valuation insights explains that the notion of
25 value is bound by more specific terms in its use; other meanings of value do not stand
26 alone, such as market value, rental value, residual value, and so on (Buitrago-Mora &
27 Garcia-López, 2023). The condition of discrepancy in understanding the term value needs
28 to be uniform to respond to differences in the use of the terms cost, price, and value, both
29 in concept and application, in the practice of appraisal (Boterenbrood, 2023).

30 According to research (Gholipour et al., 2023) cost is the money spent to obtain or
31 produce a commodity. Price is the amount requested, offered, or paid in a transaction to
32 obtain commodity rights. Value is understood as the amount of money worth receiving at
33 this time (present worth) for various benefits or benefits obtained in the future (future
34 benefits). The components of value needed to support the creation of a property value
35 include the criteria of desirability, usefulness, scarcity, and transferability (Kreppmeier et
36 al., 2023).

1 Research (Clapp & Lindenthal, 2022) developed a new approach to estimating
2 urban land values. The study extended the AMM theory by adding the assumption of
3 partial irreversibility, implying that land values with structure can evolve differently from
4 values other than market values, developing a hybrid model with a land residue method,
5 and developing a novelty test of predictive accuracy. The house price index generated
6 market value is used to estimate the hybrid economic structure and land value. The
7 applied model shows the importance of identifying the building structure for HBU at the
8 date of construction; the existing market balance is essential for identifying the selling
9 price of the related property.

10 Research (Lin et al., 2023) addresses the valuation of ground hydrogen geological
11 storage options for commercial development. The study applied a net present value
12 (NPV) evaluation framework to evaluate asset value storage by integrating updated
13 digital economic data analysis and market value-based operations. The research utilizes
14 the CAPM and WACC models to determine the risk-adjusted calculation rate in building
15 the NPV evaluation framework. The results show that there is a price spread between the
16 acquisition and the marketed prices, significant property market information of the site
17 development, and asset maintenance costs are the top three factors that most affect NPV
18 and IRR.

19 According to research (Zakaria & Fatine, 2021) on valuation models and
20 determinants of real estate property prices in Morocco proposing a new approach to
21 modeling the real estate price index. Based on the regression approach, the basic idea of
22 this study is to verify the importance of real estate characteristics in real estate prices in
23 the market, and estimate a regression model that takes into account spatial
24 autocorrelation. The findings of the research results generally indicate the identification
25 that the land surface area and location of real estate with commercial residential
26 neighborhoods, villas and apartments around have a significant influence on the value of
27 property prices.

28 Research conducted (Gautier et al., 2023) studied the transaction price and time of
29 sale or offer of new digitally accessed real estate agents in the Netherlands. Identifying
30 the competition of property transaction registered platforms with low-cost classification.
31 Using a dataset of residential real estate transactions, the study found strong evidence that
32 sellers who use secondary market digital platforms will obtain higher prices and sell
33 faster, although there is still a tendency to switch to traditional markets. The results show
34 consistently that property sellers benefit from the secondary market transactions of
35 various digital platform agents by optimizing property demand market information, the
36 research findings strengthen the conjecture that real estate agents have significant market
37 power.

1 Based on the results of empirical research and several scientific theoretical
2 foundations, there are conjectures or temporary answers (hypotheses) developed against
3 the background of this study, the variables of land area and building area according to
4 research (Boterenbrood, 2023), (Oh & Shin, 2023), (Reite, 2023), (Chen et al., 2023),
5 (Clapp & Lindenthal, 2022), (Zakaria & Fatine, 2021) mention a positive and significant
6 effect on property value and according to (Saleh, 2022) show a negative effect of land
7 area on property value. His book (Wyatt, 2014) on property valuation explains that the
8 size and physical form of the land area of a property is a concern in determining the
9 convenience and economic aspects of the activities carried out on it to support the
10 attractiveness of a property.

11 However, this only applies to the conditions of specific properties such as
12 agricultural land; the more comprehensive the land size has the effect of decreasing value
13 due to increasingly complex management and maintenance problems; this situation has
14 reduced demand for large enough land areas. The characteristics of the building area are
15 determined by various things, including the design of the building, which is adjusted to
16 the type of use according to the tastes of property users; the mismatch of building design
17 and taste will potentially reduce the value of a building, just as when the building design
18 is by the use and even follows the trend of user tastes will create an increase in the value
19 of the property. Hypotheses that can be concluded referring to the theoretical basis and
20 some previous research are as follows.

21 1. H_A : Land area positively and significantly affects property value.

22 2. H_A : Building area positively and significantly affects property value.

23 Variables of property legal characteristics in the form of property ownership rights
24 and environmental characteristics in the form of designation zones, according to research
25 findings (Hilbrandt & Dimitrakou, 2022), (Anna, 2020), (Gautier et al., 2023) mention a
26 positive and significant influence on property value. According to (Harjanto & Hidayati,
27 2019) in his book, the basic concepts of property valuation explain the importance of
28 estimating the market value of property by considering the highest and best use analysis
29 (HBU) for the identification of the most likely and possible uses of property to create
30 optimization of profits from competitive property permitted. The principle of alternative
31 HBU analysis is applied to meet several main criteria: physically possible, legally
32 permissible, financially feasible, and maximally productive. Generally, every company
33 wants to expand its business, requiring much additional capital (Khoirudin, 2017). Part
34 of the legally permissible aspect is, of course, in addition to the permitted regulations,
35 related to the necessity of the condition of the ownership rights to the property and the
36 suitability of the designation zone of a property. The hypothesis contains conclusions for
37 development referring to the theoretical basis as follows.

1 3. H_A : Land ownership rights have a negative effect on property values.

2 4. H_A : The designation zone has a positive and significant effect on property value.

3 The research road map shows the stages that will be carried out, starting from
4 accessing primary data related to the use of research variables, namely data on physical
5 property characteristics such as land area and building area; property legal characteristics
6 in the form of property ownership rights; environmental characteristics in the form of
7 designation zones and identifying the analysis of the influence of property characteristics
8 on property values in D.I.Yogyakarta and revealing the analysis of discussions in an
9 economic approach.

10 **METHOD**

11 This research data collection uses a purposive sampling model with non-probability
12 sampling techniques from the population with a sample of unique characteristics
13 according to the research objectives, namely properties with transactions (sold/bought) or
14 is in the offering stage that occur with a maximum of 18 months from the valuation date.
15 Researchers realize that it is difficult to access market data from the population of
16 property objects studied as a whole, so the research considers limited costs and aspects
17 of time and human resources so that research observations use the Slovin formula based
18 on data obtained from primary and secondary data available in D.I.Yogyakarta as many
19 as 111 observation samples of property offers and transactions.

20 The research data collection technique uses primary data obtained in several ways,
21 namely telephone interviews, personal interviews directly with property owners, and
22 secondary data accessed by desk research of the DJTR spatial plan of the Ministry of
23 ATR BPN and access to additional information from other agencies such as MAPPI and
24 the Central Bureau of Statistics. The data collection process is carried out by paying
25 attention to the suitability of the data, ensuring its reasonableness and feasibility, and
26 ensuring that it can be accounted for. According to the time dimension, the research used
27 cross-section data totaling 111 data observation samples in DIY Province.

28 The research design applies the positivism paradigm with quantitative data. An
29 analytical survey is applied to determine whether or not there is a correlation between
30 physical property characteristics in the form of land area and building area, legal property
31 characteristics in the form of property ownership rights, and environmental characteristics
32 in the form of designation zones as independent variables and property market value as
33 the dependent variable.

34 This study uses multiple regression analysis, the ordinary least square method, with
35 the Eviews software analysis tool. From the function of the best regression model, they
36 use statistical criteria to identify linear relationship behavior using the Mac Kinnon Test
37 and White Davidson MWD. Statistical criteria test is used to test the accuracy of the
38 selected model in the form of an F test, t-test, and determination coefficient test (R²). The
39 economic criteria test is applied to compare the estimated parameter coefficients by
40 economic theory. Classical Assumption Test to determine whether the estimation model
41 meets the classical assumption criteria, namely using Normality, Linearity,
42 Multicollinearity, and Heteroscedasticity Tests.

43

RESULTS AND DISCUSSION

Data acquisition in the research process amounted to 111 samples of observations of property offers and transactions scattered in the Special Region of Yogyakarta Province; the observation data paid attention to specific characteristics that were adjusted to a maximum of 18 months from the assessment date. The approach to obtaining data in the implementation is adjusted to the research planning schedule in January by adjusting the nature and sources of reliable information from the acquisition through direct information, communication tools, or written verification, which is carried out reasonably so that the information data is assumed to be correct.

The detailed observation data applied to the research is data on sale and purchase transactions and property offers from developers/agents or owners by paying attention to the specificity of the adjusted property value, including land area, building area, land ownership rights, and designation zone.

The description of the data analysis results in descriptive statistics shows an overview of the data applied in the study in detail. The descriptive statistical description contains information on the average, median, highest, and lowest values of the independent and dependent variables applied in the study as follows.

Table 1. Statistical Descriptive Data

Variable	Mean	Median	Maximum	Minimum
Property Value	1.796.649.116	1.320.000.000	10.564.680.000	231.240.000
Land Area	690	400	5102	54
Building Area	117	0	1949	0
Ownership Rights	0.86	1	1	0
Designation Zone	0.57	1	1	0

Source: primary data, processed (2024)

Based on Table 1, it is found that the property value in Yogyakarta Special Province has the highest value of IDR 10,564,680,000 with the lowest property value of IDR 231,240,000 and an average property value of IDR 1,796,649,116. These figures place the potential for a reasonably high property value gap condition electorally between districts and cities. The land and building area figures show the highest land area figure of 5102 m² with the highest building area figure of 1949 m², the lowest land area figure of 54 m² with the lowest building area figure of 0 m², and the average land area figure of 690 m² with an average building area figure of 117 m², the variable land and building area figures in the study indicate the existence of assets in the form of land buildings that have been developed both commercial and other designations are more dominant than assets that have not been developed. The variable of land ownership rights shows an

1 average number of 0.86 with a median of 1, revealing that the data of the assets studied in
 2 the form of SHM in ownership rights still dominates over other ownership rights. The
 3 designation zone variable has an average number of 0.57 and a median of 1, indicating
 4 that the research assets in the service trade designation zone are still more dominant in the
 5 property market.

6 The selection of the best model proposed according to the formulation of statistical
 7 regression equations, in the form of a statistical criteria test approach and a Mackinnon,
 8 White & Davidson (MWD) test, revealed that the log-log model can be applied. The
 9 regression results of the function model showed a significant R-squared (R^2) value of
 10 0.68697 (68.69%), and the research regression equation is as follows.

$$\text{LOGNP} = 7,829070 + 0,282960\text{LOGLT} + 0,143956\text{LOGLB} + 0,330197\text{HK} + 0.209867\text{ZP}$$

$$t\text{-Statistic} = (55,58901) (5,320390) (7,657179) (5,513919) (5,151977)$$

$$R\text{-Squared} = 0,686972$$

$$Adj R^2 = 0,675160$$

Description:

LOGNP = Property value (IDR)

LOGLT = Land area (m²)

LOGLB = Building area (m²)

HK = Ownership rights (SHM=1, other than SHM=0)

ZP = Zone designation (Service Trade Zone=1, other than ZPJ=0)

11

12 The application of the linear regression model function estimation in the study
 13 shows that the explanation of the variation of the independent variables of building land
 14 area, ownership rights, and designation zone used on the dependent variable of property
 15 value is 68.69%.

16 The application of the economic criteria fulfillment test in the study to ensure the
 17 adjustment of the estimated parameter coefficients with economic theory is expected to
 18 show whether or not the test criteria pass the direction of the estimated parameter
 19 relationship to economic theory; the economic criteria estimation results are as follows.

20 **Table 4.** Economic Criteria Fulfillment Test Results

Variable	Economic Theory	Estimation Results	Description
Land Area	+/-	+	Appropriate
Building Area	+/-	+	Appropriate
Ownership Rights	+	+	Appropriate
Designation Zone	+	+	Appropriate

21 Source: primary data, processed (2024)

The criteria for the aspects of land and building area show conformity with economic theory; the market approach to the land area of the property area has a specific type of segment suitability so that the expected expansion of the land designation will be significant to the property's value. The building area in the market approach reveals suitability; optimizing the building area's development affects increasing the property's value. The aspect of property characteristics on ownership rights is that, based on the estimation results, the existence of property offers or transactions with conditions of ownership certificates outside property rights tends to cause a decrease in property value. The estimation results of the designation zone aspect show conformity; the property market in the service trade zone tends to cause an increase in the value of a property.

Applying the classical assumption test fulfills the statistical estimation model of normality testing to determine the normal distribution of the applied estimation model. Statistically, applying the observation sample with a distribution of more than $N = 30$ is considered normal. The estimation results show Normality Test-JB $2.5799 < \text{Chi-Square}$ of 11.1433. These results are concluded to be normally distributed.

Table 5. Normality Test Results JB

Normality Test-JB	Chi Square	Prob	Description
2,5799	11,1433	0,2753	Normally Distributed

Source: primary data, processed (2024)

To ensure that the research model applied is unbiased and consistent, it is necessary to know whether there is a relationship between the two variables, so linearity testing with the Ramsey RESET Test estimation model is applied in the study. The linearity test regression estimate shows that the applied model function is statistically linear based on the value (probability = 0.0335 > significance = 0.025).

Table 6. Ramsey Test Results

F-statistics	Prob	Significance	Description
4,6425	0,0335	0,025	linear

Source: primary data, processed (2024)

The application of independent variables in the study needs to ascertain whether there is a strong relationship or correlation between the independent variables used. The multicollinearity test estimate in the form of a correlation matrix between independent variables shows the correlation value of each variable is not more than 0.686972 (R^2). These results reveal that the research data does not occur in multicollinearity.

The estimation results show that the VIF value of the independent variables used in the study is not more than 10 VIF, so each independent variable does not occur in multicollinearity. The results of the regression estimation of Variance Inflation factors are as follows.

Table 7. Correlation Matrix

Variable	Centered VIF < 10	Description
Land Area	1,3148	Non-Multikolinieritas
Building Area	1,3703	Non-Multikolinieritas
Ownership Rights	1,2189	Non-Multikolinieritas
Designation Zone	1,1848	Non-Multikolinieritas

Source: primary data, processed (2024)

This study ensures the inequality of variance of a residual for all observations of the linear model used; the heteroscedasticity test applies estimation. The results of the estimated value obtained $Obs * R\text{-Squared} = 10.22423 < \text{Chi-square table of } 11.1433$ and the prob chi-square value ($p = 0.0368 > @ 0.025$) states that the research residuals are homoscedasticity accepted, the research model does not experience heteroscedasticity.

Table 8. Heteroscedasticity Result

F- statistics	Obs*R-Squared	prob Chi-square	Table Chi square
2,6885	10,22423	0,0368	11,1433

Source: primary data, processed (2024)

The results of heteroscedasticity indicate that this study is observationally a linear model free from inequality of variance of errors for all observations of each independent variable in the research model.

Test the fulfillment of statistical criteria simultaneously or simultaneously on the variables of land area, building area, ownership rights, and designation zone on property value. The study applies a confidence level of 98.5% or significant using (a) 0.025 degree of freedom (df) numerator = $k-1 = 111-5 = 106$, the estimated value obtained F-statistic of 58.15708 > F-table of 2.89. The research regression estimation results are as follows.

Table 3. F-Test Results

Variable	F- statistics	F-table	Description
Land Area			
Building Area	58,15708	2,89	Significant Impact
Ownership Rights			
Designation Zone			

Source: primary data, processed (2024)

The results of the F test in Table 3 reveal a simultaneous influence together on the variables of land area, building area, ownership rights, and designation zone significantly on the variable property value.

The regression estimate of the coefficient of determination in the form of R-squared (R^2) on statistics with a value of 0.68697 so that the model of applying the variation of independent variables in the study on the ability to explain its effect on the dependent variable is 68.70%. The remaining value of 31.30% of the variation of the dependent variable can be determined by other independent variables that are not applied in this research model.

Test the fulfillment of statistical criteria in the study to show the accuracy of the model applied and the ability of the model to explain the formulation of research problems. First, in partial or individual testing of each independent variable (land area, building area, ownership rights, and designation zone) on the dependent variable (property value), according to the research regression results as follows.

Table 2. T-test results

Variable	Coefficient	t-Statistic	t-table	Prob,
Constant	7.829070	55.58901	1,982	0.0000
Land Area	0.282960	5.320390	1,982	0.0000
Building Area	0.143956	7.657179	1,982	0.0000
Ownership Rights	0.330137	5.513919	1,982	0.0000
Designation Zone	0.209867	5.151977	1,982	0.0000

Source: primary data, processed (2024)

Based on the results of the t-test in Table 2, the results reveal that the variable land area (5.3204), building area (7.6572), ownership rights (5.5139), and designation zone (5.1519) have a positive and significant effect on the property value variable. First, the practical meaning of the regression results can be understood that property value is influenced by land area significantly by a coefficient of 0.2829 so that changes in the land area there an increase or expansion of 1 m² will affect the increase in property value by 0.2829% the regression estimation results prove the hypothesis is accepted, namely the land area has a positive and significant effect on property value.

Second, the building area significantly has a coefficient of 0.1439 on property value; if there is an increase of 1 m² in the building area, it will affect the increase in property value by 0.1439% with these results showing that the hypothesis is accepted, namely the building area has a positive and significant effect on property value.

Third, the ownership rights variable significantly, with a coefficient of 0.3301, affects property value practically. An increase or improvement in the change in ownership rights to 1 certificate of ownership rights (SHM) will affect the increase in property value by 0.3301%. The regression estimation results prove that the hypothesis is accepted, namely that the ownership rights letter positively and significantly affects the property's value.

Fourth, the designation zone variable significantly, with a coefficient of 0.2098, affects property value. A change or increase in asset conditions in the form of 1 service

1 trade designation zone will increase property value by 0.2098%. The estimation results
2 show that the hypothesis is accepted: the designation zone has a positive and significant
3 effect on property value.

4 **CONCLUSION**

5 The study's results summarize the findings, are precise and transparent regarding
6 the problems that have been formulated, and answer matters related to the research
7 objectives. It shows the existence of property characteristics simultaneously or
8 simultaneously on the variables of land area, building area, ownership rights, and
9 designation zone, which significantly affect property value with a coefficient of
10 determination of 68.69%. Partially or individually, it reveals the influence of the
11 characteristics of land area, building area, ownership rights, and allotment zones
12 positively and significantly on property values.

13 Researchers have limitations in the implementation of research, but these limitations
14 are not an obstacle. The first limitation related to collecting property information data
15 during the interview process is that the resource person, as the subject of observation, is
16 not willing to provide information virtually because they want a direct physical meeting.
17 The positive benefits should be if the researcher does not experience this, namely allowing
18 property information in the sample to be accessed more accurately and fulfilled. The
19 second limitation of researchers is that they are limited in time and cost so that each city
20 district is limited to collecting sample property information data; if there is the ability of
21 researchers to expand the research location area around such as central Java, which is
22 adjusted to the formulation of the problem, it will increase objectivity based on the
23 representation of broader observation data.

24 There are practical implications, namely the contribution of research findings to
25 strengthening practitioners and theorists regarding the development of existing scientific
26 theories. First, there is a need for the expansion of diverse property objects such as
27 commercial properties as well as agriculture and plantations with more realistic property
28 characteristics, and a large number of property valuation models need to be carried out in
29 comparative studies in terms of efficiency and application. The second contribution of
30 research findings is that public insight regarding the formation of a property's value or
31 purchase and sale price needs to be provided by educating the public about property
32 correctly so that the public applies the knowledge that property value is not only
33 influenced by land and building area. The government is expected to make a policy on the
34 community's property value insight education program.

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1 pesan

Marista Oktaviani <journal@um-surabaya.ac.id>
Kepada: Rahmat Saleh <rahmat@ep.uad.ac.id>

28 Mei 2024 pukul 10.10

Rahmat Saleh:

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Jika telah melakukan pembayaran mohon memberikan konfirmasi sesuai pada lampiran LoA tersebut.
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