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How do Accessibility and Environmental Factors Influence Land Values? a Hedonic Price Analysis

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Abstract: Land is the basis for infrastructure and agriculture and is crucial to economic growth. The factors influencing land prices, in Magelang Regency, Indonesia, are investigated in this study. This study examines the effects of land productivity, land area, environmental conditions, and distance to major infrastructure (village center, trade area, and city center) on land value using a hedonic price model. The results indicate that while land area and distance to the center city does not have a statistically significant impact on land prices, land productivity, other accessibility, and environmental factors do. Due to the growing demand for land with significant economic potential, proximity to economic centers particularly important village roads and city centers plays a significant role in determining land value. Moreover, there is a significant connection between land prices and environmental parameters like temperature, indicating the growing significance of environmental quality in land prices. In order to guarantee sustainable land market development, these findings emphasize the necessity of incorporating economic, environmental, and geographical aspects into land valuation systems. This study highlights the necessity of strategic land use regulations to balance equitable land distribution, environmental sustainability, and economic development, offering valuable information to politicians and urban planners.

Keywords: Land Price, Hedonic Price Models, Land Productivity, Accesibility, Environmental Factors.

INTRODUCTION

The land is a significant asset in a region's economy, supporting various economic activities such as agriculture, manufacturing, infrastructure development, and urban expansion (Widodo & Pramono, 2018). The availability and utilization of land significantly influence economic growth, investment prospects, and social development, rendering it an essential factor in determining regional prosperity. The strategic application of land affects productivity, employment, and economic growth, while governmental regulations on land use and zoning are crucial for determining the optimal distribution (Luo et al., 2023). Furthermore, land scarcity in high-demand regions often occurs in competitive marketplaces, where accessibility,

environmental quality, and infrastructural development are critical for investors and developers. Due to its pivotal role in economic activity, land value varies according to numerous conditions, rendering land prices essential for analyzing regional economic dynamics.

Land prices not only indicate the property market's condition but also encapsulate a region's social, economic, and environmental dynamics. Ricca & Guagliardi, (2023) indicates that land values significantly increase when population growth and land demand escalate, especially in regions with great accessibility to economic and commercial centers. Environmental degradation and changes in land use patterns resulting from urban, industrial, and mining expansion are progressively decreasing ecosystem service values, which indirectly influence agricultural land prices, especially concerning sustainability and climate change adaptation strategies (Wang et al., 2022Land prices in emerging and established nations represent a critical concern in regional planning and spatial management (Cienciała et al., 2021). Governments, investors, and the public consistently search for patterns that elucidate fluctuations in land prices to inform decision-making. Nonetheless, numerous factors affecting land prices remain inadequately comprehended, especially regarding accessibility, land productivity, and environmental considerations.

Land Use Theory clarifies the determinants of land use, which are influenced by economic, social, and environmental factors, and examines how change in land use affects land value and pricing. This theory emphasizes land allocation for diverse purposes, including residential, industrial, agricultural, and environmental conservation. It examines how external factors such as accessibility, spatial planning policies, and population development influence its utilization. This idea has evolved to include numerous methodologies, notably the Bid-Rent idea by William Alonso, which posits that land values are elevated near economic centers due to increased demand. Von Thünen’s Model highlights the impact of distance to urban centers on land use for agricultural and non-agricultural purposes. Land Use Theory claims that the interaction of economic demands, geographical conditions, and spatial planning strategies influences land distribution and utilization in a region. This idea underlines the significance of location in land use, claiming that land in strategic areas possesses greater economic worth than land in isolated regions. Moreover, inter-sectoral competition encompassing residential, industrial, and conservation domains substantially affects land prices since increased demand for land in specific areas can lead to price escalations. Another significant aspect is governmental intervention in spatial planning, wherein policies such as zoning regulations, land use limitations, and economic incentives influence land allocation and valuation. The correlation between Land Use Theory and land prices is significant, as this theory clarifies how diverse economic and spatial planning elements affect land valuation (Wang et al., 2025). Land costs are generally increased in regions with superior accessibility and infrastructure, such as closeness to significant thoroughfares or commercial centers, as these sites present enhanced economic prospects for company and residential endeavors. Competition for land use significantly influences land prices since increasing interest in particular industries escalates prices. Moreover, spatial planning policies and governmental restrictions influence land prices through zoning systems that limit or increase specific regions' value (Firdaussyah & Dewi, 2021). Environmental issues influence property valuation, as land with superior environmental quality, such as green spaces or access to pure natural resources, typically yields increased

costs. Consequently, Land Use Theory functions as a foundational framework for understanding land price fluctuations and facilitates sustainable development planning.

Land prices are affected by various internal and external factors (Zheng et al., 2022). Internal factors comprise land area and productivity; external factors include proximity to economic activity centers, access to commercial facilities, and environmental conditions like temperature and pollution levels. Land prices exhibit considerable variation on a global scale, influenced by location, economic conditions, and various external factors. In some countries, land prices are generally elevated, particularly in major urban centers with significant urbanization rates (Kresse & van der Krabben, 2022). In developing countries, land prices are comparatively lower; however, they have increased swiftly due to economic growth and urbanization. Data from the World Bank (2023) indicates that urban land prices have risen by an average of 7.5% annually over the last ten years. The increase is attributed to economic growth, which enhances land demand across multiple sectors, including residential, commercial, and industrial (Gounaridis et al., 2019).

Buschmann et al., (2020) indicate that, in agriculture, land characterized by high productivity usually has more excellent value compared to land with low fertility; in addition to its ability to generate optimal agricultural yields, productive land in peri-urban areas can experience enhanced value as a result of urbanization and land monetization, consequently expediting changes in its use (Shatkin, 2016). This effect is more significant in some countries, where the agricultural sector continues to be a crucial component of the economy (Pawlak & Kołodziejczak, 2020). However, productivity is not the sole determinant of market dynamics land.

Distance of land to the village center, commercial districts, and urban centers significantly determines its land price (Nugroho et al., 2022). The distance of an area of property to the economic core correlates positively with its price, attributable to the availability of public amenities and social services (Dito et al., 2020). Data from Indonesia's Central Bureau of Statistics (BPS) (2022) indicates that land prices in prominent urban centers like Jakarta, Surabaya, and Bandung fluctuate between Rp25 million and Rp50 million per square meter. In contrast, suburban areas indicate significantly lower prices, ranging from Rp5 million to Rp15 million per square meter. This price indicates the increased demand for land in crucial locales, where economic activities, infrastructure development, and commercial prospects increase property prices.

Environmental factors significantly influence land use dynamics, which then affect land prices. Alterations in land use and land cover are frequently influenced by environmental factors, including drought, soil erosion, and resource depletion, modifying the economic worth of land. A study by Sanogo et al., (2022) in Wacoro, Mali, clarifies how factors such as drought, charcoal extraction, charcoal manufacturing, and soil degradation influence land utilization alterations, impacting its economic importance and prospective valuation. Makruf et al., (2020) indicates that climate change can substantially affect land values. Saifitulloh et al., (2024) assert that increasing temperatures resulting from alterations in land cover can affect land productivity, potentially impacting agricultural land prices. Environmental risks and recurring disasters can affect land prices, especially in quickly developing coastal areas (Saputra et al., 2021). Consequently, environmental issues in land pricing research are increasingly pertinent in tackling current global challenges.

In Central Java, land prices have experienced considerable volatility in recent years, indicative of persistent economic, social, and geographical developmental transformations. Mertoyudan, situated in Magelang Regency, is one of the regions undergoing these developments firsthand. Mertoyudan, adjacent to Magelang City, has emerged as a crucial center for accelerated economic development. The increase in economic activities within the commerce, services, and real estate sectors has significantly escalated land values in the region. The increasing need for property, especially along important corridors linking major cities in Central Java, has expedited the area's change of land use patterns. Mertoyudan, once characterized by agricultural and residential areas, has transformed into an economic hub increasingly interconnected with urban regions.

The emergence of contemporary shopping complexes, the expansion of the retail sector, and the rising quantity of commercial housing projects have rendered Mertoyudan one of the most swiftly advancing regions in Magelang Regency. The rise of the education sector, marked by the establishing of several academic institutions and esteemed schools, has augmented the area's attractiveness, stimulating residential growth and property investment. The extensive infrastructure development in recent years has significantly expedited Mertoyudan's economic growth. The enhancement of road conditions, the expansion of transportation networks, and convenient access to key routes like the Magelang-Yogyakarta Road have rendered this region increasingly vital for investors. Due to continuing road development projects and the expansion of commercial districts, land prices in many important sites in Mertoyudan have increased substantially, especially in proximity to public services and economic centers.

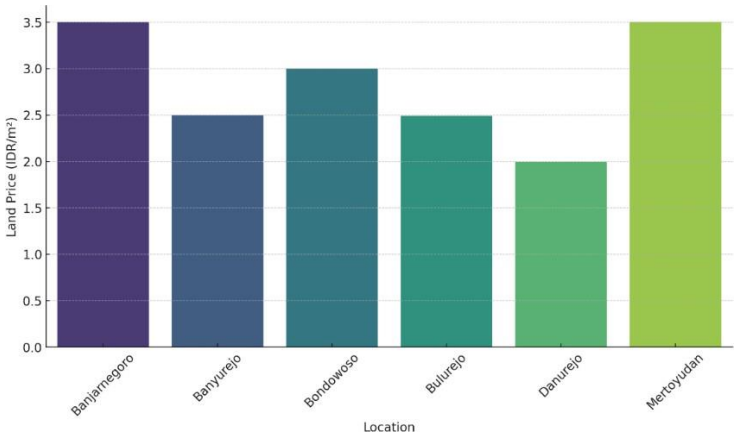


Figure 1. Average Land Price per Location in Magelang
Source: Author

The graph illustrates the average land price per square meter in several locations based on the uploaded data. The visualization shows that Mertoyudan and Banjarnegoro have the highest land prices, at approximately IDR 3,500,000/m², likely influenced by factors such as high accessibility, proximity to economic centers, and strong demand for land in these areas. Meanwhile, Bondowoso has an average price of IDR 3,000,000/m², which is still relatively high compared to other regions, whereas Bulurejo and Banyurejo fall within the IDR 2,500,000/m² range. On the other hand, Danurejo has the lowest land price, at around IDR 2,000,000/m², which could be attributed to limited accessibility, lower economic potential, or less favorable environmental conditions.

The significant price variations across locations indicate that location plays a crucial role in determining land value, particularly in accessibility to public facilities and business centers. Higher land prices often reflect more significant economic potential, while lower-priced areas may present opportunities for investors or property developers to pursue future development. These price differences can also serve as a reference for policymakers in formulating spatial planning and land management strategies to promote a more equitable economic distribution.

In development economics, a comprehensive understanding of land price dynamics is essential for facilitating more effective and sustainable spatial planning approaches. Land prices not only signify the economic value of a place but also act as a barometer for the area's social, economic, and environmental development. With the continual growth of urbanization and economic progress, the demand for land in prime areas would persistently escalate (Wei & Ye, 2014). This study advances the theoretical framework of land pricing and offers significant insights for policymakers and stakeholders in fostering sustainable and equitable regional development. This research utilizes a data-driven methodology and empirical analysis to elucidate the factors affecting land pricing and provide evidence-based recommendations for future land resource management.

Some research has shown that land area positively and significantly influences land prices. As examined by (Briassoulis, 2020), the larger the land area, the higher its market value, especially in strategic areas with high demand. Another study by (Grau et al., 2019) found that land productivity affects land prices, meaning that land with higher yields holds more excellent economic value and attracts higher demand, consequently driving up land prices. Additionally, a study by (Usrini et al., 2020) indicated that distance positively and significantly influences land prices. This implies that land closer to economic activity centers tends to have a higher value due to better accessibility and investment attractiveness. Furthermore, a study by (Kheir & Portnov, 2016) demonstrated that environmental factors positively and significantly impact land prices, where factors such as air quality, green spaces, and low pollution levels enhance land value.

This study contributes to filling the existing literature gaps by analyzing the impact of land area, land productivity, distance from main roads, distance from commercial areas, distance from city centers, and environmental factors on land prices. By incorporating these variables into the hedonic pricing model, this research offers a more comprehensive understanding of the multifaceted determinants of land value, offering insights that previous studies have not fully explored (Bajari et al., 2023). This study emphasizes the significance of location, accessibility, and environmental factors in determining land values in suburban regions by applying the hedonic pricing model. By highlighting the critical influence of environmental and geographical elements on land prices, as well as their implications for more sustainable land management techniques and spatial planning policies, these findings add to the growing reservoir of knowledge on land economics (Setiowati et al., 2021; Glumac et al., 2019) by considering into account the following variables land area, land productivity, distance from the village center, distance from the trade region, distance from the city center, and environmental factors this study seeks to determine the factors influencing land pricing.

METHOD

This research was conducted in Mertoyudan, Magelang Regency, specifically selected due to its significant land price dynamics, influenced by population growth and infrastructure development. Mertoyudan is one of the regions with a high level of economic activity in Magelang Regency, contributing to the increasing demand for land for various purposes, including residential, commercial, and industrial use. According to data from the Central Statistics Agency (BPS) of Magelang Regency, the population of Mertoyudan District increased from 91,238 people in 2020 to 94,543 people in 2023, with a higher population density than other districts. Additionally, the land area used for residential purposes in Mertoyudan District increased from 5,321 hectares in 2020 to 6,104 hectares in 2023 (BPS Magelang Regency, 2023). This increase indicates a high demand for land, directly impacting land prices in the region. Based on data from the Land and Spatial Planning Office of Magelang Regency, land prices in Mertoyudan have increased by an average of 12.5% per year over the past five years, with average land prices ranging from IDR 1.5 million to IDR 3.2 million per square meter, depending on location and accessibility.

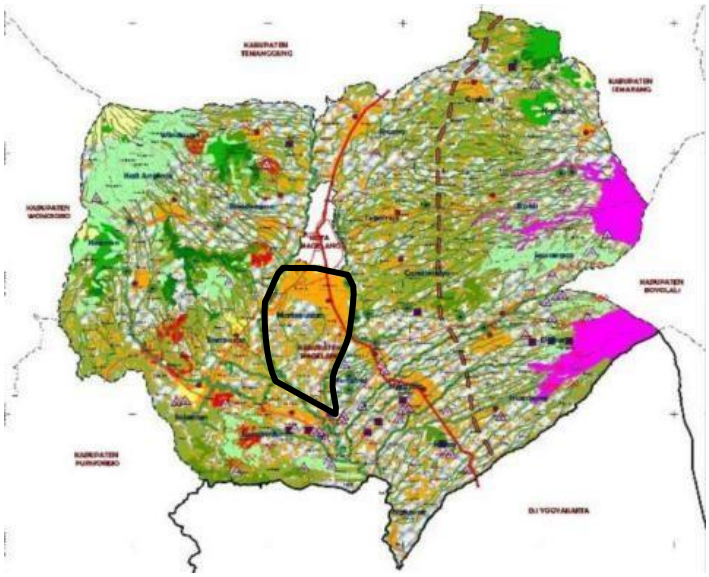


Figure 2. Magelang Regency Map
Source: e-jorunal uajy

Cultivation Areas:

DSA Defense and Security Area
PF Production Forest Area

CF Community Forest Area
LPF Limited Production Forest Area
AA Agricultural Area

PA Plantation Area
RA Residential Area

IA Industrial Area
LA Livestock Area
GOS Green Open Space

Protected Areas:

PF Protected Forest Area
FP Forest Area Outside Protected Forests with

Physiographic Characteristics of Protected Forests

W/RC Watershed/Riverbank Conservation Area
WS Water Source Protection Area

Cultural Heritage Area
NP Conservation Area of Gunung Merapi

National Park and Gunung Merbabu National Park

We surveyed farmers in the research area to understand their perspectives on land price changes and how environmental factors influence them. Farmer support was measured based

on their willingness to accept or reject land price fluctuations in their surroundings and the factors influencing their decisions, such as economic benefits and social impacts. This study aims to identify the factors shaping farmers' perceptions of land prices and understand how they participate in the decision-making process regarding land value and transactions.

The completed survey form consists of three sections. Section A collects land characteristics, including data on land prices (IDR) and land area (m^2). Section B focuses on land productivity characteristics, collecting data on annual crop yields (tons per year). Section C focuses on the environmental characteristics of the land, collecting data on distance from the village main road (m), distance from the commercial area (m), and distance from the city center (m). Section D examines environmental characteristics, precisely the area's temperature quality (°C).

The sampling method used in this study is proportional stratified random sampling. Random sampling was conducted within each stratum to ensure that participants had relevant experience in land ownership and transaction decision-making. This approach allows a more accurate representation of the population's perspectives on the factors influencing land prices. The sample size for each stratum was determined using an appropriate formula for proportional stratified random sampling, ensuring that the sample reflects the characteristics of the farmer population in the study area. We conducted a survey involving 402 respondents selected from six villages in Mertoyudan, focusing on their perspectives on land prices. The villages included in this study are: Bondowoso (67 respondents), Bulurejo (67 respondents), Danurejo (67 respondents), Banyurejo (67 respondents), Banjarnegoro (67 respondents), and Mertoyudan (67 respondents). The required sample size for the survey was calculated using Slovin's formula to ensure a representative sample. Data collection was carried out in two stages. In the first stage, we used stratified sampling techniques to select designated farmers. In the second stage, we randomly selected farmers from each village to participate in the survey.

We used the hedonic price approach to determine the relationship between various factors and land prices. In this model, land price is represented as the dependent variable. The independent variables in the model include land area, land productivity, distance from the village main road, distance from the commercial area, distance from the city center, and environmental factors (see Table 1).

$$LogLP = a_0 + a_1 LogLA + a2LogLP + a_3 LogDLVC + a_4 LogDLTA + a_5 LogDLCC + a_6 LogEF + u \quad (1)$$

where LP is the price of the land, LA is land area, LP is land productivity, DLVC is the distance of the land from the village center, DLTA is the distance of the land from the trade area, DLCC is a distance of the land from the city center, EF is a environmental factor, u is the error term.

Table 1. The definition of explanatory variables

Categories	Variable
Land Characteristic	Rice Field Land Price (IDR)
	The Area of Rice Field Land Owned (m2)
Characteristics Land Productivity	Total Yield per Harvest (ton per year)
	Distance of the Land from the Village Center (m)
	Distance of the Land from the Trade Area (m)
	Distance of the Land from the City Center (m)
Environmental characteristics	Temperature Conditions in the Rice Field Area (°C)

Source: Author

RESULTS AND DISCUSSION

This data relates to the rice field area in Mertoyudan, Magelang Regency. A total of 402 farmers were interviewed using a structured questionnaire. Table 2 shows that the average price of rice fields is 6 million rupiah. The average rice field area is 3,851 square meters. Meanwhile, the average annual harvest is 1,043 tons. Other factors influencing the price of the rice fields include the distance from several important infrastructures. The distance measured is the shortest distance from the rice fields to those infrastructure locations. The average distance from the main village road is 2,171 meters. The average distance from the trading area is 3,562 meters. The average distance from the city center is 3,794 meters. In the hedonic price model used in this study, the environmental factor is used as a measure of temperature quality. The data used comes from the monitoring results of the Environmental Agency in Mertoyudan, Magelang, with an average temperature of 3.438 Celsius.

Table 2. Statistic Descriptive

Variable	Mean	St.Dev
Land Price (IDR)	2.664.419	11.095.41
Land Area (square meters)	7472	1792
Land Productivity (ton per year)	11.32	2.39
Distance of the Land from the Village Center (meters)	149.8	21.74
Distance of the Land from the Trade Area (meters)	3953	1547
Distance of the Land from the City Center (meters)	6400	1637
Enviromental Factor (celcius)	27.42	.240

(Source: Author)

In the hedonic price models used in this study, the environmental factor is used as a measure of temperature quality. The data used was obtained from the monitoring results of the Environmental Agency of Mertoyudan, Magelang. The average environmental factor is 3.438 Celsius. Environmental characteristics are related to rice field land prices, while the existence of green areas around the rice fields is assumed to have a positive influence on the land price. All structural parameters, such as rice field area and agricultural productivity, are expected to have a positive relationship with rice field land prices. Neighborhood characteristics, such as distance from the main village road and distance from the trading area, are inversely related to the price of rice field land. The closer the rice field is to the main village road, the higher the land price tends to be, while the farther it is from the trading area, the lower the land price tends to be. By applying these assumptions in the research model, the parameters are estimated using the ordinary least squares method, and the results are shown in Table 3.

Table 3. Regression Results

Variable	Coefficient
Constant	-84.701***
	(2.471)
Log Land Area (square meters)	-0.035
	(0.029)
Log Land Productivity (ton per year)	0.202***
	(0.050)
Log Distance of the Land from the Village Center (meters)	0.309***
	(0.091)
Log Distance of the Land from the Trade Area (meters)	0.962***
	(0.042)
Log Distance of the Land from the City Center (meters)	0.068
	(0.065)
Log Enviromental Factor (celcius)	60.252***
	(1.691)

Rsquare	.806

Dependent variable: Land Price
* significant at α=10%.
** significant at α=5%.
*** significant at α=1%.

(Source: Author)

This research examines the impact of land characteristics, land productivity, and environmental factors on land prices. Important factors include land productivity, proximity to main village roads, trade areas, city centers, and temperature quality. Conversely, land area does not significantly affect land prices.

Land productivity correlates positively with land prices, signifying that more productive land possesses more excellent economic value. This connection underscores the significant influence of agricultural potential on land pricing since property with more output is more sought after by both farmers and investors. The capacity of land to yield optimal agricultural output ensures sustainable profitability and enhances its appeal as a long-term investment. Enhanced productivity often results in an augmented income for landowners, intensifying competition for cultivable land. In regions where agriculture dominates, land productivity is a crucial determinant of land prices, as it directly influences the financial returns from cultivation. This is particularly pertinent in areas under swift agricultural commercialization or where technological advancements in agriculture significantly enhance crop production potential. The economic attractiveness of highly productive land extends beyond agricultural applications. Investors and developers often concentrate on arable land due to its potential for diversity. Consequently, the demand for such land persists at elevated levels, sustaining its premium worth. This finding aligns with the according to (Widyasari et al., 2017; Pradnyawati & Cipta, 2021), which underscores that land productivity is a crucial determinant of land pricing. Their research indicates that land's capacity to sustain elevated agricultural yields significantly influences land worth, highlighting the extensive financial effects of productivity on land markets. The relationship between productivity and prices underscores the need for sustainable land management practices to preserve soil fertility, guarantee long-term agricultural viability, and avert land degradation, which can diminish economic value over time.

Distance from important village roads is positively and significantly correlated with land value, indicating that land near the main highway generally possesses a greater market worth. Consequently, the demand for these well-connected regions is elevated, increasing land prices. In addition to accessibility, infrastructure development along primary roadways enhances land values. An improved road network frequently leads to enhanced access to public services like electricity, water supply, and telecommunications, rendering the adjacent land more appealing for investment. Landowners and developers acknowledge the prospects for future growth in this region, particularly as land adjacent to major roadways is frequently favored for commercial expansion or mixed-use development. Consequently, proximity to transportation infrastructure significantly influences land market dynamics and urban planning. The beneficial association between road access and land prices underscores the need for strategic infrastructure planning in regional growth. Governments and policymakers must prioritize road accessibility in land use planning to foster sustainable economic growth. Investments in transportation infrastructure can enhance land values and facilitate sustained development in urban and rural regions. This finding aligns with the according to (Kamaludin & Qibthiyyah, 2022; Yang et al., 2022; Hasna et al., 2024; Asri et al., 2021), which found that land prices are influenced by the distance from the main village road. A piece of land's potential for economic growth increases with its ease of access to the major road, consequently increasing regional land prices.

Distance from trade areas is inversely and significantly related to land prices, indicating that land closer to trade areas often has higher value. This connection is driven by the economic advantages stemming from its closeness to business hubs, retail zones, and other commercial enterprises. Land in this region is highly coveted for its suitability for residential and commercial use, leading to heightened competition and, consequently, elevated costs. Increasing land values adjacent to commercial areas may result from proximity to important services, employment opportunities, and consumer footfall. Proximity to commercial areas enhances business patronage, while nearby housing offers greater convenience, reduces commute time, and elevates overall quality of life. These findings underscore the significance of urban planning in regulating land price volatility and promoting equitable development. Policymakers must assess zoning regulations and infrastructural enhancements to optimize land utilization while alleviating substantial pricing disparities. By strategically planning commercial expansion and integrating it with nearby residential and public spaces, the government may promote sustainable urban development while maximizing the economic potential of land in commercial zones. This finding aloigns with the according to (Nugraditama et al., 2020; Hasna et al., 2024) which demonstrate that proximity to trade areas significantly influences land values. this study indicates that land closer to commercial hubs generally commands a higher market price due to increased business opportunities and economic interactions. distance from trade centers plays a crucial role in determining land desirability, as areas with easy access to retail, business, and financial districts offer more significant potential for commercial activity, urban expansion, and investment growth. conversely, land far from significant trade zones tends to experience lower demand and reduced pricing due to limited market accessibility, weaker economic linkages, and logistical challenges. these findings underscore that commercial accessibility is a key determinant of land price variations and must be a central consideration in land valuation, urban planning, and economic development strategies.

Environmental factors exhibit a positive and strong correlation with land prices, highlighting the importance of environmental quality in property valuation. Areas characterized by cleaner air, ample green space, and reduced pollution levels generally experience increased need due to superior living circumstances, enhanced public health, and greater overall well-being. Parks, water bodies, and natural landscapes enhance an area's attractiveness, rendering it a prime candidate for residential and commercial development. Moreover, properties in eco-friendly regions frequently exhibit elevated appreciation rates owing to their enduring attractiveness and diminished risk of degradation of the environment. This finding aligns with (Azmy et al., 2021; Saxena et al., 2019), in which environmental quality significantly influences land prices. Their findings suggest that individuals are increasingly inclined to pay a premium for land in regions characterized by low pollution, availability of green space, and well-preserved ecosystems. This is especially pertinent in metropolitan areas, where swift industrialization and congestion can exacerbate environmental conditions, enhancing the value of well-maintained locations. The inclination towards eco-friendly areas is propelled by increased sustainability awareness and the enduring economic advantages of residing in a cleaner, healthier environment. These observations urge policymakers and urban planners to integrate environmental issues into land use rules and urban development strategies. Advocating for green infrastructure, enhancing waste management, and executing pollution control measures can elevate land values while facilitating sustainable growth. Furthermore, integrating environmental impact analysis into land evaluation frameworks can facilitate a balance between economic development and ecological conservation, consequently fostering more sustainable and thriving communities.

A variable that does not exert a substantial impact on property prices is land area and distance to the city center. Land Area this indicates that land size is not a significant determinant of its value, implying that market preferences may favor other variables, such as

location, accessibility, and infrastructure, over land size. Smaller lots in key locations, such as proximity to commercial centers or important thoroughfares, may attract greater prices than bigger lots in less desired places. This trend illustrates the growing significance of convenience and economic potential in land valuation, as purchasers and investors prioritize usability and development prospects over overall area. The negligible correlation between land acreage and price may be affected by discrepancies in land use restrictions and zoning policies. In certain regions, constraints on land development, such height limitations and designated land use, may diminish the advantages of possessing additional property. If a substantial area of land is constrained by agricultural zoning regulations or lacks sufficient infrastructure, its value may not escalate commensurately with the land area. Conversely, well-connected land, irrespective of size, is often considered as more valuable due to its development potential and economic feasibility. These findings highlight the intricacy of the factors impacting land prices and indicate that policymakers and urban planners have to adopt a more comprehensive strategy for land valuation. Instead than concentrating exclusively on land area, focus should be placed on enhancing infrastructure, accessibility, and regulatory frameworks to guarantee that land is utilized effectively according to its economic and social potential. Future study may investigate how variations in land use classification and ensuing market dynamics influence the correlation between land area and land prices in various regional contexts. This is supported by research conducted by (Asri et al., 2021; Hasna et al., 2024), which states that land area is not correlated with land prices. This is because land prices vary in practice, as there are instances where the price is higher despite a smaller land area. Therefore, land prices are adjusted based on the location of the land, for example, in strategic places. These findings indicate that while land size does not significantly impact pricing, location-based factors are crucial in determining land values. The contrasting effects of distance to the main village road, trade areas, and the city center suggest a complex relationship in which accessibility and economic activity are key drivers of land prices. Additionally, the strong influence of environmental factors underscores the increasing preference for livable and sustainable environments. Policymakers and urban planners should consider these aspects when formulating land-use strategies to ensure a balance between commercial expansion, infrastructure development, and environmental sustainability, ultimately optimizing land value. Conditions lead to higher land demand, ultimately driving up land prices.

Distance to the city center does not significantly correlate with land prices. Whereas urban center land may be costly in certain instances, factors such as economic conditions, spatial planning regulations, and infrastructure development significantly influence land value. In certain places, land prices in suburban areas remain competitive owing to new infrastructural developments, the expansion of industrial zones, and a growing preference for suburban life. Furthermore, accessibility and accessibility are not consistently centralized in urban areas. Certain cities have undergone decentralization, resulting in a growth of business hubs and economic activities in suburban regions, diminishing the need for land prices in proximity to the urban core. Environmental quality, investment potential, and regional development policies surpass physical proximity to the metropolitan core in significance. These findings correspond with the studies of (Asmara Gea & Khoirudin, 2022) and Nugraditama et al. (2020), which indicated that while proximity to the city center may affect land prices, its impact is not consistently statistically significant. Additional factors, including zoning rules, housing demand, and contemporary transportation infrastructure, exert a more substantial influence on land price variations. Consequently, land values are less inherently elevated in urban centers than in adjacent regions, mainly when influenced by external factors such as technical progress and market dynamics. This outcome indicates that urban development plans and infrastructure investments must extend throughout city centers to include additional areas with economic growth potential, thus promoting a more equitable distribution of land prices.

CONCLUSION

This study examines the factors influencing land prices in Mertoyudan, Magelang Regency. The findings reveal that environmental factors, land productivity, and accessibility to significant infrastructures significantly impact land value. Approximately 84.4% of the variation in land prices can be explained by these factors, whereas land area and distance from the city center do not show a significant impact. These results emphasize that land closer to economic hubs and with higher productivity tends to have a higher value, supporting the notion that strategic location plays a crucial role in determining land prices. Policies related to land prices and land-use changes in Indonesia, such as the designation of protected rice fields, the provision of incentives, and regulations on land-use conversion, significantly affect land price dynamics in various regions, including Mertoyudan. Urbanization and economic expansion have increased pressure on agricultural land, leading to land use shifts and land price changes.

With more strategic policies in land-use management and valuation, a balance between economic development and environmental sustainability can be better maintained. Therefore, the findings of this study can serve as a reference for urban planners and policymakers in formulating more sustainable land management strategies. Consequently, this research is expected to contribute to improving environmental quality in Mertoyudan, primarily by maintaining a balance between economic growth, efficient land use, and environmental preservation for future generations.

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