Factors Influencing Apartment Rental Prices in Kuala Lumpur: A Statistical Analysis

Nur Shamilah Shah Kirit[1], Nurin Nazirah Tarmizi[2], Nurul Ain Athirah Mohd Saamah[3], Sarah Yusoff[4*], Noraini Ahmad[5]

[1,2,3,4] *Kolej Pengajian Perkomputeran, Informatik dan Matematik, Universiti Teknologi MARA, Cawangan Terengganu, Kampus Kuala Terengganu, 21080 Kuala Terengganu, Terengganu, Malaysia*
[5]*Centre of Foundation Studies, Universiti Teknologi MARA, Cawangan Selangor, Kampus Dengkil Dengkil, 43800 Dengkil, Selangor, Malaysia*

*Authors' Email Address: [1]nurshamilah1701@gmail.com, [2]azirahnurin6@gmail.com, [3]ainathirahsaamah@gmail.com, *[4]sarahyusoff@uitm.edu.my, [5]norainiahmad@uitm.edu.my*

*Corresponding Author

ABSTRACT

Apartment rental prices in Kuala Lumpur are influenced by numerous factors. The aim of this study is to conduct a statistical analysis of the impact of a variety of factors on the monthly rental prices of apartments in Kuala Lumpur, such as the size of the house (square feet), the availability of parking space, and the distance from the Kuala Lumpur City Centre. Correlation and multiple linear regression analysis were applied to secondary data from 38 samples. The dataset from the Kaggle.com website, which includes the rental price and distinctive features of houses in the city of Kuala Lumpur, Malaysia. The findings reveal the distance from KLCC, and the availability of parking spaces are the most significant contributors to rental price variations. Larger apartments with more square footage also tend to have higher rental prices, but their impact is less pronounced compared to the other factors. Another purpose of the study is to find out the factors that signify the apartment rental price near KLCC. To estimate the rental prices near KLCC, this study develops a multiple linear regression model based on these key variables. The importance of this research depends on its ability to provide real estate brokers, owners, and potential tenants with insightful information. Stakeholders in the rental market can make better judgements by being aware of the main elements influencing rental rates.

Keywords: *correlation, multiple linear regression, parking spaces, rental prices*

INTRODUCTION

Kuala Lumpur's rental market is a dynamic and essential part of the city's real estate landscape, influenced by its status as the economic and cultural centre of Malaysia. The city is home to a wide demographic, which includes residents, expatriates, and students. The majority are searching with limited budgets and personal needs. The properties can vary starting with the high-end condominiums near the city centre or choosing houses in rural areas. Rental prices in urban and rural areas contribute

to several factors. In general, locations near the city centre or commercial areas and the facilities surrounding them, like public transportation, influenced the rental prices.

Additionally, recent studies in Malaysian urban markets changes due to some interconnected factors such as economic transformation and urban governance. The economic transformation in utility prices and living costs has changed the pattern of consumer behavior. This led to the carefulness in their spending (Sulaiman et al., 2018). The Mass Rapid Transit (MRT) project in the Klang Valley has significantly altered land use patterns. It has promoted urbanization and led to the development of infrastructure around the rail stations. This means that areas near MRT stations have seen more buildings and facilities being constructed, making them more urbanized and developed (Man & Majid, 2024).

Renting houses in Kuala Lumpur is an occurrence among both residents and newcomers, driven by the city's dynamic lifestyle and economic opportunities. The monthly rental prices of houses vary widely and are influenced by several factors that tenants consider important. Larger houses with more square footage tend to have higher rental prices due to the added living space they provide. The availability of parking spaces is another significant factor, as it adds convenience and security, making the property more attractive to renters. Additionally, the distance from the Kuala Lumpur City Centre (KLCC) is crucial, as houses closer to the city center typically have higher rental prices due to better access to amenities, employment opportunities, and public transportation.

Understanding which factors are associated with a higher rental rate allows property owners, real estate agents, and tenants to make better decision-making. By addressing specific factors such as the size of the house, the distance from the city centre (near KLCC), and the accessibility of parking spaces per unit, it can be tailored to the communities most in need.

Findings on significant factors associated with rental prices can inform those stakeholders. This may include optimizing rental income and guaranteeing high occupancy rates for property owners. This insight also provides valuable information to the real estate agents in offering more effective advice to their potential tenants. Most importantly, this information can give the right information to the potential tenants in deciding which to choose within their budgets and needs. To better understand the influential factors that contribute to rental prices in urban areas, specifically near Kuala Lumpur City Centre (KLCC), this study carries out multiple linear regression. The coefficient from each significant factor can provide insight into the relationship and to what extent the significant factor influences the rental market.

This study aims to statistically analyse how these factors, which are house size in square feet, availability of parking spaces, and distance from KLCC in kilometres, affect the monthly rental prices of houses in Kuala Lumpur. By examining these relationships, this study looks to provide valuable insights for property owners, real estate agents, and prospective tenants to make informed decisions in the rental market. The focus on examining quantitative variables through multiple linear regression provides a rationale for the selection of particular variables in this study. This clarifies how all categorical criteria have been excluded.

LITERATURE REVIEW

Factors Influencing Rental Prices

In understanding the complex dynamics of housing rental markets in urban areas, it is important to understand the need from rental and buyers. Research from Wei et al. (2024) highlighted the need for both of these stakeholders. Rentals may need a house that may have job opportunities while buyers prioritize a house with amenities. Spatially, suburban areas are more inclusive than urban centers, as

globalisation and institutional factors have exacerbated inequality in the residential housing market in urban centres, and homeownership is altering the patterns of segregation in Chinese cities (Wei et al., 2024).

Size of the House (Square Feet)

The rental prices of larger houses are higher, as shown by many studies; however, this relationship may depend on several factors that are integrated into the model. Abdul-Rahman et al. (2021) recommended including the size of the house in prediction the rental prices in Malaysia. According to the Thaker et al. (2020) study, rental price per square foot is a major factor influencing residential prices in Malaysia. This suggests that bigger square footage can have a beneficial impact on rental yield, which in turn affects the dynamics of the housing market as a whole and investment choices. Research from Bracke (2015) shows a positive correlation between house size and rental prices in urban areas. House prices and rents in Central London show higher price-rent ratios for larger units (Bracke, 2015). Research from Kaltsas et al. (2008) suggests a negative correlation between house size and land value. In contrast, a study by Rachlis & Yezer (1985) reveals no relationship between the size of a house and rental price in urban areas. However, the age of the house and location are negatively correlated with housing price (Rachlis & Yezer, 1985).

Parking Space Availability

Each added parking space will increase the value of the house, especially in urban areas. The availability of parking spaces has a significant effect on rental prices, as revealed by many studies. Studies from Andersson et al. (2016), Hallowell & Stoy (2015), and Xue et al. (2022) showed significantly affected rental prices and correlates positively. A 20% premium is seen for developments that provide one parking space per unit when compared to those that do not provide on-site parking, according to the study of (Hallowell & Stoy, 2015). According to a study conducted by Gabbe & Pierce (2017), the rent of tenant households is influenced by garage parking, which accounts for 17% of the housing unit rent. An average of $1,700 is contributed to the rent annually. The number of houses in the suburbs is reduced by 1.2%, and rents are raised by 2.4% because of the increased construction costs resulting due to extra parking requirements (Andersson et al., 2016). Meanwhile, a case study of Nanchang City, China, shows that owners adjust rental prices based on demand. When prices align with the owner's expectations, they are more likely to rent out spaces. Meanwhile, a case study of Nanchang City, China, shows rental prices are adjusted by the owners according to demand (Xue et al., 2022).

Distance from City Centre

Rental prices typically decline with distance from urban areas, considering the combination of socioeconomic, facilities, and transportation factors. Several studies (i.e., Acci, 2019; Boras, 2013; Huang et al., 2017; Yang et al., 2018; Zhao et al., 2024) have been conducted on the impact of the distance from the city center and rental prices. These studies found that the distance from the city center impacts the rental housing prices and correlated negatively. The distance increases from the city center, the rental prices show lower prices (Yang et al., 2018). The author from Yang et al. (2018) establishes a regression model to show the relationship between housing price and the distance to provide insight to real estate agents and the rental in choosing the best rental rates. According to Acci (2019), there is a 0.23% drop for every 1% increase in distance.

Statistical Method used in Rental Price Analysis

This study uses one statistical technique to analyze changes in rental prices, providing insights into the variables affecting rental markets. Multiple Linear Regression (MLR) is widely used in rental price analysis due to its ability to handle multiple predictors, including qualitative and quantitative predictors. In addition, MLR provides precise estimates of the relationship between rental prices and

factors. Studies by Cai & Zhao (2023) and Rao & Ge (2015) have shown that MLR models can be used to analyze rental housing prices and identify the significant factors. A study from de Jaureguizar Cervera et al. (2022) used exploratory factor analysis and multiple linear regression. It allows the revenue managers to set the rental price for an apartment based on known information. The implications of the results show that the first rental price determined is affected (72%) by the size and capacity of the apartments used for short-term rentals. The apartment complex's equipment offers have a significant impact (18%), while the neighborhood's sociodemographic have a minor effect (11%) (de Jaureguizar Cervera et al., 2022).

Researchers (Alpha Kabine, 2023; Amit et al., 2022; Hashim et al., 2018; Olanrewaju et al., 2018; Osmadi et al., 2015) used both qualitative and quantitative predictors in their studies on Malaysian home prices. The papers from Olanrewaju et al. (2018) reveal that housing location, house size, and transportation factors were significant and had an impact on developers' profits and homeownership rates. Olanrewaju et al. (2018) explore the elements of housing price in Malaysia and found that the distance from the city, house size, and number of parking lots influence housing prices.

RESEARCH METHODOLOGY

Data Collection and Sampling

The sources of the rental pricing dataset in this study were secondary data collected from a website, kaggle.com. This dataset has information on rent pricing surrounding Kuala Lumpur and the Selangor region of Malaysia. The information was scraped from mudah.my website. This study only focuses on the rental properties near KLCC. The chosen variables of 38 samples offer a diverse range of rental pricing and factors that were suited to regression analysis in finding key factors affecting smartphone prices. Table 2 provides variable explanations in detail.

Table 2: Variable Description

Variable	Description	Type of Variable
Rental Pricing (RM)	The expectation of rental prices can vary significantly depending on several factors.	Quantitative
Size (Square Feet)	A larger size impacts the rental prices due to the extra space or room provided, potentially affecting price expectations.	Quantitative
Distance from KLCC (km)	As a near distance from KLCC, prices tend to increase due to the location and market demand.	Quantitative
Number of Parking	1-1 parking space 2-2 parking spaces	Qualitative

Statistical Analysis

The study primarily utilizes multiple linear regression analysis as the statistical method. This approach enables the investigation of the connection between the dependent variable (monthly rental price) and the independent variables (house size, parking spaces, and distance from KLCC). Before carrying out the analysis, this study also performed model adequacy checking using SPSS software. To evaluate the model's fit, R-squared and adjusted R-squared values were used, and residual analysis was performed to detect any breaches of regression assumptions. The multiple linear regression model was specified as follows:

$$Rental\ Price = \beta 0 + \beta 1(Size) + \beta 2(Distance) + \beta 3(Parking) + \epsilon$$

RESULTS AND DISCUSSION

Model Adequacy Checking

Based on the graph of residual plot against fitted variable ($\hat{Y}$), the relationship between all independent and dependent variables is linear in Figure 1.
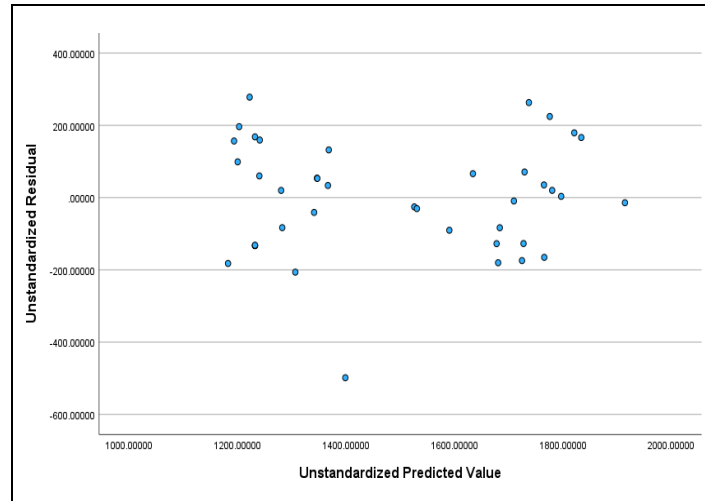

Figure 1: Linearity

Based on the P-P plot of residuals in Figure 2, the error variable is normally distributed because the plots are close and on the 45-degree line.
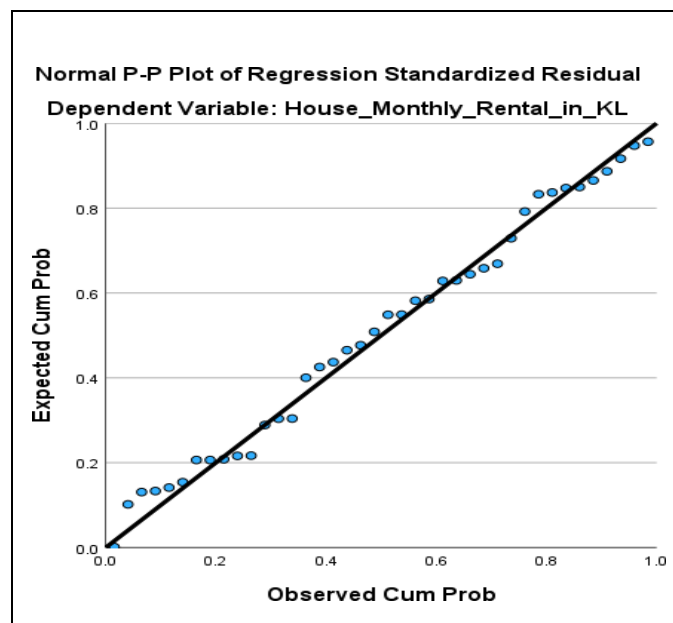

Figure 2: Normality

Based on the Durbin-Watson statistics in Figure 3, the error terms are not independent because the value of the statistics is 0.894, which is not between 1.5 and 2.5.

Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.684^a	.468	.440	215.074	.894

a. Predictors: (Constant), Distance_from_KLCC, Size
b. Dependent Variable: House_Monthly_Rental_in_KL

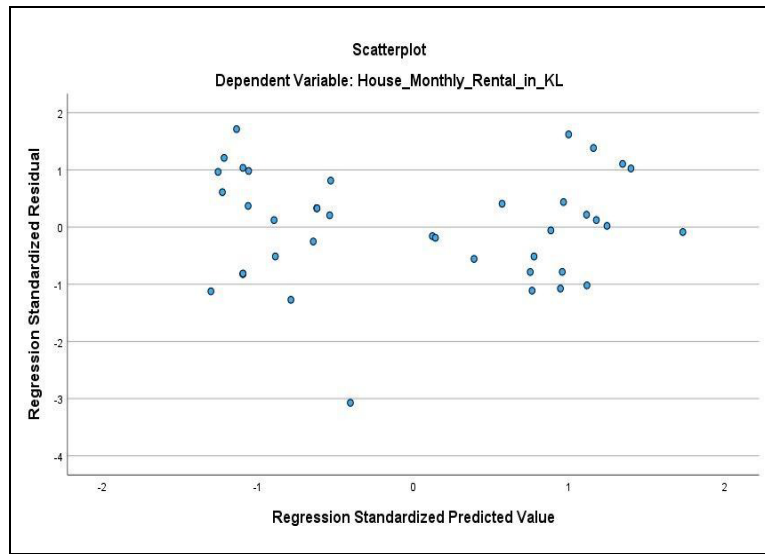**Figure 3: Error term independence**

Figure 4: Homoscedasticity

Based on the graph of standardized residual plot vs. standardized predictor in Figure 4, the error variance is constant because the plots are random around e = 0 along a horizontal bar.

Descriptive Analysis

The lowest and maximum values, mean, standard deviation, and skewness for all variables in each criterion are presented in Table 3. The skewed values show that the distributions of rental prices (RM) rely on these factors. In general, skewness values close to zero suggest a normal distribution. Thirty-eight of the data in Table 3 have a right-skewed distribution. The distribution of the changing distance from KLCC (km) and number of parking spaces, on the other hand, negatively skewed.

Table 3. Descriptive Statistics

Variables	Min	Max	Mean	Standard Deviation	Skewness
Rental Price (RM)	1099	2000	1524.87	264.412	0.265
Size (Square feet)	440	1300	856.84	214.769	0.190
Distance from KLCC (km)	1.7	19.8	10.795	4.9143	-0.044
Number of Parking	1	2	1.53	0.506	-0.110

Correlation Analysis

A correlation coefficient reflects the degree of association and the presence of a link between two variables. Less than 0.50 regarded as a weak connection, 0.50 to 0.69 as moderate, and greater than 0.69 as high. The correlation values between three (3) predictor variables are displayed in Table 4. The connection between house size (R = 0.231) and distance from KLCC (R = -0.630) is weakly positive and strongly negative, respectively. In contrast, the number of parking spaces (R = 0.788) shows a

favorable correlation. The two predictor variables move in the same direction; as one variable rises, the others will also rise. When the price of rental grows, so do the other two predictor factors. However, for another predictor, it goes on the contrary. When the price of rental grows, the distance from KLCC will decrease.

Table 4. Correlation Analysis

Variable	Correlation (R)	Strength
Size (Square feet)	0.231	Weak Positive
Distance from KLCC (km)	- 0.630*	Strong Negative
Number of Parking	0.788*	Strong Positive

*Correlation coefficient is less than 0.05

Multiple Linear Regression Analysis

In a multiple linear regression analysis, Table 5 depicts the association between three predictor variables, size, distance from KLCC, and number of parking and the price of rental. It shows the existence of a substantial association (R = 0.853) between dependent variables (size, distance from KLCC, and number of parking spaces) and the price of rental, as measured by a coefficient of determination of 72.7%. This suggests that 72.7% of rental pricing variation is attributable to size, distance from KLCC, and number of parking spaces. In contrast, 27.3% of variance is attributable to external variables.

Table 5. Correlation Analysis in Multiple Linear Regression

Variable	Correlation (R)	Strength	R^2
Size, Distance from KLCC, Number of Parking	0.853	Strong Positive	0.727

Using multiple linear regression, the link between three independent variables, size, distance from KLCC, and number of parking spaces and rental pricing, was studied using multiple linear regression. Table 6's regression result shows that the significance level (p-value 0.000) is less than the significance level of 0.05. Hence, the linear regression model is significant and reveals a substantial association between three predictor factors and rental pricing.

Table 6. ANOVA test in Multiple Linear Regression

Model	Sum of Squares	Degree of freedom	Mean Square	F	Significance
Regression	18808971.394	3	626990.465	30.202	0.000
Residual	705832.948	34	20759.793		
Total	2586804.342	37			

The existence of multicollinearity, which might considerably diminish the model's effectiveness, is another worry about the linear regression model. Table 7's variance inflation factor (VIF) displays all suitable values for each predictor variable. Size (VIF = 0.913), distance from KLCC (VIF = 0.753) and number of parking spaces (VIF = 0.723), have VIFs of below 10. Hence, there are no multicollinearity issues with the linear regression model. For the TOL results, all predictors show that TOL values are close to 0. This indicates the same results as VIF. This study confirms there is no multicollinearity problem.

Table 7. Coefficient of regression model and variance inflation factor analysis of the relationship between three predictor variables and rental prices

Variable	B estimation	Standard error	t-value	Significance	VIF	TOL
Constant	1128.378	136.951	8.239	0.000		
Size (Square feet)	0.163	0.115	1.410	0.168	0.913	1.095
Distance from KLCC (km)	-19.783	5.554	-3.562	0.001	0.753	1.328

Number of Parking	308.291	55.068	5.598	0.000	0.723	1.384

$$Rental\ Price\ =\ 1128.378\ +\ 0.163\ (Size)\ -\ 19.783\ (Distance)\ +\ 308.291\ (Parking)$$

Table 8. Coefficient of final regression model using Backward Method

Variable	B estimation	Standard error	T value	Significance
Constant	1216.604	123.536	9.848	.000
Distance from KLCC (km)	-18.167	5.511	-3.297	.002
Number of Parking	330.454	53.518	6.175	.000

Since one of the predictors in Table 7 is not significant, this study uses a backward elimination method to get the final model. Table 8 shows the results of the final regression model. There is a slight difference in the coefficient for each significant predictor. The final regression model is shown below.

$$Rental\ Price\ =\ 1216.604\ -\ 18.167\ (Distance)\ +\ 330.545\ (Parking)$$

The result of the research indicates that there is a correlation between the rental prices of apartments and the predictors. In this stage, the results show that there is a weak correlation between size and the rental price. This predictor was found to be not a significant predictor of the rental price. In Malaysia, the apartment has a standard size, and this relationship can be explained by the high supply of similar-sized apartments and tenant preferences. Strong relationships from another predictor, which are distance from KLCC and the number of parking spaces with rental prices, lead to significant results. The apartment rental prices near the city centre KLCC start from RM 1216.604.

The rental prices for apartments that are near KLCC, the coefficient shows the negative sign. The study reveals that rental prices in KLCC apartments decreased by RM19.783 for every 1-kilometer increase in distance due to location and market demand. The rental price will be decreased by RM19.783 if the apartments are far off KLCC. If the tenant is looking for a low price, they can increase their distance from KLCC. For tenants who are searching for a short distance from KLCC, they must be willing to pay a higher rental price.

For each additional number of parking spaces at the apartment, the monthly rental price is going to increase by RM308.291. In urban areas, they need to pay for parking like supermarkets or facilities with limited parking. Thus, when the developer provides apartment parking, it must be calculated in accordance with the selling price, and of course it will affect the tenants. This is due to the profit optimization. This study used a multicollinearity test to know if the predictors are related to each other. The result found no multicollinearity problem. Backward elimination methods were used in producing the models of rental prices effectively. The coefficient of distance decreased from 19.783 to 18.167. While the coefficient for the number of parking spaces also increases from 308.291 to 330.545.

CONCLUSION

The current study has discussed factors affecting apartment prices near KLCC in Malaysia. Findings from this study would benefit if the regression model met the assumptions of linearity, homoscedasticity (constant variance), and normally distributed residuals. However, it does not meet the assumption of independence of residuals. As a result, while the model is valid for the specific dataset and area under study, it may not be reliable when applied to a broader context. To improve the model, further analysis of using more proper modeling techniques or data transformations is recommended.

In conclusion, this research successfully explored valuable knowledge to understand the rental price factors in Kuala Lumpur. These insights are beneficial for real estate brokers, property owners, and

potential tenants as they allow them to make informed decisions based on the main factors that influence rental rates in this urban area.

It is recommended that the real estate brokers focus on emphasizing the key factors in their advertising and marketing efforts for the property, including the number of parking spaces and the property's location and distance from KLCC. Based on their purchasing goals, property owners can use this information to choose which property is the greatest investment. Potential tenants can utilise this information to compare prices while looking for an apartment through assessing the rate of multiple parking spaces and availability. When looking for the ideal apartment to rent, these two important factors, the quantity of parking spaces and the property's distance from KLCC—should be prioritised. If the property does not provide important features, the tenant can then bargain for a lower rental fee. Furthermore, it is significant for developers to look into the present necessity of parking spaces considering the needs of potential customers. When constructing a complex of apartments, it would be advantageous to consider the fact that nearly all families own two cars. Several units may be included in order to appeal to different buyer levels, even when the entire unit may not be provided.

ACKNOWLEDGEMENTS

FUNDING

AUTHORS' CONTRIBUTION

Nur Shamilah handled data acquisition, ensuring the collection of accurate and relevant data to meet the study's requirements. Nurin Nazirah contributed to the inferences made during the model-building process, she also took on the significant task of compiling all aspects of the research, ensuring that the findings, analyses, and interpretations were presented in a coherent and comprehensive manner. Ain Athirah carried out the data exploration phase, where she did analysis of the dataset to identify patterns, trends, and any potential outliers, which were essential for guiding the subsequent stages of the research. Sarah Yusoff and Noraini Ahmad took the lead in writing the manuscripts. All authors provided critical feedback and helped shape the research, analysis, and manuscript.

CONFLICT OF INTEREST DECLARATION

We certify that the article is the Authors' and Co-Authors' original work. The article has not received prior publication and is not under consideration for publication elsewhere. This research/manuscript has not been submitted for publication, nor has it been published in whole or in part elsewhere. We testify to the fact that all Authors have contributed significantly to the work, validity and legitimacy of the data and its interpretation for submission to Jurnal Intelek.

REFERENCES

Abdul-Rahman, S., Zulkifley, N. H., Ismail, I., & Mutalib, S. (2021). Advanced machine learning algorithms for house price prediction: case study in Kuala Lumpur. *International Journal of Advanced Computer Science and Applications*, *12*(12).

Acci, L. (2019). Quality of urban area, distance from city centre, and housing value. *Case Study on Real Estate Values in Turin. Cities*, *91*, 71–92.

Alpha Kabine, C. (2023). Determinants of house prices in Malaysia. *International Journal of Housing Markets and Analysis*, *16*(1), 85–99.

Amit, N., Sapiri, H., & Md Yusof, Z. (2022). Factors affecting housing price in Malaysia using structural equation modeling approach. *Sains Malaysiana*.

Andersson, M., Mandell, S., Thörn, H. B., & Gomér, Y. (2016). The effect of minimum parking requirements on the housing stock. *Transport Policy*, *49*, 206–215.

Boras, T. (2013). THE DISTANCE AND ACCESSIBILITY TO THE CITY CENTRE AS DETERMINANTS OF ASKING HOUSING PRICES. *Ekonomski Pregled*, *64*(6), 563–586.

Bracke, P. (2015). House prices and rents: Microevidence from a matched data set in Central London. *Real Estate Economics*, *43*(2), 403–431.

Cai, Z., & Zhao, Y. (2023). House Rent Analysis with Linear Regression Model——A Case Study of Six Cities in India. *Highlights in Science, Engineering and Technology*, *38*, 576–582.

de Jaureguizar Cervera, D., Pérez-Bustamante Yábar, D. C., & de Esteban Curiel, J. (2022). Factors affecting short-term rental first price: A revenue management model. *Frontiers in Psychology*, *13*, 994910.

Gabbe, C. J., & Pierce, G. (2017). Hidden costs and deadweight losses: Bundled parking and residential rents in the metropolitan United States. *Housing Policy Debate*, *27*(2), 217–229.

Hallowell, A., & Stoy, K. (2015). *The rent is too damn high: Parking and affordability in Portland, Oregon*.

Hashim, Z., Sapiri, H., Misiran, M., & Halim, T. F. A. (2018). The Utilization of System Dynamics for House Pricing Analysis in Malaysia. *Int. J Sup. Chain. Mgt Vol*, *7*(4), 272.

Huang, L.-X., Chen, L.-J., Hao, J.-M., Wang, D.-C., Jin, L.-G., & Zhao, D. (2017). Study on the relationship between housing price and transportation accessibility in urban district of Tianjin, China. *Theoretical and Empirical Researches in Urban Management*, *12*(2), 48–63.

Kaltsas, I. K., Bosch, D. J., & McGuirk, A. (2008). Residential land values in urbanizing areas. *Journal of Agricultural and Applied Economics*, *40*(2), 635–647.

Man, N. I., & Majid, N. A. (2024). Exploring Urban Changes: The Impact of Mass Rapid Transit (MRT) Construction in the Context of Development in the Klang Valley, Malaysia. *International Journal of Academic Research in Business and Social Sciences*, *14*(4), 231–241.

Olanrewaju, A. L., Lim, X. Y., Tan, S. Y., Lee, J. E., & Adnan, H. (2018). Factors affecting housing prices in Malaysia: Analysis of the supply side. *Planning Malaysia*, *16*.

Osmadi, A., Kamal, E. M., Hassan, H., & Fattah, H. A. (2015). Exploring the elements of housing price in Malaysia. *Asian Social Science*, *11*(24), 26.

Rachlis, M. B., & Yezer, A. M. J. (1985). Urban location and housing price appreciation. *Papers in Regional Science*, *57*(1), 155–164.

Rao, C., & Ge, Y. (2015). Analysis of main influence factors for housing prices. *2015 International Conference on Engineering Management, Engineering Education and Information Technology*, 552–555.

Sulaiman, Y., Nik Mat, N. K., Abd Ghani, N. H., & Arif, A. (2018). Understanding consumption pattern of rural and urban consumers in Malaysia. *International Journal of Engineering and Technology (UAE)*.

Thaker, H. M. T., Ariff, M., & Subramaniam, N. R. (2020). Residential property market in Malaysia: an analysis of price drivers and co-movements. *Property Management*, *39*(1), 107–138.

Wei, Y. D., Wu, Y., & Li, H. (2024). Institutions, urban space, and residential markets in globalizing Shanghai: A comparative study of housing sale and rental prices. *Journal of Urban Affairs*, 1–24.

Xue, Y., Kong, Q., Sun, F., Zhong, M., Tu, H., Tan, C., & Guan, H. (2022). Shared parking decision behavior of parking space owners and car travelers based on prospect theory—A case study of Nanchang City, China. *Sustainability*, *14*(24), 16877.

Yang, D., Cui, Z., & Zhao, L. (2018). Research of Housing Price Based on Bid-Rent Theory. *Proceedings of the 21st International Symposium on Advancement of Construction Management and Real Estate*, 1167–1173.

Zhao, W., Zhong, J., & Lv, J. (2024). Influencing factors and spatial differentiation of rental housing in a smart city: A GWR model analysis. *Measurement: Sensors*, *33*, 101126.