

Impact of Neighborhood Characteristics on Residential Property Values: A Critical Review of Literature

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Abstract

Neighborhood is a geographical unit within which given social affinities exist, even though the degree of their association and its significant to the lives of inhabitants differ greatly. The attributes of neighborhood which comprises both amenities and disamenities is a significant factor in house price determination due to its spatial linkage to the housing market. The aim of this paper is to critically review empirical literature on the impact of neighborhood characteristics on residential property values. Documentary data collected from various secondary sources were studied and carefully reviewed. Results obtained from the literature suggested that both neighborhood amenities and disamenities play very significant roles in the built up to the formation of residential housing prices. The uses of few explanatory variables were found to be dominant in the discussion of neighborhood characteristics that affect property prices/values. The study therefore suggest the use of many explanatory neighborhood variables to justifiably estimate the impact of neighborhood characteristics on residential property prices/values as this could also avoid omitted variable bias.

Key Words: *Neighborhood Attributes, Effects, House, Prices, Amenities, Disamenities.*

Introduction

The analysis of market for housing in an urban area cannot be divorced from neighborhood factors. Houses and apartments are complicated commodity that contains numerous features which have value for the consumer. The market is often characterized by complicated, highly durable units each of which is located in a neighborhood with many attributes (MacDonald & MacMillan, 2007). The neighborhood amenities according to Anthony (2012) are the necessary attractions and services that make life comfortable and easy for the inhabitants. House price on the other hand reflect the attributes of the house and lot, and the characteristics of the neighborhood in which the property is located.

Although, house price is established through the process of negotiation between buyer and seller, however, the actual sale will only be made if the buyer makes a bid (MacDonald & MacMillan, (2007). Most often buyers based their bids on many factors among which neighborhood characteristics plays a very significant role in influencing the decision of the buyers.

McDonald & MacMillan, (2007) in their study of neighborhood characteristics on house value, identified two categories of neighborhood variables which could positively or negatively influence house price. The positive neighborhood variables outlined by MacDonald & MacMillan, (2007) which are termed neighborhood amenities, include Schools, play ground, hospitals and health centers, police station, parks and recreational facilities, sporting facilities, shopping centers, community services and other environmental considerations like good drainages and waste disposal management tools. The negative neighborhood variables termed as disamenities include industrial noise, neighborhood crime rate, air pollution, heavy traffic on streets and contaminated environment.

The focus of this paper is to review empirical literature on neighborhood characteristics that influences house value given that lot of variables on neighborhood characteristics have being found by many researchers on housing and value, to have a statistical significant impact on house value.

This paper is structured as follows: The introductory part will be preceded with the methodology section. Section three will be a review of empirical literature on the impact of neighborhood characteristics on residential property prices/values. Discussion of the paper shall be the content of section four and conclusion will form the final section of this paper.

Methodology

The content of this paper is purely on review of empirical literature on neighborhood characteristics that influences residential property prices/values. Thus the methodology adopted for obtaining data was based on Documentary secondary data obtained from academic journals, conference papers, articles, textbooks and the World Wide Web (cyber internet).

Impact of Neighborhood Characteristics on House Prices

Various studies have being carried out on neighborhood amenities and disamenities that affects house value. For instance, on neighborhood amenities, Chang & Lin (2012) investigated the impact of neighborhood characteristics on house price in Taipei, Taiwan, using hierarchical linear modeling. The purpose of the study was to examine the relationship between neighborhood characteristics and house price. The study adopted three neighborhood variables which include environmental quality, convenience of life; and sport and leisure facilities as the explanatory variables.

The data for the survey was obtained through secondary sources derived from 2006 survey of residential houses status by agency of construction and planning, Ministry of interior affairs, Taiwan. The data covered dwellings from 31 neighborhoods. Five point liker scales was used in measuring the satisfaction level of items comprises in each of the house characteristics and neighborhood variables adopted for the study.

The study uses the HLM sub-models which include Null model, Random coefficient regression model and the Slope as outcome model for variable explanation and analysis of empirical studies.

Findings from the empirical results indicates that average house price in various neighborhoods have significance differences. The result also revealed that impact of house characteristics on average house price varies between neighborhoods. The results further suggest that the impact of dwelling characteristics on house price is moderated by neighborhood attributes.

The study however, made use of data collected through secondary sources which was obtained six years before the study. This might possibly affect the outcome of the study as secondary data can be misleading especially when obtained for a very long time. The use of few explanatory variables to determine the effect of neighborhood characteristics is also not sufficient to justify a convincing result as it may lead to omitted variable bias.

Earlier study by Brown & Uyor (2004) also investigated the impact of neighborhood attributes and house characteristics on residential property price by also using hierarchical modeling technique. The house characteristics was represented by a “living area” as the micro level explanatory variable and “time to get down town” as the macro level explanatory variable representing neighborhood characteristics.

The results indicate a significant effect of neighborhood characteristics on house prices. The results further revealed that neighborhood attributes can also moderate the effects of dwelling characteristics on residential property price.

Different result was reported by Lee (2009) who on his investigation of the effects of neighborhood public facilities on house prices included two more variables on neighborhood characteristics. The variables included are: convenience of life; and sport and leisure to the earlier variable “time to get to down town” as explanatory variables.

The result from the empirical study shows that the impact of neighborhood public facilities on house prices varies between countries and towns and that the effect of sport and leisure facilities on house prices is not significant. The result however, indicated a significant relationship between house characteristics and house prices.

From the foregoing studies of Brown & Uyor (2004) and Lee (2009), it is evidenced that variables used for the neighborhood study were disaggregate variables which are not sufficient enough to persuade justifiable outcome on the impact of neighborhood characteristics on house prices.

Again, Lee (2010) studied the impact of leisure and sport facilities on house value with an increase number of dwelling characteristics variables. The variables include the living area, number of rooms, building age, number of stories, number of floors and house structure as explanatory variables for the dwelling characteristics. The neighborhood characteristics are represented by sport and leisure facilities as explanatory variable.

The result from the empirical findings shows that sport and leisure facilities have significant effects on house prices with cross- level interaction at the same time. By implication, dwelling characteristics on house prices from the findings would be moderated by the effects of sport and leisure facilities on house prices.

The study again uses few explanatory variables to represent neighborhood characteristics which could also lead to omitted variable bias. Still on neighborhood characteristics, Feng & Humphreys (2012) investigated the impact of professional sport facilities on house value in US cities using the hedonic housing price model with spatial autocorrelation. The estimates were based on 1990 and 2000 census block groups within five miles of every sporting facility in US cities.

The study findings indicate that the median house values in block groups is higher in block groups closer to the sporting facilities. The result clearly shows that professional sporting facilities have positive impact on house prices. The study utilized census data where the unit of estimation is a census tract. Besides, the data used was obsolete considering the number of years the data was collected.

Furthermore, application of standard hedonic model and differences in difference approach was employed by Dehring et al. (2007) to examine the effect of an announcement for a proposed stadium in Dallas fair parks. The announcement of the proposed stadium which was later abandon jacked up the prices of nearby residential properties around the area as against the values of residential properties around Dalla’s county that was a long distance to the proposed stadium. The prices of residential properties were however reversed on the abandonment of the proposed stadium.

Dhering et al. (2007) also found that three announcement made separately on another proposed stadium in Arington which was undertaken affects residential properties negatively. Though, each of the announcement was not significant individually, the combined effects of the three announcement was negatively and statistically significant. The total net effect from the findings shows an accumulated rate of about 1.5% decline on prices of residential properties in Arington.

The study however produced a bias and inconsistency estimates of the impact of sport facilities on house prices as the two models adopted fall short in giving a clear account for spatial autocorrelation. Similarly, Tu (2005) investigated the effects of a new sport stadium on housing prices using Fed Ex field as a case study. He adopted the standard hedonic price model as an analytical technique to measure price variation between houses located around the Fed Ex field and other similar properties which are far distance away from the stadium. The result of his findings indicate that houses located within one mile radius from the stadium commands lower value as compared to those houses that are located outside the miles impact areas. Contrary opinion was however expressed by Alhfeldth and Maening (2010) who also investigated the effects of multi- purpose sporting facilities on property prices in Berlin. Their findings indicate that sporting facilities increases the value of some residential houses located within 3000m of sport facilities. The result however noted that values of residential houses decline as the distance progresses further away from the sport facilities. Some level of negative but not statistically significant impact was also recorded.

Hedonic price model was also used by Kiel et al. (2010) to determine the relationship between proximity to football stadium and residential property values. Their finding shows no relationship between residential property values and proximity to the football stadium.

Coates & Humphreys (2005) stated that empirical studies on non financial effects of professional sport teams and facilities recently carried out in recent times, shows variations across the globe. Generally, results from the review of empirical literature above shows clearly that professional sporting facilities generate externalities whose net effect could either be positive or negative.

Still reviewing neighborhood effects on house prices, Feng & Lu (2010) conducted a study to assess the impact of educational facilities on residential property prices in Shanghai, China. Two factors: the school quality and school quantity, and two batches of the government naming process of “experimental model high school” were used as explanatory variables.

Monthly panel data of housing prices and fifty two regional distributions of high schools were collected. The result shows that presence of high number of quality schools could increase house prices by over 21% on average. However, the presence of inferior schools, were also found to increase house prices by little above 5%. The result also revealed that educational facilities are neighborhood amenities that could positively impact on house prices.

The use of high quality school as an estimating factor could only be justified if the area or district is known to be a school district. For non school district, the best explanatory variable that ought to have being adopted is the proximity to school from the house. The use of only a particular school category in isolation of other categories does not fairly represent educational facilities and thus, could affect the outcome of the findings.

In a related study, Haizhen, Yan & Lin (2014) evaluated the impact of various educational facilities on house values using data on housing value and educational facilities of 660 communities in Hangzhou, China. Traditional hedonic pricing model and the spatial econometric model was used in analyzing the impact of the educational facilities on house prices. The finding revealed that educational facilities have positive capitalization effects on house values. The results further stated that houses located at close

distance to high quality schools will attract higher value than those houses located further away from the schools.

Similar study was earlier undertaken by Wang (2006). The study among other things found that the addition of Kindergarten, nursery and primary schools as well as secondary schools in a neighborhood within 500m could attract an increase in residential houses by 2.7% in Shanghai, China. The hedonic housing prices model was also used for the estimation.

The study of Wang (2006) is however at variance with the study of Wen & Jia (2004) who had earlier reported that schools and kindergartens have no neighborhood house value. Also, Li & Fu (2010) asserted that only high quality schools with outstanding academic performance can positively influence house prices. That the impact of schools with the general minimum standard will have little or no significance on house prices. The result equally revealed that the presence of higher institution in a neighborhood has no statistical significant effects on house prices.

Furthermore, Wang, Zhang & Feng (2007) also found proximity to high standard and quality schools in a neighborhood to have an effect on house prices. The findings of Wang & Ge (2010), Haung (2010) and Zhang (2010) have all confirmed the study of Wang, Zhang & Feng (2007).

In another study of neighborhood characteristics, Hans & Jan (2012) examined the impact of mixed land uses on residential house prices in Rotterdam city region, Netherland, using hedonic semi parametric estimation techniques. The purpose of the study was to explore the impact of mixing employment and residential land uses on house prices. The study also aimed at investigating how house owners value mixing of employment and residential land uses.

The study analyzed data based on three data sets obtained from: Dutch Association of Brokers (NVM) which consists of 10,152 houses transaction of 2006; Data from chambers of commerce which also comprises data from all firms / establishments located within Rotterdam city region; and Data obtained from the office of statistics, Netherland which provides number of households living in a post code.

The entire database were married into a single database which contains information on transaction price of each house, structural attributes and number of neighborhood variables that relates to mix land uses. To avoid the "curse of multidimensionality", partial linear hedonic price model was estimated.

The results among other things indicate that acceptable mixture of land uses such as business and leisure activities could result to an increase in house prices significantly which may not be same to houses located on mono-functional areas. The result further indicate that land uses such as manufacturing and wholesale are incompatible with residential land uses and may lead to negative impact on house prices. The findings also revealed that apartment occupiers may be willing to pay higher prices for a diversified neighborhood but less for additional employment in some specified sectors.

In furtherance of study of neighborhood characteristics on house prices, Tan (2010) conducted a study on neighborhood preference of house buyers in Klang Valley, Malaysia. The purpose of the study was to examine the impact of neighborhood characteristics on residential property prices. Data on structural, location and neighborhood attributes and house prices were obtained. 14 variables from structural, location and neighborhood characteristics were used. The neighborhood variables which are the independent variables include the gated guarded landscape neighborhood and the freehold neighborhood. The house price is the dependent variable for the study.

Questionnaire survey was conducted in 2007 for the collection of the study data directly from home owners in Klang Valley, Malaysia. Information about the dwellings of the respondents including internal

characteristics, outdoor environment, location and neighborhood characteristics were obtained. Transaction prices data and housing attributes of 333 dwelling units were obtained from home owners.

A random sampling technique was adopted in selecting the 333 dwelling units from eight districts within the Klang Valley. Interview survey was also used to support the questionnaire survey in getting data from identified residential areas. Semi- log hedonic price model, weighted least squares and covariance matrix estimators were used for data analysis.

The results of his study suggested that the two neighborhood variables, that is the Freehold neighborhood and the gated guarded landscape compound neighborhood have significant relationship with house prices. The results also show that gated guarded landscape compound neighborhoods attract higher house market prices. The result further revealed that buyers may be willing to pay averagely more than 18% additional price to live in a gated guarded landscape compound neighborhood. For freehold neighborhoods, the market prices are about 23.7% higher than the market prices of the leasehold neighborhoods in the study area.

The study used few explanatory neighborhood variables to measure the impact of neighborhood characteristics which may lead to omitted variable bias and cannot be solved by a tight closed specification of the hedonic price function. The sample size adopted for the study was not clearly defined on how it was arrived at and thus may raise question on the objectivity of the sample to the entire population of the study. Again in Klang Valley, Malaysia, Dziauddin, Alvanides & Powe (2013) carried out a study on the effects of Light Rail Transit (LRT) system on residential property values using the hedonic pricing model. The purpose of the study was to investigate the impact of Kelana Jaya line on house prices in Klang Valley, Malaysia.

The study uses secondary sources of data which was obtained from the database of the department of Valuation and Services of Malaysia. Transactional data on houses selling prices, structural attributes, land uses and social economic characteristics were obtained.

The study estimated the impact of house prices on various houses located within the radius of two kilometers from the Kelana Jaya LRT station. Correlation analysis and modified step wise procedures were used in identifying the most significant variables which were eventually used for the study. Geographic information system (GIS) and spatial analysis techniques were used in measuring the distance between the LRT station and other amenities from a given house and were also used in managing the large spatial database.

Findings from their study indicate a positive relationship between the house prices and LRT station. They further revealed that houses that are located within close distance to the station, commands a higher value as compared to long distance houses from the LRT station.

The study however, fall short in measurement techniques adopted for the study. Local analytical models like geographically weighted regression (GWR), spatial expansion method and multilevel modeling techniques may be more appropriate to effectively estimate local rather and will also allows for the inclusion of local geography of house prices and house characteristics relationship

Again on neighborhood disamenities, Duarte & Tamez (2009) embarked on a study in order to find out whether noise has a stationary effect on house prices using Barcelona Metropolitan in Spain as a study reference. The data collected for the study were analyzed using the geographically weighted regression (GWR) technique. The result of the findings indicated that aside from the structural attributes, socio-economic characteristics and accessibility, environmental noise has an influence on the spatial formation of house prices.

Kemiki Ojetunde & Ayoola (2014) also carried out a related study on the impact of noise and dust level on rental values of residential tenement buildings around Lafarge cement factory in Ewekoro town, Nigeria. The purpose of the study was to examine the impact of noise and dust from the cement factory on rental values of residential houses in the area.

Findings from their empirical study revealed that noise and dust have significant effects on house rental values. The result further suggested that noise and dust constitutes negative externalities and that it reduces house rental value by about 22% and 1.5% depending on the closeness of a house to the cement factory.

Discussions

Generally, results from the review of empirical literature above shows clearly that professional sporting facilities generate externalities whose net effect could either be positive or negative. Findings from the literature revealed that most of the empirical studies on the impact of neighborhood characteristics on house prices which are related to educational facilities, dwell more on influence of school quality with little or no emphasis on accessibility to educational facilities which might as well have great impact on house prices. Ignoring this factor may lead to deviation of estimation results.

Besides educational facilities, house prices are also related to many neighborhood attributes which also need to be taken in to consideration in determining neighborhoods effects on house prices. The total avoidance of these factors may cause regression deviation. The boundary fixed effects (BFE) approach and spatial econometric model suggested by Haizhen, Yan & Ling (2014) should be taken in to consideration in the study of neighborhood characteristics that affect house value.

Most importantly the studies have shown that the presence of schools with minimum acceptable academic standard in a residential neighborhood could positively influence house prices. The study of noise and dust effects on rental values of residential properties as neighborhood characteristics had not taken in to account the effects of other neighborhood characteristics such as crime rate, pollution and safety which may also needed to be analyzed alongside the noise and dust impact on rental values of residential houses especially from the cement factory. The approach adopted for selecting sample size for a study as well as sampling technique employed for selecting respondents in most of the studies reviewed in this paper were not clearly defined. The methodological problems associated with most of the studies might lead to the vulnerability of the outcome of the studies. Noise and dust was however found to have constitutes negative externalities.

The uses of few explanatory variables were also found to be dominant in the discussion of neighborhood characteristics that affect property prices/values. The study therefore suggest the use of many explanatory neighborhood variables to justifiably estimate the impact of neighborhood characteristics on residential property prices/values as this could also avoid omitted variable bias.

Conclusion

In conclusion, the neighborhood characteristics whether as amenities or disamenities have great significant impact on the determination of residential house prices. From the previous empirical studies on the effects of neighborhood characteristics, it is very clear that contribution of neighborhood attributes to the formation of property value cannot be ignored.

Most households give preference to neighborhood characteristics in determining the unit of housing to reside. While some households prefers to live in neighborhood where their investment performance promise a higher returns, some consider other neighborhood characteristics such as security, noise free and contaminated free areas in selecting a neighborhood to live.

In either of the cases above, it is very obvious that there exist a relationship between housing prices and neighborhood characteristics.

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