

PROXIMITY IMPACT OF AIRPORT LOCATION ON RESIDENTIAL REAL ESTATE PROPERTIES IN ADJOINING LAND

***KANYIO, Olufunto Adedotun, and GBADAMOSI, Kolawole Taofeek**

Department of Logistics and Transport Technology

Federal University of Technology, Akure, Nigeria

**Corresponding Author's Email: fokanyio@futa.edu.ng*

ABSTRACT

This study analysed the proximity impact of airport location on residential real estate properties on adjoining land. The specific objectives examined the proximity impact of airport location on residential property rental value and analysed the impact of airport location on residential property sales value. The study adopted a survey research design that analyses the perceptions of the respondents on the impact of the airport location on the real estate properties of the surrounding communities (adjoining lands). Primary data were deployed to achieve descriptive and inferential statistics and a direct observation in the administration of questionnaires at the villages and communities located within a three-kilometre radius of the airport. The result shows the original use of properties in Ajao-Estate, Mafoluku, and Ewutuntun. The respondents agreed with the largest percentages of 81%, 78%, and 77% that the original use of the properties was for residential purposes. 11% of respondents in Ajao-Estate indicated that the original purpose was commercial, while in Mafoluku and Ewutuntun, 7% and 4% indicated that it was for commercial purposes. Also, the result shows the correlation coefficients (r) of locations A, B, and C, which are 0.850, 0.744, and 0.879, and the coefficients of multiple determinants (r^2), which are 0.722, 0.554, and 0.772. It was concluded that airports are real estate developers and strategic partners for cities. Airports have the potential to bring in commercial developments that are non-aeronautically related. It was recommended that infrastructural investment boost residential property sales values.

Keywords: *Airport location, residential, real estate property, sales value, rental price*

1.0 INTRODUCTION

Nigerian cities have grown and been established mostly due to transportation. From riding horses to using cars, trains, and, more recently, aeroplanes. The transfer of people from one location to another is the subject of transportation. The existence of roads, railroads, waterways, and airports makes this possible. The location from which the Wright Brothers took off could scarcely be considered an airport after their success in Kitty Hawk, North Carolina, in 1903 (National Air and Space Museum, 2022). To deliver sufficient services, aeroplanes need fuel, a place to take off, and a place to land for repairs. The airport is the required site for this (Agnieszka, Maciej, Marcin & Paweł, 2016). For the aforementioned institutions to fulfil their mandate, an airport is essential (Silva, Goncalves, Correia and Marreiros, 2015).

Airports gained popularity in the 20th century because they provided shippers and travellers with increased speed, comfort, and convenience; even so, their existence is still a necessary prerequisite for air travel (Kanyio, 2021). Airports are now essential for facilitating business traveller connections to the world economy. Airport administration has grown increasingly conscious of its position at the centre of regional transportation networks and has observed how surrounding cities have grown, placing them not only in a central position within surrounding metropolitan areas but also serving as air gateways to the rest of the world (Airports Cooperative Research Program, [ACRP], 2015).

Airports are now more than just hubs for the entire supply and transport chain (Ankit, 2023). They serve as pivots for both real estate development and gradual economic expansion. According to him, they readily connect a place with a larger region, nation, and world when used in conjunction with other forms of transportation like highways, trains, and suburban transit networks. He went on to emphasize that airports change the real estate market while providing cities and areas with an economic boost and aesthetic appeal.

The effects of airport location on real estate are complex. Reiterating, (Lázaro, 2023) suggested that because of their location and accessibility to other major cities, airports offer a very alluring business prospect with substantial growth potential. Airport management has recognized the

enormous customer base resulting from the volume of people, cars, and goods passing through their facilities as a result of the shift in the economic model of airports in the twenty-first century. This customer base can be further increased by taking advantage of real estate development opportunities.

Nigeria has increasingly shifted toward non-aeronautical revenues (NAR), as it is possible in other industrialized and emerging nations, in order to maintain its competitiveness and open up new avenues for revenue generation (Kanyio, 2021). A variety of businesses are involved in the introduction of NAR into the airport business economic model, including real estate, airport lodging and hotels, restaurants and retail establishments, duty-free shopping, car rentals, parking, business offices, and conference centers (Ankit, 2023).

Statement of the Problem

There is a chance that new real estate developments next to existing neighboring homes will have an impact on them, either positively or negatively. The literature has given some attention to the impact of an airport's proximity on the value of real estate. A key function of economics is the capacity to accurately assess the value of real estate. This is because property valuations affect the choices made by investors (Goodhart and Hofmann, 2008). Property valuation inaccuracy remains an international issue surrounding property valuation practice (Babawale, 2013), without the exception of the Nigerian property market (Adegoke, Olaleye and Oloyede, 2013). Since a significant amount of investments made by both individual and corporate investors are made in real estate assets, the impact of inaccurate property value on any country's economy cannot be overstated (Yalpir, 2014). Furthermore, the value of properties is typically estimated by consulting real estate valuers; hence, a misrepresented estimate of property value could hurt a real estate investor's financial records (Taffese, 2007). Taking the aforementioned into account, this study examined the impact of an airport's vicinity on real estate properties. This study set out to determine how close an airport is to residential property how much it costs and how desirable it is.

Policymakers in Nigeria and beyond will find this study useful as it estimates the potential benefits that larger and better airports can have on the properties within its adjoining land and communities around them. This study also adds to the understanding of the relationship between the residential properties in the vicinity of the airport.

Objectives of the study

The objectives are to:

1. Examine the proximity impact of airport location on residential property rental value
2. Analyse the impact of airport location on residential property sales value

2.0 LITERATURE REVIEW

To study the proximity effects that airport location has on real estate property, it was important to conduct literature review to understand existing literature studies in this area. This literature review's primary goal is to give readers a thorough understanding of the effects that the establishment of an airport has on nearby property values

Concept of Location

Among the various themes in geographical location studies, the concept of location is still the oldest. It is fundamental to spatial relationships and has a substantial impact on both the physical and cultural aspects Saxenian (1994). He made this argument while examining the networks of Silicon Valley, California, where he found that the concept of location is a geographic unit that facilitates interaction and communication, increases search intensity, and improves task coordination. The idea of location can also be referred to as site-location, according to Quirk (2008), who also emphasized that a key element in comprehending the concept of location is the

site and situation. The site refers to the precise location of the object, whereas the situation is the object's location in relation to other objects.

Ojoawo (1990) asserts in an empirical study that one of the major determinants influencing the allocation of educational resources is geography. Frew and Wilson (2002) estimated the relationship between location and property value and concluded that a property's worth is significantly influenced by its idea of location. According to Singh (2005), a location's physical characteristics are modifiable by humans and have a significant impact on the political, social, cultural, and economic domains. Yusuf and Adigun (2010) also emphasized that location is more than just a performance factor. To them, the concept of location accelerates many societal difficulties.

Naim and Iftikhar (2014) assert in their perspective essay that location is the pivotal point of geography, influencing both socioeconomic growth, political position, and civilization on the one hand, and physical phenomena like climate and plant and animal life on the other. According to Sitholea and Zlatanov (2016), the smallest physically defined space within a building is referred to as the idea of location when used indoors. These may consist of halls, stairs, corridors, and rooms. There are two ways to convey the idea of location. They are absolute location and relative location (Morenzo and Trehan, 1997). Maria, Henri, and Raymond (2005) contended in a study on space and growth that absolute and relative locations describe a geographic location. They define absolute location as a place's position based on a fixed point on Earth, and the most popular method for determining a place's location is to use coordinates like latitude and longitude. The description of one place's relative placement to another is aided by it. It is stated using directions, such as East, West, South, and North. All coordinates do is express a location's position in relation to the Prime Meridian (longitude) and Equator (latitude). A connection between two locations can be analyzed using relative location. This could be caused by technology, culture, or distance. The description of one place's relative placement to another is aided by it.

According to Jovinius (2015), who looked into how kids' academic performance was affected by the location of their schools, an absolute location is just a simple dot that is frequently used as a grid coordinate on Earth. It is referred to as a geometrical position that is displayed by latitude and longitude on a map. Any site or area's latitudinal location is more important. Over time, neither creatures nor human existence are significantly impacted by a place's longitudinal location (local and standard). The longitudinal location serves as the basis for determination.

The geographical situation is another name for the relative location. It is the position of one place or point in respect to another. The word "natural situation" refers to the situation where physical or natural events define the location. A location or area's natural situation or position may be related to a continent, sea, ocean, mountains, rivers, or hills. The natural environment has a significant impact on social, political, economic, and cultural situations as well as human existence and activities. Kuma (2017) asserts that the study of land accessibility requires an understanding of the concept of location. This is essential to the delivery of land sustainably for residential development. The situation and characteristics of land, such as terrain, accessibility to infrastructure, and neighborhood quality, are referred to as location in his study.

The airport serves as the study's object, and it is located exactly. The precise position of the transportation facility on Earth's surface is known as the airport's location. The idea of location is crucial to this study because it helps to understand the precise location of the airport, including its latitude, longitude, and coordinates; it also helps to understand the airports' relative locations and how they relate to other locations, such as neighboring communities and how the significance of a location changes over time.

For this study, the object is the airport, which has an absolute location. The airport has a location which is the site of the airport, the exact location of the transport facility on the earth's surface. The importance of the concept of location to this study is that it helps to know about the airport

exact location, its latitude, longitude and coordinates of the absolute location of the airports, their relative location and their relationship to other locations (communities on adjoining lands and how the importance of the location changes over time).

Concept of Real Estate

Real estate can be used interchangeably as real property, realty, and land. These terms are often used interchangeably to describe the combination of land, improvements, and rights and privileges. Real estate concept has its roots anchored in Urban Land Economics (ULE) which evolved on the heels of Agricultural Economics (DeLisle, Behavioral Real Estate Theory).

Real estate is an important local and international asset estimated to be about 55 percent of world assets not including human capital. The concept of real estate is both a financial asset and a physical resource, a resource that is comprised of the site itself and the externalities that surround it and connect it to other parcels or activities. As a financial asset, it can be bought, developed and sold, making it comparable to other transaction-oriented businesses. Looking at the characteristics of real estate, Karl-Werner (2001) stated that the concept is an economic commodity due to some factors such as its immobility, complexity, long development and life cycles, high investment volume, high transaction costs, limited divisibility and limited replaceability.

The concept can be viewed from different perspectives. From an aggregate perspective, real estate is an interdisciplinary field of inquiry (Anule, Jagun, Omirin, Bornoma and Ahmed, 2018). From an individual household's perspective, real estate often represents the single largest investment in their portfolio. It also accounts for the largest share of wealth in most nations' balance sheets (Fenwick, 2013). From a professional perspective, the real estate discipline is an umbrella field, spanning several disciplines that focus on various elements of the real estate process. From an academic perspective, real estate is an area of practice that is taught at the university level and is the subject of research and publication activities by faculty members. In an applied sense, the field draws on various ancillary disciplines including appraisal, brokerage, construction, development, finance, investment, management and transactions.

Real estate has always been the cornerstone of the economy, and indeed the broader society (Karen, Bing, Barbara, Annette, Kent, David and Tom, 2020). The property serves as the bedrock upon which we build, providing the structure around which we can develop as both individuals and as nations. It dictates where we live, it is the basis for nearly all economic activity, and it is instrumental in providing opportunities for growth and development.

Real estate is property consisting of housing, commercial, industrial and special real estate (Weinstein and Worzala, 2008). From the typological aspect, Karl-Werner (2001) stressed that real estate entails commercial real estate, residential real estate, industrial real estate and special real estate as revealed in Table 1.

Table 1: Real Estate Properties

S/N	Types of Properties	Description
1	Residential Real Estate	This is the most common type of estate and is the asset class that most people are familiar with. It consists of housing for individuals, families, or groups of people. Within residential, there are single-family homes, apartments, condominiums, townhouses, and other types of living arrangements
2	Commercial Real Property	This refers to land and buildings that are used by businesses to carry out their operations. It is a substantially larger and more diverse market. Examples include shopping malls, individual stores, office buildings, parking lots, medical centres, and hotels.
3	Industrial Real Property	This refers to land and buildings that are used by industrial businesses for activities such as factories, mechanical productions, research and development, construction, transportation, logistics, and warehousing.
4	Public Property	Special use properties are characterised by their nature and their particular intended use. They include university buildings, hospitals (health care structures) and barracks.

Source: Autuors Compilation (2024)

Real estate is property consisting of Land and buildings on it, along with natural resources (Ikeotuonye & Efobi, 2022). He further explained that property is any physical or intangible entity that is owned by a person or jointly by a group of people or a legal entity like a corporation. Property includes real property, personal property, private property, public property and intellectual property as explained in Table 2.

2: Real Estate Properties

S/N	Types of Properties	Description
1	Real Property	The combination of land and any improvements to or on the land
2	Personal Property	Physical possessions belonging to a person
3	Private Property	Property owned by legal persons or business entities
4	Public Property	Stated owned or publicly owned and available possessions
5	Intellectual Property	Refers to property rights created by copyright, patent, and trademark laws.

Source: Autuors Compilation (2024)

Residential property in Nigeria encompasses the land areas and the development thereof, building or housing projects, either for individual or condominium ownership, and other similar nature (Olowofeso, Bada, Bamanga, Bassey and Dzaan, 2023)

Airport Location Impact on Real Estate

Studies investigating the effect of airport proximity on real estate properties extend back to the mid-1950s which explored the connection between airport location and properties. Since then, research within this area has progressed alongside the increased sophistication of software and the availability of data for measuring the proximity of real estate development. The early study of Herman (1953) estimated the impact of municipal airports on the markey value of real estate in the adjacent areas. Using the six factual studies which covered many parts of the United States (Chicago Midway Airport; Los Angeles International Airport and the Lockheed Air Terminal; Stapleton Field, Denver; Love Field, Dallas, located about 5.8 miles northwest of the center of the business section of the city; New Jersey Airport, Newark, and La Guardia Field, New York, the findings left no doubt that generally speaking Municipal Airports do not affect the value of vicinage real estate adversely.

Crowley (1973) studies the effect of airports on land values in an area next to Toronto International Airport (Malton). The analysis looks at residential, commercial, industrial and public land prices for both sales and rent in the years 1955 – 1969. Specifically, the study compares the land value changes of the properties near the airport relative to land prices farther away and evaluates the changes in the mix of land uses (industrial vs. commercial vs. residential). Regressions are used

to identify differences in rates of price changes and their significance. The study concludes that residential land values decreased during “shock years” when there were substantial changes but typically rebounded to their initial levels soon thereafter. The author hypothesizes that this initial decrease in price may be caused by a significant population putting their houses up for sale to prematurely to avoid potential noise related issues in the future.

Cohen and Coughlin (2007) studied the relationship between distance to the Atlanta airport and housing prices in the surrounding areas. They find that for every ten percent increase in distance to the airport, housing sales prices fall by approximately 1.5 percent, after controlling for several other factors that might affect sales prices. Cohen and Paul (2007) assessed the impacts on manufacturing property values of airport infrastructure stocks aggregated at the U.S. state-level. They find airport infrastructure improvements in a particular state enhance the commercial property values for the manufacturing sector in that state. A shortcoming of their approach, however, is the level of aggregation of the data at the state level, as well as the potential endogeneity of the infrastructure variables

Cohen and Brown (2013) conducted a study on the impact of Vancouver International Airport (YVR), located in the City of Richmond, BC, and Canada second largest airport on commercial property values. The study estimated a model to test for the impacts of investments in airport infrastructure, as well as measures of the airport’s size and connectivity, on commercial property values near the Vancouver International Airport (YVR). The study found that proximity to the airport, higher airport connectivity, and greater airport infrastructure investments increases commercial property values. Cohen, Coughlin, Lopez and Clapp (2013) explored the relationship between airport infrastructure and residential land prices in Denver and Atlanta. The study deplored and innovative approach. That is, the Local Polynomial Regressions to separate the value of land from the value of structures at each locally sold property address, and then estimate the impacts of changes in airport infrastructure improvements on land values. In Denver, the study found that investments in airfields, parking, and intermodal transportation lead to higher land values in the short-run and long-run, while investments in terminals generally have no significant impact or a negative impact (due to congestion) on land values. Due in part to less instability in land prices over the period 2003–2010. these results proposed that Denver appears to be the stronger candidate for land value capture than Atlanta.

Patcharin and Nitivattananon (2014) assessed the aviation impacts of Suvarnabhumi Airport, an international airport serving Bangkok, Thailand on Property values and management with a view to looking at the relationship for the application of the possible improvement of compensation packages. Multiple regression analysis was used to determine the relationship between five common impacts of aviation (safety, noise, scenery, air pollution, and traffic) and property value change, with data from a survey of sample communities around the airport. The results, both for the overall neighborhood and for separate land used types, show that only noise and air pollution demonstrate significant negative relations with property value. The effect of noise drives a higher impact on property price than the effect of air pollution.

Mirosław, Radosław and Michał (2020) conducted a study on the impact of airport on single-family houses in Poland. The study covered Gdansk Lech Wałęsa Airport and the Warsaw Chopin Airport in Poland in adjacent areas with the research time horizon of 2013-2017. The study deployed a time series analysis, a classic multiple regression models, a spatial autoregressive model, geographically weighted regression models, with the use of Geographic Information System [GIS] tools to visualize the results of the study. The time series analysis demonstrated that average prices for single-family houses within the limited use areas [LUA] are lower than the average prices observed outside the LUA.

Ekenta and Woga (2020) examined the effects of the newly renovated Port-Harcourt International Airport (PHIA) facilities on land values in Ipo and Omagwa, Rivers State Nigeria. The study adopted a survey research design, while simple random technique was used. The study revealed

that the renovated international airport contributed positively on property values in IPO and Omagwa communities as a result of investors participation in land and property investments.

3.0 METHODOLOGY

The study adopted survey research design which analyzes the perceptions of the respondents on the impact of the airport location of on real estate properties of the surrounding communities (adjoining lands). Primary data were deployed to achieve descriptive and inferential statistics, and a direct observation in administration of questionnaires at the villages/communities located within a three (3) kilometers radius of the airport. Questionnaire was utilized to collect data from the residents/literate population on the proximity impact of airport location on property selling prices, property rental prices, property status and land value. The respondents are residents of Lagos in Ikeja and Oshodi-Isolo Local Government Areas. The study adopted the purposive and convenient sampling technique. The distance proximity under study has been purposefully set to be from a minimum of 0 (zero) kilometers and up to a maximum of 3 (three) kilometers distance location of the houses from the land earmarked for the commercial property development. The rationale for selecting the 0 (zero) to 3 (three) kilometer proximity is motivated by the fact that there is more density of the houses from the zero to 3-kilometer distance from the land of the airport location. To get the population for the study, three buffer zones in close proximity within the three (3) km radius from the airport location was selected. These are Ipodo, Anifowoshe and Onipetesi in Ikeja local government and Ewutuntun, Mafoluku and Ajao Estate in Oshodi-Isolo Local government area with census population of 317, 614, and 629, 061 and projected population of 466,426 and 923,797. (National Population Commission [NPC], 2006 and Author's projection, 2019).as shown in Table 3.

Table 3: Population of the Study

Airport	Catchment Areas/Local Government Area	Population (NPC, 2006) (X1)	Catchment Areas Projected Population (x2)	Buffer Location radius	Zone (3km)	Buffer Zones Projected Population (X3)
Murtala Muhammed International Airport	Oshodi-Isolo	629,061	629,061	Ewutuntun Mafoluku Ajao Estate Sum	Total	76989 121678 132987 331654

Source: National Population Commission (2006), X2 from the two local government records (2006). X3, Authors Compilation (2024)

Sample Size

The sample size was determined by the introduction of the statistical formula postulated by Yamane (1967). The formula is shown as:

$$n = \frac{N}{1 + N(e)^2}$$

Where n= sample size; N=population size

e=level of precision/sampling error at 0.05

Sample size for Oshodi-Isolo is: = 399.52; ≈400

Questionnaire Administration

In order to get the questionnaire to be administered to the catchment areas, the researcher used the method below and shown in Table 4.

$$\frac{\text{Total buffer zones projected population}}{\text{Sum total of buffer zones projected population}} \times \text{Yamane size for each local government}$$

Table 4: Questionnaire Administration

Airport	Catchment Areas/ Local Government Areas	Buffer Zones	Questionnaire Administration	Marginal Percentage (%)
Murtala Muhammed International Airport	Oshodi-Isolo	Ewutuntun	93	27.0%
		Mafoluku	147	42.6%
		Ajao Estate	105	30.4%
		Cumulative Total	400	100%

Source: Autuors Compilation (2024)

Data Analysis

A multiple of analytical methods of descriptive and inferential statistics was employed in the study. The descriptive statistics involved percentages and frequency counts. Response were presented and analysed with tables, percentages and relative importance index. For the variables that assessed the respondents' perception on a 4-point Likert scale, the computation of Likert Scale, was that a value of "4" was assigned to Highly significant impact, a value of "3" to significant impact, a value of "2" to Fairly significant impact, while a value of "1" was assigned to No significant impact. To answering the research questions, ordinal logistics

Data gathered from the field survey were uploaded, vetted and exported to Excel format. The entire database was stored and managed in Microsoft Excel environment for ease of retrieval. The coded data were thoroughly certified for clean-up before they are subjected to data analysis. The data analysis was done using a combination of tools and software including the Microsoft Excel, Statistical Packages for Social Science (SPSS) software, version 27.0.

To answering the research questions, ordinal logistics regression was carried out between the and the independent variables (residential property rental value, residential property sales values and residential property status), The data were coded, cleaned Inferential statistics (Analysis of Variance) was deployed to test the analysis.

4.0 RESULT AND DISCUSSION

Out of the 400 questionnaires distributed, three hundred and forty-five (345) questionnaires were returned and deployed for data analysis as shown in Table 5:

Table 5: Response Rate of Respondents in Ewutuntun, Mafoluku and Ajao-Estate

Buffer Zones	Questionnaires Administered	Questionnaires Returned	Percentage (%)
Ewutuntun	93	89	26%
Mafoluku	147	134	39%
Ajao-Estate	105	122	35%
		345	100%

Source: Authors' Compilation (2024)

Impact of Airport Location on Real Estate in the Adjoining Lands

To get the perception of respondents on the impact of airport location on real estate, the study focused on the original and current use of the property, classes of property, property status, residential and commercial rental prices and value, and land value in the adjoining areas. The broad classes of the properties under the study are residential and commercial properties.

Original Use of Property

From observation, all the adjoining lands under study pre-date the airport location. In this study, original use was classified into four namely: residential (dwelling, houses, flats and apartments), commercial (non-residential institutions, for example, medicals/health services; learning institutions such as public libraries; financial and professional services, employments agencies and property of many occupants, namely shops, retail warehouses, showrooms and petrol filling stations), mixed-use (residential and commercial) recreational (leisure) and produce storage (agricultural produce).

Figure 1 shows the original use of properties in the buffer zones. In Ajao-Estate, Mafoluku and Ewutuntun, the respondents agreed with the largest percentages of 81%, 78% and 77% that the original use of the properties were for residential purposes. 11% of respondents in Ajao-Estate, indicated that the original purpose was commercial, while in Mafoluku and Ewutuntun, 7% and 4% indicated that it was for commercial purposes. Furthermore, in the three buffer zones, Ajao-Estate, Mafoluku and Ewutuntun, the respondents specified that 5%, 8% and 7% of the properties were for mixed-use, whereas, 2% of respondents agreed it was for recreational purpose, 1% of respondents agreed to recreational purposes in Ajao-estate and Mafoluku respectively. In addition, result from the buffer zones showed in Ajao-Estate, Mafoluku and Ewutuntun was 2%, 6% and 10% for produce storage purposes.

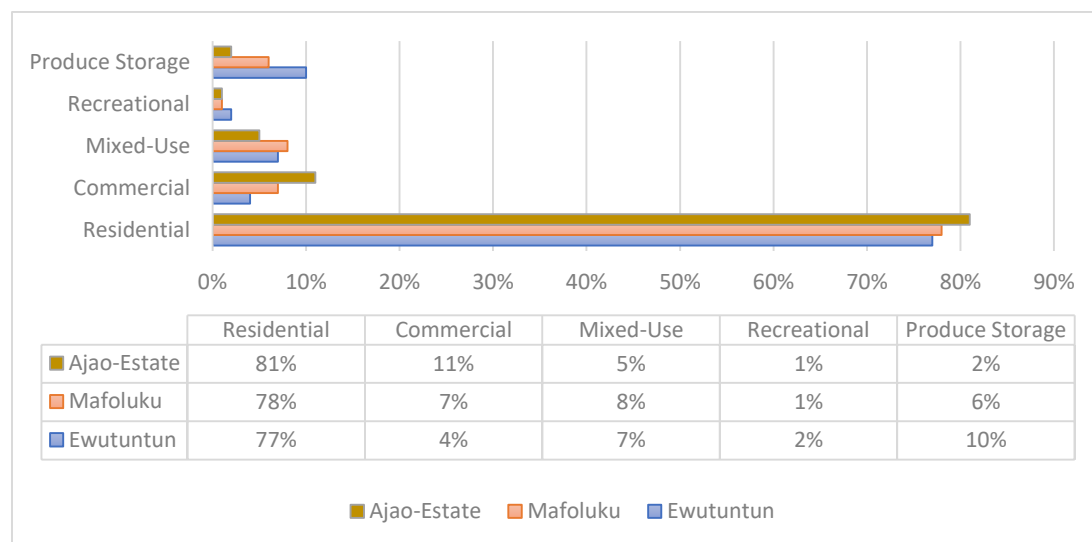


Figure 1 Original Use of Property

Source: Authors' Fieldwork (2024)

Current Use of Property

Every property has specific use class category. this defines what activities a residential or commercial premise may be used for by its lawful occupants. To give a better understanding of the idea of this study, it is paramount to comprehend the changes in property use brought about as a result of the airport location. In this study, current use was classified into four namely residential (strictly family/single-family residence), commercial (medicals/health services; learning institutions such as public libraries; financial and professional services, employments agencies and property of many occupants, namely shops, retail, showrooms and petrol filling stations), mixed-use (residential and commercial), hospitality and Service (hotels, restaurants, and guest houses); industrial (heavy production), cargoes (warehouses and distribution centers) and recreational (leisure).

From Figure 2, the current use of the properties has changed drastically in the study area. From the questionnaire administration, 26% of respondents signified that the current use was for cargo/freight uses. 22% of respondents stated that the current use is now for hospitality and service business. Respondents agreed that 21% of the current use is for commercial purposes, while 16% opined that it is for mixed used. 10% of respondents indicated the current use is for residential purposes, 4% settled for industrial uses, while 1% stated that it is for recreational purpose. The findings of this study corroborate the study of Kanyio (2021). The study concluded that airport location is driving a service of real estate development activities in the neighbourhood and adjoining lands. It also validates the report of Arup Invest Research (2016) who saw airports in new line of business. To this report, airports are real estate developers and strategic partners for cities. Airports have the potential to bring in commercial development that are non-aeronautically related. In addition, it authenticates the study of Weisbrod and Reed (1993). The study states that activities immediately adjacent to the airport include services directly supporting operations of the airport, services for airline employees and passengers (hotels, restaurants, services), and airport-related freight services. All these activities contribute to airports being real estate developers.

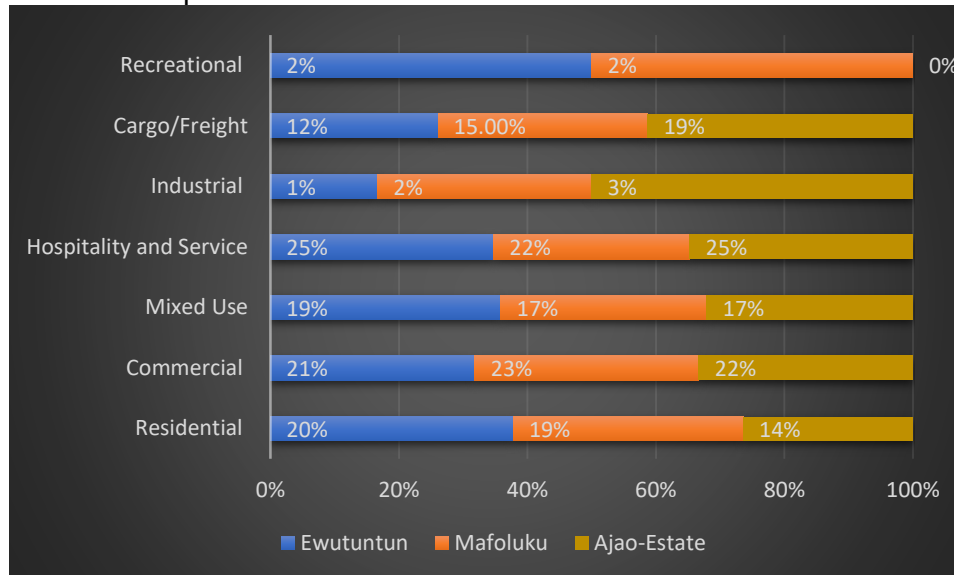


Figure 2: Current Use of Property
Source: Authors' Fieldwork (2024)

Major Factor driving the Change in Residential Properties Uses in the Ajoining Land

Respondents were asked to choose the major factor driving the change in the use of residential properties in airport adjoining land (the buffer zones). Six (6) factors were identified by the respondents as described in Table 6 below.

Table 6: Factor-Affecting Change in Residential Properties Uses in the Adjoining Land

S/N	Factors Identified	Description
1	Airport Specific Locational Attributes	.
2	Structural Attributes	The numbers of bedrooms, bathrooms, fireplaces, garages, square footage of house, lot size, age of structure, existence of pool
3	Neighbourhood Attributes	The socio-economic characteristics of neighbouring residents, quality of neighbouring structures, ownership/rental, ethnic composition.
4	Locational Attributes	The proximity and accessibility to various (dis)amenities including Highways, Powerlines and waste sites shopping centres,

		churches, schools, cultural opportunities, airport, public transportation
5	Environmental Attributes	The view from property, noise levels, pollution levels, stormwater
6	Time-Related Attributes	The month and year of sale, number of days on market

Source: Authors' Fieldwork (2024)

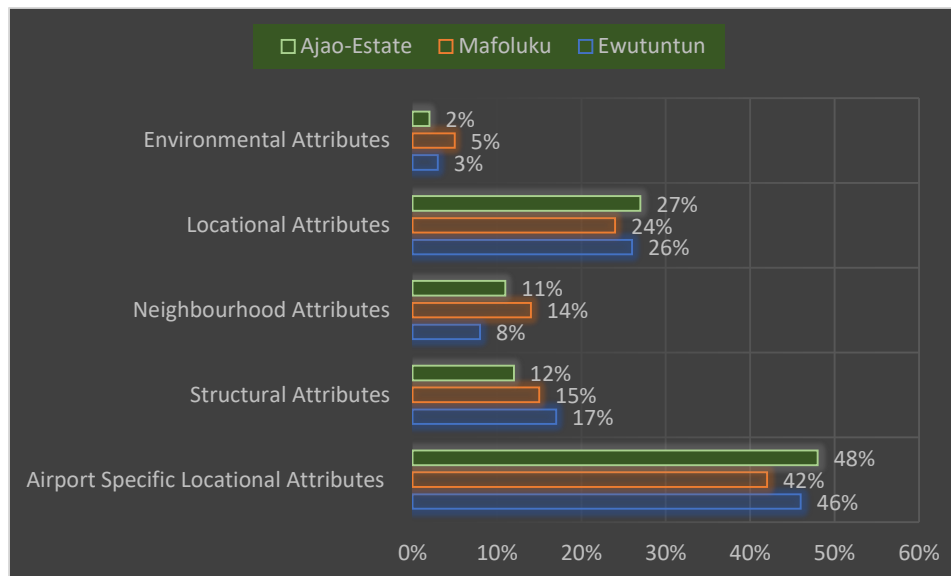


Figure 3: Major Factor driving the Change in Residential Properties Uses in the Ajoining Land
Source: Authors' Fieldwork (2024)

Regression Analysis on the Proximity Impact of Airport Location on Residential Property Rental Value

The attempt in this Section is to evaluate the perception of respondents on the impact of airport location on residential property rentals in the study area. Rental value is the fair market of property rented for lease. It is the maximum rent for which a property could be let in open market for a given set of letting terms (Betasha, 2019). The value of residential property in this study is the residential rental price.

Multicollinearity test

The variance inflation factor (VIF) and tolerance were employed to assess the presence of multicollinearity among the independent variables. A multi-collinearity test is one of the robustness tests employed in this study. The paper demonstrates the strength of the model by checking for excessive connection among variables using the Variance Inflation Factor (VIF). A Tolerance Value (TV) below 0.10 or a Variance Inflation Factor (VIF) beyond ten strongly suggests the presence of multi-collinearity and can serve as a reliable benchmark for its identification. The data presented in table 7 and 8 indicate that none of the independent variables have a tolerance value below 0.10. The tolerance value for each independent variable in this scenario is 1.000, which exceeds the threshold of 0.10. The VIF value is 1.000, which is significantly lower than the threshold of 10. There are no instances of multi-collinearity among the independent variables in the regression.

Table 5 gives the estimate of b value and tells us about the relationship between dependent variable and independent variable. However, the b value indicate both positive and negative relationship. The values of b estimate are 0.615, 0.705 and 0.749. Futhermore, these values are positive. This implies that a unit increase in the residential property rental will result to an increase of 0.615, 0.705 and 0.749 of the airport location for locarion A,B and C. They are all significant at $p < 0.05$

In addition, Table 6 shows the correlation co – efficient (r) of location A, B, and C which are 0.850, 0.744 and 0.879 and co – efficient of multiple determinant (r^2) are 0.722, 0.554 and 0.772. It simply means that 72% of variation in residential property value of location A may be attributed to a magnitude increase in the airport location while 28% account for the unexplained variable. Also, 55% of variation in residential property value of location B may be attributed to a magnitude increase in the airport location while 45% account for the unexplained variable. Finally, above 77% of variation in residential property value of location C may be attributed to a magnitude increase in the airport location while 23% account for the unexplained variable.

Table 7: Regression Analysis on the Proximity Impact of Airport Location on Residential Property Rental Value

Variables	Coefficients	Std. Error	t-value	Sig.	Collinearity Statistics	
					Tolerance	VIF
(Constant)	.011	.125	.086	.932		
Residential Property Rental Value (Location A)	.615	.037	16.630	0.000	1.000	1.000
(Constant)	-.421	.122	-3.447	.001		
Residential Property Rental Value (Location B)	.705	.034	20.627	.000	1.000	1.000
(Constant)	-.357	.073	-4.900	.000		
Residential Property Rental Value (Location C)	.749	.022	34.068	.000	1.000	1.000

Table 8: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.850a	.722	.721	.39997
1	.744a	.554	.552	.50706
1	.879a	.772	.771	.36250

Source: Authors' Fieldwork (2024)

Note:Location A =Ewutuntun. Location B =Mafoluku. Location C =Ajao-Estate.

Figure 3 shows the details of respondents' opinions on the impact of airport location on residential property value. In the study area, the respondents' perception on the impact of airport location on the adjoining land shows that 4% state that the airport location does not have any significance to residential property rental prices, 6% shows least significance, 7% are of the view that airport location is fairly significant, 30% indicated that airport location is significant to residential property rental price, while 53% are of the opinion that it is highly significant. The mean value for the impact of airport location on residential property sales value was 3.52, which implies that the airport location significantly impacts on residential property rental value. This research confirms the findings of Oyesiku (2002) who opined in his study that airport has impact on the property value in cities as a result of the airport attracting foreign investors to the city

Regression Analysis on the Proximity Impact of Airport Location on Residential Property Sales Value.

With respect to impact of airport location on residential property sales, Table 4.4 revealed that in Lagos, 3% responded that airport location is not significant to residential property sales, 4%

showed that it is least significant, 8% indicated that it is fairly significant, 28% specified that airport location is significant to residential property sales, while 57% viewed airport location as highly significant to residential property sales.

Table 9 gives the estimate of b value and tells us about the relationship between dependent variable and independent variable. However, the b value indicate both positive and negative relationship. The values of b estimate are 0.742, 0.712 and 0.740. Furthermore, these values are positive. This implies that a unit increase in the residential property sales will result to an increase of 0.742, 0.712 and 0.740 of the airport location for location A, B and C. They are all significant at $p < 0.05$

In addition, Table 10 shows the correlation coefficient (r) of location A, B, and C which are 0.796, 0.745 and 0.743 and coefficient of multiple determinant (r^2) are 0.633, 0.554 and 0.552. It simply means that 63% of variation in residential property sales value of location A may be attributed to a magnitude increase in the airport location while 37% account for the unexplained variable. Also, 55% of variation in residential property value of location B may be attributed to a magnitude increase in the airport location while 45% account for the unexplained variable. Finally, above 55% of variation in residential property value of location C may be attributed to a magnitude increase in the airport location while 45% account for the unexplained variable.

Table 9: Regression Analysis on the Proximity Impact of Airport Location on Residential Property Sales Value

Variables	Coefficients	Std. Error	t-value	Sig.	Collinearity Statistics	
					Tolerance	VIF
(Constant)	-.398	.103	-3.865	.000		
Residential Property Sales Value (Location A)	.742	.030			1.000	1.000
(Constant)	-.462	.124	-3.727	.000		
Residential Property Sales Value (Location B)	.712	.034	20.661	.000	1.000	1.000
(Constant)	-.602	.131	-4.590	.000		
Residential Property Sales Value (Location C)	.740	.036	20.546	.000	1.000	1.000

Table 10: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.796a	.633	.632	.45952
1	.745a	.554	.553	.50660
1	.743a	.552	.550	.50816

Source: Authors' Fieldwork (2024)

Note: Location A =Ewutuntun. Location B =Mafoluku. Location C =Ajao-Estate.

5.0 CONCLUSION AND RECOMMENDATIONS

It was concluded that airports are real estate developers and strategic partners for cities. Airports have the potential to bring in commercial developments that are non-aeronautically related. Also, activities immediately adjacent to the airport include services directly supporting the operations of the airport, services for airline employees and passengers (hotels, restaurants, and services), and airport-related freight services. All these activities contribute to airports being real estate developers. Based on the findings, the followings were recommended:



1. Infrastructural investment will boost residential property sales values
2. Intermodal transportation should be prioritized in order to boost investment in airport locations

REFERENCES

- Adegoke, O., Olaleye, A., & Oloyede, S. (2013). A Study of Valuation Clients' Perception on Mortgage Valuation Reliability. *African Journal of Environmental Science and Technology*, 7(7), 585-590.
- Agnieszka, M.-G., Maciej, B., Marcin, K., & Pawel, T. (2016). Location of Airports - Selected Quantitative Methods. *LogForum > Scientific Journal of Logistics*, 12(3), 283-295.
- Airports Cooperative Research Program. (2015). Innovative Revenue Strategies- An Airport Guide, Report 11.
- Akpomrere, O. R., & Nyorere, O. (2012). Land Use Patterns and Economic Development of Ikeja in Lagos State, Nigeria. The Geographic Infrastructure System Approach. *International Journal of Economic Development*, 3(3).
- Anule, S. A., Jagun, Z. T., Omirin, M. M., & Bornoma, A. H. (2018). Performance Evaluation on Aggregate Bases of Real Estate in a Mixed Asset Portfolio in Lagos. *Journal of Marketing and Information Systems*, 2(1), 1-7.
- Arup Invest Research. (2016). *The Future of Airports and Real Estate Opportunities*. Toronto: Arup .
- Babawale, G. K. (2013). Valuation Accuracy—the Myth, Expectation and Reality! . *African Journal of Economic and Management Studies*, 4(3), 387-406.
- Cohen, J. P., & Coughlin, C. C. (2007). Changing Noise Levels and Housing Prices Near the Atlanta Airport. Working Paper 2005 – 060D. Federal Reserve Bank of St. Louis.
- Cohen, J. P., & Paul, C. M. (2007). The Impacts of Transportation Infrastructure On Property Values: A Higher-Order Spatial Econometrics Approach. *Journal of Regional Science*, 47(3), 457-478.
- Cohen, J. P., Coughlin, C. C., Lopez, D. A., & Clapp, J. M. (2013). *Estimation of Airport Infrastructure Capitalization for Land Value Capture Purposes: An Analysis of Denver and Atlanta Lincoln Institute of Land Policy* . Lincoln Institute of Land Policy Working Paper.
- Cohen, J., & Brown, M. (2013). Impact of Vancouver Airport on Commercial Property Values. *Journal of Regional Science*, 1-26.
- Crowley, R. (1973). A Case Study of the Effects of an Airport on Land Values. *Journal of Transport Economics and Policy*, 7(2), 144-152.
- Ekenta, C., & Woga, C. (2020). Impact of Improved Airport Facilities on Land Values in IPO and Omagwa, Rivers State, Nigeria. *International Journal of Innovative Research and Knowledge*, 5(7), 38-42.
- Fenwick, D. (2013). Uses of Residential Property Price Indices. In OECD, *Handbook on Residential Property Price Indices*. Luxembourg: Eurostat.
- Frew, J., & Wilson, B. (2002). Estimating the Connection between Location and Property Value. *Journal of Real Estate Practice and Education*, 5(5), 17-25.
- Goodhart, C., & Hofmann, B. (2008). House Prices, Money, Credit, and the Macroeconomy. *Oxford Review of Economic Policy*, 24(1), 180-205.
- Herman, O. W. (1953). The Impact of Municipal Airports on the Market Value of Real Estate in the Adjacent Areas. *Journal of Air Law and Commerce Volume*, 20(4), 440-453.
- Ikeja, LGA. (1996). *The Corporate LGA, Lagos*. Oba Akran Road, Ikeja: Longman, Nigeria.
- Ikeotuonye, M. C., & Efobi, D. J. (2022). Responding To Housing (Real Estate) Needs: The Role of Real Estate Developers and Practitioners in Responds to Investment in Housing. *Iconic Research and Engineering Journals*, 5(8), 264-271.

- Jovinius, J. (2015). *An Investigation of the Effect of Geographical Location of Schools to the Students' Academic Performance: A Case of Public Secondary Schools In Muleba District. Tanzania: Published Master's Dissertation, Administration, Planning and Policy Studies, Open Un.*
- Kanyio, O. A. (2021). The Impact of Airport Location on Land Use Land Cover and Socio-Economic Development of the Hinterlands in Nigeria. An Unplished PhD Thesis, Submitted to the Department of Transport and Management Technology, Federal University of Technology, Akure . 300.
- Karen, M., Bing, W., Barbara, J., Annette, K.-D., Kent, M., David, F., & Tom, G. G. (2020). The Future of Real Estate Education: A Multi-Faceted Perspective. *Journal of Real Estate Practice and Education*, 22(1), 1-21.
- Karl-Werner, S. H. (2001). Interdisciplinary Approach of Real Estate Education. *Paper Prepared for Presentation at the Pacific Rim Real Estate* (pp. 1-18). Adelaide, Australia: Society Seventh Annual Conference 21st –24th January 2001 .
- Kuma, S. S. (2017). Land Policy and Land Delivery System in Nigeria . In M. A. In Nuhu, *Emerging Issues in Urban Land Use and Development, Abuja Nigeria* (pp. 1-24). Abuja: The University of Abuja Press.
- Lázaro, F.-B. (2023). The Location of the Airport an Added Value to Improve the Number of Visitors at US museums. *Case Studies on Transport Policy*. 11, 100961.
- Maria, A., Henri, D. G., & Raymond, F. J. (2005). Space and Growth: A Survey of Empirical Evidence and Methods. *Region et Development*, 21, 13-14.
- Mirosla, B., Radoslaw, C., & Michal, G. (2020). The Impact of Airport Proximity on Single-Family House Prices. Evidence from Poland. *Sustainability* 7928, 12(9).
- Morenzo, R., & Trehan, B. (1997). Location and the Growth of Nations. *Journal of Economic Growth*, 2, 399-418.
- Naim, S. T., & Iftikhar, Z. (2010). Migration of Highly Skilled and its Impact on the Economic and Technological Development of Pakistan and Bangladesh. *South Africa Network of Economic Research Institutes*, 10-11.
- National Air and Space Museum. (2022). *The Wright Brothers at Kitty Hawk*. Retrieved from <https://airandspace.si.edu/stories/editorial/wright-brothers-kitty-hawk>.
- NATIONAL POPULATION COMMISSION . (2010). NPC. (2010). Federal Republic of Nigeria 2006, Population and House Census. Population Distribution by Sex, State, Local Government Area and Senatorial District. Abuja, Nigeria: National Population Commission.
- National Population Commission (NPC). (2006). Federal Republic of Nigeria, Population and House Census. Population Distribution by Sex, State, Local Government Area and Senatorial District. Abuja, Nigeria.
- Nwosu, A. (2013). Population and the Nigerian Socio-Economic Development Dilemma: A case Study of Oshodi-Isolo L.G.A., Lagos, Nigeria. *International Journal of Science and Research*, 2(7), 230-234.
- Ogundolapo, O. (2009). *Murtala Muhammed Airport: 30 Years After, Nigeria*. Lagos: Medbev Ventures.
- Ogunlayi, M. A. (2005). An Assesement of the Awareness of Sexual and Reproductive Rights among Adolescents in South Western Nigeria. *African Journal of Reproductive Health*, 19(1), 99-112.
- Ojoawo, A. O. (1990). An Empirical Study of Factor Responsible for Poor Academic Performance in Secondary Schools in Oyo State. *AJEM*, 14((1&2)), 140-148.
- Olowofeso, O. E., Bada, A. S., Bamanga, M. A., Bassey, K. J., & Dzaan, K. S. (2023). On the Development of Residential Property Price Indices for Nigeria. *CBN Journal of Applied Statistics* , 3(2), 17-38.
- Oni, A. O. (2009). *Real Estate Marketing and Code of Conduct in Nigeria*. Lagos, Nigeria: Rehoboth Consulting.
- Patcharin, L. S., & Vilas, N. (2014). Aviation Impacts on Property Values and Management: The Case of Suvarnabhumi International Airport. *International Association for Traffic and Safety Sciences IATSS Research*, 39, 58–71.
- Quirk, R. (2008). *Longman Dictionary of contemporary English*. England: Pearson Education.



- Saxenian, A. (1994). *Regional Advantage, Culture and Competition in Silicon Valley and Route 128*. Cambridge, MA, and London England: Harvard University Press.
- Silva J.A, Goncalves J. M, Correia M, & Marreiros, S. (2015). Airport planning process. The case of the new Lisbon airport, Finisterra . 99, 63-79. doi:DOI:10.18055/Finis4119.
- Singh, S. K. (2005). Review of Urban Transportation in India. *Journal of Public Transportation*, 8(1), 18-27.
- Sithole, G., & Zlatanova, O. (2016). Position, Location, Place and Area. An Indoor Perspective. 111-4 Prague, Czech Republic: Xxiii ISPRS Congress. *ISPRS Annals of the Photogrammetry, Remote Sensing and Spatial Information Sciences*, 88-96.
- Taffese, W. Z. (2007, February 12-14). Case-Based Reasoning and Neural Networks for Real Estate Valuation. *Paper presented at the 25th IASTED International Conference on Artificial Intelligence and Applications*.
- Weinstein, M., & Worzala, E. (2008). Graduate real estate programs: An Analysis of the Past and Present and Trends for the Future. *Journal of Real Estate Literature*, 16(3), 385-414.
- Weisbrod, G. E., & Reed, J. S. (1993). Airport Area Economic Development Model. PManchester. *Paper Presented at the PTRC International Transport Conference* (pp. 1-12). Manchester, England: PTRC.
- Yalpir, S. (2014). Forecasting Residential Real Estate Values with AHP Method and Integrated GIS. *The People, Buildings and Environment Conference*. Kroměříž, Czech Republic: International Scientific Conference.
- Yamane, T. (1967). *Statistics: An Introductory Analysis*. 2nd Edition. New York.
- Yusuf, M. A., & Adigun, J. T. (2010). The Influence of School, Sex, Location and Type of Students' Academic Performance. *International Journal of Education Science*, 2(20), 81-85.