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Airport Changing Business Model and Density of Economic Activities

Olufunto Adedotun Kanyio[1], Taofeek Kolawole Gbadamosi[2], Felix Kayode Omole[3]
[1]Department of Logistics and Transport Technology, Federal University of Technology, Akure, P.M.B. 740, Nigeria
[2]Department of Logistics and Transport Technology, Federal University of Technology, Akure, P.M.B. 740, Nigeria
[3]Department of Urban and Regional Planning, Federal University of Technology, Akure, P.M.B. 740, Nigeria

ABSTRACT

Traditionally, airports were seen as air transport infrastructures for airline operations, passenger, and cargo processing. This traditional view has evolved beyond the aeronautical function, to offering non-aeronautical equipment and services. Airports play an important role in shaping the economic activities of the communities which they serve and constitute a significant stimulus to economic and social development for the communities located in neighbouring areas of the airport. This study examines how the changed economic model of Murtala Muhammed international airport has become the centre of the economic activities' concentration within a five (5) kilometre radius which covers Ikeja, Oshodi-Isolo and Alimosho Local Government Areas. The study deployed the use of the Global Positioning System for its primary data and Google Earth for its secondary data. The study found that within the buffered zones, the airport was typically a pull factor to economic activities. Air transport freight businesses were majorly concentrated within the core, and transition zones, with 41.09% and 40.50%, while decreasing at periphery zones with 18.79%. In addition, air transport passenger economic activities increased from 25.92% at the core, to 33.55% at the transition zone, while experiencing a decrease at the periphery to 30.37%. The study concluded that the airport vicinity isthe centre of economic activities, a pull factor and a growth pole centre.

Keywords: Airport, Airport Business Model, Core Zone, Transition Zone, Periphery Zone and Economic Activities.

INTRODUCTION

Following the invention of aeroplanes as a form of transportation, towns and communities started to become poly-centralized. Due to the numerous opportunities that this kind of transportation provided, new development areas started to emerge around airports. An essential part of the air transportation system is airports. They are crucial for airline operations because they provide the whole infrastructure and the majority of the procedures required to support passenger and freight transfers and traffic. An airport is also necessary for airlines to take off, land, and maintain their fleet of aircraft. From a historical/conventional perspective, airports were only considered multimodal transportation facilities, connecting modes of transportation such as air, road, railroad, and maritime.

Airports are now podiums for business which have grown more than just transportation facilities (Gillen, 2011; Thelle and la Souronne, 2018); they are run by an expanding number of international airport firms. With the development of the airport industry, the public national sector has transitioned into a new paradigm with altered dynamics between agents, in which the airport business operates in a market that is competitive and airport management is handled by private international firms (Graham, 2014; Jimenez, Claro & De Sousa, 2014; Wiltshire, 2018). Thus, airports have developed into sophisticated businesses that require a

wide range of business abilities and talents, just like any other firm or sector.

A new business perspective is necessary to view airports as platforms connecting airlines and people. Airports should be viewed as two-sided platforms that benefit airlines and passengers alike (Gillen, 2011). Airlines will make more money if there are more passengers, and there will be more flights and more carriers if there are more passengers. In this multi-sided market perspective, airport incomes come from both airlines and passengers, with airports playing a key distribution centre function in drawing both parties and facilitating connections (Thelle and la Coursonne, 2018).

Strategically speaking, incumbent airports are in a great position to compete due to the industry's high entry barriers, robust negotiating power with suppliers and clients, and a lack of intense competitors. Additionally, airports have access to several revenue streams from a wide range of prospective clientele, including airlines, passengers, cargo operators, concessionaires, resident personnel, and even the local populace (Freathy, 2004). When compared to other industries, the passenger population served by airports and airlines generally has a big number and a medium-high socioeconomic profile (Appold and Kasarda, 2010).

Due to its potential to be a significant force in the local, regional, and national economies with effects that extend far beyond the airport fence, the new model of the airport sector has attracted the attention of organizations, economic specialists, and public/community decision-makers. Many governments have used the benefits of airports to bolster their objectives for airport expansion to promote economic growth (Meihong, 2020). As stated by Callanan (2016), the airport vicinity has transformed to be the centre of urban growth. Accentuating in their study, Luke and Walters (2010) opined that the airport new model facilitates wealth creation, vacation/leisure industry, Gross Domestic Product (GDP) growth directly or indirectly and strong potential to engage people in various employments.

Furthermore, Sanusi and Ezra (2020) underlined that the new model of an airport plays a significant part in influencing the economic activities of the areas they serve. Despite these capabilities, inadequate literature is available dealing with the new airport economic model and economic activity distribution on the African continent (excluding South Africa), particularly in Nigeria. To understand this, it is vital to identify economic activities. Therefore, the purpose of this paper is to explore based on case study evidence of a selected airport, the economic activities concentrated around an airport vicinity as a result of its changed business activities.

LITERATURE REVIEW

Airport Changing Business Model.

The airport changing business activities is a worldwide affair. All over, governments withdrew partly or fully from their airport assets ownership as a result of the funding, thereby giving rise to temporary concessions or leases of these assets to private investors, sometimes under public-private partnerships (PPP) which can be Service Contract PPP, Management Contract PPP, Lease Contract PPP or Concession Contract PPP.

Traditional Airport Business Model:

Brilha and Nobre (2019) divided the airport changing model into three categories: traditional, airport commercialization business model framework, and globalization model. The classic airport in their study plays a utilitarian and basic role, typically limited to the tasks of processing planes, people, and cargo. According to Qin and Tian (2019), all airports have historically been held by the public sector in a variety of ways, including as wholly-owned or holding businesses. The traditional business model, as emphasized by Gillen (2011), considers that the airport is a public utility and concentrates on its efficient management.The

interactions between airports and their major clients, the airlines, are essentially constrained at this point, reinforcing the airport's limited position as mere infrastructure and giving the airlines direct access to passengers and the responsibility for managing air travel. Table 1 shows the airport's old-style business model framework.

Table 1. Airport Traditional Business Model Framework

Business Model	Idea	Emphasis	Vectors	Relationship	Main Activities	Crucial Abilities
Traditional	Airport Infrastructure	Operations	Aviation	Stand-alone	Operations, Safety and Security, and Maintenance	Safety & Security

Commercialisation Airport Business Model:

The airport industry underwent a transformation in the20th century identified as the commercialization business model Graham (2014). This strategy transformed airport management into a more commercial market (Qin & Tian, 2019). To the conventional airport's aviation functions, new commercial services and equipment were added, representing the new airport's purpose as a platform for doing business (Freathy, 2004). Commercialization of airports at the terminals and the adjoining lands enhances and improves the revenue streams and relieves the financial burden.

The supply of supplementary commercial services is part of this model, and airports are typically guided by two parallel business vectors, such as aviation and non-aviation or aeronautic and non-aeronautic (Graham, 2014). According to him, the development of these non-aviation operations successfully demonstrates the new airport skills for establishing business partnerships with outside parties, making concession management a new important business competency for airports.

In addition to stores, dining options, and lodging options, airports often offer convention facilities and business parks. The advantages of the commercialization model and its superior ability to monetize the airport infrastructure, which is an important feature for privately owned airports subject to strict economic regulation, are reinforced by this new commercial reality, which is based on retail and service diversity, new competencies, and new relationships with different partners. According to a study on Incheon International Airport by Chang, Jang, and Han (2013), airport corporations increased their focus on branding and marketing initiatives throughout the commercialisation era. Table 2 shows the airport's profitable and marketable business model framework, otherwise referred to as commercialization.

Table 2 Airport Commercial Business Model Framework

Business Model	Idea	Emphasis	Relationship	Main Activities	Crucial Abilities
Commercialisation	Airport Business	1.Operations 2.Auxiliary Services	Aviation (Stand-Alone) Non-Aviation (Concessions	1. Aviation (Airside, Terminal, Safety &Security, Maintenance 2.Non-Aviation (Retail, Advertising, Car Parking, Car Rentals, Real Estate, and Cargo	1.Aviation (Operational Efficiency) 2.Non-Aviation (Concession Management

Globalization Airport Business Model

Beginning in the year 2000, the airport vision's size and scope increased. Globalization, which turned airports become global centres, was the new business model from commercialization, according to Brilha

and Nobre (2019). Globalization dynamics have underlined the critical role that airports play (Meihong, 2020). The worldwide air transport network is estimated to have carried approximately 3.6 billion passengers and 35% of the world's value-added products trade in 2015, showing how the globalized business model may optimize a region's economic potential (IATA 2017) estimates that in 2015, the global air transport network carried almost 3.6 billion passengers and 35% of the world's value-added commerce in goods, demonstrating how the globalized business model may maximize a region's economic potential.

Additionally, air travel is a crucial component of the modern global economy and is considered a type of networked system since it facilitates the exchange of people, goods, and information on a worldwide scale. Accordingly, Lordan and Sallan (2019) categorize the global airport network into seven global region airport networks (GRANs) and name the principal cities that make up the network's core. Because of their close relationships, core cities contribute significantly to the local economy.

Airport-Centered Urban Development Models Concept.

The phenomena of airport-driven development have been referred to by many different names. The three most frequently used concepts—airport city, airport corridor, and metropolis—are the focus of this study. The geographical advantage that airports represent as hubs for modal travel gives rise to the concepts of airport city and aerotropolis.

In the 1970s, the idea of an airport city first appeared in the United States (Meihong, 2020). The industrial and business parks on the airport's landside are referred to by this idea. Since then, this idea has developed and been more firmly established in an urban setting, with the implications of a broad range of land uses (Poungias, 2009). The airport city is viewed differently by many academics. According to Peneda, Reis, and Macário (2011), the airport city idea represents specifically airport-related commercial land development. As a result of the airport function change, which includes multimodal transit nodes and aviation-related commercial and real estate development, urban planners and architects view it as a new urban form (Yun, 2015; Chandu, 2017). The airport city is simply defined by economists as the concentration of economic activities at and surrounding the airport (ACRP Report 27, 2010). The airport city is seen by airport operators as a marketing and business tactic to draw businesses to the airport's grounds and surrounding area (Freestone & Wiesel, 2014).

The idea of Aerotropolis was created in 1939 by New York-based commercial artist Nicholas DeSantis (Mechanix, 2018). The term "aerotropolis" has been used in a variety of contexts over the years, most recently by and afterwards by Dr John Kasarda. Historically, airports have been placed 15 to 30 kilometres distant from their associated cities, mostly for air travel, and they have little to no economic impact on the surrounding areas (Wang, Hong, Chen andJiang, 2011). Kasarda (1991) popularized the idea of the "aerotropolis" to describe the possibilities of an agglomeration centred around an airport. This paradigm of the airport city's expansion is based on logistics and the idea of "survival of the fastest.". Most airports that follow this concept have developed into networks of commercial clusters, shopping and entertainment venues, lodging options, and service providers (AlkaabiDebbageandTouq, 2013). The concept of aerotropolis implies a dense spatial concentration of vital infrastructure around a key transportation hub, making it vulnerable to terrorist attacks in addition to natural disasters (Chohan, 2019).

From the major airports, transportation lines are radiating outward up to 30 kilometres from the Aerotropolis. The term "airport corridor" describes the zone of integrated main surface infrastructure and real estate development that runs along a straight line between an airport and a city. Because it is neither a city nor an airport, this area is frequently referred to asthe city's backyard, a governmental vacuum filled by small municipalities and feeble regional authorities, outside the purview of city or metropolitan authorities, and unconsidered by urban planners (Schaafsma, Amkreutz, and Güller 2008).

Empirical Studies on Airport Business Model and Concentration of Economic Activities.

Specifically for businesses that adopt or pursue a just-in-time strategy, Flores-Fillol, Garcia-Lopez, and Nicolini's (2013) research on the distribution of economic activities around airports validate logistics as an increasingly important issue for firms in search of flexibility, speed, and agility, as well as for price and quality seeking. The same writers assert that as e-tailers gain popularity, airports are seen as a new kind of central business area with the potential to convert flight traffic into large earnings. The economic activities near the airport were discovered by Konstantinos, Giovanni,and Amedeo (2013) as part of their study on modelling and controlling airport performance. The study discovered that the services for airline employees and passengers (hotels, restaurants, and additional car rental facilities), airport-related freight services, and services directly supporting the operation of the airport flight kitchens and aircraft maintenance services (shipping, freight forwarding, customs and sometimes foreign trade zones). These kinds of operations are frequently situated on the adjacent property set aside for such use. They usually begin a year after the airport's opening. The tourist economy businesses, including lodging, are reportedly beginning to congregate around airports, according to a study by InterVISTAS Ltd (2015), hotels, dining establishments, meeting centres, exposition facilities, and entertainment). Professional services, educational services, wholesalers, researchers, real estate brokers, and office managers are some industry sectors that have a higher-than-average inclination to congregate around significant hub airports.

In order to contribute to a theoretical framework, Mokhele (2016) studied the spatial economic characteristics of airport-centric developments in Cape Town and Johannesburg. The primary method for gathering data was a survey, and the conception of the growth pole theory served as the major source of guidance for the data. The study discovered that Cape Town and/or Tambo airport have economic characteristics that operate as powerful pull pressures in the clustering of businesses. Due to linkages that developed both within the research areas and between airport-centric businesses and the airport, the study also discovered that both airports exhibit growth pole features. Major econometric research on airport effects in the United States is summarized by Mosbah and Ryerson (2016). According to these empirical studies, airports and air traffic have a favourable impact on economic activity in US urban regions.

According to Coetzee and Swanepoel (2017), the many businesses situated close to the airport are those that are associated with the airport. These businesses are located within a 5- to a 10-kilometre range of an airport, and they engage in secondary and tertiary activities for which the airport's proximity is crucial. According to the report, there are around 500 businesses at Frankfurt Airport, 520 businesses at Amsterdam Schiphol, and 611 businesses at Paris CDG as of the year 2000.

Airports are now a new type of central business district (CBD), according to Flores-Fillol, Gracia-Lopez, and Nicooni (2016) in their study. Airports have the capacity to leverage air commerce into substantial profits. Commercial businesses must locate close enough to take advantage of a variety of services that are offered by a group of service providers close to an airport. Due to the geographic concentration of these services around airports, businesses can take advantage of convenient access to several facilities. Consumers, who also want to live close to the airport, compete with businesses.

METHODOLOGY

The study adopted a descriptive design of the survey type. The source of data was primary. The instrument for data collection was through active participation in the communities within a five (5) kilometre radius using a handheld Geographic Positioning System (GPS) tool to acquire the data. The procedure for gathering the data for this study involved direct participation from the researcher and field helpers. There were 24 of them in total. Eight (8) people for every area of research. Before being hired, the field assistants

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received training on using the GPS and making suitable records as well as an introduction to the research topic. To analyse the data, Points were then overlaid on the images to help identify land use features by analyzing the coordinates of the evenly dispersed ground control points over the photographed areas during the fieldwork. Subsets of the photos were then constructed that matched the geometry and shape of the research sites.

Figure 1 shows how the five-kilometre buffer was located using Google Earth and that it is included within three Lagos State local government areas: Ikeja, Oshodi-Isolo, and Alimosho. The residents in the highly urbanized Ikeja local government region work in white-collar jobs, and trading and other economic activities are important there (Ikeja Local Government Area, [LGA], 1996). Nigerians from both the middle class and the lower class live in Oshodi-Isolo Local Government. Residents in Lagos have an advantage over other areas in terms of location due to its close proximity to and accessibility to both international and local airports. AworisEgba/Egabdo, Ijebus, and non-natives live in Alimosho Local Government, which is a semi-urban area. Notable main villages include Egbeda, Shasha, Akowonjo, Idimu, Banmake, Alaguntan, etc. (Bakare, Adesina-Uthman & Lawal, 2015).

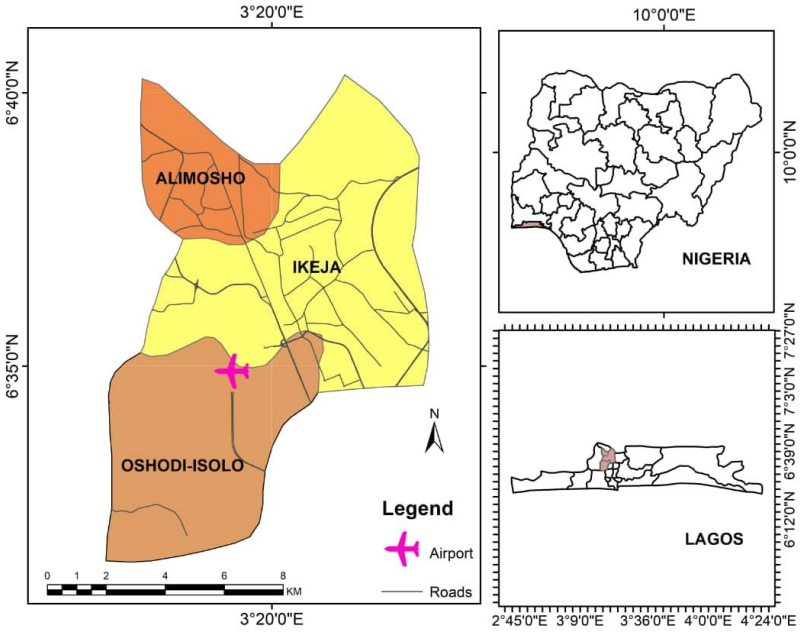

Figure .1 Local Government Areas within 5km radius of Murtala Muhammed International Airport, Lago

RESULTS

Distribution of Economic Activities around MMIA.

The discovered economic activities were grouped into five (5) primary categories that are extremely related to and dependent on the operations and activities of the airport in order to meet the study's goal.

1. Direct airport business: These are establishments situated in airports. Operations are carried out immediately on airport property for the airport or air transportation industry (Avionics Engineering Companies, Aircraft maintenance and repairs, Airport Security Outfits)
2. Passenger-related business including air travel: passenger-focused economic activities in the aviation industry are complementary to support services. They are the commercial activities necessary for the material comfort of passengers on aircraft.

3. Air Cargo/ Freight. These are Companies engaged in air cargo/freight services
4. Air Transport Support Business. These are businesses that support air travel: They are ventures that advance not only the operations of airlines but also the movement of people and cargo.
5. Other Economic Activities: These include businesses such as educational institutions (schools), venues for special events and gatherings, gas stations, and small businesses that are unrelated to the airport, air travel, passengers, or cargo. Office buildings, retail stores, laundromats, and advertising firms).

Spatial Structure of Economic Activities around MMIA.

To identify the spatial structure of various economic activities around the airport location, the airport territory was partitioned into three (3) zones inside a concentric ring of 1.6 km from the airport gate to enable effective analysis. This was done to identify the spatial structure of various economic activities around the airport location per distance band (distance measured from the geographical centre of the airport). The distances between them are 0 km to 1.6 km for the core zone which can also be referred to as the airport precinct, 1.7 km to 3.2 km for the Transition zone, and 3.3 km to 5 km for the Periphery zone from the centre of the airport. The core zone area of Lagos is made up of Ikeja (Ipodo, Anifowoshe, Old Works Yard, Government Reserved Area [GRA]), Onipetesi, and Oshodi-Isolo (Mafoluku, Ajao Estate, Ewutuntun), with Airport Road, International Airport Road, and Agege Motor Road as the corridors under consideration (Ikeja). The corridors being looked at are the Mobolaji Bank Anthony Way and the Lagos Abeokuta Express Way.

The transition Zone consists of Maryland, and Shogunle and the corridor examined are Mobolaji Bank Anthony way, and Lagos Abeokuta Express Way (Shogunle). Alimosho is the region this study designates as peripheral (Egbeda, Shasha). Agege Motorway (Alimosho) and Akowonjo Road are the two corridors under investigation (Alimosho).

Based on research done on economic activity surrounding the study airports using GPS handheld devices, two thousand three hundred and twenty-three (2323) business locations in the surrounding areas of MMIA Ikeja, Lagos, were identified as the coordinate reference positions of the location of various economic activities.

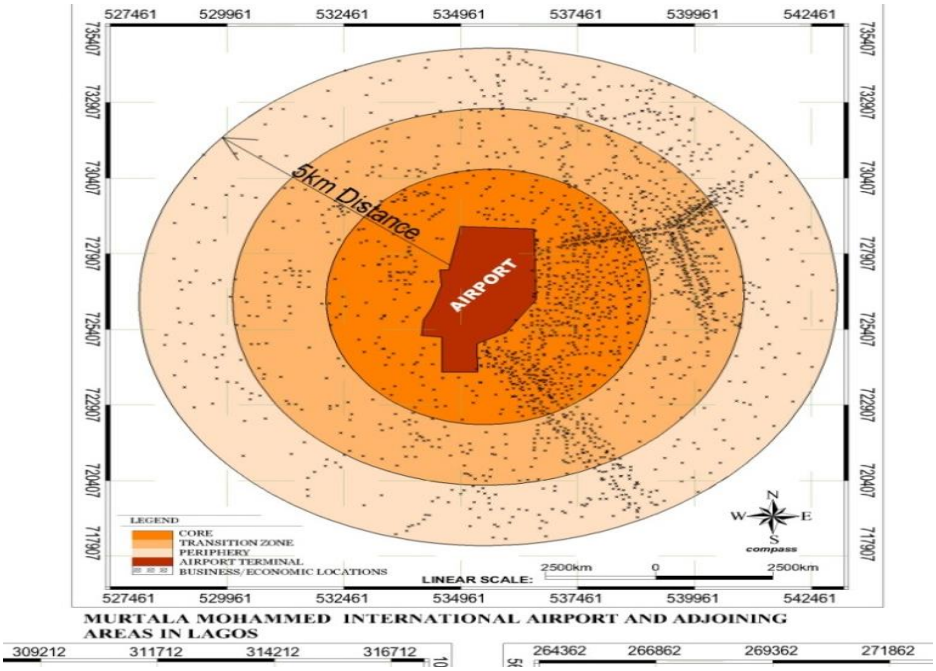

Figure 1. Concentric-Ring of Economic Activities Around Airports of Study
Source: Author's Field Work, 2022

The Core Zones of the Adjoining Lands of the Study Areas.

The outcome from the GPS and satellite photos is shown in Figure 2. There are seven hundred and ninety-one (791) concentrated economic activities in the innermost ring (the core) of the MMIA. The study's findings showed that the highest concentration of economic activities is those related to air travel for freight/cargo with 41.1%. The second highest density are those associated with air travel for passengers which accounted for 25.9%. this was followed by 16.6% of economic activity which supported air travel. Other economic activities not related to airport and air transport sector has a concentration of 9.5 %, while the density of at airports direct economic activities accounted for 6.9% only. This concurs with the Washington Department of Transportation(2015) conclusion that the design and placement of airports offer a secure and practical setting for air cargo shipments and deliveries. Additionally, the research concurs that it also offers support for linked commercial endeavors. It also corroborates with the study of Coetzee and Swanepoel (2017) that air freight/cargo economic activities are substantially higher than any other business category in close proximity to airport vicinity.

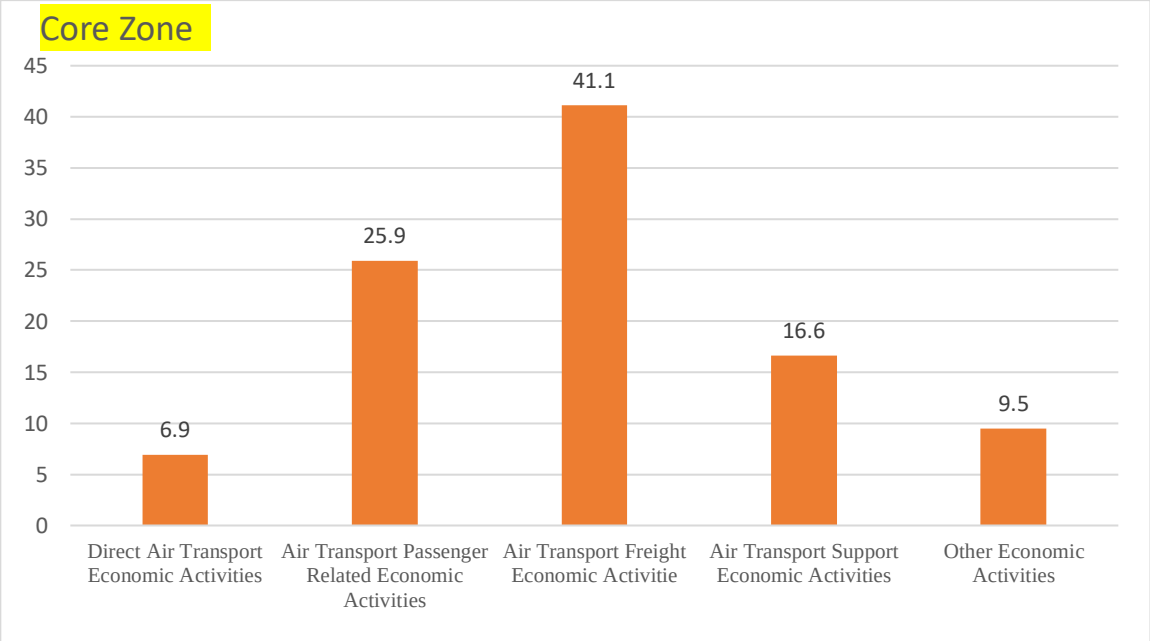

Figure 2. The Core Zones of the Adjoining Lands.

The Adjoining Lands of the Study Areas' Transition Zones

The outcome from the GPS and satellite photos is shown in Figure 3. 936 different economic activities are distributed throughout the MMIA transition zone. The study's findings showed that 2.9% of economic activity was tied to direct airport activities, 33.5% to passenger-related activities in the aviation industry, and 40.5% to freight-related activities. For air transport support economic activity, it was 13.5%, while other economic activities accounted for 9.6%. The air transport freight/cargo business still has the highest concentration followed by the air transport passenger-related business. This reflects the globalization effect of the airport's changed business model as air freight is now important means of shipping goods (Meihong, 2020). It corroborates the study of Babao?lu, and Kürkçüo?lu (2020) that air transport freight economic activities are located in close proximity to the airport vicinity to benefit from the ease and low cost of transporting goods from the airport.

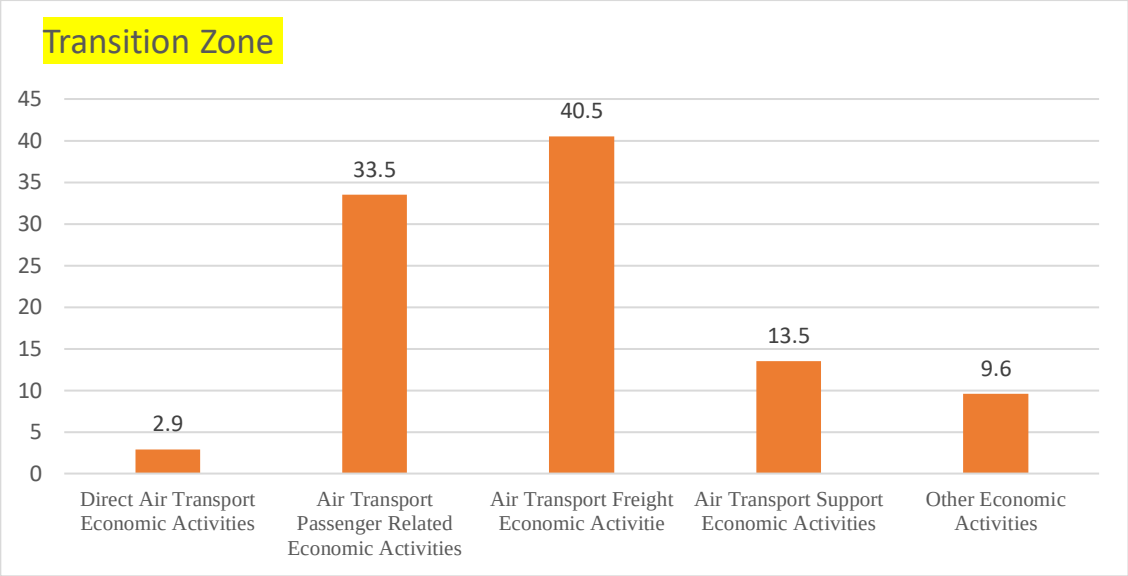

Figure 3. The Transition Zone of the Adjoining Lands.

The Periphery Zones of the Adjoining Lands of the Study Areas

From figure 4, five hundred and ninety-six (596) economic activities in total were found using GPS and satellite imagery. Direct airport economic activity made up 2.3% of economic activity in the research region, compared to 30.4% of economic activity linked to air travel for passengers and 18.8% of economic activity related to air travel for freight. Additionally, the economic activities that support air travel were reported to be 28.4%, whereas other economic activities were 20.1%.

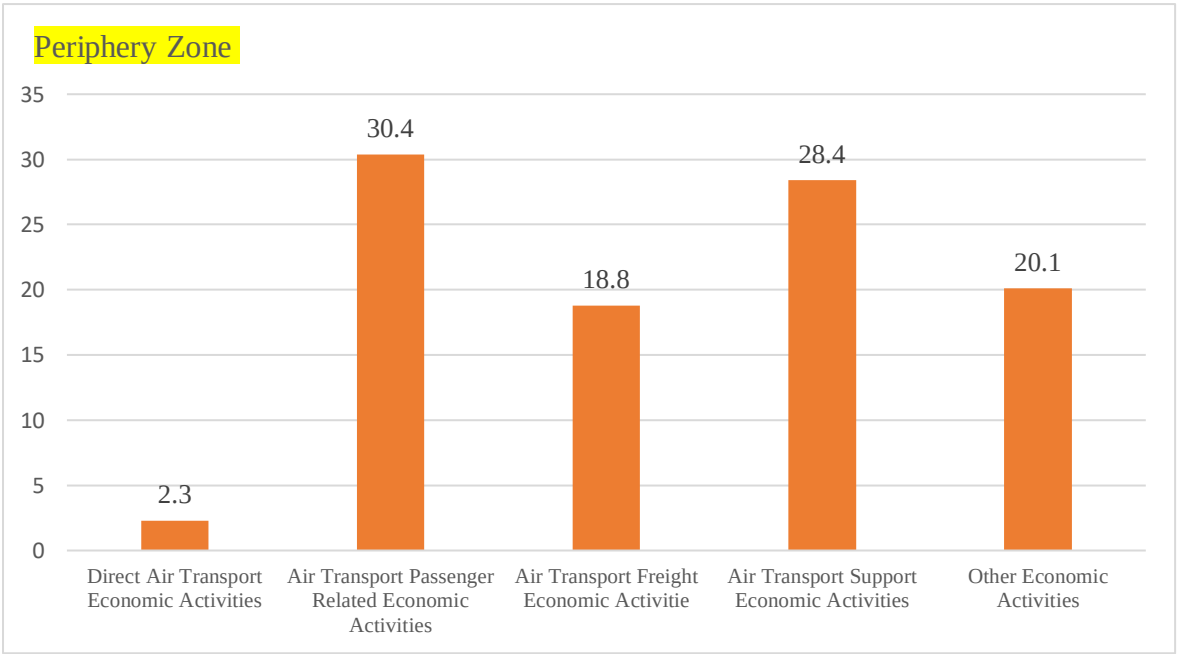

Figure 4. The Periphery Zone of the Adjoining Lands.

Source: Author's Field Work, 2022.

SUMMARY OF THE FINDINGS

The study examined how airport-changed economic models influenced the density of economic activities in

the study areas. Based on the findings of this study, it was clear that the changed economic model of Murtala Muhammed International airport has propelled different economic activities within a (5) kilometres radius of the area. Similarly, the airport vicinity has experienced changes in the various economic activities with respect to distance. The result also reveals that economic activities concentrated at, and around airports, in ranking order were majorly air transport freight/cargo economic activities, air transport passenger economic activities, air transport business support economic activities, and lastly direct airport economic activities. This also supports the study by Freeman and Baker (2011) who stated that the airport vicinity is increasingly becoming an urban landscape for non-aeronautical services.

CONCLUSIONS

From this study, it is quite evident that the study has contributed to filling the gap in the research problem, especially in Nigeria on the change in the economic business model of airports and concentration of economic activities. This study also helps in understanding the density of economic activities in the airport vicinity which is crucial for planners, government authorities, development professionals, developers and decision-makers on the ever-changing aspects of the airport industry, its changing relationships with the surrounding and space economies The study concluded that the changed economic models of Murtala Muhammed International Airport has become a pull factor, which is a positive factor influencing business movement motivation and attraction. Also, it can be seen as a growth pole centre inducing further development of economic activities throughout its zones of influence. It corroborates with the study of Percoco (2010), who examined the impact of airports on Italian provinces and found out that airports are strategy transport infrastructure crucial in the growth and development of not only for the country but also its zone of influence and economic activities.

RECOMMENDATIONS

Based on the findings, the followings recommendations were made:

- The government and the planning authorities should have a clear knowledge of its land use planning act on the location of economic activities.
- There is a need to put adequate development control mechanisms in place for maximum effectiveness, and ensure strict compliance to physical development in the study area to avoid congestion.

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