

## Impact of Urban Growth on Market activities in Gombe Metropolis

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### Abstract

Urban growth concept has dragged the attention of several scholars of different fields of study for decades. Urban growth refers to expansion of urban centres in size due population growth, which hiked the number of buildings in urban centres around the world. The finding of the paper indicate that Gombe Metropolis expanded by (85 hectares) each year from 2000 to 2010 and the expansion of Gombe Metropolis occur in all direction. The rate at which Gombe Metropolis expand grown to (203 hectares) each year from 2010 up to date. Therefore, the rate at which Gombe metropolis expanded increases by 138% from 2010 to date and how number of markets increases to 16 currently from 12 in the year 2010. This paper study the Impact of urban growth on market in Gombe Metropolis. Coordinate of markets of existing markets was collected. For second set of data used in this paper i.e. secondary data which include map of Gombe metropolis, related journals, text books, published and unpublished document, and Newspaper were consulted. The data generated from questionnaire administration were analysed using tables, graphs and charts. Satellite images showing how urban growth is taken place in Gombe Metropolis were also analysed. The study examines the impact of urban growth on Gombe Metropolis markets activities over the period of study. The findings of the study indicate emergence of new markets in the study area over the years of study as a result of urban expansion that occur in Gombe Metropolis. It also indicated that the new established markets were located in areas where urban growth take place in study area and these new markets are patronized by people within the environment or vicinity of the markets. Most of the newly emerged markets are located at the periphery of the town where urban expansions occur rapidly.

### Keywords

Maret Urban, Urban Growth, Population Growth, Market Activities

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## 1. INTRODUCTION

Urbanization is not solely a modern phenomenon, but rapid and historic changes that occur and replaced predominant culture of urban center. The process of urbanization is an increasing in both the developed and developing nations. However, rapid urbanization particularly in Nigerian large cities, and the associated problems of unemployment, poverty, inadequate health, poor sanitation, urban slums and environmental degradation pose a formidable challenges. The Urban Heat Island phenomenon has become a growing concern. The concern about this phenomena has increased over the recent years. It has been observed by different researchers that, environmental degradation is caused by several factors including rapid urbanization due to over-population, accelerated industrialization, unplanned and uncoordinated physical development resulting from poor urban management and ineffective control policies, insufficient

urban infrastructure such as housing and efficient transportation system to cater for the population upsurge. In order to attain good environmental sustainability in Nigerian urban centres (Muhammed et al., 2015).

Accelerated urban growth is usually associated with and driven by the population concentration in an area. The extent of urbanisation or its growth drives the change in land use/cover pattern. Land use and land cover changes may have adverse impacts on ecology of the area, especially hydro-geomorphology and vegetation. The process of urbanization has a considerable hydrological impact in terms of influencing the nature of runoff and other hydrological characteristics, delivering pollutants to rivers and causing erosion (Jat et al., 2008).

According Dorward et al. (2008) market systems play a vital role in sound economies as mechanisms for both exchange and for the coordination of that exchange. Coor-

minated exchange for agricultural products which are both produced and consumed domestically play a significant role in developing countries, as production of these products serve as major contribution to GDP, their consumption represents an important part of consumer expenditure (particularly of the poor), and effective and efficient exchange in these products plays an important role linking farm and non-farm sectors and allowing the movement of employment from agriculture to other sectors.

Quigley (1998) identify four periods of extensive study of cities by economists. Each of these periods is by an increased understanding of the economics of urban areas and the unique role played by these cities in the modern economy. The first of these periods occurred in the decade after World War I only about ten years after the beginning of revolutionized transport of goods within urban areas. This period included the first systematic empirical analysis of the forces affecting the location of firms and households within cities. The second periods though not in chronological order began in the mid-1960s. It formalized many of the insights about location incentives within urban areas which had been uncovered a half century before, mixed them with the logic of Heinrich von Thunen's (1826) ancient theories about agricultural crops and land values, and applied them to the household sector. The third concentrated period of advancement in our understanding of cities also arose from intensive analysis of the nation's primary city, New York. In the late 1950s, the Regional Plan Association and a group of economists at Harvard combined in a three-year study of the New York Metropolitan Region an area which contained 10 percent of the U.S. population at the time and which stretched from Monmouth County, New Jersey, to Fairfield County, Connecticut. We are in the midst of the fourth of these bursts of advancement in understanding the economics of cities. This era was ushered in by a reconsideration in the 1980s of the nature of economic growth. It has drawn new attention to aggregate cross-section and time-series data on cities, using variation between cities as the vehicle for analyzing and evaluating the nature and causes of economic growth.

## 2. EXPERIMENTAL SECTION

This entail how data was obtained and analysed throughout the research. The research have solely rely on secondary data such as; published, unpublished, newspapers magazines, books and journals. Data from governmental and non-governmental agencies have been used in the literature of the paper. Data such satellite image haven classified using ArcGIS technology to dictate the real picture of the research problem. Coordinate of Gombe metropolis markets have been used for mapping the markets locations. Regression analysis haven carried out in order to investigate the impact of urban growth on market activities in the study area.

## 2.1 Background of Study Area

### 2.1.1 Location, position and size

The study area is located between Latitude 10° 15' 02" N – 10° 20' 00" N and between longitude 11° 05' 00" E – 11° 15' 05" E It shares common boundary with Akko Local Government Area in south and west, Yamaltu - Deba L.G.A. to the east and Kwami L.G.A. to the north, the study area of this research also includes surrounding local government areas like yamaltu-deba to the east and akko LGA to the west, north and south of Gombe metropolis. It also occupies a total land area of 52Km<sup>2</sup>. It is the capital of Gombe State with a population of 266,844 (NPC, 2006). Today the population is projected to be 399,531 persons using 3.2% growth rate Gombe State Office, (NPC, 2009.)

### 2.2 Trend of Urbanisation

According to Kassa (2013), findings indicated that, up to 2010, the city of Addis Ababa expanded averagely for about 1 kilo meter radius per year in all directions but from 2020 onward the increase show reduction by half (0.5 km) radius due to vertical growth of the city. But the growth rate of the city is spread in double rate along main outlets than at all side. At present, the existing catchment of the city grows and expands in the radius of 30 km along the five highway routes, but the city on average expands about 15 km radius in all sides. Thus, the rate of both conurbation and urban sprawl along the five outlets doubles more than that found within all directions. The ideal strategy to bring formal growth in and around the city should need strong integrative work with the heads of sub-cities and proximate rural areas with timely and proper supervision to bring the required growth of the city as intended in the master plan.

According to Muhammed et al. (2015) the process of Urbanization is more complex than population growth in the cities. It involves changes in the economy, social and political structure of a place, in most cases, rapid urban growth is responsible for many environmental and social changes in the urban environment and its effect are strongly related to global change issues, the rapid growth of cities strains their capacity to provide services such as energy, education, health care, transportation, sanitation and physical security.

Up to this point, however, advocates of compact development have failed to recognize what may be a serious, unintended, consequence of containment: its potential to increase vulnerability to natural hazards. By limiting the amount of land available for development, containment policies can lead to higher land prices. This, in turn, can increase pressures to develop lower-priced hazardous land that was passed over in the initial wave of urban development. Hazardous areas particularly subject to intensified development include areas subject to coastal erosion, flooding (floodplains and coastal high-hazard and storm surge zones), ground failure (slide-prone slopes, earthquake fault zones and liquefaction zones) and subsidence. In short, a by-product of containment policies can be increased exposure

to loss of lives and increased property damage in natural disasters (Burby et al., 2001).

Cities first emerge some ten thousand years ago, and were located mainly in Southeast Asia and the Mediterranean. Urban expansion is multi-directional and dynamic aspect. This is due to the fact that its causes, forms, and consequences are varying across continents, countries, and even within a given country. According to this chapter, about urban expansion, its dimension, and the theories of urban expansion are dealt with. In addition, from related literatures, causes, forms, and consequences of urban expansion are reviewed and incorporated in this review. Related literature, dealing with an overview of Rural-Urban Linkages (RUL) in general context of Ethiopia in particular, is reviewed. Since the Industrial Revolution, large cities have sprung up in Europe and the United States. Today, the largest and fastest-growing cities are located in developing countries of Africa, Asia, Central and South America. Currently, about half of the world's population is urbanized, and this is projected to increase to 80-90 percent in forty years' time. In regard to future trends, it is estimated that 93 percent of urban growth would occur in Asia and Africa and to a lesser extent in Latin America and the Caribbean (UN-Habitat, 2006). The report further states that by 2050 over six billion people, representing two thirds of humanity, would be living in towns and cities. This means the rate at which urbanisation is occurring is very rapid and alarming. Consequently, this phenomenal growth requires much attention by policy makers both in Africa and the world at large.

The physical appearance of the world is changing more rapidly now than at any time in history. The trend is primarily responsible for the transformation is the rapid growth of the world population. People are migrating to cities at a rate not seen since the industrial revolution filled the cities of the developed world more than a century ago (UN-Habitat, 2006). In 2000, world population reached 6.1 billion. It is now growing at an annual rate of 1.2 percent and it is projected to reach 8 billion by 2030. Africa however has witnessed an unprecedented population increase from 221 million in 1950 to 785 million in 2000.

Despite a decline in population growth rates since the mid-1980s, Africa became the world's fastest growing region at an estimated rate of 2.4 percent per annum. Although future growth rates are expected to decrease, the region will reach an estimated population of 1.4 billion by the year 2030 (UNDP, 2002). The percentage urban is predicted to differ from 47 percent in East Africa to 74 percent in Southern Africa. Despite such overall rapid urbanisation, low levels of urbanisation characterise with least developed countries such as Burkina Faso, Burundi and Ethiopia. All of these countries had fewer than 20 percent of their population dwelling in urban areas in 1990. In Burundi, for example, only 5.5 percent of the population are found in urban centers and it is predicted that it will be fewer than 20 percent

urban in 2025. These high growth rates will persist to the end of the century due to demographic changes caused by a higher proportion of youth population. Urban population of Africa is projected to grow at 3 percent per annum over the next two decades. This rate will however be six times the projected rate for industrialized countries (Habitat, 2006).

These new forms of transportation were used to facilitate the sprawling of suburbs, a type of urban growth wasteful from the economic standpoint and disadvantageous socially. Coupled with the rise of real incomes, rapid transport has enabled the people moving out from the centers to find the open residential surroundings they desired. But they and the numerous immigrants from rural areas have obtained these surroundings at the expense of long and costly daily journeys to and from work. Local community life has been weakened or destroyed, and access to the country made more difficult for the large numbers of residents still left in the city centers (Nechyba and Walsh, 2004).

In order to protect, the loss of fertile arable land and to make it available, affordable housing units with better public transport accessibility, it is necessary to engage and adopt an alternative sustainable urban development pattern. The sustainable urban development concepts like Compact city, New Urbanism, Transport Oriented Development and Smart Growth which are required to respond to the increasing need for a resource-conserving, sustainable, and people-centric city, have already found enthusiastic supporters among governments, urban development agencies, planners and urban designers in many parts of the world outside India (Chadchan and Shankar, 2012). On the other hand, majority of Nigerian cities have become areas of massive urban sprawl that are serious prone to environmental problems and widespread poverty due to lack of concern shown by the government and improper planning thereby hindering environmental sustainability (Muhammed et al., 2015).

Urbanization is not solely a modern phenomenon, but rapid and historic changes that occur and replaced the predominant culture of urban center. The process of urbanization is an increasing one in both the developed and developing nations. However, rapid urbanization particularly in Nigerian large cities, and the associated problems of unemployment, poverty, inadequate health, poor sanitation, urban slums and environmental degradation pose a formidable challenge. The Urban Heat Island phenomenon has become a growing concern. The concern about this phenomenon has increased over the recent years. It has been observed by different researchers that, environmental degradation is caused by several factors including rapid urbanization due to overpopulation, accelerated industrialization, unplanned and uncoordinated physical development resulting from poor urban management and ineffective control policies, insufficient urban infrastructure such as housing and efficient transportation system to cater for the population upsurge. In order to attain good environmental sustainability in Nigerian urban

centres (Muhammed et al., 2015).

## 2.3 Causes of Urbanisation

### 2.3.1 Natural population Increase

The major cause of urbanisation is the fast urban population growth in Nigeria cities, rapid population growth driven by declining mortality and persistent high fertility: urban natural increase plays a significant role in urban expansion which on the other hand led to increase in buildup areas of Nigeria Urban centers Nigeria's urban population has increased rapidly over the past 50 years and will continue to grow relatively fast in the coming decades, although how fast is a matter of some dispute. Nigeria's urban population (the urbanisation rate is around 50 percent currently, with an overall population estimated at 170 million) will nonetheless likely double within the next 30 years, possibly much sooner.

### 2.3.2 Rural-Urban Migration

While rural-urban migration also contributed a lot to urban growth, the significance of urban natural increase and reclassification due to rural densification have been widely underappreciated while the role of rural-urban migration has likely been overstated in Nigeria, and indeed sub-Saharan Africa (SSA) more generally (Robin Bloch 2015).

## 2.4 Significance of Urban Growth on Market activities

### 2.4.1 Centre for Market.

According to Satterthwaite (2004), the surrounding areas of urban centres are mostly engaged in agricultural production either for local consumers or as links to national and export markets, urban centres act as access to market which is the pre-requisite to increasing rural agricultural incomes. Proximity also contributes to minimize the risks of perishable products to produce timely to market areas and to get affordable transportation.

### 2.4.2 Access to employment.

As to the view of Kamete and Tvedten (2006) assure that people who live around urban centres, because of their proximity, have a better access to employment and modern way of living than those who far rural dwellers. Besides, urban centres create employment opportunities through the development of small and micro enterprises and cooperatives.

### 2.4.3 Access to social amenities

parks and gardens. Therefore, people rush to urban centers to have access to these facilities, in order to comfort their lives.

#### Access to education

Most of the tertiary institution of developing countries are found in urban center. However, part population that desire to acquire high education have to move to urban pursue the dreams of attending high institutions such as universities, colleges and poly techniques etc.

### 2.4.4 Urban Growth Effects

Urban growth exert tremendous effects both on living environment by affecting the abiotic component of the environment, which include water cycle, air quality and soil features. Nevertheless, it also affect the biotic component of the environment through conversion of vegetation areas to residential areas. This on the other hand affect biodiversity.

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### 2.4.6 Environmental effects of Urban Growth

Michael P. J. 2001 identified Environmental effects of Urban Growth as follows: Loss of environmentally fragile lands, Reduced regional open space, Greater air pollution, Higher energy consumption, Decreased aesthetic appeal of landscape, Loss of farmland, Reduced diversity of species, Increased runoff of storm water, Increased risk of flooding , Excessive removal of native vegetation, Monotonous (and regionally inappropriate) residential visual environment, Absence of mountain views, Presence of ecologically wasteful golf courses, Ecosystem fragmentation.

### 2.4.7 Social Effect of Urban Growth

Conflicts associated with land acquisition. (Kanji, 2005). Causes traffic congestion Inflation of house rent It create social stratification of residential areas Increase in crime rate

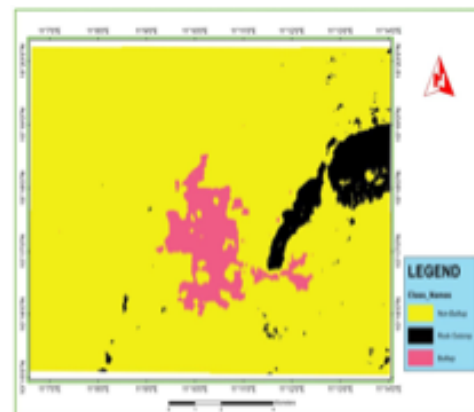
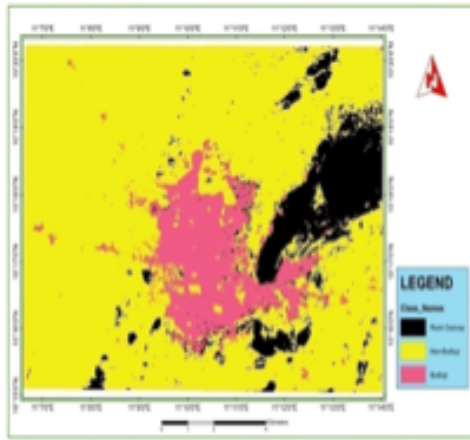


Figure 1. Classified Image of Gombe Metropolis (2000)

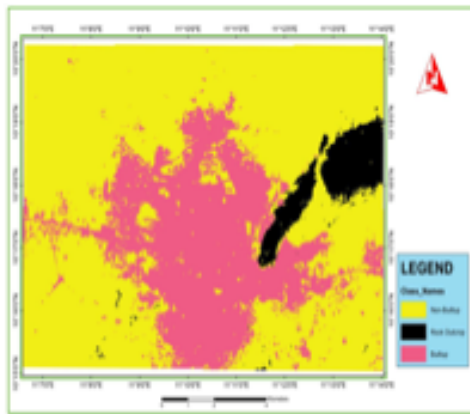
Source: Researcher's Analysis

## 3. RESULTS AND DISCUSSION

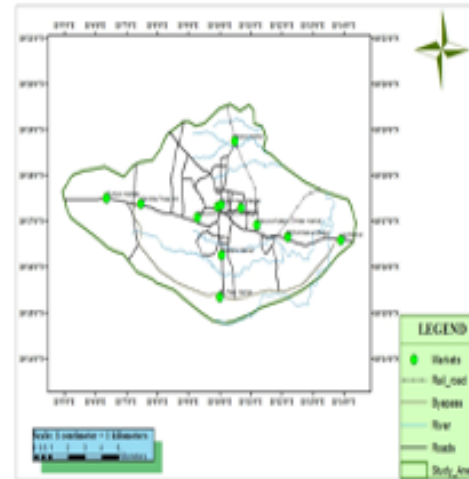
The regression analysis result of the research show (Multiple R = 0.73) which indicate that a strong and perfect positive



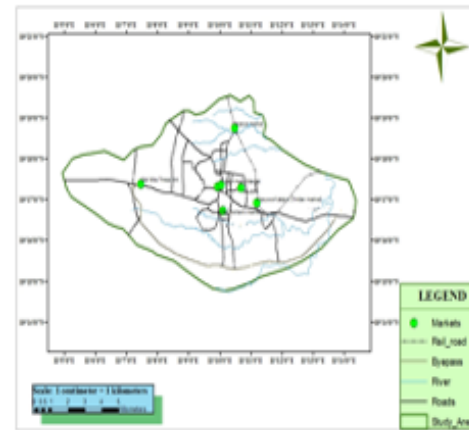
**Figure 2.** Classified Image of Gombe Metropolis (2010)  
Source: Researcher’s Analysis



**Figure 3.** Classified Image of Gombe Metropolis (2020)  
Source: Researcher’s Analysis



**Figure 4.** Map of Gombe showing the location of markets at the year 2000



**Figure 5.** Map of Gombe showing the location of markets at the year 2010

relationship co-exist between Urban Growth and markets activities in Gombe Metropolis from 2000 to 2020. The result indicate that a strong and perfect positive relationship co-exist between markets activities and urban growth in Gombe Metropolis (multiple R = 0.94). And  $(r^2) = 0.88$  indicate a good fit. 88% of the markets activities taken place in Gombe metropolis is determined and explained by the independent variable Urban expansion or we can say Urban Growth determined 89% of the markets activities in Gombe metropolis from 2000 to 2020. The closer is to one the better is regression line (read on) fit the data. The significance  $F = 0.22$  determine if the regression analysis predict markets activities significantly or the result is reliable.

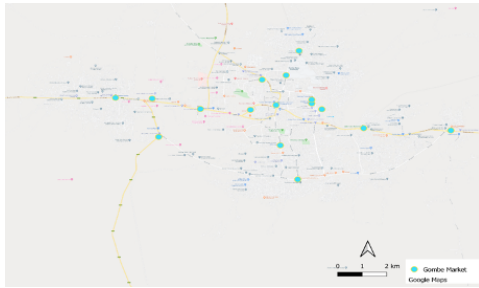
The finding of the paper indicate that Gombe Metropolis expanded by (85 hectares) each year from 2000 to 2010 and the expansion of Gombe Metropolis occur in all direction. The rate at which Gombe Metropolis expand grown to (203 hectares) each year from 2010 up to date. Therefore, the rate at which Gombe metropolis expanded increases by 138% from 2010 to date and how number of markets increases to

16 with numerous howking areas currently from 12 in the year 2010.

The result of the research shows that 88% of the market activities taken place in Gombe Metropolis are determined by urban growth all other factors been equal. Nevertheless, the finding of the research indicate how influential urban growth is on market activities of Gombe Metropolis. As Gombe Metropolis expand market activities also increases, which signified a strong positive relation between urban expansion and market activities.

Result of the research demonstrated that most of the market of the study area are situated near the main roads which in some cases extended up to the road site as indicated in fig. 1.6. The way is used to be in most West African countries

The result of the research show that urban growth has great impact on market activities in Gombe Metropolis,



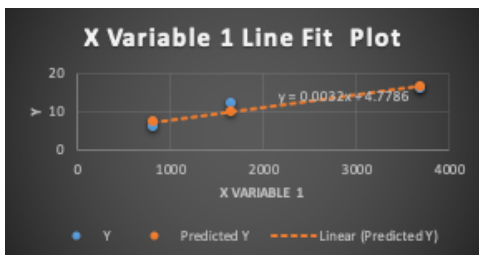
**Figure 6.** Map showing distribution of markets in Gombe Metropolis at the year 2020

Source researcher analysis



**Figure 7.** Google earth image showing markets distribution in Gombe Metropolis in the year 2020

Source researcher analysis



**Figure 8**

**Table 1.** Extend of Urban Growth of Gombe Metropolis in Hectares

Year	Urban Growth in hectare	Number of markets
2000	809.28h	6
2010	1,655.05h	12
2020	3,689.01h	16

Source: Ministry of environment Gombe State (2020)

urban expansion led to emergence of new markets in the study area. However, most of the newly established markets of the study area are situated in areas where urban expansion take place such as; Arawa, Tumfure, Liji and Bypass etc.

**4. CONCLUSIONS**

The world experience unprecedented urban expansion recently, Gombe Metropolis experience unusual urban expansion. The result of the research have demonstrated the nature of relationship that exist between urban growth and market activities the study area. Urban growth have strong positive relation with markets activities in Gombe Metropolis as indicated by the result of the regression analysis carried out in the research, with (multiple R = 0.94 which signifies a strong relationship), while ( $r^2=0.88$ ) which mean urban expansion determine 88% of market activities taken place in Gombe Metropolis. Study area expand at 84 hectares each year 2000 to 2010 and 203 hectares each year from 2010 to date. While number of markets grown to 12 from 2000 to 2010 which was initially 6 in 2000, and increase to 16 with several howking areas in 2020. The result of the research has shown how Urban expansion led to emergence of new markets mostly situated in areas where urban growth take place in the study e.g. Tumfure market, Liji market, Arawa market and Bypass market as shown in fig. 1.6.

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