



CLASSIFICATION OF SETTLEMENTS BY ECONOMIC POTENTIALS IN THE SOUTHERN REGION OF NIGER STATE: A LOCATION QUOTIENT APPROACH

KLASYFIKACJA OSAD WEDŁUG POTENCJAŁU GOSPODARCZEGO W POŁUDNIOWYM REGIONIE STANU NIGER (W NIGERII): PODEJŚCIE OPARTE NA ILORAZIE LOKALIZACJI

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Abstract

Regional economic activities and developments are measured through various techniques where Location Quotient (LQ) is one of the most reliable techniques. This paper classifies the settlements by economic potentials in the southern region of Niger state using the LQ. A structured questionnaire was administered to 1.040 in the 37 rural communities selected from 37 districts in 8 LGAs in the Niger South Federal constituency in Niger State. The data collected was analysed using LQ. Findings of the study in terms of economic potentials of the region, reveals that communities are mainly engaged in basic economic activities; including the cultivation of food crops (rice, maize, beans, millet and yam); cultivation of cash crops (benisead, ground nut, vegetable, cassava and melon), plantation agriculture (palm, kola nut, cashew and sugar cane). Findings in terms of basic economy revealed that Egbako has the highest LQ with an average score of 0.06, and is closely followed by Takuma, Batako, Kusoyaba, Mukugi and Kalmo, with an average LQ score of 0.04 each, while in terms of non-basic economy, the findings indicates that both Egbako and Kuchita have the highest non-basic LQ with an average score of 0.07, which were closely followed by Katcha, Mukugi and Gayankpa settlements with non-basic economic LQ and average scores of 0.04 each. The study concludes that LQ is one of the best techniques in measuring economic potentials of regions. It also recommends LQ for regional economic assessments.

Keywords: economic potentials, Location Quotient, Settlement classification, Regional planning, Southern region of Niger State

Streszczenie

Działalność gospodarcza w regionie oraz rozwój regionu są mierzone różnymi metodami, wśród których iloraz lokalizacji (LQ) jest jedną z najbardziej wiarygodnych technik. Niniejszy artykuł klasyfikuje osady według potencjału gospodarczego w południowym regionie stanu Niger przy użyciu wskaźnika specjalizacji regionalnej LQ. Ankiety zawierającą pytania zamknięte rozdano 1040 osobom w 37 społecznościach wiejskich wybranych z 37 stref ośmiu obszarów samorządowych w okręgu federalnym Niger South w stanie Niger. Zebrane dane zostały przeanalizowane przy użyciu techniki LQ. Wyniki badania w zakresie potencjału gospodarczego regionu pokazują, że społeczności są głównie zaangażowane w bazową działalność gospodarczą, w tym uprawę roślin spożywczych (ryż, kukurydza, fasola, proso i ignam); produkcję upraw rynkowych (benisead, orzeszki ziemne, warzywa, maniok i melony), rolnictwo plantacyjne (palma, orzech kola, nerkowiec i trzcina cukrowa). Najwyższą wartość LQ dla działalności podstawowej uzyskało Egbako ze średnim wynikiem 0,06,

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następnie Takuma, Batako, Kusoyaba, Mukugi i Kalmo, ze średnim wynikiem LQ 0,04. Pod względem gospodarki nie-bazowej zarówno Egbako, jak i Kuchita mają najwyższe LQ ze średnim wynikiem 0,07, a tuż za nimi plasują się osady Katcha, Mukugi i Gayankpa ze średnimi wynikami LQ 0,04. W badaniach stwierdzono, że LQ jest jedną z najlepszych technik pomiaru potencjału gospodarczego regionów. Technikę tę poleca się również do wykorzystania przy sporządzaniu ekonomicznych ocen regionalnych.

Słowa kluczowe: potencjał ekonomiczny, iloraz lokalizacji, klasyfikacja osad, planowanie regionalne, południowy region stanu Niger

1. INTRODUCTION

Globally, the economic developments of regions are responsible for the livelihood and wellbeing of the people (Wang et al., 2011; Hilson, 2016; Liu & Liu, 2016). The regional economic sectors are grouped into basic and non-basic (Thulin, 2015). The regional basic economic sector is the most contributing sector of the economy, while the non-basic regional economic sector contributes less compared to the overall regional economy (Thulin, 2015; Becker, 2017; Flath, 2022). The economic planners use several equations and methods which significantly benefit the economy and its activities at the national, regional and local levels. In addition, Planners are extracting figures that give important economic implications based on which the direction is use those figures analysis in the economic support (Alhwaish et al., 2015).

There are several factors affecting the regional economic potentials and developments (Reznichenko, et al., 2018), which includes low level of modern skills and technology (Zheng et al., 2019), climate variability (Malhi et al., 2021), poor infrastructure (Kanwal et al., 2020), epidemic (Gong et al., 2020), and floods and other forms of disaster (Hino et al., 2019), among others. This has attracted researches on the regional economic assessments. However, far less attention is usually paid to the processes of local and regional economic development within countries, and to a large extent, the macro-regional production configurations (Coe & Yeung, 2015).

The regional economic activities and developments are measured through various techniques (Capello & Nijkamp, 2019; Elia et al., 2017; Capello, 2015), where Location Quotient (LQ) is one of the most reliable techniques (Alhwaish et al., 2015; Prats, 2018). LQ is the ratio that provides a convenient way to examine the specialization of economic activity in a region (Tabassum et al., 2015). For example, LQ was adopted by Harjanti et al. (2021) to describe the pattern of changes in economic growth and determine the potential sectors in Sanggau Regency, West Kalimantan, Indonesia. It was also adopted by Kartikawati and Sundari (2019) in examining the

role of agriculture, forestry and fishery sectors in the development of Malinau District, North Kalimantan Province, Indonesia. Morrissey (2016) assesses the regional production multipliers for the Irish economy using the LQ. Islam et al. (2016) also determines economic growth of six divisions of Bangladesh using the LQ. These researches clearly established the relevance and importance of LQ in assessing regional economic potentials and developments.

In Nigeria, the LQ was applied in examining infrastructure and spatial concentration of cattle in Wudil market (Gambo, 2020), spatial concentration of traders in specialized agricultural food-products markets of Kano metropolis (Gambo, 2017), social infrastructure (Anthonia et al., 2018), regional inequalities in socio-economic development in Nassarawa State (Adefila, 2013), among others. However, less attention has been paid to the economic potentials and development of flood communities of river Niger valley in Nigeria. Although, Bukka, et al. (2017) while analysing the regional floods of Muwo district, Mokwa, Niger State, opined that the effects of flooding on the livelihood of rural communities has a significant increase in the loss of agricultural produce with increasing individual farm size during flood events, though, the study uses descriptive statistics and was restricted only to Muwo district out of the 39 districts in the study area. With more regional assessment of flood prone communities and application of LQ in the assessment of economic potentials, this is yet a gap needed to fill in the literature. As such this paper classifies the settlements by economic potentials in the southern region of Niger state using the LQ.

2. METHODOLOGY

Study area

The study area is located between latitudes 8°20'N and 9°45'N and longitudes 4°85'E and 6°80'E. It is an extensive lowland region with about 100-200 metres in height covering eight Local Government Areas of Mokwa, Edati, Lavun, Katcha, Agaie, Bida, Gbako and Lapai, respectively (see Figures 1 and 2).

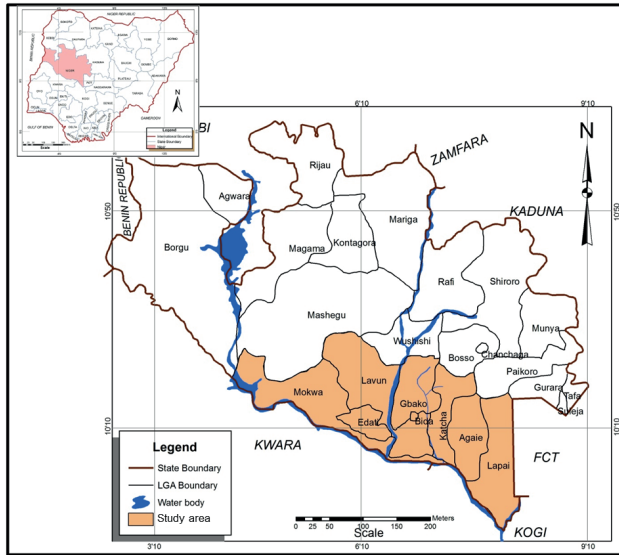


Fig. 1. Location of the Study Area in Niger State, Nigeria
Source: Niger Ministry of Lands and Housing, 2017.

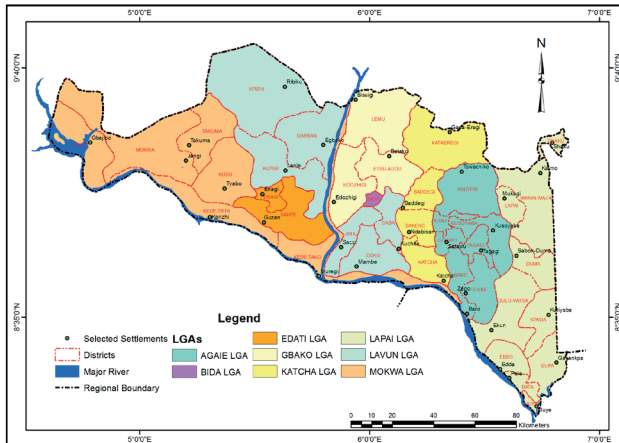


Fig. 2. Sample frame
Source: Field survey, 2020.

The area has an abundant water resources, and the major river is the Niger, called Ndaduma in Nupe. The name Niger was given to the River by the Europeans, and it originated from the Futa Jallon highlands of Guinea. The river passed through different areas in West Africa including Nupe land which it entered around Leaba, covering its full length down to Muye area in Lapai Local Government. The river provides a large population of the Nupe people with their means of livelihood (Mohammed, 2011). Apart from the fishing and Canoe transportation done on the river, it is known to be a carrier of alluvium from its upper course, down to Nupe land and beyond which is deposited on its flood plains, making the plains

fertile and suitable for extensive rice cultivation along the valley from Jebba to Muye (Mohammed, 2011). Similar situation applies to the flood plains of other rivers in the area, many of which are tributaries of the Niger on its Eastern and Western sides such as Eku and Yampere, Kaduna, Gbako and Gurara rivers, respectively (Afolabi, 1973; Iwena, 2015).

The sample frame is 37 rural communities selected from 37 districts in 8 LGAs in the Niger South Federal constituency in Niger State. The graphical representation of the sample frame is presented in Figure 2.

Data and analysis

A structured questionnaire was administered to 1,040 respondents in the study area. The data collected for this paper includes the basic (farming, fishing and livestock) and non-basic (trades, crafts, hunting and canoe building) economic potentials of the region; the settlement classification based on their respective economic activities/values and land resources evaluation (classification). The data collected were analysed using Location Quotient (LQ). LQ is the ratio that provides a convenient way to examine the specialization of economic activity in a region. LQs can be based on the level of employment, local industries, income or value added data and other variables (Tabassum, Hauque & Debnath, 2015). The general formula of LQ is:

$$\frac{\left[\frac{e_i}{e} \right]}{\left[\frac{E_i}{E} \right]} = \frac{\text{Share of regional economic based in sector } i}{\text{Share of national economic based in sector } i} \quad (1)$$

where:

- e_i – Regional economic based in sector i ,
- e – Total regional economic based (all sectors),
- E_i – National economic based in sector i ,
- E – Total national economic based.

In this study, LQ was calculated as:

$$LQ = \frac{\left[\frac{e_i}{e} \right]}{\left[\frac{E_i}{E} \right]} = \frac{\text{Share of sectoral socioeconomic activities } i}{\text{Share of regional socioeconomic activities } i} \quad (2)$$

Therefore, LQ was used to calculate variations in the basic and non-basic economic indicators in the study area.

3. FINDINGS

Location Quotient of Settlements Based on Economic Values

Location Quotient (LQ) which is the ratio that provides a convenient way to examine the specialisation of economic activity in a given region was adopted to analyse the contribution of settlements in terms of basic and non-basic economy to the Niger South region. For the basic economic activities, the aggregated scores of food crops, cash crops, plantation and livestock were summed up to arrive at the total economic score which was used to analyse the LQ. Whereas, the scores of trade, craft, hunting and canoe building were summed up to arrive at the total non-basic economic score which was also used to analyse the non-basic economic LQ of the settlements.

The study revealed in Table 1 that in terms of basic economy, Egbako has the highest LQ with an average score of 0.06, and closely followed by Takuma, Batako, Kusoyaba, Mukugi and Kalmo, with an average LQ score of 0.04 each, respectively. Table 1 further revealed that significant settlements in Niger South, such as Gbajibo, Jangi, Tyabo, Enagi, Guzan, Lanle, Ribiku, Kuchita, Edozhigi, Baddegi, Ndabisan, Tswachiko, Salawu, Tagagi, Shaku and Sabon-Duma have equal average basic economic LQ score of 0.03 each. However, there are some other settlements with an average basic economic LQ score of 0.02 each, including Kanzhi, Sacci, Mambe, Bisuigi, Gada-Eregi, Katcha, Baro, Zago, Kutiyaba, Ekun, Edda and Gayankpa respectively. Settlements with the lowest average basic economic LQ score of 0.01 include; Muregi, Pele and Muye and are all on the River Niger valley. The basic economic LQ indicates specialisation of settlements in agricultural productions/activities in terms of food crops, cash crops and plantation on one hand; and on the other livestock rearing which varies from place to place depending on the location of the settlement in the region.

The analysis in Table 1 further reveals that the scores of trade, craft, hunting and canoe building were summed up to arrive at the total non-basic economic LQ of the settlements in the region. The results of the finding indicates that both Egbako and Kuchita have the highest non-basic economic LQ score of 0.07, and were closely followed by Katcha, Mukugi and Gayankpa settlement with non-basic economic LQ scores of 0.04 each. Other settlements with non-basic economic LQ of 0.03, 0.02 and 0.01 as shown on Table 1 comprehensively.

Table 1. Location Quotient of Basic and Non-basic Economic Potentials in Niger South Region

S/N	Settlements	Basic Economic Mean Score	Basic Economic LQ	Non-Basic Economic Mean Score	Non-Basic Economic LQ
1	Gbajibo	3.63	0.03	0.35	0.02
2	Jangi	4.83	0.03	0.50	0.03
3	Tyabo	4.02	0.03	0.32	0.02
4	Takuma	5.29	0.04	0.29	0.02
5	Kanzhi	2.50	0.02	0.50	0.03
6	Muregi	1.89	0.01	0.33	0.02
7	Enagi	4.16	0.03	0.38	0.03
8	Guzan	4.82	0.03	0.45	0.03
9	Lanle	4.76	0.03	0.41	0.03
10	Egbako	8.00	0.06	1.00	0.07
11	Ribiku	4.67	0.03	0.33	0.02
12	Sacci	2.67	0.02	0.33	0.02
13	Mambe	2.60	0.02	0.40	0.03
14	Kuchita	4.00	0.03	1.00	0.07
15	Edozhigi	3.67	0.03	0.21	0.01
16	Batako	5.00	0.04	0.50	0.03
17	Bisuigi	2.80	0.02	0.40	0.03
18	Gada-Eregi	2.85	0.02	0.30	0.02
19	Baddegi	3.86	0.03	0.26	0.02
20	Ndabisan	4.33	0.03	0.44	0.03
21	Katcha	3.18	0.02	0.55	0.04
22	Tswachiko	4.85	0.03	0.21	0.01
23	Salawu	3.83	0.03	0.33	0.02
24	Kusoyaba	5.31	0.04	0.25	0.02
25	Tagagi	3.68	0.03	0.21	0.01
26	Baro	2.38	0.02	0.28	0.02
27	Zago	3.34	0.02	0.24	0.02
28	Shaku	4.07	0.03	0.43	0.03
29	Mukugi	5.80	0.04	0.60	0.04
30	Kalmo	5.25	0.04	0.25	0.02
31	Sabon-Duma	4.27	0.03	0.33	0.02
32	Kutiyaba	3.33	0.02	0.50	0.03
33	Ekun	2.68	0.02	0.23	0.02
34	Edda	2.67	0.02	0.33	0.02
35	Pele	2.00	0.01	0.33	0.02
36	Muye	1.82	0.01	0.46	0.03
37	Gayankpa	3.04	0.02	0.57	0.04

Source: Field survey, 2020.

Spatial distribution of Basic Economic LQ in the study area is presented in Figure 3. The findings revealed that most of the settlements with high LQ values were located on the Niger valley. However, there are some settlements with lower LQ values in the Niger valley such as Kanzhi, Muregi, Katcha, Zago, Baro, Pele and Muye respectively. This could be as a result of persistent flood incidence in these settlements and also their small nature.

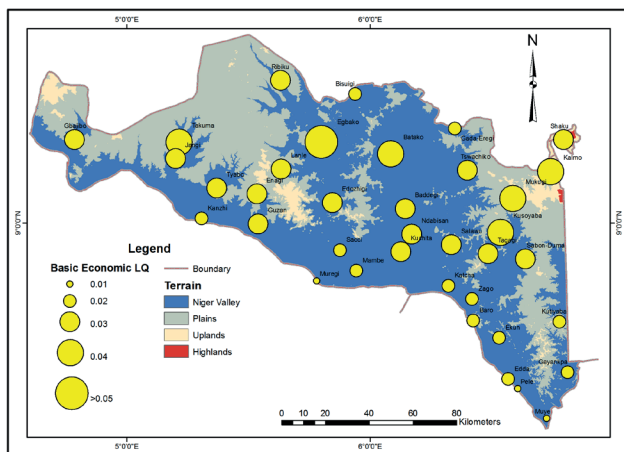


Fig. 3. Spatial Distribution of Basic Economic LQ in the Study Area

Spatial distribution of Non-Basic Economic LQ presented in Figure 4 revealed that high LQ values were found in most settlements in the Niger valley such as Mambe, Katcha and Gayankpa respectively. Although, some smaller settlements in the Niger valley also records small LQ values such as Gbajibo, Muregi, Baro, Edda and Pele respectively. This implies that LQ values across the region depends on the sizes of the settlements.

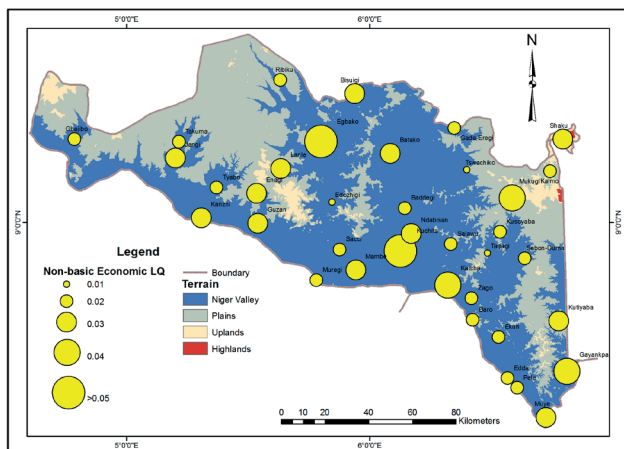


Fig. 4. Spatial Distribution of Non-basic Economic LQ in the Study Area

Settlement Classification Based on Terrain and Location Quotient

Settlements in the Niger State Southern region have earlier been classified into Highlands, Uplands, Plains and Niger Valley respectively. The study in this section investigates LQ of both basic and non-basic economic potentials based on the classified terrains. The study revealed in Table 2 that Egbako which falls in the Plains records highest basic economic LQ. This is followed by five settlements who are located on Niger Valley (Takuma and Batako), Plains (Kusoyaba) and Uplands (Mukugi and Kalmo) recorded 0.04 LQ each. This is an indication that settlements that are located within Niger Valley, Plains, and Uplands have considerable LQ. The finding also indicates Shaku which is the only settlement in the region located on the Highlands records 0.03 basic economic LQ. This implies that all settlements in all type of terrain in the region are productive.

Findings of the study in Table 2 further revealed that two settlements with highest non-basic economic LQ are located within Plains (Egbako) and Niger Valley (Kuchita) with 0.07 LQ each. Followed by three settlements located in Niger Valley (Katcha and Gayankpa) and Uplands (Mukugi) with 0.04 non-basic LQ each. This indicates that Niger Valley is also among the terrains with high LQ in the region which implies that it is one of the most productive terrain in the region.

Analysis in Table 2 revealed that a significant number of settlements in the southern region of Niger State are located in the lower Niger Valley. This could be partly due to the fertile nature of the terrain and its potential in terms of both basic and non-basic economic activities. The region is also blessed with abundant water resources that flows throughout the year which has implication on agriculture and livelihood of the people of the region in general. The significant number of settlements located in the region, coupled with the fertile nature of the area and abundant water resources provide opportunities for which accounts for higher basic and non-basic economic activities and LQ of the region. The Niger Valley accounts for about 57% of the entire landscape, and is closely followed by the plains which occupies about 40% while the remaining 3% upland or highland of the terrain. The implication of these settlement classifications based on terrain and LQ is that the significant settlements located on the Niger Valley with their environs basic and non-basic economic activities highly vulnerable to flood hazards

on one hand and those on the low topography, rainfall regime and the drainage characteristics of the region.

Table 2. Settlement Classification Based on Terrain and Location Quotient

S/N	Settlements	Terrain	Basic Economic LQ	Non-Basic Economic LQ
1	Gbajibo	Niger Valley	0.03	0.02
2	Jangi	Niger Valley	0.03	0.03
3	Tyabo	Niger Valley	0.03	0.02
4	Takuma	Niger Valley	0.04	0.02
5	Kanzhi	Niger Valley	0.02	0.03
6	Muregi	Niger Valley	0.01	0.02
7	Enagi	Uplands	0.03	0.03
8	Guzan	Niger Valley	0.03	0.03
9	Lanle	Plains	0.03	0.03
10	Egbako	Plains	0.06	0.07
11	Ribiku	Uplands	0.03	0.02
12	Sacci	Niger Valley	0.02	0.02
13	Mambe	Niger Valley	0.02	0.03
14	Kuchita	Niger Valley	0.03	0.07
15	Edozhigi	Niger Valley	0.03	0.01
16	Batako	Niger Valley	0.04	0.03
17	Bisuigi	Niger Valley	0.02	0.03
18	Gada-Eregi	Plains	0.02	0.02
19	Baddegi	Niger Valley	0.03	0.02
20	Ndabisan	Plains	0.03	0.03
21	Katcha	Niger Valley	0.02	0.04
22	Tswachiko	Plains	0.03	0.01
23	Salawu	Plains	0.03	0.02
24	Kusoyaba	Plains	0.04	0.02
25	Tagagi	Plains	0.03	0.01
26	Baro	Niger Valley	0.02	0.02
27	Zago	Niger Valley	0.02	0.02
28	Shaku	Highlands	0.03	0.03
29	Mukugi	Uplands	0.04	0.04
30	Kalmo	Uplands	0.04	0.02
31	Sabon-Duma	Niger Valley	0.03	0.02
32	Kutiyaba	Plains	0.02	0.03
33	Ekun	Niger Valley	0.02	0.02
34	Edda	Niger Valley	0.02	0.02
35	Pele	Niger Valley	0.01	0.02
36	Muye	Niger Valley	0.01	0.03
37	Gayankpa	Niger Valley	0.02	0.04

Source: Field survey, 2020.

4. DISCUSSION

Findings of the study in terms of economic potentials of the region, reveals that communities are mainly engaged in basic economic activities; including the cultivation of food crops (rice, maize, beans, millet and yam); cultivation of cash crops (benisead, ground nut, vegetable, cassava and melon), plantation agriculture (palm, kola nut, cashew and sugar cane). Fishing (both individual and communal fishing) and livestock production (cow, poultry, sheep and goats). The study further revealed that there are four major non-basic economic activities which include trade, craft, hunting and canoe buildings which the communities are usually engaged in the region.

Findings in terms of basic economy revealed that Egbako has the highest LQ with an average score of 0.06, and is closely followed by Takuma, Batako, Kusoyaba, Mukugi and Kalmo, with an average LQ score of 0.04 each, while in terms of non-basic economy, the findings indicates that both Egbako and Kuchita have the highest non-basic LQ with an average score of 0.07, which were closely followed by Katcha, Mukugi and Gayankpa settlements with non-basic economic LQ and average scores of 0.04 each. This study explores the economic potentials of the Niger south region in Nigeria. The finding of this study is more comprehensive than a study conducted by Bukka et al. (2017). Bukka et al. (2017) revealed the economic potentials of Muwo district in Mokwa local government area, which is one of the total 39 districts in the region. This paper also explores application of LQ in regional economic potential assessments.

5. CONCLUSION

The study revealed the economic potentials of Niger south region in Nigeria and this depict the economic values of the flood region. The basic economic activities of the region revealed by the study includes the cultivation of food crops (rice, maize, beans, millet and yam); cultivation of cash crops (benisead, ground nut, vegetable, cassava and melon), plantation agriculture (palm, kola nut, cashew and sugar cane). Fishing (both individual and communal fishing) and livestock production (cow, poultry, sheep and goats), while, four major non-basic economic activities in the region include trade, craft, hunting and canoe buildings which the communities are usually engaged in the region. The study demonstrates that LQ is one of the best techniques in measuring economic potentials of regions. Therefore, the LQ is recommended for regional economic assessments.

REFERENCES

- [1] Adefila J.O.: (2013). *Regional inequalities in socio-economic development in Nassarawa state of Nigeria: A spatial analysis for planning*. Asian Social Science, 9(1), 60.
- [2] Afolabi O.: (1973). *Study Map Notebook West Africa*. Ibadan: Collins Publishers.
- [3] Alhowaish A.K., Alsharikh M.A., Alasmal M.A., Alghamdi Z.A.: (2015). *Location quotient technique and economy analysis of regions: Tabuk Province of Saudi Arabia as a case study*. International Journal of Science and Research (IJSR), 4(12), 1756-1761.
- [4] Anthonia A.N., Apala D.S., Samaila I., Daku Y.S.: (2018). *Assessment of Environmental Integration Approach in Distribution of Social Infrastructure (Schools) in Otukpo Local Government Area, Benue State, Nigeria*. GSJ, 6(10).
- [5] Becker G.: (2017). *Economic theory*. Routledge.
- [6] Bukka U.A., Muhammad B.Y., Yahaya T.I.: (2017). Effect of Flooding on Livelihood of Communities in Muwo District, Mokwa Local Government Area, Niger State, Nigeria. *International Journal of Scientific & Engineering Research*, 8(12), 1615-1620.
- [7] Capello R.: (2015). *Regional economics*. Routledge.
- [8] Capello R., Nijkamp P.: (Eds.). (2019). *Handbook of regional growth and development theories: revised and extended second edition*. Edward Elgar Publishing.
- [9] Coe N.M., Yeung H.W.C.: (2015). *Global production networks: Theorizing economic development in an interconnected world*. Oxford University Press.
- [10] Elia V., Gnoni M.G., Tornese F.: (2017). *Measuring circular economy strategies through index methods: A critical analysis*. Journal of Cleaner Production, 142, 2741-2751.
- [11] Flath D.: (2022). *The Japanese Economy*. Oxford University Press.
- [12] Gambo B.: (2017). *Spatial Concentration of Traders in Specialized Agricultural Food-Products Markets of Kano Metropolis, Nigeria*. Dutse Journal of Pure and Applied Sciences (DUJOPAS) 3 (2), 30-44.
- [13] Gambo B.: (2020). *Infrastructure and spatial concentration of cattle in Wudil Market, Kano State, Nigeria*. International Journal of Science for Global Sustainability, 6(3).
- [14] Gong H., Hassink R., Tan J., Huang D.: (2020). *Regional resilience in times of a pandemic crisis: The case of COVID-19 in China*. Tijdschrift voor economische en sociale geografie, 111(3), 497-512.
- [15] Harjanti D.T., Apriliyana M.I., Arini A.C.: (2021). *Analysis of regional leading sector through location quotient approach, shift share analysis, and klassen typology (Case study: Sanggau Regency, West Kalimantan Province)*. Jurnal Geografi Gea, 21(2), 147-158.
- [16] Hilson G.: (2016). *Farming, small-scale mining and rural livelihoods in Sub-Saharan Africa: A critical overview*. The Extractive Industries and Society, 3(2), 547-563.
- [17] Hino M., Belanger S.T., Field C.B., Davies A.R., Mach K.J.: (2019). *High-tide flooding disrupts local economic activity*. Science Advances, 5(2), eaau2736.
- [18] Islam F.B., Mubassirah F.A., Siddiq F., Hossain D., Sharmin N., Haque A.: (2016). *Economic growth analysis of six divisions of Bangladesh using location quotient and shift-share method*. Journal of Bangladesh Institute of Planners ISSN, 2075, 9363.
- [19] Iwena O.A.: (2015). *Essential Geography for Senior Secondary Schools*. Ibadan: Tonad Publishers Limited.
- [20] Kanwal S., Rasheed M.I., Pitafi A.H., Pitafi A., Ren M.: (2020). *Road and transport infrastructure development and community support for tourism: The role of perceived benefits, and community satisfaction*. Tourism Management, 77, 104014.
- [21] Kartikawati D., Sundari M.T.: (2019, August). *The role of agriculture, forestry and fishery sector in the development of Malinau District (location quotient and shift share approach)*. In IOP Conference Series: Earth and Environmental Science (Vol. 314, No. 1, p. 012077). IOP Publishing.
- [22] Liu Z., Liu L.: (2016). *Characteristics and driving factors of rural livelihood transition in the east coastal region of China: A case study of suburban Shanghai*. Journal of Rural Studies, 43, 145-158.
- [23] Malhi G.S., Kaur M., Kaushik P.: (2021). *Impact of climate change on agriculture and its mitigation strategies: A review*. Sustainability, 13(3), 1318.
- [24] Mohammed S.: (2011). *History of the Emirate of Bida to 1899 AD*. Zaria: Ahmadu Bello University Press Limited.
- [25] Morrissey K.: (2016). *A location quotient approach to producing regional production multipliers for the Irish economy*. Papers in Regional Science, 95 (3), 491-506.
- [26] Prats G.M.: (2018). *Analysis of the behavior of a regional economy through the shift-share and location quotient techniques*. Management Dynamics in the Knowledge Economy, 6 (4), 553-568.
- [27] Reznichenko S.M., Takhumova O.V., Zaitseva N.A., Larionova A.A., Dashkova E.V., Zotikova O.N., Filatov V.V.: (2018). *Methodological aspects of assessing factors affecting the sustainable development of the region*. www.mjltm.com info@mjltm.org, 71.

- [28] Tabassum A., Hauque A.M., Debnath A.K.: (2015). *Determination of Location Quotient (LQ) of Districts of Bangladesh based on Level of Urbanization and their Regionalization to study the Regional Disparities based on Indicators of Urban Area of Bangladesh*. European Academic Research, 3 (2), 1671-1692.
- [29] Thulin P.: (2015). *Local multiplier and economic base analysis*. In Handbook of research methods and applications in economic geography, Edward Elgar Publishing, 213-233.
- [30] Wang C., Yang Y., Zhang Y.: (2011). *Economic development, rural livelihoods, and ecological restoration: evidence from China*. Ambio, 40, 78-87.
- [31] Zheng Y., Cheng Y., Li L.: (2019). *Factors affecting regional economic synergy in China – based on research on high-tech industry*. IEEE Access, 8, 14123-14133.