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Urban Infrastructural Facility Provision: A Strategy towards Promoting Urban-Rural Interaction and Sustainable Rural Development in Cross River State, Nigeria

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Abstract

The purpose of this study is to determine the effect of urban infrastructural provision on urban-rural interaction in Cross River State, Nigeria. The objective is to establish the relationship between urban infrastructural provision and the spatial interaction of the urban centres with the hinterland. The methodology used in the study was survey design. This entailed inventory-taking of urban facilities to determine the level of infrastructural development. Numbers of daily trips to selected urban centres were used in measuring urban-rural interaction. The relationship between infrastructural development and urban-rural interaction was determined using spearman rank correlation coefficient. The study established a strong positive correlation coefficient between infrastructural provision and urban-rural interaction. It also identified a low urban infrastructural development in the study area. The study advocates for a deliberate policy formulation aimed at stimulating urban infrastructural provision in the study area.

Keywords

Infrastructural Provision, Urban-Rural Interaction, Urban Centres, Rural Areas, Rural Development

1. Introduction

Urban centres otherwise referred to as growth poles are known to be attracting a

lot of infrastructural facilities and thus have the potential of generating socio-economic, political, and industrial activities which enable them to play some vital roles in the development of the hinterland (Kudiabor, 1977; Inyang, 2000; Davila, 2010). Incidentally, infrastructural facilities are not evenly provided to all urban centres especially in the developing countries. Some urban centres are more favoured in the provision of urban infrastructures (Ebong & Animashaun, 2002).

Urban centres with high level of infrastructural development tend to provide more functions and services to the hinterland (Akpan, 2000). As urban centres provide services and other functions to the hinterland, a spatial interaction develops between them and the rural areas (Mabongunje, 1974).

1.1. The Role of Urban Centres

The role urban centres play in the development of rural areas is based on the fact that they are centres of innovation, seats of government, commercial or industrial centres from where development impulses are generated and spread to the hinterland. These urban centres are called growth centres or growth poles. The role of urban centres in stimulating regional development notwithstanding, it has been observed that urban centres are haphazardly created and located with little or no spatial consideration to their relationship with the hinterland (Abiodun, 1967; Adeniyi, 1978; Akpan, 1990).

The consequence of this is the inability of some urban centres to stimulate development impulses to the surrounding rural areas. In such situations that the urban-rural interaction remains very low because the urban centres do not possess the services or infrastructure that would generate or sustain urban-rural interaction.

In Cross River State, the study area, most urban centres were created by government policy without consideration to the spatial relationship with the hinterland as such they failed to perform the expected role of transmitting development or growth impulses to the surrounding rural areas. Urban centres with poor infrastructural provision are said to have low level of interaction with the surrounding rural communities; such urban centres may fail to radiate growth impulses to the rural areas.

1.2. Presentation of the Study Area

The study area is located in the Niger Delta region of Nigeria. Cross River State is between Latitude 4˚35' & 6˚55' North and Longitude 7˚50' & 9˚28' East. It is bounded in the north by Benue State, West by Ebonyi and Abia State, in the East by the Republic of Cameroun and in the South is Akwa Ibom State and the Atlantic Ocean. The total landmass of the State is 20,156 square kilometers. The State projected population in 2016 was 3,737,517 (Three million, seven hundred and thirty-seven thousand, five hundred and seventeen) people.

The study area is predominately agrarian. It has 18 designated urban centres (CRSG, 1997). The centres are coincidentally the Local Government headquarters;

hence, they serve mainly as administrative centres and only a few perform other functions. At the time of the creation and location of the centres, no consideration was given to spatial location of the centres (Oyesola & Kadiri, 2010).

Theoretically, the urban centres are supposed to serve as growth poles from where development could radiate to the surrounding rural areas (Inyang, 2000; Allen & Yuo, 2002). This is not the case in the study area. Many urban centres as identified by Onokerhoraye and Omuta (1986), are not growth points because they are incapable of generating activities and services that can create "trickled down effect" to the surrounding rural areas. Inyang (1984) and Kudiabor (1977) traced the inability of some urban centres to stimulate growth and development to the rural areas to the low infrastructural base of such urban centres.

The urban infrastructural provision in the study area is negatively skewed. Only very few urban centres can boast of high urban infrastructural provision. Others are not well provided with urban facilities. The paucity of urban facilities in some urban centres tends to limit urban-rural interaction in the study area.

1.3. The Concept of Rural-Urban Interaction

Rural-urban interaction is a concept that explains the linkage across space and sectors involving rural and urban areas in respect of flow of people, goods/services, money, information, and participation in activities between two areas (Ayo, 2020). Arguably, in every region, there exist rural and urban centres, each rendering some functions which the other may depend on. The urban centres on one hand are favoured in the provision of amenities such as electricity, pipe borne water, industries, financial institutions, health care facilities, among others, whereas the rural areas may lack such infrastructural facilities and services and therefore would depend on the urban centres for services rendered by the infrastructures located in the urban centres. The inequitable distribution of infrastructures between the rural and urban areas often causes a flow of people and services from the rural to urban centre thus establishing a linkage between the two areas. Such linkages usually impact on the rural areas in terms of economic growth of the region (Oyesola & Kadiri, 2010).

The links between rural and urban areas are key components of livelihood and local economics, as they lead to social, cultural, and economic transformation of any region.

The aim of this paper is to examine the effect of infrastructural provision on urban-rural interaction in the study area. The objective is to determine the relationship between urban infrastructural development and urban-rural interaction.

The rationale of the study is to provide a framework for optimal distribution of infrastructural facilities in urban centres to enhance rapid sustainable development of the rural areas.

This study is premised on the growth pole theory and rural-urban interaction concepts. The Local Government Headquarters are regarded as growth poles.

They are supposedly characterized by high population concentration, high concentration of economic, political, and commercial activities, thus generates a lot of functions and services which the neigbouring rural areas depend on. The functions and activities generated by the urban centres are perceived to often stimulate interaction between the rural and urban areas thus making the urban centres to serve as growth points in any given region.

2. Methodology

All Local Government Headquarters in the study area are identified as the urban centres while all other settlements are regarded as rural areas. Out of the 18 urban centres in the study area, 9 centres were randomly selected for the study.

The data collected from the urban centres focused on urban infrastructural provision and the interaction between the urban centres and the rural areas otherwise referred to as hinterland.

To measure the infrastructural provision in the selected centres, the following were used as indices; presence of banks/financial institutions, guest houses/hotels, post offices, primary schools, secondary/tertiary institutions, hospitals/health centres and clinics, industries/factories, daily markets/supermarkets, police stations, sport stadium, motor parks, electricity supply, pipe-borne water, petrol filling stations, and government administrative offices. These facilities and services are assumed to be attracting patronage from people living within and outside the urban centres (Alexander, 1959; Halbrun, 1976). To measure the level of infrastructural development in the urban centres, every facility outlet provided was given a score of one point and total score of all the available infrastructural facilities for each centres was used in determining the level of infrastructural provision. Akpan (2000) adopted this approach in determining a single outlet service such as pipe-borne water, electricity supply, etc. Based on the above, the urban centres with more than 30% infrastructure provision were classified as high infrastructural base while those with less than 30% are described as low infrastructural base.

The level of urban-hinterland interaction was calculated by scoring individual daily trips to and fro the selected urban centres by residents of the surrounding rural areas. This information was collected for a period of three months covering January to March 2024 from the motor parks based on their loading records. In addition to the loading records from the motor parks, individual passengers were interviewed to validate the reason for their choice of urban centres for services. The volume of movement of people to and fro a particular urban centre seems to be a simpler and more practical way of determining the interaction between the urban centres and the rural areas than the I-value point and urban nodal accessibility or the connectivity index of graph theory used by Akpan (1990).

In order to establish a relationship between infrastructural provision and urban-rural interaction, the spearman rank correlation analysis was applied to the collected data.

3. Results

The spatial distribution of infrastructural facilities/services in the study area is as shown in Table 1.

Table 1 highlights that 45.9% of the infrastructural facilities in the study area are concentrated in Calabar, while other urban centres shared 54.5%. This shows a wide disparity in infrastructural facilities distribution in the study area. Ikom that is next to Calabar has only 11.6% of the total urban infrastructures provided in the State.

Table 1. Urban infrastructural facility distribution in Cross River State.

S/N	Facilities/Services	Urban Centres									
		Calabar	Akamkpa	Akpabuyo	Ugep	Ikom	Boki	Ogoja	Yala	Obudu	Total
1	Banks	18	3	-	3	4	-	4	3	3	**38**
2	Hotels/Guest houses	36	3	-	4	8	-	6	4	6	**67**
3	Police Station	8	1	1	1	1	1	1	1	1	**16**
4	Primary schools	28	4	3	10	8	3	5	4	4	**69**
5	Secondary schools	43	4	3	6	7	2	6	5	4	**80**
6	Tertiary Schools	3	1	-	1	1	-	1	1	1	**9**
7	Hospital/Clinics	12	2	1	4	6	1	4	3	3	**36**
8	Taxi service	1	-	-	-	-	-	-	-	-	**1**
9	Stadium	3	-	-	1	1	-	-	-	-	**5**
10	Electricity supply	1	1	1	1	1	1	1	1	1	**9**
11	Water supply	1	1	1	1	1	1	1	-	1	**7**
12	Petrol stations	30	4	2	5	8	2	5	4	3	**63**
13	Factories/Industries	4	-	2	-	1	-	-	-	-	**7**
14	Daily market	6	1	-	2	2	-	2	1	1	**15**
	TOTAL	194	25	14	39	49	10	36	27	26	**422**
	% (Percentage)	45.9	5.9	3.3	9.2	11.6	2.4	8.5	6.4	6.2	**100**

The table further revealed that the most widespread infrastructural facilities are primary and secondary schools, followed by the health care centres and police stations. These facilities are classified as low trip generating. They are not likely to generate urban-rural interactions because most communities have these facilities. Facilities like banks, hotels/guest houses, tertiary institutions, petrol stations, daily markets/supermarkets and taxi services are not provided in most of the urban centres. The absence of these facilities in such urban centres limits the services provided by the urban centres to the surrounding rural settlements. In such situations, the residents of the surrounding settlements would look elsewhere for the services they need, the distance notwithstanding. The implication of poor infrastructural facilities provision in urban centres is that the urban-rural interaction

would be very low. The low urban-rural interaction implies that the urban centres are not likely to transmit the supposed development impulses to the hinterland. Such urban centres may fail to function as growth poles.

3.1. Urban-Rural Interaction

Table 2 presents the urban-rural interaction using daily trips made by rural dwellers to and fro urban centres in the study area.

Table 2. Urban-rural interaction based on average daily trips by rural dwellers.

Urban Centres	Trips from Urban-to-Urban Centres	Trips from Rural to Urban Centres	Trips to Urban Centres to Rural Areas	Total trips	Ranking
CALABAR	2168	3867	2657	8692	1st
AKAMKPA	671	256	106	927	7th
AKPABUYO	394	641	53	1138	4th
UGEP	309	425	286	1020	3rd
OBUBRA	218	87	29	334	9th
IKOM	784	1379	803	2966	2nd
OGOJA	293	301	242	836	5th
BOKI	124	88	44	256	8th
OBUDU	266	285	63	614	6th
TOTAL	**5227**	**7329**	**4220**	**16,775**	
%	**31.15**	**43.69**	**25.15**	**100**	

Table 2 shows that a total of 16,776 daily trips were generated to the selected urban centres. Out of these daily trips, 43.6% were from rural areas to urban centres and 25.2% were from urban centres to the rural areas. The result of the urban-rural interaction shows that Calabar had the highest number of trips and as such is ranked the highest in terms of urban-rural interaction. The high interaction level of urban-rural interaction is attributed to the fact that Calabar, being the State Capital, has the highest infrastructural base. Ikom ranked second, Ugep third and Akpabuyo fourth. Obubra, Boki, Akamkpa were ranked ninth, eighth and seventh, respectively. They have the least number of daily trips. These urban centres seem to have very low level of infrastructural facilities as such do not provide enough services that would attract residents of the surrounding rural areas. Residents of such rural areas often travel beyond the immediate urban centres to seek for services elsewhere (IIED, 2018).

The low level of urban-rural interaction may be attributed to low infrastructural facility provision in some of the urban centres. Urban centres such as Boje, Akamkpa, Obubra, Yala have very low infrastructural facilities. The implication of this result is that many urban centres in the study area do not serve as "growth poles",

hence, the "trickle-down effect" from the designated urban centres which are supposed to stimulate rural development is very minimal.

It therefore follows that for urban-rural interaction to be enhanced the urban centres must be adequately provided with infrastructural facilities that would generate services the rural dwellers would depend on for socio-economic development.

Table 3 highlights the urban infrastructural facilities and their potentials in enhancing urban-rural interactions. Government offices, filling stations, banks and financial institutions are identified as urban facilities/services that have high potentials for urban-rural interaction. In the other hand, hospitals/clinics, daily markets, factories/industries, and police stations attracted more trips and can be assumed to have average interactive potential between the rural and urban settlements. The potentials of the urban facilities to enhance urban-rural interaction is expressed in terms of the ranking, hence, the least ranked urban facilities are the primary schools.

Table 3. Urban facilities/services and their interactive potentials.

S/N	Urban Facility	No. of Trips to Urban Facility	Trip %	Ranking of Facility
1	BANKS	2605	15.53	3RD
2	HOTELS	308	1.83	12TH
3	POLICE STATION	942	5.62	6TH
4	PRIMARY SCHOOLS	141	0.08	15TH
5	SECONDARY SCHOOLS	351	2.10	11TH
6	TERTIARY SCHOOLS	840	5.0	8TH
7	HOSPITALS/CLINICS	1490	8.88	4TH
8	DAILY MARKETS	1420	8.40	5TH
9	TAXI SERVICES	754	4.51	9TH
10	FACTORIES/FIRMS	913	5.44	7TH
11	SPORT STADIUM	609	3.63	10TH
12	ELECTRICITY SUPPLY	263	1.56	13TH
13	WATER SUPPLY	241	1.47	14TH
14	FILLING STATION	2712	16.17	2ND
15	GOVT. OFFICES	3171	18.90	1ST
	TOTAL	**16,775**	**100.00**	

The implication of the finding is that urban centres with high-ranking urban facilities have the potential of attracting higher urban-rural interaction with the hinterland. Whereas urban centres with very low-ranking facilities will attract very low urban-rural interaction.

3.2. Relationship between Infrastructural Provision and Urban-Rural Interaction

The result in Table 4 shows a strong positive correlation between urban infrastructural provision and urban-rural interaction. A correlation coefficient of 0.83 was obtained indicating that an association exists between urban infrastructural facilities provision and urban-rural interaction.

Table 4. Relationship between Urban Centres' infrastructural provision and interaction level with the hinterland using Spearman rank correlation coefficient.

N	X	Y	X^2	Y^2	XY	r
9	112.2	221.4	97468.8	49017.9	4,777,721	0.83

Note: df of freedom = 6; Significance level = 0.05; t value = 1.34; critical t = 1.96.

The identified relationship implies that an increase in the provision of infrastructural facilities in urban centres would lead to increased level of interaction between the urban centres and the rural areas. This is so because an improved infrastructural base of an urban centre would enhance the provision of more services and functions which stimulate rural-urban interaction.

3.3. Findings and Implications

The findings of the study are summarized as follows:

1) Urban infrastructural provision in the study area is very low. Most of the designated urban centres, in exception of Calabar, have low levels of infrastructural facilities provision.

2) Urban-rural interaction is very low because of the poor urban infrastructural provision. These urban centres therefore do not offer services or functions that would attract patronage and generate development from the surrounding rural areas.

3) Strong positive relationships exist between urban infrastructural facility provision and urban-rural interaction. Urban centres that have high level of infrastructural provision tend to attract patronage from the surrounding rural areas, as such, they have high interaction with the rural areas.

The implications of the findings are as follows:

1) The low urban infrastructural provisions among the designated urban centres have limited the urban centres from rendering services that are likely to encourage urban-rural interaction. Urban centres faced with paucity of infrastructural facility provision may not serve as "growth poles" to the hinterland. The rural development of such regions may be impeded. Sustainable rural development may not be achieved in such situations.

2) Low level of urban-rural interaction implies that most of the designated urban centres exist only by name. They are not transmitting appropriate growth or development impulses that would stimulate growth and sustainable development in the rural communities. This may be responsible for the slow pace of rural de-

velopment in the study area. It also implies that the urban centres were not optimally located to foster urban-rural interaction. Since a strong positive correlation exists between urban infrastructural provision and urban-rural interaction, another implication of the findings is that an increase in the provision of infrastructural facilities in urban centres will lead to an increase in urban-rural interaction. This will eventually promote sustainable rural development.

4. Recommendations

Regional development in the study area could be enhanced if urban-rural interaction is strengthened. This can be achieved by:

1) Providing infrastructural facilities especially daily markets, industries, banks, supermarkets, etc. in the urban centres of the study area.

2) Spatial consideration should be given when creating and locating urban centres. The location of some urban centres hinders urban-rural interaction (Ofoegbu, 1997; Wolpert, 1964; Oyesola and Kadiri, 2010; Smailes, 1970; Ebong and Animashaun, 2002). This strategy would stimulate "trickle-down effect" from urban centres to the rural areas. The optimal location of urban centres in terms of their spatial relationship with the hinterland is therefore advocated.

3) Urban-rural transportation routes should be improved to enhance movement of goods and services.

4) Urban-rural interaction policy should be formulated in such a way that urban centres are made to specialize in the provision of particular services to promote regional efficiency. This can be achieved through the establishment of closer economic and social tiers between rural and urban centres as advocated by Ebong and Animashaun (2002).

5) Infrastructural facilities that have the potential to promote urban and rural growth should be provided in all designated urban centres. Among these urban facilities are manufacturing industries, banks, daily markets, supermarkets.

5. Conclusion

The study area is predominantly a rural economy with very few urban centres. The infrastructural development in the urban centres is very low. Only Calabar, the State capital is provided with optimal infrastructural facilities while other urban centres lack the necessary urban facilities. The low infrastructural development tends to affect the urban-hinterland interaction. The urban-rural interaction in the study area is therefore very low. The State of infrastructural provision in urban centres seems not to stimulate the development of the rural areas. The study identified a strong positive relationship between the urban infrastructural facilities provision and urban-rural interaction. Urban centres with high infrastructural facilities development tend to have high level of urban-rural interaction and therefore stimulate the growth and development of the rural areas. A regional planning policy that promotes urban-rural interaction is advocated. Such interac-

tion would promote sustainable rural development.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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