Firms Location and Relative Importance of Location Factors amongst Firms in the Lagos Region, Nigeria

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Abstract

The location and location factors constitute a potent and essential prerequisite, for any country or a region to experience a significant revamping, sustenance, rejuvenation and advancement in the industrial sector of her economy, This paper underscores the location and location factors amongst firms in the Lagos region. Both primary and secondary sources of data were adopted. The first stage in the collection of primary data involves the reconnaissance survey of the study area, while the second stage involves the administration of questionnaire to 103 firms in the twelve industrial estates of the region. All the firms identified during the reconnaissance survey were successfully covered. The paper has found out a clustered pattern of industrial distribution in the region. The research further revealed the following location factors as germane to industrial enterprise; nearness to raw materials, market facilities, transportation, research and development, water supply, labour, power supply, personal reasons, cheap land, government policy, telecommunication, ports and shipping and access to financial institution. It was vivid from the research that market facilities was the most significant among the location factors, it also doubled as the most important advantages offered by locating within the industrial estates. The paper further revealed that the location factors were inadequate. On this premise, government intervention was strongly recommended. Governments have an important role to play in encouraging the small, medium and large scale enterprises. This could be achieved by making the location factors to be liberal coupled with the provisions of adequate infrastructural facilities in the industrial estates. Also, tax holidays should be given to the younger investors, while relaxing the laws governing the importation of raw materials. A financial assistance in form of loan should be given to interested investors, while the collateral securities should be affordable.

Keywords: Location, Location factors, Infrastructural facilities, Industrial estates, Lagos region

Introduction

In many developing countries, industrialization has become an increasingly valuable tool towards achieving not only rapid and sustainable economic growth but also more balance regional development. This is owing to the higher potential which manufacturing activities have in generating externalities that would have a widespread effect across sectors of economy through production linkages. In the present world, neither individuals nor societies can afford to operate as a close system. Spatial interactions through the exchange of ideas and materials and mobility across space are both inevitable and indispensable. The industrial sector, which is an important aspect of economic development experience varying degrees of interaction with intra-sectoral and inter-sectoral firms

In developing countries, the forces of economic production have been concentrated in a few cities, especially state capitals, ports and major administrative centers. For manufacturing activities, these concentrations have usually been explained in terms of the specific principles of industrial location. For instance, Aboyade (1968) have argued that industrialization in Nigeria arose as a result of the need for valorization of raw agricultural products or the beneficiation of minerals for export; through the principle of import substitution which entailed the manufacture in Nigeria, of those articles for which the market already existed in the country. It is well established that the geographic distribution of plants is concentrated, both across sectors and within individual industries. Devereux, Griffith and Simpson (2003), provide evidence on the geographic distribution of production activity in Great Britain, and find examples of such as the ceramics and lace industries that are highly localized. Studies in other countries find similar evidence. Henderson (1996), imply that production is more efficient or cost effective when it is spatially concentrated. The propensity to agglomerate (locationally) increases further either when transactions include small-scale, irregular, unstandardized, or contact-intensive activities that have high unit linkage costs, or when firms seek to reduce demand fluctuations by improving their customer base through locational clustering (Leung, 1993). This location tendency according to Storper and Scott (1989: 21) "is associated with a flexible regime of capital accumulation or mode of corporate organization characterized by intense external transactions between firms (external economies of scale) as a result of unstable market conditions". the location dispersal of production occurs when the transaction involves bulky, stable, standardized, or easily manageable activities that have low unit linkage costs. These activities "contain primarily routine deskilled production process and are dispersed to peripheral areas where labour or land costs are low" (Scott 1988a: 210). This locational tendency, as stated by Storper and Scott (1989: 22) is associated with a

Fordist regime of capital accumulation typified by deepened internal transaction within firms (internal economies of scale) as a result of stable market circumstances. Consequent on this is the emergence of spatial and international division of labour, with centers dominating in unstandardized skilled labour and the hinterlands depending on routine unskilled activities (Scott and Storper, 1986). Considering the immense importance of industrialization in socio economic development of regions, this paper underscores firms location and location factors amongst firms in the Lagos region, Nigeria.

Conceptual Issues/ Literature Review

Industrial location analysis may be defined as the study of spatial arrangement of industrial activity. Therefore, to understand the spatial pattern of firms in the Lagos region we have to use analytical tools of concepts, models and theories. Aber, Adams and Gould (1972) observed that 'what we call spatial processes are mechanisms which produce spatial structure of distributions'. Spatial processes can therefore give some view as to the processes that bring about spatial patterns of industries located for particular reasons. It can be grouped under two headings : Least cost approach and Market area approach . These reasons have a process they leave their mark on the landscape as zones of industrialization. From the literature review, it is clear that no single location theory is capable of explaining plant location but a combination of theories. Just as Weber was criticized for over-emphasizing supply, so also Losch was criticized for over-emphasizing demand. This limits the strength of these theories, Subsequent attempts to integrate these two aspects of supply and demand by writers as Greenhut, M.J.(1970) and Isard, W. (1960) have not been totally successful. Thus intellectual debate over the spatial aspects of economic activity, set in motion by Weber and others continue in the geographical literature. However, geographers like Hsu (1997), made efforts at discerning those factors that shape the economic landscape. These writers developed specific theories of plant location. These different industrial types.

The existence of externalities and increasing returns to scale in production is the

most important explanatory factor for the geographic concentration of firms. Even if individual firms face constant internal returns to scale, agglomeration may generate externalities that create productivity advancements for individual firms in a given locations and therefore lead to increasing returns to scale at an aggregate level. Many studies have shown that agglomeration economics can affect productivity levels of local firms and boost the economic performance of a region (Feser, 2001; Henderson, 1986; Moomaw, 1988; Bottazi & Peri, 2007). They tested the degree to which productivity increases with industry size (locationalization economics) or city size (urbanization economics). In addition Wheeler and Mody (1992) found that agglomeration economics are positively associated with firms' investments and location decisions. In his study of industrial location in Nigeria, Onyemelukwe (1974) contends that, 'location decision making for manufacturing activity in Nigeria has been the product of a complex body of decision beyond the control of the industrial promoter and within the framework of which his location decision is a mere space filling function'

The Study area and the Methods

The Lagos region covers metropolitan Lagos made up of fifty-seven local government areas among which are, Ikeja, Apapa, Mushin, Ikorodu, Epe and Badagry to mention just a few. This region which is situated along the south west of Nigeria, approximately between latitudes $6^{0}27$ ' and $6^{0}37$ ' north of the equator and longitudes $3^{0}15$ ' and $3^{0}47$ ' east of Greenwich meridian with a land area of about 1,088km², covers about 32 percent of the land area of Lagos state. About 20 percent of this area is made up of Lagoons and mangrove swamps.

Lagos region is the leading, industrial, commercial, financial and maritime nerve-centre of the country. Over 60 percent of all commercial transactions in Nigeria are carried out or finalized in the Lagos region. About 70 percent of the total value of industrial investments in Nigeria is in the Lagos region. Over 65 percent of the country's industrial employment is concentrated in this region, leaving the remaining 35 percent in other parts of the country. It is, in part, the recognition of the marked concentration of industries in the Lagos region that informed its choice as the study area for this work.

Perhaps it is this strategic position of the Lagos region within the country, which explains why industrial concerns and trading companies, such as United African Company (UAC), Union Trading Company (UTC), Patterson and Zochonis (PZ), have their head offices, located in this region. In addition, major financial centres such as the Nigerian Stock Exchange and the head office of major banks, insurance companies and other financial institutions are located in this region. The Lagos region has two seaports, Tincan and Apapa. The two ports handle about 60 percent of Nigeria's total export excluding crude oil and about 70 percent of imports. Major terminals for both road and rail routes are located in the Lagos region. The strategic location of the Lagos region is further strengthened by the presence of the most important airport.



The reconnaissance was carried out and covered all the twenty industrial estates/areas and outlying firms in the Lagos region. In each of the industrial estates/areas, all the industrial establishments were identified. The purpose of identifying all firms in each estate and other industrial centers was to ensure that none of the industrial establishments was left uncovered during the survey.

Questionnaire was designed to elicit information on firms location and location, factors, the industry group (line of activity), the location (address/industrial estate/area); the size and structural characteristics of the firms. All the firms identified during the reconnaissance survey were covered in the questionnaire administration. The questionnaire was administered such that firms in each of the industrial estates/areas and the outlying firms were visited one after the other. In each case, the questionnaires were left with the industrial estates; one questionnaire in each of the firm. This connotes that all the firms in the industrial estates were successfully covered in the questionnaire administration, which was administered. All the questionnaires were retrieved.

Findings

Firms Location.

The differential spread of industrial activity in space and time is a function of natural, social, political, economic and institutional factors. The interplay of these forces leads to the observed industrial landscape in the Lagos region. Out of the 103 firms (100%) in the estates, there are 24(23%) firms in Ikeja, 14 firms (13.6%) in Ilupeju, while 13 firms (12.6%) in Apapa and 10 firms in Oshodi/Isolo. Also, there are 9(8.7%) firms in Oregun, 7(6.8%) firms each in Surulere/Mushin, Agbara and Iganmu Industrial estates and 4(3.94%) firms in Ikorodu. Furthermore, there are 3 firms (2.9) each in Matori and Ijora estates and 2 firms (1.94%) in Ogba. This analysis has shown significant variation in the spatial distribution of agglomeration firms is presented in table 1.

	Table 1 Distribution			
S/No	Industrial Estate/Area	Number of Firms	Percentage of Tota	al
1	Apapa	13	12	2.6
2	Matori	03		2.9
3	Agbara	07		6.8
4	Ikeja	24		23
5	Ilupeju	14	1	13.6
6	Ijora	03		2.9
7	Iganmu	07	6.8	
8	Oshodi/Isolo	10		9.7
9	Ogba	02		1.94
10	Ikorodu	04	3.94	
11	Oregun	09		8.7
12	Surulere/Mushin	07	6.8	
Total		103		100

Field Survey, 2013.

The hypothesis which states that: the distribution of firms in the Lagos region is not clustered was tested using the quadrant count analytical techniques which was done using the Poisson distribution formula.

$$\int e^{-z} (1+z+\frac{z^2}{2!}+\frac{z^3}{3!}+\frac{z^4}{4!}+\frac{z^n}{n!})$$

Industries/Grid with (x)	F	Fx
0	531	0
1	28	28
2	18	36
3	8	24
4	1	5
5	2	10
15	588	103

$$Mean = \frac{\sum fx}{\sum f}$$
$$= \frac{103}{588} = 0.175$$

= 0.18

Determination of level of clustering of industries in Lagos Region

Industry	Variance
Х	$\sigma = \frac{x - \sigma_p}{N - 1}$
0	$\sigma = \frac{(0-0.41)^2}{(103-1)} = \frac{0.169}{102} = 0.0016$
1	$\sigma = \frac{(1-0.41)^2}{(102-1)} = \frac{0.59^2}{102} = \frac{0.3431}{102} = 0.0034$
2	$\sigma = \frac{(2-0.41)^2}{(103-1)} = \frac{1.59^2}{102} = \frac{2.5281}{102} = 0.0248$
3	$\sigma = \frac{(3-0.41)^2}{(103-1)} = \frac{2.59^2}{102} = \frac{6.7081}{102} = 0.0658$
4	$\sigma = \frac{(4-0.41)^{2}}{(103-1)} = \frac{3.59^{2}}{102} = \frac{12.8881}{102} = 0.1264$
5	$\sigma = \frac{(5-0.41)^2}{(103-1)} = \frac{4.59^2}{102} = \frac{21.0681}{102} = 0.2066$

Variance mean ratio= 0.8496 + 0.0954 + 0.4464 + 0.526 + 0.1234 + 0.4132/ 0.41

2	4 57	

=	0,	41

=	5.993	

Industry	
Х	Clustered of industry per grid = σ_0 x freq of industry per grid
0	$\begin{array}{c} 0.0016 \text{ X } 531 = 0.8496 \end{array}$
1	0.00341 X 28 = 0.0954
2	0.0248 X 18 = 0.4464
3	0.0658 X 8 = 0.526
4	0.1264 X 1 = 0.1264
5	$0.2066 \ X \ 2 = 0.4132$

The variance mean ratio is

 $\frac{0.8496 + 00954 + 0.4464 + 0.526 + 0.1264 + 4132 / 0.41}{2.457}$

0.41 = 5.993

If variance mean ratio (VMR) is greater than 1 the distribution is clustered. Therefore, the hypothesis which states that the distribution of firms in the Lagos region is not clustered is rejected this connotes that the distribution of firms in the Lagos region is clustered.

Firms Location Factors

Table 4 depicts the relative importance of location factors. Out of 103 firms (100%), 28 firms (27.2%) considered market facilities as the most important location factor, 16 firms (15.5%) considered nearness to raw material as the most important. Another, 14 (13.6%) considered nearness to transportation, 9 (8.7%) considered labour supply as the most important, R & D and power supply were rated equally as the most important by 8 firms(7.87%) each. Furthermore, 7 firms (6.8%) considered water supply, 6 firms (5.8%) considered ports and shipping as the most important, while, 3firms (2.9%) considered access to financial institution. Only 1 firm (0.97) each considered government policy and telecommunication as the most important, while availability of cheap land was ranked least in the ranking. It is apparent that market facilities were ranked/rated as the most important location factors.

Factors	Frequency	Percentage
Nearness to raw materials	16	15.5
Market facilities	28	27.2
Transportation	14	13.6
R & D	08	7.8
Water supply	07	6.8
Labour	09	8.7
Power supply	08	7.8
Personal reasons	02	1.9
Cheap land	0	0
Government policy	1	0.97
Telecommunication	1	0.97
Ports & shipping	6	5.8
Access to financial institution	3	2.9
Total	103	100

Table 4The Relative Importance of Location Factors.

Source: Author's Analysis, 2013.

The hypothesis which states that the location of industries on the various estates is not significant was tested using the chi-square analytical technique as depicted in table 5. The calculated chi-square value is 170.345 at 0.05 level of significance and 102 degree of freedom, while the tabulated value is 140.2. Since calculated is greater than the tabulated value, H_0 is rejected, thus signifying that the location of industries in the various estate is significant

Table 5 Summary of the Chi-Square Analysis of the Industry Group on the Basis of the Estates

Variable	α	Df	Cal X ² value	Tab X ² value	Decision
Industries group and estates	0.05 5%	(n - 1) =(103 -1) = 102	170.345	140.2	H _o is rejected H ₁ is accepted

Advantages Offered by Locating within the Estate

The establishment of industrial estate coupled with the provision of essential infrastructural facilities attracts the concentration of manufacturing establishments and other activities in the estate. The various advantages offered within an estate, has the capacity of attracting industries to locate in the estate.

Location Advantages amongst Firms

Table 6 reveals the various advantages offered in the estate. Out of 103(100%), 48(16.2%) of the firms attested to the transportation advantages, 43 (14.5%) raw materials. Another, 37(12.5%) opined labour advantages, 30(10.1%) power supply, 65 (22%) market, 15(5.1%) subcontract, while, 29 (9.8%) attested to water supply advantages. Furthermore, 11(3.7%) enjoyed security advantages, 13(4.4%) attested to ports and shipping, while 05 (1.7%) attested to sales promotion advantages.

ADVANTAGES	FREQUENCY	PERCENTAGE	
Transport	48	16.2	
Raw materials	43	14.5	
Labour	37	12.5	
Power supply	30	10.1	
Market	65	22	
Sub contract	15	5.1	
Water supply	29	9.8	
Security	11	3.7	
Ports and shopping	13	4.4	
Sales promotion	05	1.7	
	296	100	

Table 6	Advantages	Offered by	Locating wi	ithin the Estate
I able 0	1 iu antagos	Onci cu by	Locating m	thin the Lotate

Source: Authors analysis, 2013.

Total is greater than 103, because of multiple response.

Location Advantages on the Basis of Each Estate

Table 7 shows the advantages offered in each industrial estate. Out of the 48(0.68%) firms that enjoyed transport advantages; 20(6.8%) firms are in Ikeja, 9(3%) in Apapa, 4(1.41%) in Ilupeju, 3(1%) in Agbara. Whereas there are 2(0.68%) firms each in Matori, Oshodi/Isolo, Oregun and Surulere/Mushin. There is only 1(0.34%) firm's in Ijora, Iganmu and Ikorodu. Out of the 43(14.5%) firms that benefited from the raw material purchase/supply advantages 10(3.4%) firms are in Ilupeju, 6(2%) in Apapa, while 4(1.4%) firms each are in Ikeja and Iganmu. Another, 2(0.68%) firms each are in Matori, Agbara, Ijora and Oregun, whereas there is only 1(0.34%) firms each in Ogba, Ikorodu and Surulere/Mushin. Out of 37(12%) firms that are enjoying Labour advantages, 9(3%) are in Ikeja, 5(2%) firms each are in Agbara, Ilupeju and Oshodi/Isolo. There are 4(1.4%) firms in Apapa, 3(1%) in Iganmu, 2(0.68%) in Ikorodu, while, there is only 1(0.3.4%) in Surulere/Mushin. 30(10.1%) firms enjoyed power supply advantages, out of which there are 49(14.2%) in Agbara 10(3.4%) in Ikeja, while there are 7(2.4%) firms in Apapa. Another 3(2%) firms each in Apapa and Oshodi/Isolo also benefited from power supply, while there are 2(0.68%) firms in Matori and 1(0.68%) firms in Oregun.

Out of 65(22%) firms that benefited form market advantages in the estates. There are 10(3.4%) firms each in Ikeja and Ilupeju, whereas there are 8(2.7%) in Apapa. Another 6(2%) firms also enjoyed market advantages in Iganmu while there are 5(1.77%) in Oshodi /Isolo, 5(1.7%) each firms in Surulere/Mushin, 3(1%) each in Agbara, Ijora, and Oregun. 4(1.4%) firms in Surulere/Mushin, 3(1%) in Matori 2(0.68%) each in Ogba and Ikorodu also enjoyed market advantages, 15(5.1%) firms enjoyed subcontract advantages out of which there are 5(1.7%) in Ikeja, whereas there are 2(0.68%) firms each in Apapa, Agbara, Ilupeju, Oshodi/Isolo and Oregun. Out of the 29(9.8%) firms that enjoyed water supply advantages, there are 5(1.7%) firms each in Agbara, and Surulere/Mushin, whereas there are 4(1.4%) in Apapa and 3(1.4%) firms each in Ikeja, Oshodi/Isolo. Another 2(0.68%) firms enjoyed security advantages out of which there are 4(1.4%) in Matori also benefited from water supply. 11(3.7%) firms enjoyed security advantages out of which there are 4(1.4%) firms in Ikeja, 3(1%) in Oshodi/Isolo, 2(0.68%) in Ilupeju, while there is 1(0.34%) firm's each in Apapa and Oregun.

Furthermore, another 13(4.4%) firm's enjoyed ports and shipping advantages out of which there are 4(1.4%) firms in Ikeja, 3(2%) in Oregun. Whereas there are 2(0.68%) firms each in Apapa, Oshodi/Isolo and only 1(0.34%) firm's each in Agbara and Ilupeju. 5(1.7%) firms enjoyed sales promotion advantages, out of which 2(0.68%) are in Ikeja and 1(0.34%) each in Ilupeju, Oshodi/Isolo and Ikorodu. Out of 74(100%) firms that enjoyed Access to financial institution advantages, 10 (13.5%) firm's each are in Apapa, Ilupeju and Oshodi/Isolo, whereas there are 16(21.6%) in Ikeja. Another 5(6.8%) firms each in Iganmu, Oregun, Surulere/Mushin, 3(4.1%) in Ikorodu and 2(2.7%) firms each in Matori and Ogba also benefited from access to financial institution.

Industrial	Trans	sport	Raw		Labo	ur	Powe		Marl	cet	Subc	ontract	Water		Secu	rity	Port		Sales			
estate			mate	rıal			supp	ly					supply				shipp	oing	prom	otion		
	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%
Apapa	9	3	6	2	4	1.4	7	2.4	8	2.7	2	0.68	4	1.4	1	0.34	2	0.68			43	14.4
Matori	2	0.68	2	0.68	01	0.34	2	0.68	3	1	-	-	01	0.34							12	4
Agbara	3	1	2	0.68	05	2	49	1.4	5	1.7	2	0.68	5	1.7			1	0.34			28	9.5
Ikeja	20	6.8	4	3.4	09	3	10	3.4	10	4.4	5	1.7	3	1.4	4	1.4	4	1.4	2	0.68	77	26
Ilupeju	4	1.4	10	3	05	1.7	3	2	10	3.4	2	0.68	2	0.68	2	0.68	1	0.34	1	0.34	40	13.5
Ijora	1	0.34	2	0.68	01	0.34			5	1.7			2	0.68							11	3.7
Iganmu	1	0.34	4	1.4	03	1			6	2			2	0.68							16	5
oshodi/isolo	2	0.68	3	1	05	1.7	3	2	5	1.7	2	0.68	3	1.8	3	1	2	0.68	1	0.34	30	10
Ogba	-		1	0.34	01	0.34			2	0.68											4	1.4
Ikorodu	1	0.34	1	0.34	02	0.68			2	0.68									1	0.34	7	2.4
Oregon	2	1	2	0.68			1	0.68	5	1.7	2	0.68	2	0.68	1	0.34	3	2			19	6.4
Surulere /Mushin	2	0.68	1	0.34	01	0.34			4				5	1.7							12	4
Total	48	0.68	43	14.5	37	12	30	10.1	65	22	15	5.1	29	9.8	11	3.7	13	4.4	5	1.7	296	100

Table 7 Advantages Offered in Each Industrial Estate

Source: Author's analysis, 2013.

The Adequacy of Location factors and Infrastructural Facilities in the estates

Table 8 shows that out of 103 (100%) firms, 88(85.4%) firms responded that location factors and infrastructural facilities are inadequate, while 15 (14.6%) firms opined the adequacy of Location factors and Infrastructural Facilities in the estates

Response	No of firms	Percentage
Adequate	15	14.6
Inadequate	88	85.4
Total	103	100

Table 8 The Adequacy of Location factors and Infrastructural Facilities

Source: Author's analysis, 2013.

Summary and Conclusion

The impetus for this study was stimulated by the desire to examine the location and location factors amongst firms in the Lagos region and the study has provided a quantitative analysis of spatial distribution as well as location factors amongst firms in the region (Lagos region). The analysis has shown significant variation in the spatial distribution of firms in each of the estates, revealing a clustered pattern, while concentration were more striking in Ikeja and Ilupeju industrial estates. The most important location factors were the market facilities. In all, the concentration of manufacturing establishments in the region can be explained by the initial advantage that the region has over other places. Lagos region, apart from being one of the oldest states in Nigeria, is the seat of the Lagos state government, and so the tendency for industrial promoters to want to locate in the estate is not impossible. This study has emphasized the economic rationality that led to the agglomeration of manufacturing activities in the Lagos region. Location optimality is derived directly from the forces of industrial location in Lagos and these forces are the concentration of manufacturing establishments in the industrial estate, which have been well laid out and provided with necessary infrastructural facilities. In addition, the fact that bulk of the raw materials used by some industries is not sourced locally, the geographical location of Lagos, having the best well developed port, location close to the entire port is inevitable, hence the concentration of manufacturing establishment in the Lagos industrial estates. The most significant advantages offered by locating within the estate was the market facilities, followed by transport. Most of the firms attested that location factors and infrastructural facilities are inadequate.

Industrialization can lead to amazing technological development of a region, thereby facilitating diffusion and innovation creation which will immensely contributes to the economic welfare and improved standard of living. The industrial estates needs to be created and equipped with facilities, because industrialization in this modern world is a determinant of national power, thus, any country that failed in this aspect, will find it difficult to perform in other aspects of the economy. Government should invest in the industrial sector.

Agglomeration of firms if encouraged, will lead to increase agglomeration economies, these agglomeration of firms should be made viable, encouraged and strengthened through government investment in the industrial sector, making the location factors to be liberal, giving tax holidays to the younger investors, relaxing the laws governing the importation of some raw materials, as this will have positive impact on productions. Financial aids should be given to these industries in form of loan, while the collateral securities should be made affordable for the investors. Assistance, in form of subsidy should be given to the investors.

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