

THE PLACE OF FIRMS INVESTMENT IN AGGLOMERATION ECONOMIES AMONGST INDUSTRIES IN THE LAGOS REGION, NIGERIA

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Abstract

This paper underscores the place of firms' investment in agglomeration economies in the Lagos region, Nigeria. 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 revealed that majority of the firms invested above two hundred million naira in their plants. Agglomeration economies enjoyed include; power supply economies, transport economies, research and development economies and labour economies among others. The canonical correlation analysis carried out to test the influence of firms investment on the degree of agglomeration economies enjoyed amongst firms was significant, the analysis revealed F-value 3.2045 and the tabulated F-value 2.70. Result revealed that firms' investments led to the use of improved technology, increased capacity utilization, acquisition of adequate and right personnel (labour), increased output, and realisation of more economies. The contribution of firm's investment to agglomeration economies has positively boosted the local economy. The study recommends that governments have an important role to play in encouraging small, medium and large scale enterprises. This could be achieved by given tax holiday to start-up investors, relaxation of 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.

Key Words: *Firms investment, Agglomeration economies, Lagos Region*

Introduction

Agglomeration economies are the benefits enjoyed by firms locating in the same place. The concentration of the production facilities of a single firm or across multiple firms in a single location generates cost-saving scale effects and often leads to further agglomeration of firms through an industrial location process (Weber, 1929; Venables, 2008). Such cost saving effects of agglomeration is often called agglomeration economies.

Agglomerative activity can take many forms (Simmie, 1997) and is often considered to result in either "localization" or "urbanization" (external) economies dependent upon the industrial composition of the cluster or complex. Localization economies involve economies amongst similar firms, while economies amongst unlike firms are known as urbanization economies. The latter form of agglomeration has received greater attention in the literature, often providing a

mechanism for analyses of differential urban growth and optimal city size.

The economies of scale that are enjoyed by the manufacturing establishments in metropolitan areas account for the concentration of these industries in the city. These economies of scale are both internal and external. The internal economies enjoyed by the firms that are concentrated in an area may include managerial economies, which are likely to be those derived from specialization. External economies are also realized through a trade association. Marketing economies, both in the purchase of raw materials and components, and also in the sale of finished products are other advantages derived by firms that agglomerate over space. The concentration of industries with functional linkages in industrial agglomeration brings about financial savings on the part of industries concerned. Such savings are achieved because agglomerated firms can share common services such as water, communication facilities, security, transport facilities and labour. Individual industries are thus saved from the cost of providing these services for themselves. Such financial savings are referred to as external economies of scale. Agglomeration also has the advantage of concentrating labour, managerial skill, capital and customers in specific places, thereby making such places still more attractive to industries.

Coe, (2009), imply that production is more efficient or cost effective when it is spatially concentrated. Firms benefit from the proximity of firms that are in the same industry or are suppliers, (demanders) of their inputs (outputs). Negative spillovers, or insufficient density to facilitate economical production, can conversely be called thin market effects. Once an agglomeration of firms becomes established, progressively more external

economies are created forming a cumulative process. 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). Flexible regime of accumulation encompasses new forms of production characterized by a well-developed ability to shift promptly from one process and/or product arrangement to another it mechanism for rapidly adjusting to changes in the market without harmful effects on the level of efficiency; these have encouraged agglomeration and competitiveness amongst firms. On the other hand, 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 1993).

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.

Based on the two variables of the number of employees and the sum of capital investment, the Nigerian government recognizes large and small scale manufacturing plants. A small scale establishment is the one that employed 50 employees or less and has ₦750, 000.00 or less capital investment (federal

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 industrialist/designated officer to complete. One hundred and three questionnaire were administered in twelve 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.

Result and Discussion

Firm's Investment

Figure 2 shows the estimated firms investment. Out of 103(100%) firms, 9 (8.7%) firms invested less than ₦1m, 12 (11.7%) firms invested between ₦1m -50m naira, 4 (3.9%) firms invested between ₦51m ₦100 while, 8 (7.8%) firms invested between ₦ 101m- ₦150m, also, 11 (11%) firms invested between ₦ 151m - ₦ 200m and 59 (57%) firms invested above ₦200m. It is apparent that many of the firms invested above ₦200m; this also points to the fact that most of the firms are large scale industries, federal government 1990 opined that large scale industries are those firms having above 750,000.00 investments.

Figure 3 shows the estimated firm's investment in each of the estates. Out of 9(8.7%) firms that invested <N1m, 2(1.9%) are in Ikorodu while 1(0.97%) firms each are in Agbara, Ikeja, Ilupeju, Oshodi/Isolo, Oregun and Surulere/Mushin. Out of the 12(11.7%) firms that invested between N1m and N50m, 3(2.9%) are in Apapa, 1(0.97%) each are in Matori, Ikeja, Ilupeju, Oregun and Surulere/Mushin. Another 4(3.9%) firms invested between N51m and N100m, out of which 3(2.9%) firms are in Ikeja, only 1(0.97%) in Apapa.

Out of the 8(7.8%) firms that invested between N151 and N200m, 3(2.9%) are in Apapa, while 2(1.9%) firms each are in Agbara, Ikeja and Ilupeju. Whereas only 1(0.94%) is in Oshodi/Isolo. Furthermore, out of 11(10.7%) firms that invested between N101m and N150m, 3(2.9%) are in Apapa, while 1(0.97%) is in Matori, Agbara, Ikeja, Ilupeju and Oshodi/Isolo. Out of the 59(57%) firms that invested above N200m, 16(15.5%) are in Ikeja, while 9(8.7%) are in Ilupeju. Also, 7(6.8%) were in Oregun, whereas 6(5.8%) firms each were in Iganmu and Oshodi/Isolo. Another, 5(4.9%) firms are in Surulere/Mushin, while there are 2(1.9%) firms each in Apapa and Ogba. Only 1(0.97%) firms in Ikorodu.

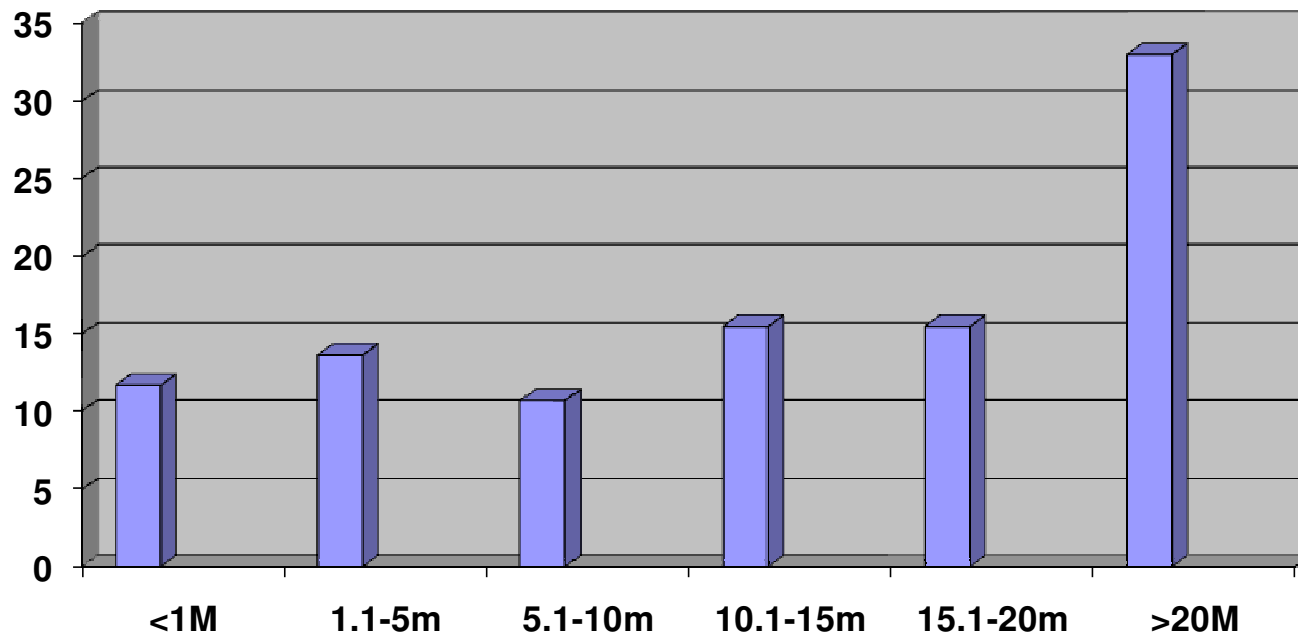


Figure 2: Firms Investment

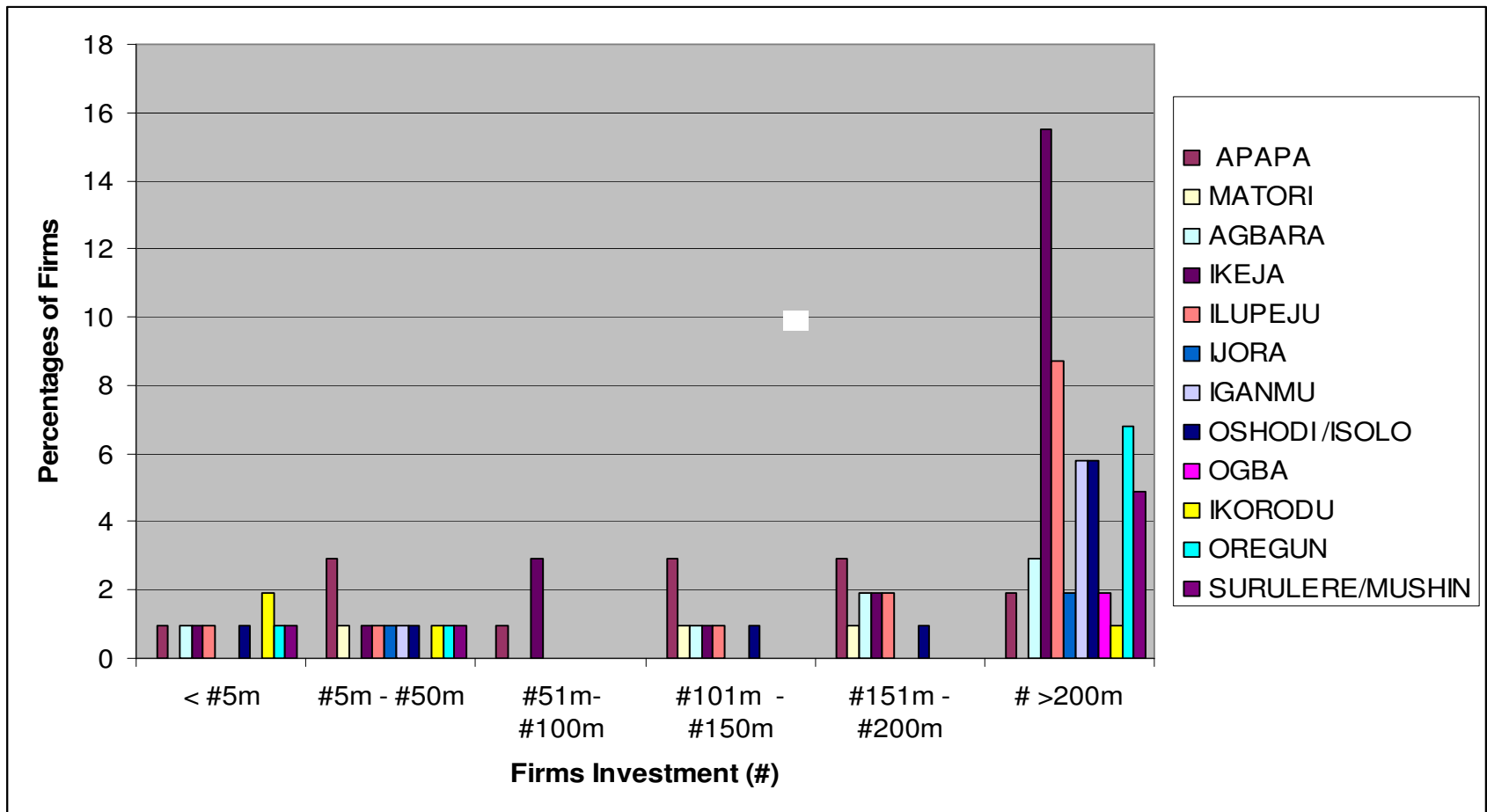


Figure 3: Estimated Firms Investment on the Basis of the Estates

Gross Financial Annual Output

Table 1 shows the gross financial annual output of firms. Out of 103 (100%) firms, 5 (4.9%) firms have less than ₦10m, 22 (21.4%) firms have between ₦10m – ₦100m, 4 (3.9%) firms have gross financial annual output between ₦101m – ₦190m,

while, 3 (2.9%) firms have between ₦191m – ₦281m , only 2 (1.9%) firms have between ₦282m – ₦372m , 67(65%) firms have above ₦372m gross financial annual output. This connotes that majority of the firms have gross financial annual output above ₦372m.

Table 1 Gross Financial Annual Output of Firms

Gross financial annual output of Firms ₦m	No of Firms	Percentage
Less than ₦10m	5	4.9
₦ 10m- ₦100m	22	21.4
₦ 101m- ₦ 190m	4	3.9
₦ 191m- ₦ 281	3	2.9
₦ 282m- ₦ 372m	2	1.9
Greater than 372m	67	65
TOTAL	103	100

Table 2 shows the gross financial annual output in each of the estates. Out of the 5(4.9%) firms having <N10m gross financial annual output, 2(1.9%) firms are in Oregon and 1(0.97) firm’s each are in Apapa, Ikeja and Ilupeju. Another, 22(21.4%) firms have between N10m and N100m gross financial annual output, out of which 5(4.9%) each are in Apapa and Ikeja. While there are 2(1.9%) firms each in Ilupeju, Oshodi/Isolo, Ogba and Oregon. Also, out of 4(3.9%) firms having between N101m and N190m, 2(1.9%) are in Agbara, only 1(0.97%) each in Apapa and Matori.

Furthermore, out of the 3(2.9%) firms that have between N191m and N281m gross financial annual output, 2(1.9%) firms are in Apapa, only 1(0.97%) in Ikeja. Moreover, out of the 2(1.94%) firms that have between N282m and N372m, only 1(0.97%) each in Apapa, and Ikeja. Out of the 66(64.07%) firms that have above N372m gross financial annual output, 17(16.5%) are in Ikeja, 8(7.8%) in Ogba, whereas there are 5(4.9%) firms each in Agbara, and Oshodi/Isolo. Another 6(5.8%) in Surulere/Mushin, while there are 3(2.9%) in Apapa. Also, there are 2(1.9%) firms Iganmu and 1(0.79%) each in Matori and Ikorodu.

Table 2 Gross Financial Annual Output on the Basis of the Estates

	< #10m		#10m -100m		#101m-#190m		#191m-#281m		#282m-#372m		>#372m	
	No	%	No	%	No	%	No	%	No	%	No	%
Apapa	1	0.97	5	4.9	1	0.97	2	1.9	1	0.97	3	2.9
Matori			1	0.97	1	0.97					1	0.97
Agbara					2	1.9					5	4.9
Ikeja	1	0.97	5	4.9			1	0.97			17	16.5
Ilupeju	1	0.97	2	1.9							11	10.7
Iganmu			1	0.97							2	1.9
Oshodi/Isolo			2	1.9							5	4.9
Ogba			2	1.9					1	0.97	8	7.8
Ikorodu	2	1.9	1	0.97							1	0.97
Oregon			2	1.9							7	6.8
Surulere /Mushin			1	0.97							6	5.8
TOTAL	5	4.9	22	21.4	4	3.9	3	2.9	2	1.94	66	64.07

Table 3: Agglomeration economies Amongst Firms

% Savings	Joints Transportati on		Joint Power Supply		Joint Raw Material Purchase/Su pply		Collaboratio n in R & D		Joint labour		Joint Water Supply		Joint waste treatment		Joint Security		Joint telecomm		Joint port & shipping		Access to financial institution	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
<10	29	28.2	38	36.9	24	23.3	42	40.7	43	41.7	60	58	53	51.5	55	53	79	76.7	51	49.5	20	19.4
11-20	10	9.71	18	17.5	26	25.2	12	11.7	18	17.5	19	18	06	5.8	16	15.5	15	14.6	7	6.8	17	16.5
21-30	20	19	9	8.7	9	8.7	3	2.9	17	16.5	9	9	12	11.7	12	11.7	8	7.8	13	12.6	12	11.7
31-40	10	9.71	1	0.97	6	5.8	10	9.71	4	3.9	10	10	11	10.7	7	6.8	1	0.97	10	9.71	07	6.8
41-50	14	13.6	19	18.4	6	11.7	17	16.5	15	14.6	3	3	8	7.8	5	4.9	-	-	5	4.9	25	24.3
51-60	10	9.71	9	8.7	10	16.5	9	8.7	06	5.8	2	1.94	10	9.71	5	4.9	-	-	12	11.7	9	8.7
61-70	05	4.9	7	6.8	4	7.8	8	7.8	-	-	-	-	1	0.97	2	1.94	-	-	5	4.9	5	4.9
71-80	1	0.97	2	1.94	1	0.97	2	1.94	-	-	-	-	1	0.97	1	0.9	-	-	-	-	3	2.9
81-90	2	1.94	-	-	-	-	-	-	-	-	-	-	1	0.97	-	-	-	-	-	-	5	4.9
91-100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	103	100	103	100	103	100	103	100	103	100	103	100	103	100			103	100	103	100	103	100

The benefits of agglomeration are revealed in table 3, these benefits ranges from joint transportation to access to financial institution. Due to joint transportation, only 1(0.97%) firms saved between 81-90%, whereas as a result of joint power supply; (7.8%) firms realized between 61 and 70%. The percentage savings in collaboration in research and

development indicated that 17(16.5%) firms saved between 41and 50%, whereas 15(14.6%) firms realised between 41and 50% as a result of joint labour. Also, 5(4.9%) firms saved between 61-80% due to joint ports and shipping, while three (2.9%) firms realized between 71 and 80% as a result of access to financial institution.

Table 4: Firms Investment and its Influence in Agglomeration Economies

Contribution of Firms Investment to Agglomeration Economies	Frequency	Percentage
Adequate Infrastructure	50	15
Recruitment of adequate and Right Personnel	42	13
Improved Collaboration in research and development	34	10
Adequate Sales promotion	34	10
The use of Sophisticated Equipments	47	14
Industrial Expansion	29	9
Increased Output	27	8
Improved Productivity	40	12
Production Sustenance	24	7.2
Realisation of more Economies	6	1.8
Total	333	100

The total is greater than 103 because of multiple responses.

Table 4 depicts the contribution of firms investment to agglomeration economies enjoyed amongst firms. Fifty (15%) firms opined adequate infrastructure, 47(14%) agreed that firms investment has contributed to the use of sophisticated equipments to boost production. Also, 24(7.2%) believed that firms investment has sustained production, whereas 6(1.8%) opined realisation of more economies. This has lends credence that the place of firms investment is germane to industrial survival, especially in the areas of increased agglomeration economies which is vital to economic rejuvenation.

The degree of agglomeration economies enjoyed by firms is not determined by firms investment was tested using the canonical correlation statistical technique.

Table 5 shows the result of Canonical Correlation Analysis of agglomeration economies and structural characteristics of firms. It reveals that agglomeration economies have a stronger variation coefficient, with r value of 0.8027, r² value of 0.62 and 62% variance, while the firm's investment has r value of 0.7033, r² value of 0.51 and 51% of variance.

The Roy's Largest Root Test depicted in table 6 was employed to test for the significance of the canonical correlations at 0.05 significant levels; result of the test shows the calculated F-value 3.2045 and the tabulated F-value 2.70. The calculated F-value is greater than the tabulated value. This suggests that the degree of agglomeration economies enjoyed by firms is significantly explained by the firm's investment.

Table 5: Summary of result of Canonical Correlation Analysis

Variables	Canonical Correlation (r)	r ²	% of variance	Decision
Set I				Accept H ₁
Y ₁₋₁₁	0.8027	0.62	62%	
Set II				
X ₁₁₁ – X ₅₅₅	0.7033	0.51	51%	

Table 6: Roy’s Largest Root Test of Significant

R	df _r	df _c	Level of Significant	Calc. F	Tab. F.	Decision
0.8027						
	11	9	5%	3.2045	2.70	H ₁ is accepted
0.7033						

Table 7 The Most Significant Infrastructure as the Dominant contributor to Agglomeration Economies

Most Significant Infrastructure	Frequency	Percentage
Telecommunication	2	1.6
Water Supply	42	33.1
Good Road Net work	12	9.4
Sewers	10	7.9
Electricity	49	38.6
Hospitals	4	3.1
Parks	8	6.3
Total	127	100

The total is greater than 103 because of multiple responses.

Table 7 reveals the most significant infrastructure, which is the dominant contributor to agglomeration economies enjoyed as a result of firms investment. Only 2(1.6%) firms opined telecommunication, while 42(33.1%) agreed water supply. Another 49(38.6%) believed that electricity has significantly contributed to the agglomeration economies, whereas 12 (9.4%) agreed that good roads contributed the most. Also, 10(7.9%) firms opined sewers, while 8(6.3%) believed that parks has the most contribution.

It is apparent that telecommunication is not a significant contributing factor to agglomeration economies, while electricity is very germane in contributing to agglomeration economies. This lends credence to the facts that proximity of firms could lead to joint power supply,

which is a concerted efforts towards production sustenance.

Table 8: The Firms Notion about their Investment and Agglomeration Economies Contribution to the Local Economy

Contributions	Frequency	Percentage
Very Significant	58	56
Fairly Significant	33	32
Significant	9	9
Averagely Significant	3	3
Insignificant	-	-
Total	333	100

Table 8 shows the contribution of firm’s investment and agglomeration economies to the local economy. Out of 103(100%) firms, 58(56.3%) attested a very significant contribution, while 33(32%) attested fairly significant. Furthermore, 9 (9%) opined significant

contribution, whereas 3(%) believed an averagely contribution. It is obvious from the analysis that firms' investment and the agglomeration economies are catalysts which serve as an economic booster.

Summary and Conclusion

The paper has examined the place of firm's investment in agglomeration economies amongst firms in the Lagos region, Nigeria. The research has found out that many of the firms invested above ₦200m; this also points to the fact that most of the firms are large scale industries. Furthermore, majority of the firms have gross financial annual output above ₦372m. Agglomeration economies varied significantly amongst these firms, the agglomeration economies enjoyed includes; transportation economies, labour economies, ports and shipping, research and development economies, power economies, water supply economies, waste treatment economies, security economies, raw material /purchasing economies, telecommunication as well as access to financial institution. The contributions of firm's investment to agglomeration economies are diverse, including; adequate infrastructural provision, recruitment of adequate and right personnel, industrial expansion, and increased output, adequate sales promotion, the use of quality and sophisticated equipments, improved productivity and production sustenance, improved collaboration in research and development and realisation of more economies. It must be noted that adequate infrastructural facility provisions was the most significant of all the contributions of firms investment to agglomeration economies; this has lends credence to the fact that firms investment is germane to industrial survival, especially in the areas of increased agglomeration economies. To further ascertain the place of firm's

investment in agglomeration economies amongst firms, a test was carried out and the result of the test i.e. in relation to the influence of firms' investment on degree of agglomeration economies enjoyed by firms, using the canonical correlation statistical technique shows the calculated F-value 3.2045 and the tabulated F-value 2.70. This revealed that the degree of agglomeration economies enjoyed by firms is significantly explained or determined by the firm's investment, this signify a positive relationship.

Agglomeration of firms therefore could be likening to a catalyst and socio economic booster in regional revamping and development. The economies generated have a multiplier effect and positively aiding other sector of the economy. Agglomeration of firms needs to be encouraged, because its encouragement will culminate to realisation of more economies. In the light of this; the paper recommends that: the industrial enterprise should be encouraged through active government participation and the provision of adequate infrastructural facilities in the industrial estates. Also credit facilities should be accorded to interested entrepreneur to facilitate industrial expansion. Government should implement tax holiday policy in order to encourage younger investors.

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