Industrial clustering and performance of technology-based SMEs in Nigeria: Does firm age and size have any influence?

6 authors, including:

Omotayo Adewale Osibanjo
Covenant University Ota Ogun State, Nigeria
67 PUBLICATIONS   **325** CITATIONS

SEE PROFILE

Stephen Ibidunni
Covenant University Ota Ogun State, Nigeria
70 PUBLICATIONS   **179** CITATIONS

SEE PROFILE

Helen Jevwegaga
Covenant University Ota Ogun State, Nigeria
3 PUBLICATIONS   **3** CITATIONS

SEE PROFILE

Maxwell Olokundun
Covenant University Ota Ogun State, Nigeria
65 PUBLICATIONS   **170** CITATIONS

SEE PROFILE

Some of the authors of this publication are also working on these related projects:

Corporate governance and behaviour View project

Developing an Entrepreneurial Ecosystem View project

INDUSTRIAL CLUSTERING AND PERFORMANCE OF TECHNOLOGY-BASED SMES IN NIGERIA: DOES FIRM AGE AND SIZE HAVE ANY INFLUENCE?

Osibanjo, Adewale Omotayo; Ibidunni, Ayodotun Stephen; Jevwegaga, Helen; Olokundun, Maxwell Ayodele; Obaoye, David
Department of Business Management, Covenant University

Adebanji, Ayeni William
Department of Business Administration, Landmark University

ABSTRACT

This research focused on examining the relationship between industrial clustering and performance of technology-based SMEs in Nigeria, and to identify the moderating role of firm age and size on this relationship. A sample size of 65 owners/managers of technology-based small and medium enterprises were surveyed through the use of structured questionnaire. Hierarchical multiple regression were adopted in analysing the research instrument. Based on the findings from the statistical analysis, this research concludes that there is a direct relationship between industrial clustering and the performance of SMEs in Nigeria. The study also asserts that firm age is a critical influencer of the relationship between industrial clustering and performance of SMEs. Consequently, it is recommended that SME operators in Nigeria should leverage on industrial clustering as a means of enhancing their performance levels. More so, owners/managers of SMEs, bearing in mind the age categorization of their organizations should form industrial clusters in ways that help younger firms share from the experiences of older firms to enhance their performance.

Key words: Entrepreneurship, Industrial Clustering, Innovation, Firm Age, Firm Size, Technology-based SMEs performance.

Osibanjo, Adewale Omotayo; Ibidunni, Ayodotun Stephen; Jevwegaga, Helen;
Adebanji, Ayeni William; Olokundun, Maxwell Ayodele; Obaoye, David

1. INTRODUCTION

Industrial clustering can be described as the coming together of firms in the same industry, gathering together in close proximity in order to work and develop. Existing studies in developed economies have shown that industrial clustering is very beneficial to enhancing the performance of SMEs (Santis, 2012; Denisa, Michaela and Gabriela, 2016). However, there is still a dearth in literature to shown the effects of such clusters on the performance of SMEs in developing economies, such as Nigeria. Moreover, the interacting effects of firm age and size the relationship between industrial clustering and performance of SMEs have not been examined in existing literature. Consequently, this research focuses on providing viable insights by examining the relationship between industrial clustering and performance of SMEs in Nigeria, and to identify the role of firm age and size on this relationship.

2. LITERATURE REVIEW

2.1. Industrial Clustering and Performance of SMEs

Small and medium businesses have been known to contribute immensely to economic developments world over through diverse patterns of growth modes and strategies. Santi (2012) examined the variables for cluster analysis to include the firm's goals and objectives, rate of turnover in the business, indicators of business growth, educational background of the business operator, comparison with firm's competitors, the style of leadership and the management principles. Santi (2012) was of the view that the businesses with homogeneous characteristics can be further grouped into clusters based on whether they are struggling for survival, the ones that should need external support, and those innovators with continuous improvement. Therefore, the findings would enable the provision of quality guiding principles for improvement.

Jose, Tulio, Simon and Caio (2013) noted that the initiative of providing financial support for locally based development projects through identified clusters of industries with common targets, serves as an effective industrial policy tool, with which to improve productivity and economic development by generating employments. However, Jose *et al* (2013), and Denisa, Michaela and Gabriela (2016) argued that policymakers are often challenged with the inability to properly identify the target cluster of industries and to also assess their level of economic performance. Reason being that the location of the industries to neighbouring businesses and their specialization depends on the similarity of industrial structures. In order words, businesses with similar industrial structures tend to perform better than those with only specialization.

2.2. Industrial Clustering Practices among SMEs in Nigeria

Small firms grow and are also competitive in nature through cluster formation in Nigeria. Osmond, Andreas, Alfons, Axel, & Karl (2004), asserted that firms are able to share their limited resources, innovative contributions, technological expertise and knowledge to increase their productivity while reducing transaction costs via the co-operation of their go-between agents (Adeniji *et al*, 2014; Ogunnaike *et al*, 2014; Olokundun *et al*, 2017; Ibidunni *et al*, 2017). The approach helps to strengthen the competitiveness of clustered firms and also facilitate their learning and technological improvements. Accordingly, Osmond *et al* (2004) gave 5 factors which enables clustered firms in Nigeria to facilitate growth such as, the size of the market and the nature of products (where there is low demand for the firm's product, the rate of income is also reduced hence, emphasis is placed on ensuring the durability and reliability of the product as well as the conformity to specification and safety standards); the nature of supporting institution or Parastatal; the forms of collective efficiency; the rate of

innovativeness; risk-taking; and the stock of economies of scale and scope (ability to reach a larger market in order to induce proportionate increase in productivity and increased income).

Similarly, Gudda (2017) explained that clustering of industries enable firms to share competences and reduce labour costs, and to also consolidate limited resources, thereby increasing innovativeness and profitability (Babajide & Olokoyo, 2017; Ogundana *et al*, 2016). Corroborating further, it is a firms' ability to sustain competitive advantage through a strategic capability management of its intellectual, physical and cultural resources (Ahsan, Ming & Louise, 2012: Wawan, Eko, Surajati, Sri, Rendra, Qorri, Bayuningrate & Evy, 2012). Thus, firms with common interest often create the environment for innovation and technological advancements. In this way, SMEs tend to gain additional benefits of technological know-how, cost-saving options, and innovative product differentiation to satisfy customers' needs. Additionally, successful SMEs would naturally adopt ways to become more efficient in integrating strategic capabilities and cooperation than their competitors (Ahsan *et al*, 2012).

2.3. Influence of Firm's age and size on industrial clustering and performance

Anderson and Eshima (2013) and Anggadwita and Mustafid (2014) asserted that younger firms, although may lack established routines and processes, and procedures for doing viable businesses which may provide proper guidance and discipline in strategic decision making, they do possess structures and can organize more flexible and reactive contexts than older firms. The moderating effect of firm's age and intangible resources such as brand identity, intellectual property and reputation enables younger firms to better capture the value of entrepreneurial strategies like higher organizational growth rate than older ones (Tayfun & Zafer, 2015). Also, Aziz and Samad (2016) further observed that with a growing knowledge on the effect of innovation on SMEs' competitive advantage, studies have recently showed that younger firms outperform the older ones through their proactivity, aggressive innovation initiatives and flexibility. Nevertheless, there are other views opposing this line of thought to state contrarily hence, creates room for subjective opinions and mixed feelings on the matter.

3. METHODOLOGY

The research design used in this study is descriptive. The use of descriptive research design is validated by the fact that the population for the study is already established, theories are not newly explored or determined and the research study, on one hand, simply attempts to describe the relationships among the variables included in the research (Jong & van der Voordt, 2002).

3.1. Measures

Questionnaire was used to gather primary data from the respondents. This research benefitted from the ideas of existing research studies. Questions that pertained to new product/service creation was developed based on Page (1993) and Ueasangkomsate and Jangkot, (2017). Items on entrepreneurial education and training was developed based on Njoroge and Gathungu (2013), Küttim, Kallaste, Venesaar and Kiis (2014) and Emmanuel (2017). Items on industrial clustering was designed based on Bölükbaş and Güneri (2017), while items of SMEs performance was developed based on Venkatraman (1989) and Wang, Chich-Jen, and Mei-Ling (2010).

Osibanjo, Adewale Omotayo; Ibidunni, Ayodotun Stephen; Jevwegaga, Helen;
Adebanji, Ayeni William; Olokundun, Maxwell Ayodele; Obaoye, David

3.2. Sampling

In this research work the respondents include owners and managers of SMEs in Lagos state, Nigeria. A study of this nature is not common in existing literature, especially within the context of Nigeria. A total of 65 owners/managers of SMEs in the Ikeja technology-based market of Nigeria, commonly referred to as "Computer Village" were included in this study. Computer Village is a large technology-based market that consists of dealers in electronic, mobile phones and telephone accessories. A pilot study of this nature is essential to demonstrate theoretical thoughts towards enhancing performance levels of SMEs in the Computer Village.

3.3. Reliability and Validity of the Scale Items

The reliability of the research items was ensured using the internal consistency method while the validity of scale items was carried out using construct validity. These tests were carried out using SPSS version 22. The Coefficient Alpha (α) or Cronbach Alpha is the most popularly used to measure internal consistency (Pallant, 2005). Table 1 below shows the reliability and validity results of the scale items.

Table 1 Reliability and Validity of the Scale Items

Factor	Loading	Alpha	
IC1	.956	.704	
IC2	.950		
IC3	.940		
IC4	.935		KMO = .884; Bartlett's Test of Sphericity = Chi Sq. (605.458); df = 36; Sig. = .000
IC5	.887		
IC6	.865		
IC7	.835		
IC8	.778		
IC9	.305		
PERF1	.892	.859	
PERF2	.870		
PERF3	.862		
PERF4	.859		KMO = .804; Bartlett's Test of Sphericity = Chi Sq. (458.106); df = 45; Sig. = .000
PERF5	.801		
PERF6	.614		
PERF7	.916		
PERF8	.913		
PERF9	.793		
PERF10	.756		

Based on a generally acceptable factor value of 0.3 (Hair, Anderson, Tatham & Black, 1998), the factor loading for each scale item as indicated in Table 1 above are judged to be very satisfactory. The KMO values also surpass the minimum 0.6 benchmark and the Barlett's Tests of Sphericity as presented above are significant ($p < 0.05$). Moreover, the alpha reliability values surpass the benchmark of 0.7 (Pallant, 2005), thus indicating that all the scale items are reliable.

4. ANALYSIS AND DISCUSSION

Table 2 Demographic Characteristics of Respondents

Demographic Characteristics	Frequency	%
Gender		
Male	42	64.6
Female	23	35.4
Total	65	100.0
Marital Status		
Single	21	32.3
Married	31	47.7
Others	13	20.0
Total	65	100.0
Work Experience		
Less than 5 years	21	32.3
6-10 years	20	30.8
11-15 years	12	18.5
16 years and above	12	18.5
Total	65	100.0
Age		
Under 25 years	9	13.8
26 - 35 years	23	35.4
36 - 45 years	17	26.2
46 years and above	16	24.6
Total	65	100.0

A total of 65 copies of the research instrument was distributed and returned. The respondents that make up the study consist of both the male and female gender however the sample is made up of more males 42 (64.6%) than female 23 (35.4%) respondents. In terms of the age of respondents, 9 respondents (13.8%) are 25 years and below, 23 (35.4%) of the respondents are between 26-35 years, 17 (26.2%) of the respondents are between the age of 36-45 and 16 (24.6%) of the respondents are 46 years and above. 21 (32.3%) of the respondents are single, 31 (47.7%) of the respondents are married and 13 (20.0%) are under the categories of other, such as divorced and widowed. According to the statistics, 21 (32.3%) of the respondents have 5 years and below working experience, 20 (30.8%) of the respondents have 6-10 years' work experience, 12 (18.5%) of the respondents have 11-15 years' work experience and 12 (18.5%) of the respondents have 16 years and above work experience.

Table 3 Moderating Effect of Firm Age and Firm Size on Industrial Clustering and SMEs' Performance

	Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3.738	.176		21.190	.000
	IC	.091	.047	.237	1.935	.058*
2	(Constant)	4.066	.266		15.296	.000
	IC	.203	.121	.530	1.681	.098*
	IC_Size	-.034	.146	-.060	-.234	.816
	IC_Age	-.191	.100	-.344	-1.905	.061*

Model	R	R^2	Adj. R^2	ΔR^2	F
1	.237[a]	.056	.041	----	3.743 (Sig. = 0.058)
2	.335[b]	.112	.068	.056	2.562 (Sig. = 0.063)
a. Dependent Variable: PERFORM					
b. Predictors: (Constant), IC					
c. Predictors: (Constant), IC, IC_Age, IC_Size					

Osibanjo, Adewale Omotayo; Ibidunni, Ayodotun Stephen; Jevwegaga, Helen;
Adebanji, Ayeni William; Olokundun, Maxwell Ayodele; Obaoye, David

Table 3 shows the moderating effect of firm age and firm size on the relationship between industrial clustering and SMEs' performance. The results indicate that there is a direct relationship between industrial clustering and SMEs' performance ($\beta = 0.091$, $r^2 = 0.056$, sig. $= 0.058$; $p < 0.1$). More so, the moderating effect of firm age on the relationship between industrial clustering and performance of SMEs was also established ($\beta = -0.191$, $\Delta r^2 = 0.056$, sig. $= 0.061$; $p < 0.1$). However, the moderating effect of firm size on the relationship between industrial clustering and SMEs' performance was not statistically significant. The implication of this result is that the capability of SME operators to form clusters that are strategic to the firms' objectives can stimulate higher levels of performance. This findings is in consonance with the assertions of Santi (2012) and Denisa et al (2016) that industrial clustering are significantly related to the business level and econo mic performances of SMEs. Moreover, the findings that firm age moderates the relationship between industrial clustering and performance is supported by those of Anggadwita and Mustafid (2014) and Aziz and Samad (2016) that suggested that small firms are able to combine efforts based on similar characteristics and experiences to enhance their performance.

5. CONCLUSIONS

This research was focused on investigating the moderating influence of firm age and firm size on the relationship between industrial clustering and SMEs' performance. Based on the findings from the statistical analysis, this research concludes that there is a direct relationship between industrial clustering and the performance of SMEs in Nigeria. The study also asserts that firm age is a critical influencer of the relationship between industrial clustering and performance of SMEs. Consequently, it is recommended that SME operators in Nigeria should leverage on industrial clustering as a means of enhancing their performance levels. More so, owners/managers of SMEs, bearing in mind the age categorization of their organizations should form industrial clusters in ways that help younger firms share from the experiences of older firms to enhance their performance.

ACKNOWLEDGEMENT

REFERENCES

[1]   Adeniji, A, Osibanjo A. O., Abiodun, A. J., Oni-Ojo, E. E. (2014). Corporate image: a strategy for enhancing customer loyalty and profitability. Proceedings of the 23rd International Business Information Management Association Conference, 1, 1687-1695.

[2]   Ahsan, M., Ming, K. L. & Louise, K. (2012). Sustaining competitive advantage in SMEs. 2nd International (European) Conference on Asia Pacific Business Innovation & Technology Management: *Procedia - Social and Behavioral Sciences*, 25: 408-412: j.sbspro.2012.02.052

[3]   Anderson, B. S. & Eshima, Y. (2013). The influence of firm's age and intangible resources on the relationship between entrepreneurial orientation and firm growth among Japanese SMEs. *Journal of Business Venturing*. 28: 413-429. doi:10.1016/j.jbusvent.2011.10.001

[4]   Anggadwita, G. & Mustafid, Q. Y. (2014). Identification of factors influencing the performance of small and medium enterprises (SMEs). The 5th Indonesia International Conference on Innovation, Entrepreneurship and Small Business (IICIES 2013). *Procedia – Social and Behavioral Sciences*, 115: 415-423.

[5]   Aziz, N. N. & Samad, S. (2016). Innovation and competitive advantage: Moderating effects of firm's age in foods and manufacturing SMEs in Malaysia. 7th International Economics & Business Management Conference, 5th & 6th Oct.2015. *Procedia Economics and Finance*, 35: 256-266. Available at http://creativeeconomics.org/licenses/by-nc-nd/4.0/

[6]   Babajide, A. A. & Olokoyo, F. O. (2017). Assessment of Financial Stability in Emerging Economies: Evidence from Nigeria, Chapter Global Financial Crisis and Its Ramifications on Capital Markets Part of the series Contributions to Economics, 191-207.

[7]   Bölükbaş, U. & Güneri, A. F. (2017). A fuzzy multi-criteria decision approach for measuring technology competency performance of SMEs. *Sigma Journal of Engineering & Natural Sciences*, 8(1), 31-40.

[8]   Denisa, G., Michaela, K. & Gabriela, D. (2016). New challenges of SMEs through cluster creation in Slovakia. 3rd International Conference on New Challenges in Management and Organization: Organization and Leadership, 2 May 2016, Dubai UAE. *Procedia – Social and Behavioral Sciences*, 230: 264-271.

[9]   Gudda, P. (2017). Clustering and product innovativeness: A literature review of small and medium sized enterprises (SMEs) in Kenya. *International Journal of Academic Research in Economics and Management Sciences*, 6(4): 2226-3624. Available at http://dx.doi.org/10.6007/IJAREMS/v6-14/3499

[10]   Hair, J. F., Anderson, R. E., Tatham, R. L. & Black, W. C. (1998). Multivariate Data Analysis (5th ed.) Upper Seddle River, New Jersey, USA: Prentice-Hall International, Inc.

[11]   Ibidunni, A. S., Ogunnaike, O. O. & Abiodun, A. J. (2017). Extending the knowledge strategy concept: linking organizational knowledge with strategic orientations. Acad. Strat. Manag. J. 16(3), 1–11.

[12]   Jong, T. M. de, & van der Voordt, D. J. M. (2002). Ways to study and research: urban, architectural and technical design. Delft University Press, Delft.

[13]   Jose, C. P., Tulio, C., Simon, L., & Caio, P. (2013). Industrial clusters and economic performance in Brazil. Inter-American Development Bank. Felipe Herrera Library. Available at www.josepires@iadb.org

[14]   Ogundana, O.M., Okere, W., Ayomoto, O., Adesanmi, D., Ibidunni, S. & Ogunleye, O. (2016). ICT and accounting system of SMEs in Nigeria, Manag. Sci. Lett., 7(1), 1–8.

[15]   Ogunnaike, O.O., Ade-Turton, D. & Ogbari, M.E. (2014). Higher education marketing: Does corporate quality really matter? *Proceedings of the 23rd International Business Information Management Association Conference*, 2846-2861.

[16]   Olokundun, M.A., Ibidunni, A.S., Peter, F., Amaihian, A.B., Moses, C.L. & Iyiola, O.O. (2017). Experiential pedagogy and shared vision: A focus on identification of business opportunities by Nigerian students. *Journal of Entrepreneurship Education*, 20(2), 1-12.

[17]   Osmond, O. U., Andreas, K, Alfons, L, Axel, S., & Karl, W. (Hrsg.) (2004). Small and medium scale enterprises cluster development in South-Eastern Region of Nigeria. Berichte aus dem Weltwirtschaftlichen colloquium der Universitat Bremen, Nr, 86. Available at http://www.iwim.uni-bremen.de

[18]   Pallant, J. (2005). *SPSS Survival Manual, A step by step guide to data analysis using SPSS for Windows (Version 12)*. Allen & Unwin, Australia.

[19]   Santi, S. (2012). Using cluster analysis study to examine the successful performance of entrepreneur in Indonesia. International Conference on Small and medium enterprises development with a theme "Innovation and sustainability in SME development" (ICSMED 2012) *Procedia Economics and Finance*, 4: 286-298

[20] Tayfun, Y. & Zafer, A. (2015). Clustering and innovation concepts and innovative clusters: An application on technoparks in Turkey. World conference on technology, innovation and entrepreneurship. *Procedia – Social and Behavioral Sciences*, 195: 1196-1205.

[21] Venkatraman, N. (1989). Strategic orientation of business enterprises: the construct, dimensionality, and measurement. Manag. Sci. 35(8), 942–962.

[22] Wang, F., Chich-Jen, S., & Mei-Ling, T. (2010). Effects of leadership styles on organizational performance as viewed from human resource management strategy. Afr. J. Bus. Manag. 4(18), 3924–3936.

[23] Wawan, D., Eko, A. P., Sudrajati, R., Sri, H., Rendra, C., Qorri, A., Bayuningrate, R. H. & Evy, R. (2012). Moderating effect of cluster on firm's innovation capability and business performance: A conceptual framework. International Congress on Interdisciplinary Business and Social Sciences 2012 (ICIBSoS 2012). *Procedia - Social and Behavioral Sciences*, 65: 867-872.