Small and Medium Scale Enterprises and the Utilization of Strategic Alliance: The Effect of Spatiality in Emerging Markets Economy

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ABSTRACT
This study examined the effects of spatiality in the utilization of strategic alliance by SMEs in an emerging market economy such as Nigeria. A case study approach, survey research design and a questionnaire survey of 233 SMEs were adopted for the study. Data for this study were analysed using descriptive statistics and nearest neighbour analysis, while maps and tables were used to illustrate the results. The result of the study showed that SMEs had three distribution patterns in cluster, regular and random distribution in the study. SMEs in these distribution patterns had a total mean score of 3.93, 3.58 and 3.05 as well as an average mean score of 2.00 in cost reduction, risk reduction, resource and knowledge accessibility in the use of strategic alliance. This signified that engaging in strategic alliance is not determined by the spatial distribution of SMEs but the need to achieve cost reduction, risk reduction and resource accessibility.

1. Introduction

Spatiality is the impact of space on objects, bodies or entities on the earth surface. It also refers to the relationship between people and things, including other people, on the earth’s surface (Kobayashi, 2017). Spatiality in the context of industries depicts the geographical arrangement, spatial distribution, composition as well as the distance between industries across space. This distance can be clustered, random or dispersed and this to a large extent determines the proximity of one industry to another. This is because industries in clustered spaces are closer to each other more than those in random and dispersed spaces which are usually in isolation. Given that strategic alliance has its foundations in the mechanism of linkages and economies of scale, proximity becomes an important condition for industrial interaction and cooperation. In most cases, the choice for a given partner is related to geographical proximity. For instance, Giuliani (2010) holds that regional clusters propel strategic alliance in local firms because they share a tacit knowledge that fosters cooperation. The application of this in the SMEs sector is largely unknown and this creates the need for this research.

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In emerging markets of Africa such as Nigeria, South Africa and Egypt, small and medium scale enterprises are manufacturing, processing and service enterprises that play critical role in economic development of nations. They serve as the hub of economic development in any society (Junaidu et al., 2019; Ko et al., 2020; Talebi et al., 2017) and stimulates the development of other sectors of the economy. In Nigeria, SMEs create independence, self-reliance, expectation of income for owners, employment opportunities, utilization of local resources and economic development (Obioma, 2017). They constitute about 97% of all businesses in Nigeria and generate about 50% of the employment in the country as well as about 30% of manufacturing output.

These enterprises form alliances with other enterprises due to the lack of financial, physical and managerial resources and alliance allows SMEs to share major financial and non-financial resources among themselves (Dekker, 2004; Joshi and Dixit, 2014; Farsi & Toghraee, 2015). A number of studies, however, have examined the functions/benefits of forming alliances by firms (Brouthers, 2013; Brouthers & Hennart, 2007; Hung et al., 2015; Isoraitè, 2009; Segers, 2015), risks or constraints associated with alliance development (Dekker (2003; 2004); Butigan & Benie, 2017), effect of alliance on the performance of SMEs (Junaidu et al., 2019; Ko et al., 2020; Nwokocha and Madu, 2020; Muange & Maru, 2015; Talebi et al., 2017) and location of firms (Ahn et al., 2009; Capaldo & Petruzze, 2014; Gulati, 1999; Narula & Santangelo, 2008; Ryu et al., 2016). As laudable as the findings of these studies are, they have not been able to show the spatial pattern of distribution (spatiality) of SMEs and its effect on the utilization of strategic alliance. This study, therefore, examined the effect of spatiality in the utilization of strategic alliance by SMEs in Nigeria. This was pursued by

(1) Identifying the spatial patterns of distribution of SMEs in the study
(2) Analyzing the effect of these patterns on the utilization of strategic alliance by SMEs.

The rest of the paper is structured as follows: literature and theoretical framework; material and method; result and discussion; significance of study; and conclusion

2. Literature and theoretical framework

Strategic alliance is a form of industrial linkage which involves a cooperative agreement among industries or third parties such as large, medium and small-scale enterprises to work together in order to achieve a set target. It is a close relationship among enterprises, sharing similar characteristics and whose target is to achieve a set of common purposes (Obioma, 2017). In view of these definitions, this study defines strategic alliance as a relationship between two or more organizations or business entities formed in order to achieve some strategic business objectives, which are not possible or economical to pursue alone (Ko et al., 2020). Such strategic business objectives are transaction cost reduction, access to rare resources, access to market and competitive advantage, access to new knowledge as well as risk reduction (Patchged, 2013).
Strategic alliance has been studied from different perspective. These are competitive advantage, location and networking, marketing efficiency and social capital. Establishing strategic alliance by firms to achieve competitive advantage has been a common response to resource limitations and size restrictions of the enterprises. In view of this, Hung et al. (2015) found that cost efficiency, product quality, flexibility and better delivery are four dimensions of competitive advantage which strategic alliance helps firm to achieve. In the same vein, Talebi et al. (2017) opined that alliances are avenues to achieve strategic resources and network sources. This results in the entrance of SMEs into competitiveness which ultimately brings long-term benefit leading to the superior performance of these firms.

In the area of location, Narula and Santangelo (2008) also argued that spatial proximity plays a role in determining the propensity of firms to engage in research and development (R&D) alliances. Using economic geography, network theory and innovation theory, to examine how prior collocation can affect the propensity to engage in R&D alliance, the paper found that alliances are complementary to prior collocation (at both national and sub-national regional level) of firm’s R&D labs. This study showed that firms strategically use R&D alliances as a means to limit knowledge flows and protect competences, rather than to promote knowledge flows. The study also showed that while a common institutional context is important to promote collaboration because of the high level of R&D internationalisation as well as the complex social networks within an oligopolistic industry, national institutional contexts are less relevant.

Similarly, Gulati (1999) in his work examined the dynamics and roles of network resources in determining alliance formation found that accumulated network resources arising from firm participation in the network of accumulated prior alliances are influential in firms’ decisions to enter into new alliances. This study highlights the importance of network resources that firmly derive from their embeddedness in networks for explaining their strategic behaviour. Ryu et al. (2016) also argued that geographic co-location between a focal firm’s partner and rivals introduce potential indirect paths of knowledge leakage to rivals. Geographic co-location creates significant risks of unintentional knowledge spill-over to rivals, while it also increases the likelihood of transactions between the partner firm and the rivals in which firm knowledge can be misappropriated. As a consequence of these risks associated with the co-location of partners and rivals, the focal firm is more likely to employ defence mechanisms when designing alliances. In particular, the focal firm will use equity structures to provide greater monitoring, control and incentive alignment and will reduce the alliance’s scope, as well as task interdependence, to address knowledge leakage concerns.

The work of Ahn et al. (2009) revealed that ‘absolute numbers of technology and product alliances were approximately twice as important as proximity to partners in terms of firm performance’. This according to the work showed that ‘a strategy of relentless pipeline building, without regard to geographic proximity of alliance partners, may enhance relative and absolute performance of biopharmaceutical industry leaders’. In view of this, the work of Capaldo and Petruzze (2014) also revealed that “geographic distance and organizational proximity are contingent upon one another in their effect on the innovative performance of knowledge-creating alliances and that distance (proximity) in one dimension can be bridged (overcome) by proximity (distance) in another dimension.
Furthermore, strategic alliance also helps firms to acquire market efficiency and social capital. Marketing efficiency increases firm value when efficient investment in marketing offers the same levels of customer demand while requiring less advertising, promotional, and research and development spending relative to competitors (Anderson et al., 2006; Song, Kim, Kim, and Lee, 2019) was cited in Ko et al. (2020). This marketing efficiency generates higher profits, which in turn enables a firm to enhance firm value. The market-sensing aspects of marketing efficiency that are customer related allow firms to identify segments (Margariti et al., 2019). Segmentation allows for better targeting, which then leads to a better positioning of the firm’s products relative to that of its competitors (Yuan et al., 2018). Therefore, marketing efficiency helps a firm to promote demand and financial performance, which ultimately increases firm value.

Social capital, on the other hand, is referred to as the development of representatives of firm’s partners in interaction with other firms. This form of relationship in large scale/established industries is usually a valuable resource for small enterprises. Consequently, small scale industries/firms sought for partners with large social capital in order to have access to network resources. Evidence has shown that success is a function of the quality of the relationships between partners and therefore social capital increases the potentials of the success of strategic alliance due to trust and the tendency to share resources among partners (Buvik & Reve, 2002 (search in Talebi et al., 2017)). Social relations create opportunities through strong awareness, trust and commitment among partnering firms leading to personal relationships and awareness of situation and reputation of key people in firms (Eisenhardt and Schoonhoven, 1996 was cited in Talebi et al., 2017).

Furthermore, evidence has also showed that collaborative organizational forms such as strategic alliance have inherent risk and constraints. These constraints/risks, however, offer many of the important strategic advantages as long as they can be safely managed (Dekker, 2003). Using the COSO Enterprise Risk Management (ERM) framework, Anderson et al. (2006) revealed that selection risk, monitoring risk and failure identification risks each have a moderate to high influence on the operation of firms, suggesting that the magnitude and likelihood of each are greater than average. Similarly when assessing specific risks as they apply to critical partner or specific partner type, studies such as Buvik & Reve, 2002; Dekker, 2003; Dekker, 2004), (Coletti et al. (2005)), and Christ, Sedatole and Towry (2005) found that the manifestation of most risks would have a significant influence on the firms operation, although the likelihood of the manifestations were low.

Following these assertions, Kalmbach and Roussel (1999) suggested that it is very important to analyze the potential risks and problems facing strategic alliances in order to understand the reasons for which more than 60% of strategic alliances failed, Badu (2010) identified six potential risks of strategic alliance. These risks are cross-cultural issues and incompatibility, lack of trust, No clear or good objectives, lack of coordination between management teams, relationship risk and result risk. According to his work, proper management of these risks will lead to improvement in the organizations’ operations and competitiveness.

Again it has also been found that strategic alliance proactiveness is an important contributor to the performance of firms engaging in alliances in industrial markets (Yang & Meyer, 2019). Strategic alliance proactiveness as a foundation of alliance management capability enables firms to react faster to emergent opportunities and gain early mover advantages. According to Yang and Meyer (2019), alliance proactiveness indeed
interacts with both capabilities and market growth; probably most interesting is the finding that the combination of alliance proactiveness with technological capabilities and market growth has the highest impact on firm performance. The work of Nwokocha and Madu (2020) found that strategic alliance cumulatively led to an increase in the performance of SMEs in Nigeria. The study showed that strategic alliance lead to 0.55 unit increase in sales growth, 0.58 unit increase in growth in market share and 0.56 unit increase in product success. The result also revealed that that strategic alliance led to 0.76 unit increase in growth in profit, 0.62 unit increase in the number of employees and 0.73 unit increase in labour productivity at 0.05 level of confidence. As important as these studies are, they have rarely showed the spatial distribution of small and medium scale enterprises and its effect on the utilization of strategic alliance in an emerging market economy. This study, therefore, analysed the spatial distribution of small and medium scale enterprises and its effect on the utilization of strategic alliance in an emerging market economy.

3. Study area

The study took place in Enugu State Nigeria. The state is located between Latitudes 5° 58.1N and 7° 08.1N of the Equator and Longitude 7° 08.4E and 7° 48.1E of the Greenwich Meridian as was shown in Figure 1. The state as an emerging market economy is one of the few commercial centres in Nigeria and is currently a good ground for small scale enterprises and entrepreneurs. This can be seen in areas such as Ngwo, An industrial hub for soft drink industries in Nigeria and Enugu North, An industrial hub for plastics, paint, metal and non-metallic industries. These enterprises has increased the revenue base of the government which stood in excess of 2 billion naira in the third quarter of 2017 and has continue to rise ever since (NBC 2017 as cited in Ko et al., 2020). The area is also partnering China on foreign direct investment in order to make her an industrial nerve center in Nigeria. These achievements made this area suitable for this study.

4. Material and method

Research approach

This study adopted a case study approach and a survey design for this study. This is to show the usefulness of strategic alliance in the environment it has been utilized. This is in line with the work of Dana and Dana (2005) which opined that case study research is useful because it allows important aspect of the environment to be analysed and understood. The paper adopted a number of methods comprising of field observations, reference to relevant literature and questionnaire survey of 65 (sixty five) SMEs.

5. Sample selection and size

This study was carried out in 12 Local Government Areas (LGAs) of Enugu State as was explained elsewhere in Nwokocha and Madu (2020). A total of one thousand three hundred and sixty six (1,366) SMES were identified from seven (7) industrial groups in
the study area after a preliminary field work was carried out to update the existing industrial directory obtained from Enugu State SME directory. This is shown in Table 1.

2017 Enugu State SME centre report
Using Yamane’ formula of 1967 which is stated thus:

$$n = \frac{N}{1 + Ne^2}$$  \hspace{1cm} (1)

where $n =$ sample size, $N =$ population size, $e =$ the error of sampling/error of 5% points (.05) and the calculation from a population of 1366 SMEs came to 309 SMEs. To ensure equitable representation of the SMEs, stratified random sampling was done, as shown in Table 2.
Two hundred and thirty three SMEs were used for this study. This level of response was due to the willingness of the SMEs owners to participate in this study.

6. Data collection

The study adopted a number of data collection methods. These are field observations, reference to relevant literature and questionnaire survey of 309 SMEs. While primary data were collected through the use of questionnaire and field observations, published and documentary materials formed the secondary sources. The questionnaire instrument contained both open and close ended questions and was administered through direct delivery techniques. The instrument was reviewed and validated by three experts. These experts were selected from the field of Geography and Economics. The choice of these experts were based on their knowledge and understanding of the subject area.

Similarly, to determine the reliability of the instrument, the questionnaire was trial tested in a pilot study of 15 SMEs. The data for the reliability test was collected by the researcher and the internal consistency of the instrument determined by Cronbach alpha reliability coefficient. The choice of Cronbach alpha reliability coefficient was informed by the fact that the questionnaire items were mostly of multiple response type and it provides for more stable measure of homogeneity (Mba, 2018). From the analysis, a Cronbach alpha reliability coefficient of 0.82 was obtained. The score obtained showed that the questions in the questionnaire are relevant to the subject they were built to investigate. The instrument was also modified based on the response obtained from the managers of these 15 SMEs. The managers of the 233 SMEs were the respondents in this
study. This was so because they are saddled with the day to day running of the enterprises including making decisions on the enterprise to go into alliance with. The questionnaire was designed to elicit from the managers of the SMEs the following questions:

1. Characteristics and size of the enterprises
2. Factors that were considered in the location of enterprises.
3. The part of the study area where the enterprise is located
4. The effect of strategic alliance on the enterprises in the identified locations among others

The questions in the questionnaire were mostly closed-ended which provided options for participants to pick from, while some were opened-ended that encouraged participant to elaborate as much as possible.

Questionnaire was administered with the help of five research assistants and this lasted for 6 months.

7. Data analysis

Relevant statistical techniques were used in analyzing the data generated from this study. Accordingly, nearest neighbour analysis was used to analyse the spatial pattern of distribution of the SMEs in the study area. This was used not only to elucidate the distribution pattern (random, regular or clustered) of the SMEs, it was also used to ascertain the degree of spatial dispersion in the distribution of the SMEs. The geographical coordinates of the SMEs formed the data for this analysis and was analysed with the aid of Tatuk GIS and Quantum GIS software applications. While Tatuk GIS software was used to transform the geographical coordinates of the SME from minutes and seconds to decimal and points, Quantum was used to analyse the points to show distribution.

Nearest neighbor analysis examined the distances between points and the closest point to it. It compares two expected values for a random sample of points in order to establish complete spatial randomness pattern (CSR). Complete spatial randomness is generated by means of two assumptions- that all places are equally likely to be the recipient of a case or event and all cases are located independently of one another (Boots et al. 1988). Nearest neighbour analysis was tested in this study using the Z statistic (standard normal variate). This was because it gives the spatial randomness of points in a place. A negative Z score indicates clustering; a positive score indicates dispersion or evenness. The Z statistic is calculated using the formula below.

The nearest neighbour analysis is given as

\[
2R_n = \frac{2D(\text{obs})}{202.5 \sqrt{\frac{2a}{n}}} \tag{1}\]

Where:
- \(R_n\) = nearest neighbor value
- \(D(\text{Obs})\) = mean observed nearest neighbour distance
- \(a\) = area under study
- \(n\) = number of point
The mean observed nearest neighbour distance is the mean of the distance observed between points. It is calculated thus

$$D_0 = \frac{\sum_{i=1}^{n} d_i}{n}$$  \hspace{1cm} (2)

Where:
- \(n\) = total number of points;
- \(d_i\) = the distance between point \(i\) and its nearest point; \(i\) = random point in an area under study.

The NNI (from 0 to 2.15) measures the spatial distribution: The formula produced by the nearest neighbour analysis produces a figure expressed as \(R_n\) (the nearest neighbour index) which measures the extent to which the pattern is clustered, random or regular.

- **Clustered**: \(R_n = 0\) All the dots are close to the same point.
- **Random**: \(R_n = 1.0\) There is no pattern.
- **Regular**: \(R_n = 2.15\) There is a perfectly uniform pattern where each dot is equidistant from its neighbour.

8. Results and discussion

8.1. Spatial distribution of SMEs engaged in strategic alliance

The spatial distribution of SMEs engaged in strategic alliance in Enugu State was examined using nearest neighbour analysis. Nearest neighbour analysis was tested in this study using the Z statistic (standard normal variate). This was because it gives the spatial randomness of points in a place. A negative Z score indicates clustering; while a positive score indicates dispersion or evenness. From the nearest neighbour analysis, the distribution pattern of SMEs in the area was found to be relatively clustered. The result of the analysis showed an observed mean distance of 621.76 between the SMEs as well as Z-score and nearest neighbour index of \(-17.53\) and \(0.21\), respectively, as shown in Table 3–4 and Figure 2.

This clustered pattern of distribution from our observation enabled SMSs in the area to engage in strategic alliance. SMEs in the area were found to be located in close proximity and this enabled them to share and utilize each other’s resources in carrying out their production activities. This is such that SMEs relied on their partners in production areas where they lacked capacities, while concentrating on their core

| Local government area                        | Sample size | Valid response |
|----------------------------------------------|-------------|----------------|
| Food processing                              | 46          | 34             |
| Cloth making                                 | 26          | 17             |
| Wood and Wood product                        | 49          | 40             |
| Publishing and paper product                 | 52          | 43             |
| Domestic plastics including Nylon Sachet     | 40          | 32             |
| Non-metallic products (aluminium)            | 47          | 33             |
| Basic and Fabricated metals products         | 49          | 34             |
| Total                                        | 309         | 233            |

Author’s computation
Table 4. Nearest neighbour analysis of SMEs in Enugu State.

| LGAs             | Observed mean distance | Z-score | Rn |
|------------------|------------------------|---------|----|
| General (Enugu State) | 621.76                | -17.53  | 0.21 |
| Aninri           | 1753.21                | 3.96    | 1.92 |
| Agwu             | 1034.00                | 3.88    | 1.77 |
| Enugu East       | 656.26                 | 2.49    | 1.31 |
| Enugu North      | 403.87                 | 2.37    | 0.68 |
| Enugu South      | 207.29                 | -2.00   | 0.77 |
| Ezeagu           | 475.31                 | 4.00    | 1.85 |
| Nkanu East       | 978.19                 | 6.00    | 2.04 |
| Nkanu West       | 634.81                 | 4.67    | 1.77 |
| Nsukka           | 305.57                 | -1.78   | 0.75 |
| Orji River       | 1635.65                | -0.82   | 0.85 |
| Udenu            | 990.10                 | 4.34    | 1.93 |
| Udi              | 295.63                 | -1.05   | 0.87 |

Source: Author’s computation,

Figure 2. Spatial distribution pattern of SMEs in Enugu state Nigeria. Source: GIS Lab, Department of Geography, University of Nigeria Nsukka 2018
competence. For instance, the study observed that SMEs engaged in the production of paint products align with those engaged in the production of plastics products in order to complete their production operations.

At the LGA level, the distributions of SMEs were found to be clustered, random and regular. While SMEs in places such as Nsukka, Udi, Enugu North, Enugu South, and Orji River had a clustered distribution, SMEs in places such as Udenu, Enugu East, Nkanu West, Agwu and Anini had a random distribution. SMEs in Nkanu East were found to be randomly distributed. The next section examines the effect of these distribution patterns in the utilization of strategic alliance by SMEs in the study area.

8.2. Spatial distribution pattern and the utilization of strategic alliance by SMEs

Using a likert scale of 5 – Significantly increased and 1 – Significantly decreased; SMEs were asked to evaluate the effect of spatial distribution of SMEs on the utilization of strategic alliance in a clustered environment. In doing this, respondents were asked to rate the various effects of strategic alliance on a scale of 5 and 1. In view of this, the result revealed that, 42.20% and 26.63% of the SMEs had experienced significant increase and relative increase in the utilization of strategic alliance, while 5.11% and 10.90% had experienced significant decrease and relative decrease in the utilization of strategic alliance as indicated in Table 5.

The result also revealed a total average mean response of 3.93 and a standard deviation value of 0.61 this result indicated that the spatial distribution of SMEs has an effect on the utilization of strategic alliance in clustered environment. This can be seen the area of cost reduction, risk reduction resources accessibility, technology advancement and improved flexibility. These variables had average mean score of 2.00.

Similarly, in areas where the distribution of SMEs were regular, it was found that 40.03% and 23.17% of the SMEs had experienced significant increase and relative increase in the utilization of strategic alliance, while 10.78% and 10.78% had experienced significant decrease and relative decrease in the utilization of strategic alliance. The result also showed that 12.18% were static meaning that they have not experienced any change in their utilization of strategic alliance, as shown in Table 6.

The result showed a total average mean response of 3.58 and a standard deviation value of 0.66. This result revealed that SMEs despite been regularly distributed still utilize strategic alliance in the study area. This can be validated cost reduction, risk reduction resources accessibility, technology advancement and improved flexibility which have an average mean score of 2.00. This result also showed that distance between SMEs does not affect their cooperation and partnership.

Furthermore, in areas where the distribution of SMEs were randomly distributed, the result showed that 37.50% and 22.89% of the SMEs had experienced significant increase and relative increase in the utilization of strategic alliance, while 11.73% and 15.29% had experienced significant decrease and relative decrease in the utilization of strategic alliance. The result also indicated that 12.59% of the SMEs were static, as hown in Table 7.

The result also showed a total average mean response of 3.05 and a standard deviation value of 0.76. This means that SMEs engage in the use of strategic alliance in their activities despite been randomly distributed. SMEs despite their distribution utilize strategic alliance
Table 5. Spatial distribution of SMEs and its effects in the utilization of strategic alliance in a clustered environment.

| Strategic alliance variable | Spatial distribution of MSMEs | Significantly decreased (1) % | Relatively decreased (2) % | Static (3) % | Relatively increased (4) % | Significantly increased (5) % | Mean | Standard Deviation |
|-----------------------------|------------------------------|-------------------------------|--------------------------|-------------|--------------------------|-------------------------------|------|-------------------|
| Cost reduction              | Clustered distribution       | 7.30                          | 8.30                     | 19.40       | 15.00                    | 45.00                         | 4.12 | 0.61              |
| Risk reduction              |                              | 3.50                          | 9.30                     | 16.60       | 30.60                    | 40.00                         | 4.52 | 0.50              |
| Resource accessibility      |                              | 0.60                          | 2.60                     | 20.40       | 31.30                    | 45.10                         | 3.65 | 0.48              |
| Knowledge accessibility     |                              | 10.00                         | 13.40                    | 15.20       | 10.30                    | 50.10                         | 3.55 | 0.65              |
| Technology advancement      |                              | 5.00                          | 20.90                    | 20.10       | 20.60                    | 33.40                         | 3.38 | 0.69              |
| Improved flexibility        |                              | 4.28                          | 10.90                    | 10.86       | 36.16                    | 39.60                         | 4.34 | 0.74              |
| Total average               |                              | 5.11                          | 10.90                    | 17.09       | 26.63                    | **42.20**                     | 3.93 | 0.61              |

Author’s computation
Table 6. Spatial distribution of SMEs and its effects in the utilization of strategic alliance in a Regular distribution pattern.

| Strategic alliance variable | Spatial distribution of MSMEs Regular distribution | Significantly decreased (1) % | Relatively decreased (2) % | Static (3) % | Relatively increased (4) % | Significantly increased (5) % | Mean | Standard Deviation |
|-----------------------------|---------------------------------------------------|-------------------------------|---------------------------|-------------|---------------------------|-------------------------------|------|-------------------|
| Cost reduction              |                                                   | 15.40                         | 10.00                     |             |                           | 55.00                         | 1.82 | 0.72              |
| Risk reduction              |                                                   | 12.30                         | 20.60                     |             |                           | 43.00                         | 3.52 | 0.50              |
| Resource accessibility      |                                                   | 14.40                         | 21.30                     |             |                           | 47.10                         | 4.23 | 0.77              |
| Knowledge accessibility     |                                                   | 15.20                         | 30.30                     |             |                           | 31.10                         | 4.18 | 0.72              |
| Technology advancement      |                                                   | 14.10                         | 26.60                     |             |                           | 33.40                         | 3.52 | 0.50              |
| Improved flexibility        |                                                   | 10.86                         | 30.20                     |             |                           | 30.60                         | 4.18 | 0.72              |
| Total average               |                                                   | 16.76                         | 23.17                     |             |                           | 40.03                         | 3.58 | 0.66              |

Author’s computation
Table 7. Spatial distribution of SMEs and its effects in the utilization of strategic alliance.

| Strategic alliance variable | Spatial distribution of MSMEs Random distribution | Significantly decreased (1) % | Relatively decreased (2) % | Static (3) % | Relatively increased (4) % | Significantly increased (5) % | Mean | Standard Deviation |
|-----------------------------|-----------------------------------------------|-------------------------------|--------------------------|--------------|---------------------------|-------------------------------|------|-------------------|
| Cost reduction              |                                               | 12.30                         | 17.30                    | 10.40        | 25.00                     | 35.00                        | 2.03 | 0.80              |
| Risk reduction              |                                               | 13.50                         | 19.30                    | 6.60         | 20.60                     | 40.00                        | 3.72 | 1.04              |
| Resource accessibility      |                                               | 10.60                         | 12.60                    | 25.40        | 21.30                     | 30.10                        | 4.08 | 0.81              |
| Knowledge accessibility     |                                               | 15.00                         | 16.40                    | 12.20        | 20.30                     | 36.10                        | 4.18 | 0.87              |
| Technology advancement      |                                               | 9.00                          | 10.90                    | 10.10        | 26.60                     | 43.40                        | 2.62 | 0.49              |
| Improved flexibility        |                                               | 10.00                         | 15.22                    | 10.86        | 23.52                     | 40.40                        | 1.67 | 0.57              |
| Total average               |                                               | 11.73                         | 15.29                    | 12.59        | 22.89                     | 37.50                        | 3.05 | 0.76              |

Author’s computation
which aids them in cost reduction, risk reduction resources accessibility; technology advancement and improved flexibility. This differs from the work of Giuliani (2010) which held that regional clusters propel strategic alliance in local firms because they share a tacit knowledge that fosters alliances and the work of Narula and Santangelo (2008) which found that spatial proximity plays a role in determining the propensity of firms to engage in alliances. The present study has shown that proximity is not the primary determinant of strategic alliance. Small and medium scale enterprises in both regular and random distribution patterns in the study area were found to be engaged in strategic alliance. This signified that the need to achieve cost reduction, risk reduction, access to resources etc by these enterprises through alliance determined the settlement pattern.

8.3. Practical implication and limitation of study

Following the result of this study, it has been revealed that SMEs despite their pattern of distribution can engage in strategic alliance. This invariably showed that engaging in strategic alliance is not determined by the proximity or distance between SMEs but the need to achieve cost reduction, risk reduction and resource accessibility. Given the inability of successive governments in Nigeria to revamp dwindling fortunes of the SMEs sector, the findings of this study stand to be very important in addressing this situation.

This study is limited to small and medium scale enterprises. This means that the result of this study cannot be used to assess the effect of spatiality in the utilization of strategic alliance by large scale enterprises. This set the stage for further research in this area. Further studies can be directed at finding out the effect of spatiality on large scale enterprises as well as the effect of spatiality in the utilization of specific forms of alliance such as subcontracting, franchising and licensing.

9. Conclusion

This study has shown that spatiality has limited effect on the utilization of strategic alliance by small and medium scale enterprises. This study showed that the distribution of SMEs in the study area was generally clustered. This was, however, different in some LGAs where the distribution of SMEs were found to be regular and random. The clustered pattern of distribution from our observation enabled SMEs in the area to engage in strategic alliance. SMEs in this area where found to be located in close proximity and this enabled them to share and utilize each other’s resources in carrying out their production activities. This was also the case in the other two distribution patterns (regular and random). SMEs in these distribution patterns were found to be utilizing strategic alliance despite the geographic distance among them. This study, therefore, suggests that small and medium scale enterprises be encouraged to engage in strategic alliance not only to sustain their operations but also to propelling economic growth, development and entrepreneurship.

Availability of Data and Material

All data generated or analyzed during this study are included in this published article
Disclosure statement

No potential conflict of interest was reported by the author(s).

Funding

The authors received no financial support for the research, authorship, and/or publication of this article.

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