



Harnessing the Potentials of Caves and Rock-Shelters for Geotourism Development in Mmaku and Achi on Nsukka-Okigwe Cuesta, Nigeria

Chidinma C. Oguamanam¹, Emeka E. Okonkwo^{2*}

Department of Archaeology and Tourism, University of Nigeria, Nsukka

***Corresponding Author:** Emeka E. Okonkwo, Department of Archaeology and Tourism, University of Nigeria, Nsukka

Abstract: Geology and landscape constitute a form of natural area tourism known as geotourism. Features of this form of tourism include cave, rock shelter, waterfall, among others. Geotourism attractions are visited because of their scenic geological formation, unmodified vegetation, water resources, among others; and are developed due to their valued contributions to community development, income generation and employment opportunities. Mmaku and Achi on Nsukka-Okigwe Cuesta are endowed with caves and rock shelters that can be harnessed for geotourism. This paper is aimed at examining the potentials of caves and rock shelters in the study areas with a view to harnessing them for geotourism. The study uses ethnographic research instruments to elicit useful information and data collected were analyzed descriptively. The study argues that Mmaku and Achi communities' Standard of living can be enhanced if these natural resources are harnessed for geotourism.

Keywords: Caves and Rock-shelters; Geotourism; Tourism potentials; Mmaku and Achi

1. INTRODUCTION

The Nsukka-Okigwe cuesta trending north-south is seen by Afigbo (1976;1981) as the route of migration of the Igbo ancestors from the Benue confluence to Nsukka cuesta and this spread along the cuesta to other parts of Igbo land. This assertion was not however based on any archaeological data. Even though limited archaeological studies in parts of the cuesta have shown copious evidence of human activities and material remains of past populations. These sites, which are potential centres for tourist attraction if given the required attention, include abandoned occupation sites such as caves and rock shelters (Kitson 1913; Okafor 1993; Anozie 1979; Ibeanu 2000).

Caves and rock shelters which are the main focus of this research abound in some parts of Igbo land and are rich natural attractions which when developed will not only bring development and source of revenue to the state, but also to the community in which they are located. Mmaku and Achi located on the Central of Nsukka-Okigwe cuesta have very high concentration of caves and rock shelters. This means that there is a considerable range in the relative abundance of archaeological sites on this part of the cuesta than the other parts, which suggest that we have a high degree of clustering of archaeological sites which can be developed to promote tourism in these areas through careful planning as have been done in different part of the country. Examples are the Marshal cave in Yankari, Bauchi State and Ogbunike cave in Anambra State.

Compared to other industries which have witnessed several fluctuation and frequent sharp decline, tourism has rarely fallen into a serious long term down-turn (Hawkins, 1993), thus making it one of the world's most dependable revenue earners. In the Tourism industry, resources are relatively inexhaustible and technological demands are comparatively low. While tourism projects come generally on-stream more quickly than other development projects, their pay back periods are lengthy and as a result, the sector has been identified by the world as having the key to present and future growth that could help ensure balance of payment equilibrium for many nations currently facing foreign currency squeeze and huge foreign debts.

Some authors consider cave tourism as one of the oldest form of geotourism (Bourne, *et. al.* 2008). Its definition (geographical tourism) has been heavily influenced by the National Geographic Society

(n.d.), which defines geotourism as tourism that sustains or enhances the geographical character of a place – its environment, culture, aesthetics, heritage, and the well-being of its residents. Newsome and Dowling (2010) see geotourism as a form of nature-based tourism that focuses on landscape and geology, promoting tourism to geosites and conservation of geo-diversity. In other words, it deals with the natural and built environments (Sadry, 2009). Efforts were made in this research to document identified caves and rock shelters in the study areas with a view to examining their geotourism potentials.

2. RESEARCH METHODOLOGY

Ethnographic survey was used in the prosecution of the study. The researchers selected key informants – some elders of the communities who are knowledgeable in the oral tradition of the people, origin and use of caves and rock shelters. In-depth interview was used to collect data for the study, interview questions were structured and administered to key informants, which attracted the appropriate responses. In the end, we were able to interview thirty-four people from the two communities: sixteen from Mmaku and eighteen from Achi. Out of the thirty-four people interviewed, ten were women while the rest were men. Our respondents include six chief priests, three women leaders, two youth leaders, elders of the villages and farmers/artisans.

The data collected are, but not limited to sites, features, oral history and traditional values and norms associated with the caves and rock shelters. Efforts were made to understand the peoples’ perception of the sites and to create awareness among them on the usefulness of the attractions for geotourism development. The researchers equally consulted other written materials both published and unpublished in order to extract from them relevant data on the research topic.

3. THE STUDY AREAS

Our study areas are located on Nsukka-Okigwe cuesta, a range of hills, which makes it to stand out as a distinctive mark on the landscape with combination of highlands and valleys as well as symphonic diversity of saddles and convex summit (Ekechukwu 2002). It is referred to as a cuesta because of the monoclonal structure of its component rocks which impart on it a distinctive morphology (Iloeje, 1961, Ofomata 1975).

Mmaku and Achi are located on Udi/Awgu highlands part of the cuesta, which consist of both plateau surface and escarpment zone. The escarpment zone contains some of the remaining thick forest while the Plateau landscape of the area is between 320-400 metres above sea level (Ekechukwu 2002).

Mmaku is 60 kilometers south of Enugu, and covers approximately 10 kilometre square piece of highly elevated land between Awgu and Achi on the Awgu-Oji River trunk ‘A’ road. Mmaku is bounded on the west by Achi, on the North by Mgbidi, Ezele and Awgu while on the south by Mgbowo and Nenwe and on the east by Newenta (Anikpo 2005). Achi on the other hand, occupies an area of about ten kilometers radius from the centre of Oji River LGA. It is bounded on the Southwest by Isuochi and on the Southeast by Awgunta, Mmaku, Obuagu and Amaowerre, on the Northwest by Inyi and Ugwuoba; while on the Northeast by the Oji and Mmam Rivers (see figure 1 & 2).

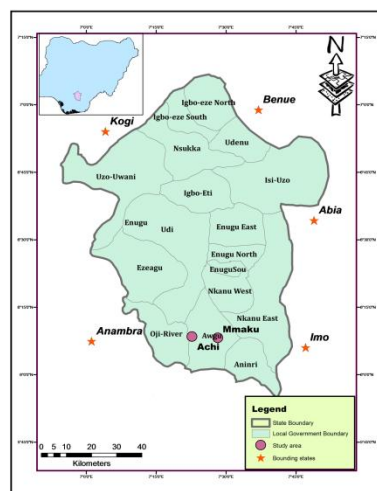


Figure 1. Map of Enugu State Showing the Study area

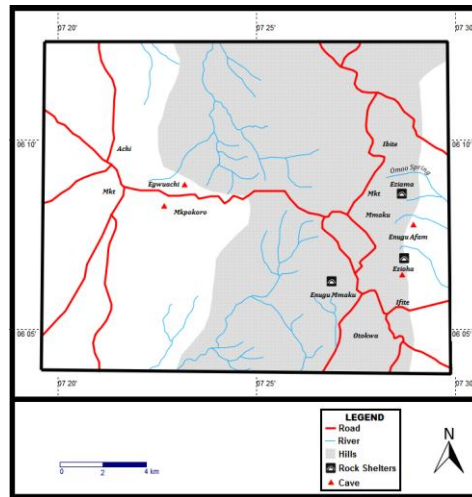


Figure 2. Map of the Study Areas

3.1. Empirical Review

Caves have proven to attract tourists seeking to study them. As has been supported by Aloarez (1970), Bonor (1989) and Mercer (1975) more sources found under caves dealt with antiquities and the finding of artefacts including pottery.

In Brazil, the cave of Tola da boa vista, although not a pleasant site for recreational visits because of the high internal temperature ($27-29^{\circ}\text{C}$) that makes cave exploration, an uncomfortable activity and obstacle along the cave passage, nevertheless, despite lacking attributes such as flowing rivers and ocean washed passage common in many commercial caves, these caves contain sites that are among the most spectacular in Brazilian caves... Even where speleothem decoration is absent, the morphology of many of the passages is quite attractive (Hill and Forti 1977). San Cristobal de las casas cave is open to tourist and scientific study. Scientists use the caves to study cave-roosting of bats, so in caves, bats are common sights and when “one is not scared of bats; this is a good travel distribution” (Arita 1996).

Pohl 1983 and Grigsby 1986 are of the view that ritual practices performed in caves are ways off the topic of tourism, yet was used by the tourism industry to attract many customers. In most cases where these caves are located, water bodies are attached. Although most of the caves in this part of the country are undeveloped, they have great tourism potentials.

Many archaeological sites have been located in parts of Igbo land, the distribution, however, shows that a greater concentration of these sites is in Nsukka-Okigwe cuesta. This includes the cave and rock shelter sites in the Udi/Awgu highlands (Ezeadichie 2002). Ekechukwu identified 15 caves in Obeagu, a community located on the eastern side of Mmaku in Awgu highlands which goes to confirm that the area has one of the highest densities of caves on the cuesta (Ekechukwu 2002). While Umeji (1995) studied many caves, which include *Uhu Chukwu* cave *Isikwuato* with six chambers, *Okpu Chukwu* cave still in *Isikwuato* all in Abia State Nigeria. She identified six caves within a distance of 15m occurring on the northern face of an E-W trending cliff in Mamu formation; *Isi-Ugwu Obukpa*, Nsukka, *Ogba Agu*, *Ngwu Nruru*, Nsukka in Enugu State Nigeria. One similar feature of these caves is that they are all of sandstone formation.

Ibeanu (2000), writing on Okigwe caves and the need to develop the caves into tourist resort noted that caves and rock shelters have a very challenging and exciting landscape and this landscape on its own is a tourist attraction. He went further to say that “The heritage of any given society includes the following; historical sites and building such as locations, sacred grooves, caves, which have played roles in the origin and migration of people as contained in their traditions of origin. When these heritage resources are properly interpreted and presented, they will serve as tourist attractions.” He went further to say that Okigwe caves and landscape can be harnessed by creating awareness of these tourism products which will be possible through sustainable documentations, interpretations and education of the people who had and still have direct relationship with caves and their immediate environment.

Many archaeological sites have been located in parts of Igbo land, the distribution, however, shows that a greater concentration of these sites is in Nsukka-Okigwe cuesta. This includes the cave and rock shelter sites in the Udi/Awgu highlands (Ezeadichie 2002). Ekechukwu identified 15 caves in Obeagu, a community located on the eastern side of Mmaku in Awgu highlands which goes to confirm that the area has one of the highest densities of caves on the cuesta (Ekechukwu 2002).

3.2. Presentation of Findings

Attempt is made here to present the findings of our research. Based on oral traditions collected, some caves don't seem to have origin as they were said to be discovered in the course of hunting activities. Only one of the caves located within the residential area has some myths surrounding its origin and use. The caves and rock shelters played very important roles to the host communities in ancient times and during the Biafra Civil War as they became homes for them and as a result, few casualties were recorded.

3.3. Caves in Mmaku and Achi

Four caves were identified as thus:

3.3.1. Inyikwe Cave of Mmaku

Inyikwe cave is located in Enugwu Affam. The legend or myth surrounding this cave has it that in the past there lived a goddess named Nnechukwu whose function to the people was basically to help them find their stolen properties. Due to the nature of her functions, the people always disturb her, at a stage she got tired and left to Ama-Owelli. Another version has it that people from other villages started coming to Nnechukwu to help them find their stolen properties and this made the Mmaku people to be annoyed, their reason was that Nnechukwu should have asked those people to come to her through the Mmaku people and as a result, Nnechukwu seeing their selfishness left the cave and went to live at Ama-Owelli.

By the side of this cave is a rock from where water gushes out which serves as a source of drinking water for the people. Our informants told us that a lion also lived there and that in the morning before anyone enters the water, the person has to throw sand into the water from a distance to alert the lion of the presence of human beings so that the lion will give way. Oral tradition had it that a hunter and his dog on ignoring the act of throwing sand into the water got lost inside the cave and till date nobody has seen them.

The cave has two cavities. Measurements were taken from the base to the roof; thus, the first cavity has a height of 1.15m and a width of 1.48m; while the second cavity measured 1.1m and 2.38m for height and width respectively (**Plate 1a and 1b**).

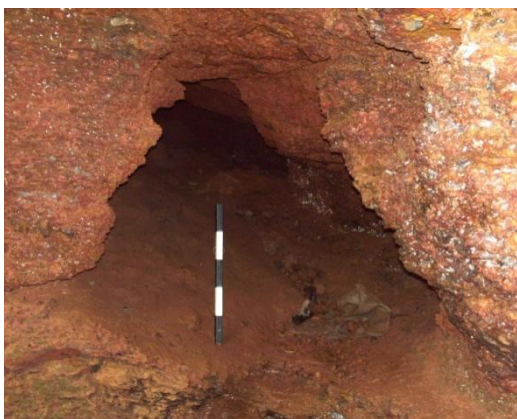


Plate1a. Inyikwe Cave (First Cavity)



Plate1b. Inyikwe Cave (Second Cavity)

3.3.2. Ogba Agu Ukwu of Mmaku

The cave is located in Agu-Ukwu Ezioha village in Mmaku and it is the biggest cave in Mmaku. There was evidence of human activities such as cooking utensils, tripod stands and big stones believed to have served as seats. About 10 meters away from the *Ogba Agu-Ukwu* is another smaller cave from where spring water flows out, which made living in the cave very attractive for both man

and animals in the past. The *Ogba Agu-Ukwu* is facing north; while the smaller one opens at 340° Northwest. The measurements of these caves were taken from the base to the top. The height and width of *Ogba Agu-Ukwu* measured 2.8m and 4.95m respectively; while the smaller cave measured 0.97m in height and 2.53m in width.



Plate 2. Ogba Agu-Ukwu (the smaller cave)

3.3.3. *Isiogba Cave of Achi*

This cave is found in Mkpam in Egwu Achi. It is the biggest cave in Achi and links to Achiyi and Ohaudum Caves. There is no information on the cave; however, the rules guiding the cave were handed to them by their fore-fathers. The people believe that an animal “*Obo*” lives inside the cave and this animal is believed to be the spirit of the cave. Other animals that live in the cave are pythons and bats.

The cave is highly revered because it is believed to be the abode of a very dangerous and powerful deity. visitors are not allowed to enter the cave without performing some kind of rituals, however, as at the time of our visit, we could not enter inside the cave because there was no Chief Priest to perform the rituals for us.

3.3.4. *Achiyi Cave of Achi*

This cave had no myth. It is connected to *Isiogba* cave. It has two cavities. We were not allowed to take picture of the cave because according to our informants, the deity inhabiting the cave abhors light reflection. However, we were able to sketch the cave. *Achiyi* cave is situated at 280° Northwest of Achi community. Only one of the openings was measured from the base to the top as thus: height 1.48m and width 1.70m

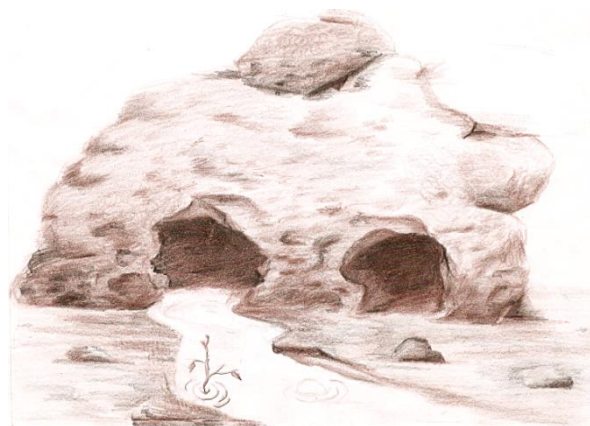


Plate 3. A Sketch Diagram of Achiyi cave

3.4. Rock-Shelters in Mmaku and Achi

Three rock-shelters were identified and studied. They have curve and shallow openings with rock overhangs.

3.4.1. Umude Nworji Rock-Shelter

This rock shelter is located in Eziama village in Mmaku. According to oral tradition, this rock-shelter houses a big python that is harmless to the indigenes of Mmaku. The *Umude Nworji* rock-shelter is situated at 240⁰C Northwest with a height measurement of 2.14 m and width of 2.55m



Plate 4. *Umude Nworji Rock-Shelter*

3.4.2. Ngala Agu Rock-Shelter

This rock-shelter is some kilometres away from *Umude Nworji* rock-shelter and it is situated at 320⁰C Northwest. The height and width are measured 1.60m and 3.85m respectively.



Plate 5. *Ngala Agu Rock-Shelter*

3.4.3. Opia Echeta Rock-Shelter

This rock-shelter has a water fall. It is located in Ezioha village in Mmaku. It is situated at 85⁰C Southeast of the community. The measurement of this rock-shelter was not taken because of the pool of water that surrounds it.

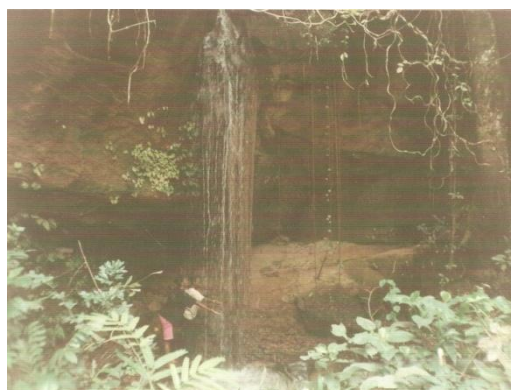


Plate 6. *Opia Echeta Rock-Shelter*

4. DISCUSSION

Geotourism attractions are being developed around the world primarily as a tool for the development of local and regional communities and income generation (Itanyi, Okonkwo and Eyisi, 2013). Humans have visited and appreciated caves for a very long time. Due to their connection with water, some caves had some degree of significance to the host community (not only for their ability to provide water, but also for their beauty and religious values); they are visited for a number of reasons. Kim, *et. al.* (2008) noted that cave tourism has gained popularity in recent years; placing the main purpose of cave tourists' visit on socialization or escape from their work place or everyday routines. Cave tourism experience may involve visiting the cave as part of an organized tour group or as a self guided experience.

Caves and rock-shelters that have survived from the past are tourists' attractions in many parts of the world like the Eisriesenwelt cave in Austria, Orda cave in Russia, Waitomo caves in New Zealand, Cango caves in South Africa, cave of the swallows and cave of crystals in Mexico, Fingal cave in Scotland, cave of the ghost in Venezuela, among others. In order to fully appreciate the potentials of the identified caves and rock shelters for Geotourism in the study areas, we have to highlight their functions, aesthetics and values to the people of Mmaku and Achi communities. Their value ranges from historic, economic to religious, educational and aesthetic values. Worthy of mention is also the fact that in some cases more than one of these values is interwoven.

Cleere (1984) asserted that "at the heart of the values of archaeological sites as tourist attractions is their ability to serve as tangible links to the past from which they have survived, in a way and manner that written or narrated history cannot." Ekechukwu (2002), on his part argued that "the authenticity of a sites is the basis for creating in the contemporary viewer such as a tourist, the subjective knowledge that he has experienced a contact with the past that is direct and real, no matter how incomplete that experience may be". The above argument has highly buttressed the point that a tourist is always excited by an encounter with archaeological remains at a site such as caves and rock shelters. For example, the experience of visiting and seeing the caves and rock shelters will have an effect on a tourist and subsequently enhance his ability to receive new information about these sites and the roles they played to the host communities. Therefore, developing caves and rock shelters into tourist resort would not only widen the scope of the knowledge of the natural heritage of the community or group that owns them, but also provide additional information to the tourists' curiosity and as well help to promote sustainable geotourism beneficial to the local economy.

The economic value of these sites emanates from the fact that tourism is a source of revenue to many countries and nations. Statistics has it that economic benefit accruing to countries due to tourism is on the increase with some countries benefiting to the tune of billions of Dollars. Tourism is an invisible export in which the host country does not spend much. It is also seen by many as a smokeless industry that has contributed substantially to the total world trade. According to the Nigerian Tourism Board's bulletin (1988), Nigeria realized N206.20 million and N156.20 million in 1986 and 1987 respectively. This figure, many have argued, is a very conservative figure, for many countries make far more than that from tourism.

Tourism contributes to the enhancement of the local people. For instance, the expenses by tourists who visit attractions like caves or rock shelters are injected into local shops, restaurant, local transport facilities etc. Tourism also helps in the preservation of these sites and encourages the revival and maintenance of traditional skills and craft, this is so because when tourists visit those places/sites they purchase the locally made souvenirs like woven mats, hats, pottery and other craft thereby encouraging the local population to produce more. Therefore, cultural and geotourism are foreign exchange and local currency earner and an important source of employment with all its paraphernalia of hotels, travel agencies, entertainment centres, craft centres and boutiques (Ekechukwu 2002; Okpoko, Okonkwo and Diminyi 2011; Okpoko and Okpoko 2002). These sites if developed will reduce unemployment in the host communities, as the local people will be directly or indirectly employed through community participation.

The landscape of the cuesta is very good for film shooting and this is another source of revenue generation and as well a way of awakening the peoples' interest. This is highly encouraged especially now that the Nigerian Nollywood industry is gaining popularity in many parts of the world. Another

aspect of the economic value of geotourism is the fact that the development of caves and rock shelters in Mmaku and Achi could lead to improvement in rural infrastructural facilities leading to good networks of roads, local airstrips, water and electricity supply. Observations by experts has led to the understanding that the economic effect of tourism lies in the purchasing power generated at the receiving areas or tourist destinations. This is through the expenditure of visitors who tend to spend at a much higher rate than when they are at home.

The educational value of caves and rock-shelters have been canvassed by some scholars (Itanyi, *et. al.* 2013; Bourne, *et. al.* 2008; Newsome and Dowling 2010; Kim, *et. al.* 2008; Okpoko *et. al.* forthcoming), which makes them an important aid in teaching archaeology, tourism, geography and geology courses. A practical example is the National Park Services Trust for Historic Preservation in the United States of America. The Park has developed an exciting educational project titled “*Teaching with Historic Places.*” In this project, the National Register of Historic Places are used by teachers in high schools to enhance class instruction of history and social studies. Thus, students are exposed to significant places located in their own community (Ekechukwu 2002). Cleere (1989) noted that an important factor underlying the protection of monuments is their educational value as the imagination of a child is stimulated much more effectively by objects, which they can see and feel such as caves and rock shelters than any amount of class room teaching. Besides their educational value, these sites also serve the tourist who will be influenced by a feeling of respect for the human achievement that such remains present. This exposes the vital role that tourism plays in providing education whether consciously or unconsciously.

Nature-based motivation, which has been the underling factor behind tourists’ visits to these sites could compel potential tourists to visit (and excursions by school children) caves and rock shelters, which will not only fascinate and capture their attention and imagination, but could also drive home some of the stories they may have been told. Consequently, visits to these sites would ginger the local inhabitants to take proper care of these sites.

4.1. Harnessing Mmaku and Achi Caves and Rock-shelters for Geotourism

Tourism has globally gained recognition and it forms the economic base of most countries. Tourism has been identified as an alternative to crude oil in some African Countries. Agu (1998) corroborated this view when he stated that “Tourism can be seen by Nigeria and other African Countries as a goldmine, miracle or magic wind, an all enhancing industry..., a gateway to a nation’s economy and the purest means of escaping the current economic perils afflicting the Country”. Recently, The WTTC report, titled travel and tourism economic impact 2012 puts investment in the travel and tourism sub-sectors in Nigeria in 2011 at N 251.5 billion, while forecasting growth in this area at 1.5 percent in 2012 and a rise of 2.4 per cent per annum from 2012 to 2022 (Adewole, 2012).

According to Oladele (2001), for tourism activities to succeed in any given area, the tourist, the business providing tourist goods and services, the government, and the host community must have a positive attitude towards the industry. Without this attitude, the development of tourism will be hampered. All progressive governments in the world are embracing tourism because of its economic advantages.

Caves and rock shelters of Mmaku and Achi communities in Enugu state, Nigeria are call for attention from relevant authorities. In Nigeria, there are entities saddled with the responsibilities concerning tourism and related matters - Ministry of Information, Culture & Tourism, Nigerian Tourism Development Corporation, State Tourism Board, Local Government Tourism Committee, National Commission for Museum and Monuments and National Orientation Agency. These bodies should engage the private sector to collaborate and coordinate concerted efforts to develop the caves and rock shelters into geotourism products. Importantly, the local people being the custodians of these resources in their environments should be incorporated into every arrangement to develop the resources as tourism products.

4.2. The Government/Private Sectors

In developing these sites, the government should provide infrastructural facilities such as good road network, electricity, water supply, communication network, hospitals and security as these are prerequisite to tourism in any place. The State Tourism Board and the Local Government Tourism

Committee strengthened. The boards and committees can assist the Nigeria Tourism Development Corporation to identify and align the sites for development.

The role of the private sectors in the development of these resources cannot be underestimated because they contribute to many development projects by providing transportation, accommodation, tour operations, travel agency, and site management and sometimes fund. For instance, private investor initiative can in partnership with tourism professionals and cultural managers embark on the development of other resources such as home videos of traditional festivals and heritage sites, such films would be shot in very stimulating environment that should allure tourist to visit the sites as they will have multiple attractions to experience during their stay.

4.3. The Local Community

The local community should provide important information on the cultural background of the community to the developers like their taboos which must not be abused. These taboos need to be studied and taken into consideration as they often represent the aspects of the community life which make up the socio-cultural and geopolitical existence of the community in question (Eze-Uzomaka 2006).

Again the community has the onerous task of ensuring that these attractions are well preserved and well managed because these resources have their origins in the communities and their significance and history are well known by the indigenes. There should be people employed for the development and who will co-ordinate every other activity as regards the sites. The local people should be part of the staff since they are the day to day care-takers of these sites that will attract tourists. Cultural festivals could be staged on the highlands as this will help to show-case their scenic landscape.

4.4. Community Perceptions

Already the local people are very willing to contribute in their own way to develop the caves and rock shelters into a tourist destination. In the words of Mr. Raymond, one of our informants, “the cave (Isiogba) is a very good tourist site, which can contribute to their income only if the people of Achi community can come together and consult the oracle in order to know what should be done to make the cave open to the public (tourists) considering the superstitious believe surrounding the cave”.

4.5. Proximity of the Study Areas to Other Attractions

Our focus area is not more than 60 kilometres off Enugu, a cosmopolitan city with varied tourist attractions dotted around the city with good accommodations, road and communication network, in addition to an International airport. Report has it that the statistics of both international and local tourists visiting the attractions is about 5299 annually (Enugu State Tourism Board).

5. CONCLUSION

This research carefully surveyed caves and rock shelters in Mmaku and Achi in the central part of Nsukka-Okigwe cuesta with a view to examining their geotourism potentials. The caves and rock-shelters have very exciting landscape that can hold tourists spellbound if harnessed and developed. In the words of Itanyi, *et. al.* (2013) sightseeing and adventurous tourists are always attracted and motivated by unusual phenomena (the concept of pull and push factors); hence caves and their associated features stand out as veritable source of awe and adventure. Recreational activities such as caving require specific landscapes or geological environments (Gray, 2004). Caves cater for the adventurous visitor; they provide an excellent educational opportunity for tourists to experience geology or to understand geomorphology and environmental changes through time (Itanyi, *et. al.* 2013).

Caves and rock-shelters as natural attractions have been influential to the tourism structure of some localities where they are located; this is because nature astonished human conception through the formation of caves. Mmaku and Achi are virgin communities with potential resources for geotourism development and it is our belief that if these resources are properly harnessed, the communities will be turned into a tourist haven. It is quite unfortunate that nature-based resources in Nigeria have remained largely unharnessed. More so, in spite of the vast natural and cultural resources in the country, tourism remains underdeveloped. This is attributed to government over dependent on oil sector, but with the price-fall in oil (affecting the nation’s external reserve), the country is exploring

other sources of revenue generation, which makes tourism an ideal option. When Geotourism is fully developed in the study areas, it will improve the living standard of host communities, encourage local economy and cultural diversity in terms of local products and create employment opportunities.

REFERENCES

- [1] Afigbo A. E. (1981) *Ropes of Sand: Studies in Igbo History and Culture*. Ibadan University Press.
- [2] Afigbo, A.E. (1976) Oral Tradition and History in Eastern Nigeria: An Essay in Historical Methodology. *African Notes*. Vol. 13 (3). Pp.12-20.
- [3] Agu, C.S. 1988. *Accommodation and Tourism in Enugu State*. University of Nigeria, Unpublished MA Thesis Department of Archaeology.
- [4] Anikpo M. (2005) *The Land and People of Mmaku*. Ibadan: Obassi Associate Publishers.
- [5] Anozie, F.N. (1979) Early Iron Technology in Igboland: Lejja and Umundu *West African Journal Archaeology*. Vol.9 pp.119-134.
- [6] Arita, H.T. 1996. "The Conservation of Cave-Rooting Bats in Yocatan, Mexilo" *Biol. Conservation*. Vol.76 (20) pp.177-185.
- [7] Bourne, S., Hamilton-Smith, E. and Spate, A. (2008) "Visiting Show Caves – Australia's Oldest form of Organized Geotourism". Paper Presented at the Inaugural Geotourism Conference, 17th-20th August, 2008. Perth.
- [8] Cleere, H. (1984) Approaches to the Archaeological Heritage: A Comparative Study *World Cultural Resource Management Systems*, London: Cambridge University Press.
- [9] Ekechukwu, L.C. (2002) *Tourism Potentials of Archaeological Sites in Igbo land. Nsukka-Okigwe Cuesta as a Case Study*. University of Nigeria, Unpublished Ph.D Thesis Department of Archaeology.
- [10] Gray, M. (2004) *Geodiversity: Valuing and Conserving Abiotic Nature*. Chichester: John Wiley and Sons.
- [11] Hawkins, D.E. (1993) Prospects and Challenges of Tourism to the Millennium. *Tourism Management*. Vol. 14. No. 5. Pp. 392-296
- [12] Hill, C. & Fort, P. 1997. *Cave Minerals of the World*. Second Edition, National Speleological Society, Huntsville.
- [13] Ibeanu, A.M. (2000) *A Contribution to the Archaeology of Okigwe and its Environs*. University of Nigeria, Unpublished Ph.D Thesis Department of Archaeology.
- [14] Ibeanu, A.M. (2000) *A Contribution to the Archaeology of Okigwe and its Environs*. University of Nigeria, Unpublished Ph.D Thesis Department of Archaeology.
- [15] Itanyi, E. I; Okonkwo, E.E and Eyisi, A.P. (2013) A Preliminary Study of Cave, Rock-Shelters and Waterfalls in Owerre-Ezukala, Orumba South Local Government Area of Anambra State, Nigeria. *Journal of Tourism and Heritage Studies*. Vol. 2, No.1. Pp. 39-40
- [16] Kim, S. S., Kim, M., Park, J., and Guo, Y. (2008) Cave Tourism: Tourists' Characteristics, Motivations to Visit and the Segmentation of their Behaviour. *Asia Pacific Journal of Tourism Research*. Vol. 12. (3). Pp. 299-318.
- [17] Kitson, A.E. (1913) Southern Nigeria: Some Considerations of Its Structure, *People and Natural History Geographical Journal*. Vol.41 pp.16-38.
- [18] National Geographic Society (n.d.) *Geotourism*. Available online at: http://www.nationalgeographic.com/travel/sustainable/pdf/geotourism_charter_template.pdf. Accessed on 21st September, 2015.
- [19] Newsome, D. and Dowling, R.K. (eds.) (2010) *Geotourism: The Tourism of Geology and Landscape*. Oxford: Goodfellow Publishers.
- [20] Ofomata, G. E. K 1975. Nsukka Okigwe Cuesta. In Ofomata G. E. K (ed.) *Nigeria in Maps: Eastern States*. Benin: Ethiopia Publishing House pp. 35-37.
- [21] Okafor, E.E. (1993) New Evidence on Early Iron Smelting from Southeastern Nigeria. In Thurstan S. *et al.* (ed.) *The Archaeology of Africa: food, Metal and Towns. One World Archaeology Series*. 20. Pp.432-448. London: Routledge.
- [22] Okpoko P.U. (1988) The Role of Cultural Resources in Tourism in Nigeria. In Andah, B. W. 1990. (ed.) *Cultural Resource Management*. Ibadan Wisdom Publishers Ltd.
- [23] Okpoko, P.U, Okonkwo, E. E, and Eyisi, A. P (Forthcoming) A Preliminary Study of Affia Cave, Waterfall and Natural Bridge in Okpatu Town of Udi L.G.A. *Journal of Tourism and Heritage Studies*.
- [24] Okpoko, P.U. and Okpoko, A.I. (2002) *Tourism in Nigeria*. Nsukka Afro-Orbis Publications Limited.
- [25] Okpoko, P.U., Okonkwo, E.E and Diminyi, C. (2011) *Understanding Tourism*. (Second Edition) EFS Allied Publishers Ltd. Onitsha.

- [26] Oladele, F. 2001. The Economic Implication of Developing Tourism In Aremu, D.A. (ed.) *Culture and Eco-tourism Development in Nigeria*. Ibadan: Hope Publication
- [27] Pohl, M. (1983) Maya Ritual Faunas: Vertebrate Remains from Burials, caches, caves, and cenoates in the Maya Lowland, in *Civilization in the Ancient Americans: Essay in Honor of Gordon R. Willey*, (Eds) by Richard L. and Alan, K. pp. 55-104 New Mexico University Press.
- [28] Sadry, B.N. (2009) "*Fundamentals of Geotourism: with a Special Emphasis on Iran*", Samt Organization publishers, Tehran. 220p. Available Online at: <http://physio-geo.revues.org/3159?file=1>. Accessed on 21st September 2015.
- [29] Umeji, P.U. 1995. Aspects of Speleology of the Scarplands of Eastern Nigeria. *Nigerian Journal of Mining and Geology*. Vol.31(2): 135-140.

Citation: Chidinma C. Oguamanam, Emeka E. Okonkwo. "Harnessing the Potentials of Caves and Rock-Shelters for Geotourism Development in Mmaku and Achi on Nsukka-Okigwe Cuesta, Nigeria". *International Journal of Research in Tourism and Hospitality (IJRTH)*, vol 4, no. 2, 2018, pp. 21-31. doi:<http://dx.doi.org/10.20431/2455-0043.0402003>.

Copyright: © 2018 Authors. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.