IKR Publishers

IKR Journal of Arts, Humanities and Social Sciences (IKRJAHSS)
Journal homepage: https://ikrpublishers.com/ikrjahss/
Volume-1, Issue-4 (September-October) 2025
OPEN ACCESS
ISSN: 3107-4014 (Online)

Nasality and Nasalisation in the East Central Igbo Dialects

OKOROAFOR Elizabeth, Ihuoma*
Adeyemi Federal University of Education, Ondo

DOI:*10.5281/zenodo.17087636*

ARTICLE INFO

Article history:
Received : 02-09-2025
Accepted : 05-09-2025
Available online : 09-09-2025

Citation: Okoroafor, E. I. (2025). Nasality and Nasalisation in the East Central Igbo Dialects. *IKR Journal of Arts, Humanities and Social Sciences (IKRJAHSS)*, 1(4), 193-199.

ABSTRACT **Original research paper**

This study explored nasality and nasalisation in the East Central Igbo dialects, a dialect group of Igbo comprising all the speech communities in Imo state and some nearby speech communities in Abia and Rivers States of Nigeria. As a result of the observed gaps, which have revealed that previous phonological studies in East Central Igbo dialect have not given adequate attention to the issue of nasality and nasalisation. This study, therefore, aimed to investigate the peculiarity of nasality and nasalisation in the East Central Igbo dialects emanating from the inconsistency in the process of nasalisation. The objectives were to: (i) describe the phenomenon of nasality and nasalisation as phonological features and process, respectively; (ii) demonstrate the peculiarity of nasality and nasalisation in the East Central Igbo dialects employing the autosegmental phonology framework. A framework propounded by Goldsmith in (1976) for the representation of segments in separate tiers or lines as against the binary feature arrangement of Chomsky & Halle (1968). (iii) Provide evidence from nasal segments and nasalised segments in the East Central Igbo dialects. The study adopted a descriptive research method. The findings of the study were that: (i) East Central Igbo dialect attests only two (2) syllabic nasals /n/, and /m/.(ii)That the two syllabic nasals identified are opaque in nature, hence, they do not transfer their nasality to the adjacent consonant. (iii) That East Central Igbo dialect attest peculiar oral vowels in the sense that a vowel sound can be oral vowel in an environment that is exactly the same with where it is nasal vowel, as seen in words like /ɔ́rɔ́/ ‘deformity’ and /ɔ˜r˜ʊ˜/ ‘work’.

Keywords: Nasality, Nasalisation, East Central Igbo, Autosegmental phonology, tone perturbation Syllabic nasals.

**Corresponding author: OKOROAFOR Elizabeth, Ihuoma*
Adeyemi Federal University of Education, Ondo.

Introduction

East Central Igbo group of dialects is one of the eight dialect groups postulated by Nwaozuzu (2008) it is a dialect group that comprise all the speech communities in Imo state and some nearby communities of Abia and Rivers States of Eastern Nigeria. Igbo is spoken in the core Igbo states – Abia, Anambra, Ebonyi, Enugu and Imo as well as in some parts of Bayelsa, Delta and Rivers states all in the southern region of Nigeria. Earlier studies in Igbo linguistics relied basically on the standard variety of Igbo that has twenty eight consonants and eight vowels thereby paying little attention to other phonemic features attested by other dialects of the language (Hair1969, Ogbalu 1974, Meir 1975, among others) dialect. Many scholars like have carried out some studies on phonology of some speech communities of the East Central Igbo, however, no evidence of a holistic study on the nasality and nasalisation in the East Central Igbo dialect group. An in-depth review of some works on nasality and nasalisation are centered on the Standard Igbo and some speech communities of East Central Igbo dialect group, hence, this study aims at exploring the peculiarity of nasality and nasalisation process in East Central Igbo dialects.The study employs autosegmental framework to analyse the data gathered for the study.

Review of Related Literature

This section reviews the conceptual as well as the theoretical framework for the study, specifically, it reviews nasality and nasalisation and autosegmental phonology (ASP) which is the adopted framework. The theoretical review

appraises some earlier theories and their weakness that led to the development of autosegmental phonology (ASP). The review begins with Classical Phonemic (CP) which gave birth to Generative Phonology (GP) then climaxed into Autosegmental Phonology.This section reviews the basic proposals of the theories and justifies the choice of autosegmental phonology for the study.

Nasality and Nasalisation

While nasality is a phonological feature of speech sounds that are produced by lowering the velum, hence, allowing air to flow through the nose with the soft palate at the back of the mouth. A nasal segment can either be a vowel or a consonant. Ladefoged (2006) opines that nasal feature is one of the phonetic features that assimilate the place of articulation in most languages. Nwaozuzu (2008, p. 58) views nasality as a phonemic feature in the East Central dialects of Igbo, because nasality brings about a difference in the meaning of lexical items with identical as in lexical items such as: /árá/ 'madness, and /a˜r˜a˜/ 'breast'. According to Crystal (2008) 'nasality' is the phonetic classification of speech sounds that are produced with airflow through the nasal cavity based on the manner of articulation. Crystal (2008) further opines that nasal consonants occur when there is a complete closure in the mouth, and all the air thus escapes through the nose. Examples in English are in the final consonants of the words /ram/ [ræm] /ran/ [ræn] and /rang/ [ræŋ] where the closures are in bilabial, alveolar, and velar positions, respectively. It is argued that several other nasal sounds are possible, e.g., in palatal position [ɲ] as in spanish: /mañana/ [maɲana]. English language also attests voiceless nasal sounds which occurs when a nasal consonant follows [s] in the word /small/ and /snooze/. In addition to the discussion on nasal sounds in languages, Ferguson (1963) adds that natural languages are known to attest to nasals; that every language has at least one primary nasal consonant. However, Botma (2004) challenges this position of Ferguson in the commonness of nasal sounds to all the natural languages, hence, he avers that some languages like; Rotokas, Piraha and Lushootseed do not exhibit nasals even at the level of underlying structure, this may be said to agree with the proposition of Maddieson (1984) that about 97% of languages have underlying nasals, which confirms the fact that nasality is not universally attested. Rafiu (2005) looks at nasalisation as a unified process of spreading nasal feature over to a non nasal to become a nasal segment. The identified feature of nasality for autosegmental framework is [N]. The presence of nasal feature is [+N], while its absence is indicated by [-N].

Clark and Yallop (2000) views nasalisation as 'inherent' when speakers do not exert strong control over the raising of the velum, allowing nasalisation to become an 'unintended' characteristic of all their vowels, even when not adjacent to nasal consonants. Nasalisation may also be a general property of speech, for reasons of individual articulatory habit, dialect type, or pathological condition such as a cleft palate.

Maduagwu and Dare (2016) define nasalisation as a phonological process whereby a non-nasal segment acquires the nasal quality of an adjacent nasal segment. Omar (2024) adds that English has both **vowel and consonant nasals**, as in /a/ a front unrounded vowel in the word 'mat' that becomes nasalised when it comes after the bilabial nasal consonant /m/ in [mæ̃n], the open mid front unrounded vowel /ɛ/ in 'net' becomes nasalised when it occurs in the environment after an alveolar nasal consonant [n] to become [nɛ̃t], and the close front unrounded vowel /i/ in 'sing' becomes nasalised when it occurs in the environment before a velar nasal consonant [ŋ] to become [sĩŋ]. Still on the issue of nasalisation. Also citing citing (Al-hamad 2004, p.12), Omar (2024) notes that in Arabic, nasalisation arises when breath is hindered /obstructed at some point in the mouth and the soft palate is lowered causing air to escape through nasal cavity, and that nasal sounds can be produced at any point where the obstruction occurs, like the lips, or any part of the tongue, and that Arabic has two nasal sounds the /m/ and /n/.

Omar's (2024) definition of the term nasalisation seems not to align with real meaning of nasalisationin the sense that instead of seeing nasalisation as a phonological process that can cause a transformation in the inherent nature of sound to a new status, he defines it as a sound that accompanies the articulation of 'al-meem' (م) and al-noon (ن)…

Uguru (2005) defines nasalisation as a process by which a non-nasal sound, usually a vowel, acquires nasal quality through contact with a nasal consonant, resulting in a change in its articulation and acoustic characteristics. In Uguru's (2005) work where he focused on the phonological processes of nasalisation in Ika dialect, he observes that both regressive and progressive nasalisation is possible in Ika dialect. He also notes that nasalisation with vowel in Ika is prosodic rather than phonemic as postulated by Williamson (1968). Ndimele (2003) argues that nasalization in Echéé dialect occurs as a phonological process which is also governed by certain rules like vowel assimilation rather than a phonetic phenomenon. Ndimele (2003) also avers that nasalization in Eche'e' is characterized by three features such as: (i) vowel nasalization that occurs in the environment of an oral vowel becoming nasalised before a nasal consonant (ii) nasal spread which happens when nasal feature spreads from a nasal consonant to an adjacent oral vowel, and the third instance is nasal assimilation which occurs when a nasal consonant assimilates with an oral consonant resulting into nasalised consonant.

Nasalation of vowels

Vowels segments are said to be nasalised when they acquire a nasal quality due to the lowering of the velum, allowing airflow through the nasal cavity. In some European languages such as French vowels can become nasalised when

they occur before nasal consonant /m/, /n/, or /ŋ/, as in; vin' [vɛ̃] (wine) or 'pain', while in a language like Portuguese, a vowel can be nasalised due to historical or phonological processes, as in 'irma˜' [irmɑ̃] (sister). In phonetics vowel nasalisation is usually represented in transcription with a tilde (˜)

Nasal consonants

Nasal consonants are type of consonantal sounds that are produced by obstructing airflow in the mouth while allowing air to escape through the nasal cavity thereby bearing nasal quality. Ladefoge, & Maddieson (1996) add that nasal consonants are characterized by two qualities: (i). nasal airflow through the nasal cavity and (ii). Oral obstruction (the oral cavity is blocked) as in [m]: bilabial nasal, and [n]: alveolar nasal.

Disagreeing with the opinion of Uguru (2005) on the issue of most East Central dialects of Igbo attesting prosodic nasalisation rather than phonemic as postulated by Williamson (1968), Ndimele aligns with the opinion of Williamson giving the fact that nasalisation in Echéé distinguishes meaning between words of the same spelling thereby providing minimal pairs. Examples are: /ī/ and /i/ in /kī/ 'death' and /ki/ 'stick', he observes that there is contrastive distribution that is to say that nasal vowel occur in complementary distribution with the non-nasal vowel for example the vowel /i/and /ī/ in the two words /ki/ for stick and /kī/ for death all exist at the word final position. Ndimele also opines that the phonological nasalisation in Echéé can be predictable based on the phonological rules and agrees that prosodic nasalisation exist only on three consonants such as: /ɦ̃, r̃ and nw̃/ in Echéé

It is no gainsaying that many scholars have written extensively on the concept of nasalisation generally and in some dialects in the East Central Igbo, and it is pertinent to note that virtually all the scholars are of the opinion that the East Central dialects of Igbo exhibit complex nasalisation patterns. According to Nwaozuzu (1999), nasalisation in the East Central dialects of Igbo is the same as Ndimele (2003) claims that nasalisation is the process whereby a vowel assimilates the nasal feature of a contiguous nasal consonant, thereby having a change in the nasal vowel's quality.

Nwaozuzu (1999) observes that the East Central dialects of Igbo attest both regressive and progressive nasalisation like Eche'é dialect. She also observes that there is no environmental restriction in the occurrence of nasalisation in the east central Igbo, hence, there can be: (1) pre-nasal position as in /an/ ´n /ã/, (2). post-nasal position as in /na/ ´n /nã/, and (3) word final position as /ọn/ 'n /õ/. Paramount in the state of nasalisation in the East Central dialects of Igbo is the fact that it is phonemic in the sense that it brings about distinction in words of the same spelling. The following examples will suffice:

i. /a´ra´/ 'madness' and /ãr̃ã/ 'breast',ii. /i re/ 'to decay' and /ir̃ẽ/ 'to burn',iii. /í bē/ 'to cry' and /ib̃ẽ/ 'to peel (orange)

While Maduagwu and Dare (2016) opine that nasalisation is a phonological process through which a non-nasal segment acquires the nasality of an adjacent nasal segment. They also noted that an oral vowel may be nasalised if it occurs before or after a nasal consonant. Maddieson (1977) opines that nasality is a property of language that is peculiar to consonants but often copied by vowels and underlying oral consonants in some phonological contexts. Rafiu (2005) views nasalisation as a unified means of transferring a nasal feature from a nasal segment to a non nasal segment adjacent to it.

Extant studies have shown that Yoruba exhibits both nasal and nasal vowel soundswhich are usually conditioned by context of use. For example, the vowel sounds /a/, /e/, /i/, /o/u/ function both as vowel nasals and vowel nasalised segments depending on their speaker's production. In the case of Yoruba where vowels are bear nasal features without any evidence of any nasal segment triggering the nasalisation, such vowels are referred to as oral vowels as in /ità˜/ 'story', and /itá˜/ 'lap'.

Theoretical Framework

A theoretical framework is an organised conceptual structure used to interpret and analyse data for any research in order to answer the research hypothesis and research questions raised for better understanding of the phenomenon. In the study of human languages of the word, many theoretical frameworks have been used to analyse several linguistic phenomenon. Among which are: Standard theory of Bloomfield and Generative theory of Chomsky that postulate single line for the representation of phonological segments. The tenets of these theories earlier mentioned did not factor in the representation of supra segmental features because they postulated binary feature for segments that is to say that a segment can be either plus or minus the same feature, for example the segment /a/ and /k/ can be represented as +syllable & –consonant, while /k/ is +consonant and –syllable in this order:

+syll	+cons	+syll
-cons	-syll	-cons
/a/	/k/	/a/

According to what Kuhn (1922-1996) calls paradigm shift in his book "The Structure of Scientific Revolutions", new theories emerge to replace old ones that have accumulated anomalies and contradictions. The assertion of Kuhn (1922-1996) can be taken as a justification for Goldsmiths emergence with another theory known as autosegmental phonology (ASP) to alter the binary feature system of Generative theory, which could not account for suprasegments like: tone, nasal, pitch, stress and others. The theory of autosegmental phonology (ASP) is otherwise seen as a radical shift from the age long practice of the linear or binary feature approach of feature analysis to non-linear

system which warrants every segment to be represented independently on a tier or line. Autosegmental phonology (ASP) caters for the various components of the articulatory apparatus such as: the tongue, the lips, the larynx, and the velum.

The tenets of the ASP include:

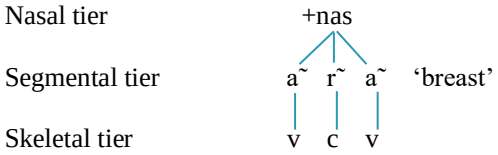
The word tenet means the principle, belief, or doctrine of operation. in simple terms, it can be called the rules and regulations guiding something or an organisation. With this, therefore, the working principles of autosegmental phonology (ASP) include: (i). multi-tiered representation which opines that phonological representation should not be mopped up in one tier; (ii). Investigation of the consequences of having structures in phonology more complex than a simple linear string of segments; and (iii) Exploration of the outcome of generative phonology for multi-linear phonological and phonetic representations consisting of a single string concatenation of segments. While the tools are the means by which a task, goal, or operation is accomplished, the operational tools of ASP are:

Tools of operation in ASP

(i) An association line that indicates pre-linking, that is the creation of an association line by means of mapping; (ii) A broken association line indication active linking, that is, the creation of an association line by means of spreading; (iii) A cross through association line that shows delinking or dissociation, of association line; and (iv) Brackets show the boundaries of phonological forms.

Principles of ASP

Autosegmental phonology maintains that autonomous segments can be linked together through the following: (i) Mapping: (associate vowels with tones in a one-to-one fashion from left to right until we run out of tones or vowels), (ii) Dumping: (if after applying mapping, some tones are still free, link them to the last vowel), (iii) Delinking: (delete an association line as a result of loss of segment), (iv) Docking: (when a tone is stranded between two linked tones, a language-specific requirement decides whether the stranded tone will be linked with the syllable on its left or right or the tone will be erased). Prior to the present study on nasality and nasalisation in East Central Igbo dialect group, some scholars have employed autosegmental theory to analyse data on suprasegmental related issues, among them are: Ihionu (1984) "Tone in Syntax", Bamisaye (1987), "Tone in Yoruba" Oyebade (2003), "A Comparative study of word order in Yoruba and English", Rafiu (2005), "Tone in Yoruba Verb Phrases", Weijer (2006), "Are Grammatical Relations Universal?"etc. The choice of this framework, therefore, finds its justification from the fact that, according to Oyebade (2008), Generative Phonology is grossly inadequate to account for suprasegmental features such as: tone and nasal. Pulleyblank (1986) sees the assignment of independent tiers to each suprasegment as an uncontroversial laudable effort. Examples of the ASP feature representation suffice in the illustration below



Research Methodology

The concept of research methodology refers to the organized or systematic and scientific approach employed to conduct research which include the methods, techniques, and procedures used to collect and analyse data for a study.

For the purpose of this present study therefore, two designs are employed; Ethnographic and descriptive survey research methods. The research designs are considered appropriate in view of the fact that the study entails systematic collection, analysis and description of data gathered from the representatives of the entire population. The research approach is adopted to identify, describe and analyse the uniqueness of the nasality and the process of nasalistion in the East Central dialects of Igbo. Ethnographic research method is chosen for the analysis of the data for the study which entails an immersive fieldwork hence, the researcher observes about hundred (100) adult male native speakers from various speech communities in the East Central Igbo both in an organised interviews and spontaneous observation which offered the researcher an opportunity to gather substantive data for the study. The descriptive method enabled the researcher to describe the data accurately using the adopted theoretical tool.

Data Presentation and Analysis

Syllabic nasal

	Phonemic form	**Phonetic form**	
(i)	/ṅnà/	[nnà]	'father'
(ii)	/mgbe/	[mgbɛ]	'time'
(iii)	/mmụọ/	[mmʊɔ]	'spirit'
(iv)	/ ncha/	[nʧa]	'soap'

The data (i-iv), buttresses the claim that East Central Igbo dialects has only two syllabic nasals the /m/ and /n/, they are syllabic nasals because the segments that come after them are consonants. They are also referred to as syllabic nasals (myiriudaume) because they can carry tones like every other vowel sound. It can also be observed that the following consonants are opaque in nature, hence; they do not transfer their nasal quality to the other segments next to them either progressively or regressively, of course they usually occur at word initial position. Examples (i-iv) suffice.

(i) Nasal tier +nas
Syllabic tier n n a 'father'
Skeletal tier sn c v

(ii)Nasal tier +nas
Syllable tier m gb e 'when'
Skeletal tier sn c v

(iii) Nasal tier +nas
Syllabic tier m m ʊ ɔ 'spirit'
Skeletal tier sn c v v

Nasal tie +nas
Syllabic tier n ʧ a 'soap'
Skeletal tier sn c v

East Central Igbo attests obligatory contour principle (OCP) (a phonological principle that prohibits adjacent segments such as tone and nasals within the same domain. see examples (i-v)

(i) /ibˇeˇ/ [ibˇeˇ] 'to peel' like pineapple
(ii) /itˇeˇ/ [itˇeˇ] 'to limp'
(iii) /ịdụ/ [ịdʊˇ] 'to sew'
(iv) /irˇeˇ/ [irˇeˇ] 'to burn'
(v) /atụrụ/ [atˇʊˇrˇʊˇ] 'sheep'

(i) Nasal tier +nas
Syllabic tier *# i bˇ eˇ 'to peel'
Skeletal tier v c v

(ii) Nasal tier +nas
Syllabic tier *# i tˇ eˇ 'to limp'
Skeletal tier v c v

(ii) Nasal tier +nas
Syllabic tier *# ị dˇ ʊˇ 'to sew'
Skeletal tier v c v

(iii) Nasal tier +nas
Syllabic tier *# i rˇ eˇ
Skeletal tier v c v 'to burn'

(v) Nasal tier +nas +nas
Syllabic tier *# a tˇ ʊˇ rˇ ʊˇ 'sheep'
Skeletal tier v c v c v

The East Central Igbo also attests complete nasality even without any evidence of a nasal segment triggering the spread of the nasal quality on the both the oral vowels and the consonant, however, it may be assumed that the nasal vowel before and after the consonant may be responsible for the nasalisation of the consonant sound as examples i-iii suffice.

i /ɑˇrˇɑˇ/ [ɑˇrˇɑˇ] 'breast'
ii /ɑˇhˇʊˇ/ [ɑˇhˇʊˇ] 'body'
iii /ọˇrˇụˇ/ [ɔˇrˇʊˇ] 'work'

(i) Nasal tier +nas
Syllabic tier aˇ rˇ aˇ 'breast'
Skeletal tier v c v

(ii) Nasal tier +nas
Syllabic tier aˇ hˇ uˇ 'body'
Skeletal tier v c v

(iii) Nasal tier +nas
Skeletal tier ọˇ rˇ uˇ 'work'
Skeletal tier v c v

Nasality as a phonemic feature in the East Central Igbo

The East Central Igbo dialects has been proven with copious examples that certain words may have the same spellings yet they are different in meaning, nasality feature becomes a means of differentiating the meaning between such words as examples i-iv suffice.
(i) /ọrụ/ [ɔrʊ];'deformity' vs /ọˇrˇụˇ/ [ɔˇrˇʊˇ] 'work',
(ii) /árá/ [árá] 'madness' vs /áˇrˇáˇ/ [áˇrˇáˇ] 'breast'
(iii) /ishi/ [i□i] 'head' vs /ishˇiˇ/ [i□ˇiˇ] 'to massage'
(v) /í reˇ/ 'to decay' vs /írˇeˇ/ 'to burn'

Nasal tier -nas +nas
Syllabic tier ɔ r ʊ 'deformity' vs ɔˇ rˇ ʊˇ 'work'
Skeletal tier v c v v c v

Findings and Conclusion

This study has examined and analysed nasality and nasalisation in East Central Igbo dialects spoken in the Imo State of Nigeria, and has come up with the followings findings:

(i) That East Central Igbo dialect attests only two (2) syllabic nasals /n/, and /m/.

(ii) That the two syllabic nasals identified are opaque in nature, hence, they do not transfer their nasality to the adjacent consonant.

(iii) That East Central Igbo dialect attest peculiar oral vowels in the sense that a vowel sound can be oral vowel in an environment that is exactly the same with where it is nasal vowel. as seen in words like /ɔ́ró/ 'deformity' and /ɔ̃r̃ʊ̃/ 'work'.

(iv) That vowels and consonant can bear nasal feature with or without any evidence of any adjacent nasal segment triggering the process.

From the above findings therefore, the researcher recommends further studies on the phonology of the East Central Igbo dialects in order to harness the rich linguistic tools of the dialect group which will enrich Igbo language studies as a whole.

References

1. Agbaedo, C.U. (2000). *General linguistics: An introductory reader*. Nsukka: ACE Resources Konsult.
2. Akinlabi, A. (2000).*Sonorant nasalization in Yoruba verbal nouns*. Ms: Rutgers University.
3. Armstrong, R. (1967). "A Comparative Wordlist of Five Igbo Dialects", *Institute of African Studies Institute of African Studies*, University of Ibadan. Occasional Publication No.5.
4. Anagbogu, P.N, Eme C.A, Mbah, (2001). *Introduction to linguistics*. Awka, Anambra State: J.F.C Ltd.
5. Arokoyo, B.E. (2017), Morphological Rules. In *Unlocking Morphology* Ilorin:
6. Chridamel Publishing House. pp 113-130.
7. Awobuluyi, O. (1992). Aspect of Contemporary Standard Yoruba, in J.F. Odunjo Series. *The Dialectology Perspective.*
8. Bloomfield, L. (1983). *An introduction to the study of Languages.* Amsterdam/ Philadelphia: John Benjamin's publishing Company.
9. Clark, J., & Yallop, C. (2000). *An introduction to phonetics and phonology*. UK: Blackwell Publishers
10. Crystal, D (1989). *A dictionary of linguistic and phonetics*. Cambridge: Cambridge University Press.
11. Crystal, D. (2008).*A dictionary of linguistics and phonetics*. (6th ed.). UK: Blackwell Publishing.
12. Eme,P.O. (2008). Parameters of intersegmental co-ordination in speech: In selected Proceedings of the 38th Annual Conference on African Linguistics. Pp.123-137.
13. Emenanjo,E.N.(1995).*Multilingualism, minority language policy in Nigeria*. Agbor: Central Book Limited.
14. Emenanjo, E. N. (2015).*"Nasalization" in a grammar of contemporary Igbo*. Port Harcourt: M&J Grand Orbit.
15. Emenanjo, E. N. (2015). *A grammar of contemporary Igbo*. Port Harcourt: University of Port Harcourt Press.
16. Fromkin, V (ed). (2018). An introduction to language (12th). Boston, M.A Cengage Learning. pp. 261-265.
17. Goldsmith, J. (1976). "An Overview of Auto Segmental Phonology" in *Linguistic Analysis* 2, 23-68.
18. Goldsmith, J. (1979). *Autosegmental phonology*. New York: Garland.
19. Gopsill, J. (1990). *Dialect as a pejorative: The social implication of language attitudes*. Oxford: Oxford University Press.
20. Hayes, B. (2009). Introductory Phonology in,*TheAtriu*. US: John Wiley and son Ltd.
21. Igwe, G.E. (1999). *Igbo-English Dictionary*.Ibadan: UPPLC.
22. Manfredi,V.(1988).*Igboid in Bendor-Samuel J.T. (ed.).*The Niger-Congo Languages:Langam.
23. Manfredi,V. (1991). *Agbo and Ehugbo: Igbo linguistics consciousness.* USA: University Press of America.
24. Mbah B. and Mbah E.E (2010). *Topics in phonetics and phonology: Contribution from Igbo*. Nsukka: AP Express Publishers.
25. Meier, I. (1975). *A Grammar of Izi: An Igbo language*. Oklahoma: Norman.
26. Nwachukwu, P.(1995).Tone in Igbo syntax:Studies in Igbo linguistics 2,Nsukka of Igbo Unpublished ed.M.A.Thesis, SUNY, Buffalo, Owerri.
27. Nwaozuzu, G. I. (2008). *Dialects of Igbo language*. Nsukka: University of Nigeria Press.
28. Nkamigbo, L.C.(2014).Nasalization, Aspiration, and Labialization in Igbo Dialect phonology, in *Journal of Theoretical Linguistics*.
29. Nkamigbo, L.C. (2017). Vowel height, consonant type and the realization of High tone in Igbo, in Chinedu Uchechukwu. ed. Igbo Language Studies – *A Journal of Igbo Language and Linguistics,* 2: 43-62.
30. Ndimele,M.O.(2003). *Nasalization in Echee in a Concise Grammar and Lexicon of Echie*. Aba: NINLAN.
31. Ohiri-Aniche,C.(2011). *A lexicostatistical study of Igbo*. New Jersey:Goldline and JacobsPublishers.
32. Ohiri-Aniche,C. (2013). Igbo Speech Varieties Centre for Igbo Arts and Culture. Abuja.
33. Onwuejiogu,M.A.(1975).The Igbo Culture Area. In Ogbalu, F.C. and E.N. Emenanjo (ed)1-10.
34. Oluikpe, E.C. (1979). *Dialects of Igbo: A study of linguistic variation*. Ibadan: University of Ibadan Press.
35. Oyinloye, M. E. (2019). Nasal harmony in Yorùbá: A constraint-based analysis. Ph.D seminar Paper, University of Ilorin.
36. Oweleke, E.N. (2020). Igbo dialects and citation-form: The possibility of a standard Igbo Dictionary AFRREV LALIGENS. *An international journal of Languages Literature and Gender Studies* 9(1): 95-107.
37. Rasinger,S.M.(2008).Research design methodology, in Qualitative Research in Linguistics An Introduction. Bloomsbury.
38. Roach,P.(2010). *English phonetics and phonology A practical course*. Cambridge: Cambridge University press.

39. Trask, R.L. (1996). *A dictionary of historical and comparative linguistics*.London Routledge.
40. Trochim, W.M.K. (2005). *Research design: The logic of scientific inquiry*. Thomson

Appendix

i.	*#	OCP- Obligatory Contour Principles
ii.	+nas	Plus Nasal
iii.	-nas	Minus Nasal
iv.	sn	Syllabic Nasal
v.	c	Consonant
vi.	v	Vowel