

A study of consonant distribution in Abureni phonology

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Abstract

The Abureni language is currently being documented to preserve it from extinction, having been identified as an endangered minority language in Nigeria. At present, the documentation of the language is still in its early stages, and there is a notable scarcity of literature on it. This study seeks to contribute to ongoing efforts by investigating and documenting the distribution of consonants in Abureni phonology. The Abureni alphabet consists of thirty-five letters, comprising twenty-five consonants and ten vowels. To analyze the language data, the study adopted the general theory of preferential attachment. Specifically, it aimed to identify the word positions of nineteen consonants and six consonant clusters in the Abureni alphabet. A random sample of words from various linguistic domains was collected and categorized into three positional clusters - word-initial, word-medial, and word-final - in order to determine the environments in which each consonant or consonant cluster occurs as an allophone. The analysis reveals that thirteen consonants and two consonant clusters occur only in word-initial and word-medial positions, but not in word-final position. In contrast, six consonants and four consonant clusters appear across all three word-boundary positions. An important observation is that the occurrence of each consonant within word structures follows a distributional pattern governed by the sound system of Abureni.

Keywords: Abureni language, consonant distribution, phonology, endangered languages.

Introduction

Abureni language is spoken by people located in southern border communities of Bayelsa State and Rivers State in Nigeria. The people communicate among themselves by means of oral tradition as attested in Daniel (2017), Etire (2023) and Paul et al (2023). In a discourse on the languages of Southern Nigeria, (Udoh, 2019), captured Abureni as one of the languages under the Political Classification and Linguistic Affiliations in Bayelsa State and Rivers State of Nigeria. Eberhard (2024) in the *Ethnologue Languages of the World* noted that Abureni belongs to the Niger-Congo language family. It is recognized that capturing aspects of phonology and morphology is significant in the documentation of an indigenous language. The Abureni

Alphabet is made of thirty-five letters out of which ten are vowels while twenty-five are consonants, including six consonant clusters or digraphs (Akari, 2014; Ebua, 2017; Etire, 2015; Etire, 2016), viz,

a, ǎ, b, ɓ, bh, d, ɗ, e, ɛ, f, g, gb, gh, h, i, ɪ, k, kp, l, m, n, nw, ny, o, ɔ, p, r, s, t, u, ʉ, v, w, y, z
/a, ǎ, b, ɓ, β, d, ɗ, e, ɛ, f, g, gb, γ, h, i, ɪ, k, k̄p, l, m, n, ηʷ, ɲ, o, ɔ, p, r, s, t, u, ʉ, v, w, j, ʒ/

This study investigates the twenty-five consonants and consonant clusters (digraphs) which are:

b, ɓ, bh, d, ɗ, f, g, gb, gh, h, k, kp, l, m, n, nw, ny, p, r, s, t, v, w, y, z
/b, ɓ, β, d, ɗ, f, g, gb, γ, h, k, k̄p, l, m, n, ηʷ, ɲ, p, r, s, t, u, v, w, j, ʒ/

The Abureni language, classified as endangered based on a UNESCO (2003) vitality account, is being documented to prevent extinction. According to the Ad Hoc Expert Group on Endangered Languages, a language faces endangerment when it lacks sufficient documentation, has declining speaker numbers, and sees no new speakers among younger generations. In Agrisaba, on Abureni's southern border with Nembe, only the elderly speak Abureni due to Nembe's dominance as a language of wider communication. The lack of literature and prior studies on Abureni consonants inspired this research to analyse consonant distribution by determining the word-positions of nineteen consonants and six consonant clusters (digraphs). The results aim to improve understanding of spoken Abureni and support ongoing dictionary efforts to help preserve the language.

Literature review

Scholars have examined phonological processes involving consonants of languages variously and motivated differently to do so. For example, in a critique of the Buckeye Speech Corpus, Yang (2019) indicated that what motivated his study was the dearth of papers on phonological processes of English consonants in a large spontaneous speech corpus compared to the study of vowels of the language. Yang also observed that such analysis can contribute to a practical understanding of spoken English, strengthening the view by earlier scholars.

In a discourse of English syllables, McCully (2009) opined that consonant distribution is the way consonant segments are distributed within the syllables, how they occur, and the kinds with which they can co-occur. McCully further noted that allophones are parts of the events of speech and manifestations of the underlying system. Consonants occur in predictable environments and therefore have places reserved for them within the syllables, meaning that they occur in complementary distribution. This aligns with the view by Fuchs & Birkholz (2019) that consonants are a major class of sounds which, alongside vowels, constitute the phoneme inventory of a given language and occur in all languages of the world. This study notes the discussions by Galloway (1993) and Marinakis (2004) on the distribution of consonants and consonant clusters in Upriver Haiq'emeylem, an endangered Salish language. These scholars

addressed the distribution of consonants at the initial, medial, and final positions of words in the language.

In their discourse of Dutch phonology, Linke & Oostendorp (2015) noted that the consonants feature as word types (monosyllabic or polysyllabic word), and stress types (stressed or unstressed syllable), and that they do so in a complementary manner. The study of phonological processes of consonants extends beyond linguistics to other fields of study like medical sciences. For example, in a study of phonation disorders among patients, Pouchoulin et al (2009) noted the potential relevance of unvoiced consonants in the classification of dysphonia severity, and how it brings a better understanding of the phenomena.

Theoretical Framework

To investigate the elicited data, the study adopted the theory of preferential attachment which is derived from the principle of least effort. Hofstad (2016) explains that “*Preferential attachment models describe growing networks, where the numbers of edges and vertices grow linearly with time...This way, vertices that already have a high degree are more likely to attract edges of later vertices*”. The choice of this framework stemmed from the premise that sound systems of the world’s languages show remarkable regularities with cross-learning opportunities, especially where it had been used to enhance understanding of consonant distribution.

In a discourse on the application of Preferential Attachment, Machu et al (2023) noted that the first application of Preferential Attachment dates to Yule (1925)’s study of species evolution. They further noted that the linguist George Kingsley Zipf, studied the principle and theorized in Zipf (1949:23) that “*the distribution of word use was due to the tendency to communicate efficiently with least effort.*” Similarly, Choudhury et al (2006) observed that any arbitrary set of consonants and vowels does not make up the sound system of a particular language, and that the occurrence of consonants follows a two-regime power law distribution. Specifically, they asserted that consonant inventory size distribution together with the principle of preferential attachment are the main reasons behind the emergence of such behaviour. The foregoing, along with similar scholarly assertions on the subject, provides insights into the preferential nature of consonant distribution within the structures of syllables and words. to which this study also aims to contribute.

Methodology

The study used the Semi-structured Interview as the research tool. George (2022) notes that semi-structured interviews are a blend of structured and unstructured interviews where the questions are open-ended, allowing for flexibility but follows a predetermined thematic framework. The reason for this choice of instrument by the study was influenced by the need to involve the Indigenous people to provide by themselves suitable words with consonants in the specified word-positions and critique the results. The author randomly selected respondents were

from various age groups and from both literate and non-literate populations, and communication was mostly face-to-face. The intent was to gain from the benefits of face-to-face interviews which according to Netscribes (2024) include fostering trust, engagement, and nonverbal communications for deeper insight among participants.

Furthermore, the study also relied on the author's intuitive knowledge as a native speaker of Abureni language. Words were randomly sampled from various linguistic domains and listed in three word-position clusters, namely, word-initial, word-medial, and word-final to ascertain the location of each consonant or consonant cluster in Abureni phonology. Each sampled word is first stated in Abureni, then its gloss is given in English and phonemically transcribed using the symbols of the International Phonetic Association (IPA) Chart in Newton & Esling (2015). Tone marking is done only on the transcribed version of each entry to avoid too many tone marks in the compilation. The sampled words are listed by consonants/consonant clusters and further presented in clusters depending on their locations in the word structure.

Data

The primary corpus for this study is Etire (2023)'s *Wordlist of Abureni*, comprising 3,800 words, from which the investigated words were drawn. The study also incorporated newly suggested, unpublished words provided by respondents during interviews. The Abureni Alphabet contains twenty-five (25) consonants and consonant clusters, while the sample population consists of one hundred and ninety-two words from the corpus. The sampled words for each investigated consonant and consonant cluster are categorized into three clusters: word-initial, word-medial, and word-final boundary positions. These clusters include both open and closed syllabic words, where the consonants and consonant clusters or digraphs serve as onsets or codas, depending on the syllable structure of the word.

1 Consonant 'b'

Word-initial:

1. /bà/ → [bà] 'slice' (parts)
2. /bàdà/ → [bədà] 'unfocused', 'foolish'

Word-medial:

3. /àbàdì/ → [àbədì] 'sea', 'ocean'
4. /àbár/ → [àbár] 'thing'

Word-final: None found.

2 The consonant 'b'

Word-initial:

5. /bàkù/ → [bàkù] ‘hammer’
6. /bàm/ → [bàm] ‘ripe’ (be ripe)

Word-medial:

7. /àbà/ → [àbà] ‘egret’
8. /èbòl/ → [èbòl] ‘septic head sore’

Word-final: None found.

3 The consonant ‘d’

Word-initial:

9. /dà/ → [dà] ‘receive’
10. /dègh/ → [dèy] ‘play’

Word-medial:

11. /ada/ → [ádà] ‘father/grandfather; pet name’
12. /àdèm/ → [ədèm] ‘manatee’

Word-final: None found.

4 The consonant ‘ɗ’

Word-initial:

13. /ɗà/ → [ɗà] ‘drink’
14. /ɗè/ [ɗè] → ‘eat’ (food)

Word-medial:

15. /àɗè/ → [ədè] ‘palm tree’
16. /àɗùghùl/ → [ədùyùl] ‘flying squirrel’

Word-final: None found.

5 The consonant ‘f’

Word-initial:

17. /fàghà/ → [fàyà] ‘ransack’
18. /fìnìghà/ → [finiyà] ‘sob’

Word-medial:

19. /abafu/ → [ábáfù] ‘basin’
20. /àfà/ → [áfà] ‘calabash’

Word-final: None found.

6 The consonant ‘g’

Word-initial:

21. /gàm/ → [gàm] ‘vex’

22. /gè/ → [gè] ‘write’

Word-medial:

23. /àgâ/ → [àgâ] ‘egg’

24. /égùgùm/ → [égùgùm] ‘anthill’

Word-final: None found.

7 The consonant ‘h’

Word-initial:

25. /hè/ → [hè] ‘yes, of course’

26. /hó/ → [hó] ‘Is that so?’ (surprise)

The above examples comprise words of exclamation.

Word-medial:

27. /àhă/ → [àhă] ‘That is it’ (thought so)

28. /èhê/ → [èhê] ‘watch out’ (caution) (adv.)

Word-final: None found.

8 The consonant ‘k’

Word-initial:

29. /kà/ → [kà] ‘carve’

30. /kè/ → [kè] ‘start’

Word-medial:

31. /ákàm/ → [ákàm] ‘malaria’

32. /èkîêr/ → [èkîêr] ‘sunbird’

Word-final: None found.

9 The consonant ‘l’

Word-initial:

33. /làghà/ → [làɣà] ‘wear’

34. /lèl/ → [lèl] ‘perch’

Word-medial:

35. /àlà/ → [àlà] ‘year’

36. /àlìgà/ → [àlìgà] ‘worm’

Word-final:

37. /adughul/ /əḍũyùl/ ‘tortoise’

38. /àlìzòl/ → [àlìzòl] ‘crayfish’

10 The consonant ‘m’**Word-initial:**

39. /màlà/ → [màlà] ‘dream’ (v)

40. /mèl/ → [mèl] ‘fall’ (v)

Word-medial:

41. /àmàn/ → [àmàn] ‘back’

42. /àmìn/ → [èmin] ‘wine’

Word-final:

43. /àmìnòm/ → [èminòm] ‘urine’

44. /àzìm/ → [àzìm] ‘darkness’

11 The consonant ‘n’**Word-initial:**

45. /nè/ → [nè] ‘endure’

46. /nù/ → [nù] ‘push’

Word-medial:

47. /ànùgá/ → [ànògá] ‘needle’

48. /ènàm/ → [ènàm] ‘animal’

Word-final:

49. /àmàn/ → [àmàn] ‘back’

50. /àmìn → [èmin] ‘wine’

12 The consonant ‘p’**Word-initial:**

51. /pà/ → [pà] ‘threaten’

52. /pèl/ → [pèl] ‘jump’

Word-medial:

53. /àlìpè/ → [àlìpè] ‘firewood’

54. /àpípíyà/ → [àpípíjà] ‘hornbill’

Word-final: None found

13 The consonant ‘r’

Word-initial:

55. /ràbh/ → [ràβ] ‘shoot’

56. /ròbh/ → [ròβ] ‘throw’

Word-medial:

57. /éri/ → [éri] ‘thread’

58. /èrùn/ → [èròn] ‘leech’

Word-final:

59. /ènùr/ → [/ènòr] ‘bird’ (n)

60. /ìghòróghòr/ → [ìyòróyòr] ‘slime’ (n)

14 The consonant ‘s’

Word-initial:

61. /sà/ → [sà] ‘cook’ (v)

62. /sèbh/ → [sèβ] ‘thank’

Word-medial:

63. /àlísèm/ → [àlísèm] ‘periwinkle’

64. /àsòn/ → [àsòn] ‘gray hair’

Word-final: None found

15 The consonant ‘t’

Word-initial:

65. /tà/ → [tà] ‘imitate’

66. /tama/ → [tàtà] ‘drift’ (canoe)

Word-medial:

67. /àtò/ → [àtò] ‘ear’, ‘leaf’

68. /ètí/ → [ètí] stern (of canoe)

Word-final: None found

16 The consonant ‘v’

Word-initial:

69. /vaghà/ → [vəḡà] ‘search’ (vigour)
70. /vâîny/ → [vâîŋ] ‘bouncing sail’; paddling (ideophone)

Word-medial:

71. /àvâ/ → [àvâ] ‘gun’
72. /òvöbh/ → [òvöβ] ‘empty headedness’

Word-final: None found

17 The consonant ‘w’

Word-initial:

73. /wâl/ → [wâl] ‘count’
74. /wîn/ → [wîn] ‘break’ (v)

Word-medial:

75. /èwálà/ → [èwélà] ‘tilapia’
76. /èwèl/ → [èwèl] ‘goat’

Word-final:

77. /âbòûw/ → [âbòúw] ‘mangrove swamp’
78. /áyòûw/ → [ájòûw] ‘onion’

18 The consonant ‘y’

Word-initial:

79. /yáǎ/ → [jǎǎ] ‘but’
80. /yâbh/ → [jâβ] ‘beckon’, ‘magnet’(v)

Word-medial:

81. /òyébò/ → [òjébò] ‘carved image’
82. /òyéêl/ → [òjêl] ‘basket (small)’

Word-final:

83. /àlàîy/ → [àlàîj] ‘tooth’
84. /òbhíîy/ → [òβíîj] ‘river’

19 The consonant ‘z’

Word-initial:

85. /zà/ → [ʒà] ‘flowering’ (in plant)

86. /zò/ → [ʒò] ‘load’ (gun)

Word-medial:

87. /àkózògh/ → [àkóʒòɣ] ‘dry season’

88. /àzìghàzìghà/ → [àʒìɣàʒìɣà] ‘broom’

Word-final: None found

20 The consonant cluster ‘bh’

Word-initial:

89. /bhàm/ → [βàm] ‘carry’

90. /bhè/ → [βè] ‘skim’ (oil)

Word-medial:

91. /èbhùl/ → [èβùl] ‘brain’

92. /òbhâl/ → [òβâl] ‘horn’

Word-final:

93. /àḍùsúbh/ → [àḍùsúβ] ‘twenty’ (adj./n)

94. /ḍiòbh/ → [ḍiòβ] ‘ten’ (adj., n)

21 The consonant cluster ‘gb’

Word-initial:

95. /gbàm/ → [gbàm] ‘place on top’

96. /gbànà/ → [gbànà] ‘aground’ (canoe)

Word-medial:

97. /ágbà/ → [ágbà] ‘side’

98. /àgbó/ → [àgbó] ‘cliff’

Word-final: None found

22 The consonant cluster ‘gh’

Word-initial:

99. /ghà/ → [ɣà] ‘drop’, ‘abscise’ (fruit)

100. /ghèn/ → [ɣèn] ‘brittle’

Word-medial:

101. /àbòghò/ → [àbòyò] ‘dog’
 102. /àghìní/ → [àyìní] ‘pond’

Word-final:

103. /àgùgh/ → [àgùy] ‘pot’
 104. /òghùgh/ → [òyùy] ‘canoe’

23 The consonant cluster ‘kp’**Word-initial:**

105. /kpàtòn/ → [kpàtòn] ‘open’ (eye, hand)
 106. /kpèlèmàn/ → [kpèlèmàn] ‘squat’ (v)

Word-medial:

107. /àkpákûm/ → [àkpákôm] ‘mushroom’
 108. /èkpě/ → [èkpě] ‘he-goat’

Word-final: None found**24 The consonant cluster ‘nw’****Word-initial:**

109. /nwè/ → [ɲwè] ‘change’ (v)
 110. /nwègì/ → [ɲwègì] ‘resuscitate’ (fainted person)

Word-medial:

111. /ànwánī/ → [àɲwánī] ‘women’
 112. /ànwínyân/ → [àɲwínyân] ‘girls’

Word-final:

113. /àpóûnw/ → [àpóôɲw] ‘pound’ (nativized) (money)
 114. /èkéûnw/ → [èkéôɲw] ‘potash’

25 The consonant cluster ‘ny’**Word-initial:**

115. /nyàgh/ → [ɲày] ‘draw’, ‘pull’
 116. /nyègì/ → [ɲègì] ‘shake’

Word-medial:

117. /ànyà/ → [àɲà] ‘fire’
 118. /ínyà/ → [ɲà] ‘four’

Word-final:

119. /àbóîny/ → [àbóîŋ] ‘cat’

120. /éḅùlégúnwéîny/ → [éḅùlégún^wéîŋ] ‘water hyacinth weevil’ (*Neochetina eichhorniae*)

Data analysis, findings and discussion

The study found out that there are nineteen consonants in Abureni, and that the language allows consonant clusters that feature as digraphs which agree with earlier assertions in (Akari, 2014; Ebua, 2017; Etire, 2015; Etire, 2016). In the mono-syllabic and poly-syllabic words investigated, thirteen of the consonants appear in both the word-initial and word-medial positions only, but not at the word-final position. These are: /b, ḅ, d, ḁ, f, g, h, k, p, s, t, v, ʒ/. Similarly, two of the consonant clusters, /gb/ and /kḅ/, appear in word-initial and word-medial positions only, but not at the word-final position. Phonetically, it means that the sounds that only feature at word-initial and word-medial positions in Abureni are: the bilabial plosives /p/ and /b/, the alveolar plosives /t/ and /d/, and the velar plosives /k/ and /g/. Others are the double articulated voiceless plosive /kḅ/ and its voiced counterpart /gb/. The bilabial voiced implosive /ḅ/ and the alveolar voiced implosive /ḁ/, the labio-dental fricatives /f/ and /v/, the alveolar fricatives /s/ and /ʒ/, and the glottal fricative /h/ also fall in this category.

On the other hand, in the mono-syllabic and poly-syllabic words investigated, six of the consonants appear in all three sound positions at word-initial, word-medial, and word-final. These are: /l, m, n, r, w, j/. Similarly, four consonant clusters appear in all three sound positions at word-initial, word-medial, and word-final positions. These are: /β, γ, ŋ^w, ɲ/. Phonetically, it means that the sounds that feature in all the three positions at word-initial, word-medial, and word-final positions in Abureni are: the bilabial nasal /m/, the alveolar nasal /n/, the palatal nasal /ɲ/, the velar nasal /ŋ/, and the labialized velar /ŋ^w/. Others are the bilabial fricative /β/, the velar fricative /γ/, and the alveolar thrill /r/. The palatal approximant /j/, the labialized velar approximant /w/, and the alveolar lateral approximant /l/ also fall in this category.

Appearance patterns of consonants and consonant clusters in mono-syllabic and poly-syllabic word structures

This subsection illustrates the patterns of occurrence of identified consonants and consonant clusters (or digraphs) in sample open-syllable and closed-syllable words, along with their root shapes. In describing the shape of a root, ‘C’ represents a consonant, ‘V’ represents a vowel, and ‘CC’ represents a consonant cluster, which in this context refers to a digraph. For this study, one word is used to exemplify each root shape, depending on the pattern. These words are presented in Abureni, phonemically transcribed with tone markings, and accompanied by their English glosses to enhance the reader’s comprehension.

Appearance patterns of consonants

CV

121. /gì/ → [gì] ‘go’

CVC

122. /dùm/ → [dùm] ‘live’

CVCV

123. /kòkò/ → [kò-kò] ‘save’, ‘heal’

CVCVC

124. /kàdòn/ → [kà-dòn] ‘unlock’

CVCVCV

125. /pònòmà/ → [pò-nò-mè] ‘domineer’; ‘oppress’

CVCVCVC

126. /bòlòbòl/ → [bò-lò-bòl] ‘mould’

CVCVCVC

127. /gìgìrìbh/ → [gì-gì-rìβ] ‘firmly’, immovable (ideophone)

CVCVCVCV

128. /bágánágá/ → [bá-gá-ná-gá] ‘bare’; ‘naked’ (ideophone)

Appearance patterns of consonant clusters and digraphs

The study also observed that consonant clusters manifest in various word shapes, parts of speech, and feature in ideophonic constructions in Abureni as shown in the examples stated below.

CCV

129. /ghò/ → [ɣò] ‘buy’

CCVC

130. /bhòn/ → [βòn] ‘good’

CCVCC

131. /nyàgh/ → [nàɣ] ‘draw’, ‘pull’

CCVCCV

132. /kpùkpù/ → [kpù-kpù] ‘knock’

CCVCCVC

133. /bhùghòl/ → [βò-γòl] ‘burrow’; ‘drill’

CCVCCVCC

134. /nyo-ghogh/ → [nòγòγ] ‘pester’, ‘worry’

CCVCV

135. /bhùgì/ → [βò-gì] ‘burn’

CCVCVC

136. /gbòdòn/ → [gbò-dòn] ‘crank’ (v)

CCVCCVCC

137. /kpòkpòny → [kpò-kpòn] ‘peck’ repeatedly

CCVCCVCCV

138. /gbìgbìghà/ → [gbì-gbì-γà] ‘drag foot’ (foot-dragging)

CCVCCVCCVC

139. /gbùghòghòm/ → [gbò-γò-γòm] ‘an indirect reference to something’, ‘obliquely’

CCVCCVCCVCC

140. /gbègbèghèbh/ → [gbè-gbè-γèβ] ‘hugely sturdy’ (ideophone)

CCVCCVCCVCCV

141. /bhighìbhighì/ → [βì-γì-βì-γì] ‘wobble’; ‘shaky’ (instability, tendency to fall)

CCVCCVCV

142. /gbàghàdì/ → [gbà-γà-dí] ‘fry’ (dry fry, e.g. groundnut)

CCVCCVCVCC

143. /kpàkpàràbh/ → [kpà-kpà-ràβ] ‘thin’ (slender, skinny, lanky)

CCVCCVCVCCVC

144. /gbàgbàràghàn/ → [gbà-gbà-rà-γàn] ‘be restive’; ‘fidget’

CCVCCVCVC

145. /kpàghànòm/ → [kpà-γà-nòm] ‘clasp’; ‘hard-fisted’ handling of an object.

CCVCCVCVCV

146. /gbùghùmèni/ → [gbù-γù-mè-nì] ‘stir sediments in liquid’

CCVCVCC

147. /bhòrògh/ → [βò-ròγ] ‘search’; ‘look for’

CCVCVCCV

148. /bhùmùghù/ → [βù-mù-γù] ‘throw down oneself’ (in anguish)

CCVCVCCVC

149. /bhòlòbhòl/ → [βò-lò-βòl] ‘carress’

CCVCVCCVCV

150. /gbòrògbòrò/ → [gbò-rò-gbò-rò] ‘straight on’

CCVCVCCVCVCC

151. /kpùrùghùtùbh/ → [kpù-rù-yù-tùβ] ‘crumble’, ‘collapse’, ‘instantaneous structural collapse’ (ideophone)

CCVCVCV

152. /gbògìnà/ → [gbò-gì-nà] ‘divorce’

CCVCVCVCV

153. /kpàrà-nò-mà/ → [kpà-rà-nò-mà] ‘frightened’

CCVCVCVVC

154. /kparagìom/ → [kpà-rà-gì-ôm] ‘bear pain’, ‘endure pain’

VCCV

155. /ánwā/ → [á-ŋ^wā] ‘you’

VCCVC

156. /àghĩm/ → [à-γĩm] ‘vision’

CVCCV

157. /lagha/ → [là-yà] ‘wear’, ‘put on’ (wears)

CVCCVC

158. /lòbhòm/ → [lò-βòm] ‘wet’, ‘soak’ (rain)

CVCCVCC

159. /kànyògh/ → [kà-nòγ] ‘slaughter’, ‘butcher’

CVCCVCCV

160. /tìghíhí/ → [tí-γí-γí] ‘inflated’, ‘robust’

CVCVCCV

161. /mùlùghù/ → [mù-lù-γù] ‘shout’

CVCVCCVC

162. /mànàghàn/ → [mà-nà-γàn] ‘lie down’, ‘lay’

CVCVCVCCVC

163. /bèbèrèghàn/ → [bè-bè-rè-γèn] ‘fuss’

VCCVCCV

164. /ìghòghò/ → [ì-γó-γò] ‘grass’

VCCVCCVC

165. /ògbógbòm/ → [ò-gbó-gbòm] ‘thickness’

VCCVCCVCCV

166. /ìbhùbhùghà/ → [ì-βò-βò-γà] ‘armpit’

VCCVCCVCV

167. /èghìghírà/ → [è-γì-γì-rà] ‘area’, ‘neighbourhood’

VCCVCCVCVC

168. /óbhùghólóm/ → [ó-βù-γó-lóm] ‘sunflower’ (wild)

VCCVCCVCVCV

169. /òbhùbhúlúgì/ → [ò-βò-βó-ló-gì] ‘vapour’

VCCVCVCCV

170. /òbhùrùghó/ → [ò-βù-rù-ghó] ‘wrap’

VCCVCVCCVC

171. /èghèlèghèl/ → [è-γèl-è-γèl] ‘basket fish trap’

VCVCCVCC

172. /àsùbhùbh/ → [à-sù-βùβ] ‘pubic hair’

VCVCCVCCV

173. /asùgbagba/ → [à-só-gbà-gbà] ‘news’

VCVCCVCCVC

174. /àlùgbégbêm/ → [à-lù-gbé-gbêm] ‘agama lizard’

VCVCCVCCVC

175. /ìmèghènyàn/ → [ì-mè-γè-nàn] ‘gossip’

CVCCVCVCC

176. /ròghòrògh/ → [rò-γò-ròγ] ‘watery’ (molten substance, tuber dough)

CVCVCC

177. /mòlògh/ → [mò-lòγ] ‘laugh’

VCCVCC

178. /ànwìny/ → [à-n^wìɲ] ‘children’; also ‘boys’

CVCC

179. /bàbh/ → [bàβ] ‘slap’
VCCVCCVCC
180. /èkpákpâgh/ → [è-kpá-kpâγ] ‘chest’
VCVCCVCCVCC
181. /idòghòghòiny → [i-dò-γò-γòìn] ‘mushroom’ (tall species)

Appearance of consonant clusters and digraphs in reduplicated root words

In this subsection, the study examines words that are formed through reduplication of certain root words, with particular emphasis on consonant clusters and digraphs. These constructions function as adjectives and may also serve as noun phrase names where digraphs such as /bh/, /gb/, gh, /kp/ and /ny/ appear. In some cases, the root words are hyphenated for clarity and emphasis.

- CCVCVVCC-CCVCVVCC
182. /bhèlèiny-bhèlèiny / [βèlèîn-βèlèîn] ‘fart quietly’, ‘pass gas quietly’ (repeatedly).
CVCVVCC-CVCVVCC
183. /dèléiny-dèléiny / [dèlèîn- dèlèîn] ‘magnitude; carrying heavy loads about hastily.’
CCVCCVCVC-CCVCCVCVC
184. /gbághánám-gbághánám/ → [gbá-γá-nám-gbá-γá-nám] ‘banging (percussion)’ (ideophone)
CCCVCCCV
185. /gbràgbrà/ → [gbrà- gbrà] ‘interplay’ loose flat sonorous strips of materials (ideophone).
CCCVCCVCVCC-CCCVCCVCVCC
186. /gbràghàtàbh-gbràghàtàbh / → [gbrèγètǎβ-gbrèγètǎβ] ‘fall down flat’, ‘sound produced when a huge object repeatedly falls down heavily or loosely’ (ideophone).
VCCVCCVC-CCVCCVC
187. /ìgbàgbàm-gbàgbâm/ → [i-gbè-gbèm-gbè-gbêm] ‘sour’ (soup) (adj.)
VCCVCCVCVCCVC-CCVCCVCVCCVC
188. /òkpùkpùrùghàn-kpùkpùrùghàn/ → [ò-kpù-kpù-rù-γèn-kpù-kpù-rù-γên] ‘shrivelled’
VCCVCCVCV-CCVCCVCV
189. /ògbàgbàrà-gbàgbàrà/ → [ò-gbà-gbà-rà-gbà-gbà-rà] ‘fond searcher’, ‘adventurer’
VCCVCCVCVC-CCVCCVCVC

190. /òkpòghòlàn-kpóghòlân/ → [ò-kpò-γò-làn-kpó-γò-lân] ‘emaciated’ (severely)

VCCVVC-VCCVVC

191. /ogbuorogbuor/ → [ò-gbùòr-ó-gbùòr] ‘sluggard’; ‘lazy person’

VCVCCVCVCC

192. /òbàgháâgh/ → [ò-bàγ-á-bâγ] ‘person with hearing difficulty’

The investigated consonants and digraphs in Abureni appear word-medially or word-finally in nouns, pronouns, and adjectives but never initially. This aligns with Etire’s (2015) assertion that Abureni nouns, including borrowed words and foreign names, start with vowels due to vowel adaptation. These findings highlight how consonant distribution shapes word structure in Abureni phonology.

Application of the preferential Attachment (PA) tool

In the figure below, the study has used typical environments in which fricatives and approximants occur as allophones to illustrate the Preferential Attachment theory as it applies to consonant distribution in Abureni.

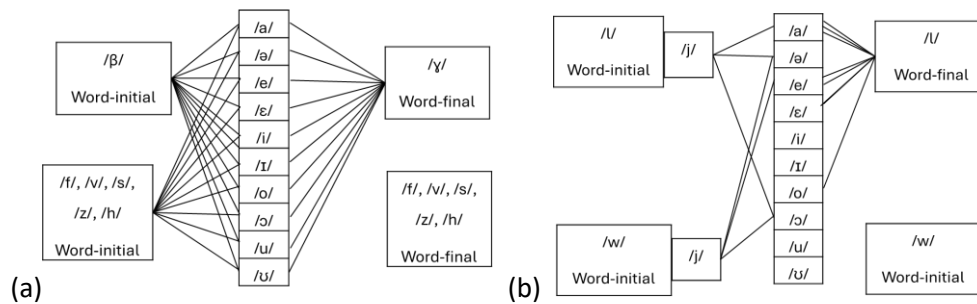


Figure 1 (a) *Preferential Attachment of vowels with the bilabial fricative /β/ at word-initial position compared to the velar fricative /γ/ at word-final position and other fricatives; (b) PA of the palatal approximant /j/ as glide with the lateral approximant /l/ and the labialized velar approximant /w/ at word-initial compared to /l/ at word-final position.*

From Figure 1(a), the nodal network of preferential attachment for fricatives skews left, highlighting their tendency to appear in word-initial positions. Analysis of thirty words revealed equal nodal counts for /β/ and /γ/ at word-initial and word-final positions, suggesting equal probabilities of occurrence. However, /f/, /v/, /s/, /z/, and /h/ appear exclusively in word-initial positions. Figure 1(b) demonstrates that the palatal glide /j/ preferentially attaches to the lateral approximant /l/ at word-final positions, while the labialized velar approximant /w/ is restricted to word-initial positions. Nodal counts for /j/-

/l/ and /j/-/w/ connections were three words each, underscoring their distinctive attachment behaviours under specific environments. These findings elaborate on consonant-vowel interactions and their distribution in Abureni phonology.

Conclusion

The study outlines the distribution of consonants in Abureni. It identifies specific consonants, consonant clusters, and digraphs that appear at word-initial and word-medial positions only, such as bilabial plosives (/p/, /b/), alveolar plosives (/t/, /d/), and velar plosives (/k/, /g/), among others. Additionally, it highlights consonants and clusters that can occur at word-initial, word-medial, and word-final positions, including /l/, /m/, /n/, /r/, /w/, /j/, and clusters like /β/, /ɣ/, ɲ^w/ and /ɲ/. The study points out that thirteen consonants and two consonant clusters of the Abureni Alphabet appear in word-initial and word-medial positions only, but not at word-final position.

Furthermore, six of the consonants and four consonant clusters appear in all three word-positions. Another important observation from the study is that the occurrence of each of the investigated consonants in a word structure follows a pattern that is predicated by the sound system of Abureni. The pattern that each of the consonants or consonant clusters appears in a word or syllable structure varies from consonant to consonant. Notably, noun words do not start with consonants or consonant clusters. Certain consonants, such as ‘w’ and ‘h,’ exhibit specific phonological features and functions at word boundaries. For instance, ideophones primarily dominate the list of investigated words with the consonant ‘w’ at word-final positions, whereas words with ‘h’ at initial or medial positions are predominantly exclamations.

It is anticipated that the results from this study have provided insight into the ways in which Abureni consonants manifest in word structures and would also contribute to the wider discourse on consonant distribution. There is no doubt that future research with a corpus larger than the one used in this study will give additional understanding of Abureni consonant distribution system to further enrich the literature in the language.

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Appendix

Field Interview Questionnaire on Abureni Consonant Distribution

Study Title: *A Study of Consonant Distribution in Abureni Phonology*

Research Tool: Semi-Structured Interview

Interviewer's Name: _____

Respondent's Name (Optional): _____

Date: _____

Age Range (tick one): ☐ 21–40 yrs ☐ 41–60 yrs ☐ Above 60 yrs

Section A: General Phonological Awareness

1. For each of the 19 consonant sounds listed below, provide at least one commonly used Abureni word where the sound occurs in each of the following positions:

- a) Initial (at the beginning of the word)
- b) Medial (in the middle)
- c) Final (at the end)

Consonants: b, b, d, d, f, g, h, k, l, m, n, p, r, s, t, v, w, y, z _____

2. Are there Abureni words that begin with consonant clusters (e.g. *kp*, *gb*)?

☐ Yes ☐ No

If yes, give examples:

Section B: Articulatory Insights

3. Tick any sounds that feel different to pronounce:

☐ b ☐ d ☐ bh ☐ gh ☐ kp ☐ gb ☐ nw ☐ ny

Describe how they feel different:

4. Describe the difference between the following pairs:

d vs d: _____

b vs b: _____

5. Where does each of the digraphs *bh*, *gh*, *kp*, *gb*, *nw*, *ny* usually appear in Abureni words?

☐ Beginning ☐ Middle ☐ End ☐ all 3 positions ☐ Unsure

Examples: _____

Section C: Positional Distribution

6. Are there consonants used only at the beginning of words?

☐ Yes ☐ No

If yes, which ones? _____

7. Which consonants commonly occur in the middle or end of words?

8. Are there consonants rarely heard at the beginning, middle, or end?

☐ Yes ☐ No

If yes, which ones? _____

Section D: Morphophonemic & Semantic Patterns

9. If you replace *h* with *b*, or *g* with *d*, does the word's meaning change?

☐ Yes ☐ No

Example(s): _____

10. Do consonant sequences appear in compound or repeated words?

☐ Yes ☐ No

Examples: _____

Section E: Speaker Variation & Usage

11. Do all Abureni speakers pronounce *bh*, *gh*, or *v* the same way?

☐ Yes ☐ No

If no, describe differences: _____

12. Are some consonants disappearing or being replaced in modern use?

☐ Yes ☐ No

If yes, which ones? _____

Section F: Minimal Pairs Elicitation

Please provide word pairs that differ by only one consonant:

Contrast	Word Pair
b / <u>b</u>	
d / <u>d</u>	
kp / k	
ny / n	

Section G: Speaker Perception

14. Which consonants feel more “natural” or easier to pronounce? Why?

15. What sounds do non-native speakers usually find difficult in Abureni?

Analysis Table for Research Use only (Interviewer)

Question Nos.	Response Type	Data Type	Suggested Analysis
1–2	Open-ended	Lexical	Word lists by consonant/cluster
3–5	Mixed	Articulatory	Speaker’s phonetic awareness & commentary
6–8	Mixed	Distributional	Positional patterns across lexicon
9–10	Open-ended	Semantic & Morphological	Distribution and change in word meaning
11–12	Mixed	Sociolinguistic	Regional/age-based variation or shift
13	Structured	Minimal Pairs	Identification of contrastive units
14–15	Open-ended	Perceptual	Ease, prominence, and L2 acquisition barrier