

The Vowel System of Àléḡē

Ebitare F. Obikudo and Bosco C. Okolo-Obi

University of Port Harcourt

Abstract. Alege is one of the undescribed languages that belong to the Bendi language family spoken in Cross River State, Nigeria, West Africa. This study examines the vowel system of the language. Data for this work was gathered primarily through a series of fieldwork carried out between 2016 and 2019. The descriptive approach is employed in providing both phonetic and phonemic analyses of the data. For the analysis and interpretation of the phonetic data, the study utilizes the Praat software. We also exploit the classical phonemic parameters of contrast and distribution in determining the phonemic status of vowels in the language. Findings from the study show that Alege has twenty-eight phonetic vowels and nine oral phonemic vowels /i ɪ e ε a ɔ o u/. Eight of the nine vowel phonemes, except for /o/, have nasalized counterparts that are restricted to word-final position in their distribution. Vowel length is not contrastive but is phonetic in certain environments. Phonemically, instances of perceived long vowels are analyzed as cases of sequences of identical short vowels. One defining quality of the vowel system of most Niger-Congo languages is vowel harmony that is based on the Advanced Tongue Root (ATR) feature. Interestingly, Alege language which is classified under the Benue-Congo group does not show any form (total or partial) of vowel harmony.

Keywords: Vowel System, Vowel Length, Vowel Formants, Bendi Languages

Languages: Alege

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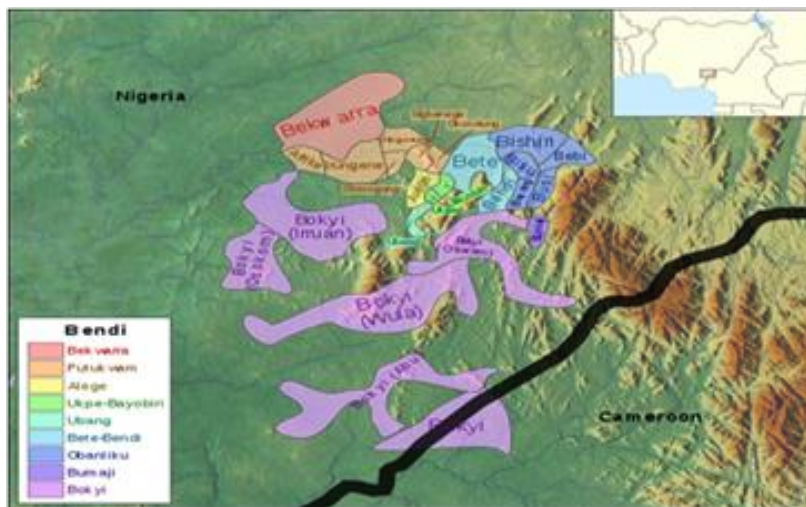
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1.0 Introduction

Alege (pronounced /àlé⁺gé/) is a small group Bendi language spoken in Alege community in Obudu Local Government Area of Cross River state, Nigeria, West Africa. The Bendi languages are located in the northern part of Cross River State in southern Nigeria and adjacent parts of south western Cameroon (Crozier and Blench 1992, Blench 2001). They belong to the Cross River languages of the Benue-Congo family within the Niger-Congo phylum. The Bendi languages include Bekwarra, Putukwam, Alege, Ukpe, Ubang, Bette, Obanliku, Bumaji, and Bokyi as seen in the map below (see Figure 1). The closest linguistic relatives of Alege are Ukpe and Ubang.

The Alege speech community consists of seven villages, namely Amukwong, Eraru, Okikwo, Ngokpu, Ebuasu, Okpe and Okodun (Okolobi, Obikudo and Alerechi, 2019). Like many small group languages, Alege is sustained orally. With the increased awareness of the dangers of language endangerment globally, more and more linguists are now collaborating with small group language communities to design language development projects. This paper is an outcome of a collaborative language development project initiated by the Alege community that is aimed at investigating the phonological rudiments observable in the sound system in order to develop an orthography. The study sets out to provide a detailed account of the vowel system of the language.

Figure 1: Map Showing the Bendi Languages



1.1 Previous Studies

In terms of research, very little work has been carried out on Alege. Previous studies that make mention of Alege are basically attempts towards the genetic classification of the Bendi family within the Cross River group. Even on Bendi, Blench (2004) laments that very little research has been conducted on Bendi languages and modern works that exist, mostly on Bekwara and Bokyi, remain unpublished and inaccessible. Blench's (2004) comparative study of Bendi languages includes examples from Alege. Although fairly comprehensive (compared to other previous studies), the data provided were however limited to few words gathered from multiple secondary sources.

Otronyi, Ajaegbu, Muniru and Nweke (2015) conducted a sociolinguistic survey on Alege, Ukpe and Ubang. The main goal of the survey was to find out the possibility of widespread bilingualism in Alege, Ukpe, Ubang and Bette among speakers of Alege, Ukpe and Ubang and to determine the most suitable language(s) each language group understands and accepts as the best for a standard written form that would serve all groups.

Okolo-obi, Obikudo and Alerechi (2019) employed three survey methods namely; individual and group interviews, participant observation and structured questionnaires in investigating the sociolinguistic setting of the Alege community. Their findings showed that Alege is predominantly spoken alongside English, Nigerian Pidgin, and Bette. The study also revealed that the continued migration of young people in search of quality education, better jobs and higher standards of living is a threat to the Alege language which is presently sustained orally.

Okolo-obi, Alerechi and Obikudo (2019) discussed the consonant system of Alege. Out of thirty-seven (37) phonetic consonants identified, twenty-nine (29) phonemes were established using the principles of contrast, variation, and distribution. The consonant phoneme inventory consists of ten (10) plosives /p b t d k g kp gb k^w g^w/, one (1) implosive /ɓ/, four (4) nasals /m n ɲ ŋ^w/, four (4) affricates /ts dz tʃ dʒ/, one (1) tap /ɾ/, six (6) fricatives /f v s z ʃ h/ and three (3) approximants /l j w/.

Regardless of the dearth of previous research in Alege, few empirical studies have been carried out in some neighboring related languages like Mbe, Utugwang and Bekwarra. Mbe is an Ekoid language spoken by the Mbube people in Ogoja Local government area of Cross River State. Although it does not belong to the Bendi family, Mbube shares a common geographical boundary with Alege. The indigenes of the Alege and Mbube communities have had centuries of consistent interactions. Knowing the relevance of contact situation to linguistic investigations as this, it is pertinent to examine some available literature on the phonological system of the language. Bamgbose (1967) examined the phonological structure of the Mbe language. His findings showed that Mbe has twenty-six consonants /p b t d k g kw kp gb f s ʃ h ts dz tʃ dʒ m n ŋ l r y w ỹ w̃/. He observed that some of these segments have allophonic variants. For instance, the voiceless bilabial plosive /p/ is realized as a bilabial fricative [ɸ] when it is preceded by a syllabic nasal and followed by the vowel /u/ or any diphthong beginning with /u/ as in the example /n̩ɸù/ ‘feather’. The voiced bilabial plosive /b/ is devoiced in syllable final position; for example [təɸ] ‘accompany’. The alveolar trill /r/ becomes an alveolar tap [ɾ] when it occurs in an intervocalic position. In the distribution of consonant sounds in the language, Bamgbose (1967) noted that all consonants except the velar nasal [ŋ] occur in syllable initial position. Palatal consonants can only occur before close vowel phonemes and their diphthongs. Nasal consonants [m n ŋ], lateral [l], bilabial plosive [b] and trill [r] occur in syllable final position. Both the trill and the bilabial plosive are devoiced in this position. Bamgbose (1967) stated that the language has seven simple vowels /i e ε a u o ɔ/ and ten diphthongs /ie ie ia iu io ue ue ua uɔ/. Nche (2015) argued that the diphthongs presented in Bamgbose’s analysis are ambiguous segments that are better analyzed as a CⁱV or C^wV sequence given that the first vowel of the sequence is either the high front vowel /i/ or high back vowel /u/. The fact that palatalization and labialization are widespread in this language gives further credence to the alternative analysis.

According to Williamson (1993), Bekwarra language has twenty-one consonants; /p b t d k g kp m n ɲ f ʃ h tʃ dʒ j r l w y/. Palatalization and labialization are prevalent features in the Bekwarra language. Labialization

affects the following consonants in the language /p b m tʃ j ɲ ʃ k g ŋ/ while palatalization affects /p b m d l/. In addition, Bekwarra has five vowels /i e u o a/. All vowels of the language have long phonetic counterparts.

Utugwang language belongs to the Bendi family like Alege. In addition, Utugwang and Alege communities share a geographical boundary, and the people of both communities have a lot of interaction. According to Ayugha (2013), Utugwang has twenty-seven (27) consonant phonemes /p b t d k g kp gb tʃ dʒ m n ɲ r f v s ʃ h j w l k^w g^w ŋ^w h^w/. He explains that all plosives and affricates have their voiced and voiceless counterparts. For the fricatives, only the labio-dental has its voiced counterpart others do not. This is because the voiced labio-dental fricative /v/ is not a sound native to Utugwang. It is only found in words that have been borrowed into the language. One example of such a word is /igo:va/ the Utugwang word for ‘guava’. Utugwang has seven contrastive vowels. These seven vowels have their long counterparts, which are contrastive as well. Utugwang does not show any kind of vowel harmony. At the syllable level, the vowel [e] has two allophones; [e] in an open syllable, but [ə] in a closed syllable. This is a process of centralization. In the case of ambiguous vowel sequences in Utugwang, Ayugha (2013) analyzed sequences of [ie], [ai], [ia] as VGV where G is a glide. According to him, a VV analysis would be unlikely because there is no unambiguous evidence for a VV syllable type.

This present study seeks therefore to provide a detailed description of the vowel system of Alege based on firsthand data gathered in the course of linguistic fieldwork.

2.0 Methodology

Several field trips to the Alege community were made between 2016 and 2019 to gather data for the work. The basic tool for data elicitation from competent native speakers was the SIL Comparative African Wordlist (SILCAWL). In addition, some stories and conversations were recorded. Audio recording of data was done using a Marantz PMD 660 digital audio recorder and a Shure head-mounted microphone. In order to describe the phonetic data, we carried out spectrographic analyses for the vowels of

Alege using the Praat (Boersma and Weenink 2015) software. Phonological analyses included identification of distinctive sound segments using classical phonemic parameters such as contrast and distribution.

3.0 The Alege Vowels

Chomsky's Transformational Generative Grammar introduced two levels of grammatical analysis; the deep structure and the surface structure. In the analyses of sounds, these two levels are conceptualized as the phonetic and phonemic levels. For clarity, we will present and analyze the phonetic data of Alege language. Afterwards, a phonemic analysis will be provided.

3.1 Phonetic Analyses of Alege Vowels

Kohlberger (2013:23) provides a standard for measuring vowel properties using their formant values (as adapted from Lindau 1975:8-11) which states that:

- I. High vowels have a relatively low F1.
- II. Low vowels have a relatively high F1.
- III. Back vowels have a relatively low F2.
- IV. Front vowels have a relatively high F2.
- V. Front vowels can be determined by considering the distance between F2 and F1; that is, F2 minus F1. The greater the distance, the more front the vowel; the lesser the distance, the more back the vowel.
- VI. Central vowels have neither a low nor high F2.

Based on the data gathered, our analyses of the different vowel formants in the language was done using the Praat software. On the spectrograph, the first formant shows vowel height while the second formant is sensitive to the shape of the body of the tongue or part of the body of the tongue used in the production of the vowel. On the basis of these acoustic parameters, we present a spectrographic analysis of Alege vowels with the aid of Praat. From the data collected, we identified ten phonetic vowels [i ɪ e ε ə ɔ o u] as shown in the example (1).

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- (1) a. [i] ipè ‘glory’
 b. [i] ìbò ‘ripe’ (change of fruit color from green to yellow)
 c. [e] èbè ‘we’
 d. [ɛ] èsè ‘urine’
 e. [ə] òdàn ‘chest’
 f. [a] àkè ‘basket’
 g. [ɔ] bò ‘be ripe’
 h. [o] òpì ‘copper’
 i. [ɔ] òdì ‘bile’
 j. [u] ùdè ‘cobra’

With the exception of the examples *òdàn* (‘chest’) and *bò* (‘be ripe’), initial vowels were selected for this analysis to minimize any assimilatory effects of preceding sound segments. The vowels [ə] and [ɔ] do not occur word-initially in the language. Again, all the vowels in the words chosen carry low tones; this was also done to reduce the assimilatory effect of different tonal levels on the vowel segments. The spectrographic analyses of these vowels are presented in Figures 2, 3, and 4.

Figure 2: *Spectrographic Analysis Showing Formants of Vowels [i ɪ e ɛ]*

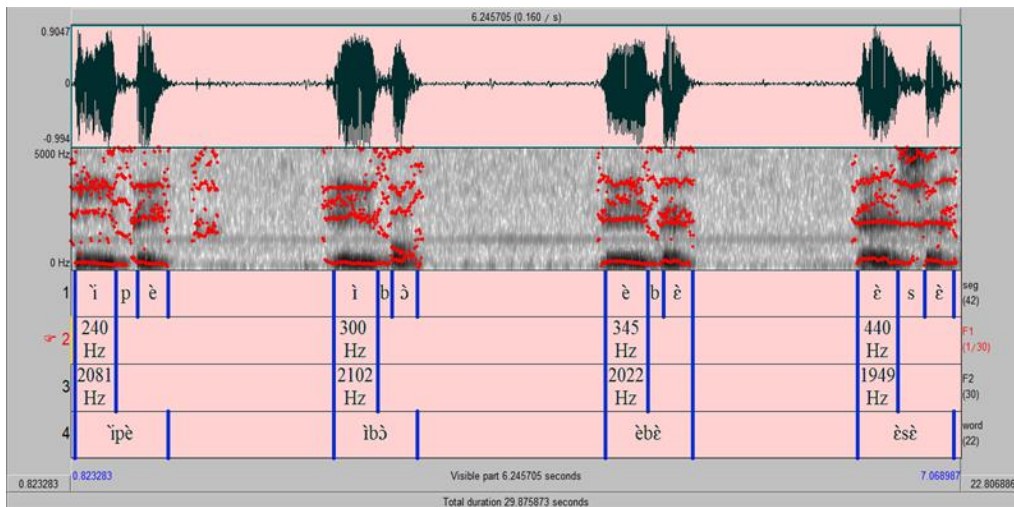


Figure 3: Spectrographic Analysis Showing Formants of Vowels [a ə u]

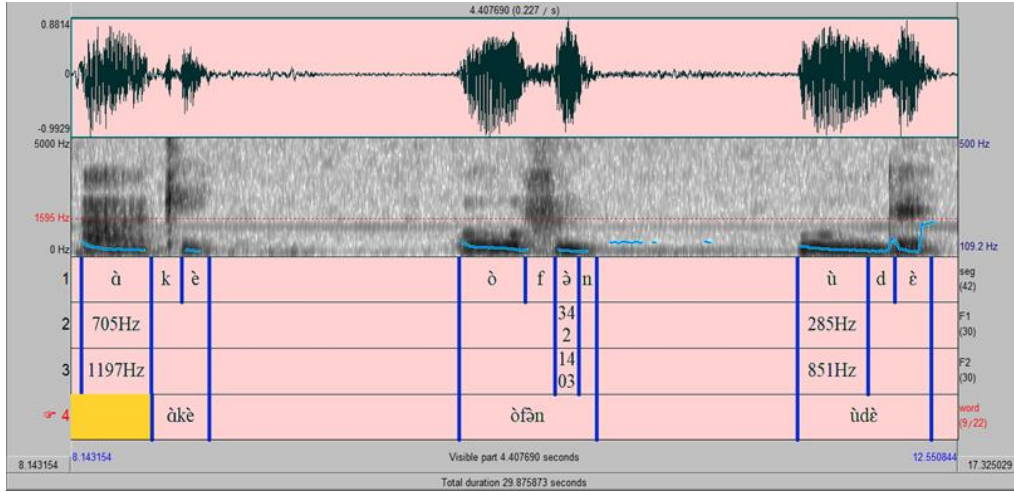
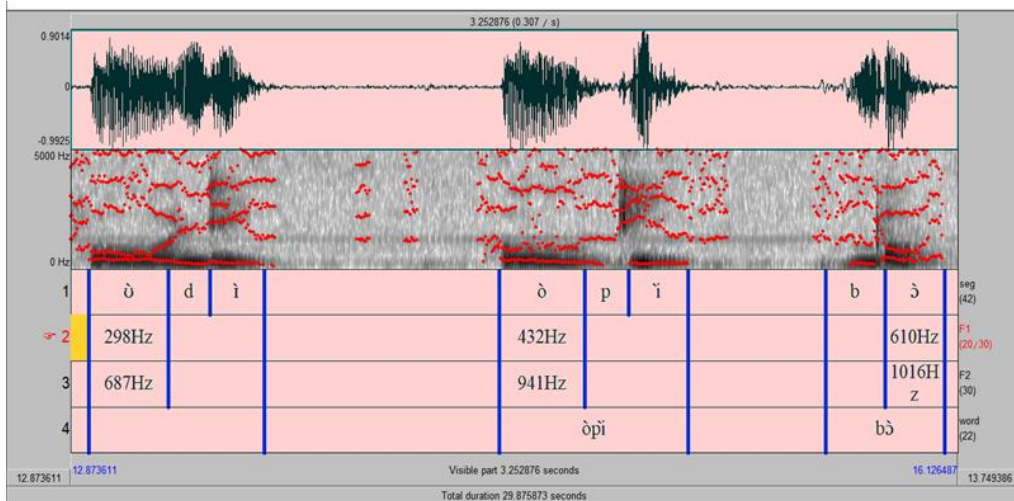


Figure 4: Spectrographic Analysis Showing Formants of Vowels [ɔ o ɔ]



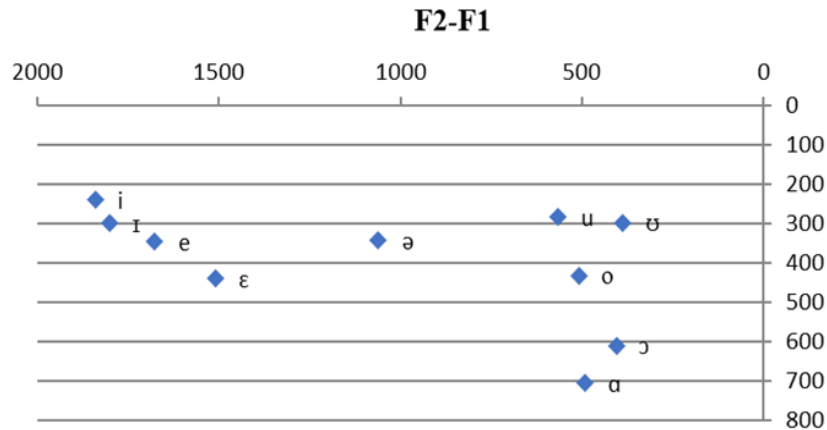
From the spectrographic analyses, the F1, F2 and F2-F1 values for all the phonetic vowels of the language are provided in Table 1.

Table 1: Formant Values of Alege Phonetic Vowels

Vowels	i	ɪ	e	ɛ	ɑ	ə	ɔ	o	ʊ	u
F1	2081	2102	2022	1949	1197	1403	1016	941	651	644
F2	240	300	345	440	705	342	610	432	298	285
F2-F1	1841	1802	1677	1509	492	1061	406	509	359	566

The F1 correlates of the vowels were deduced from F2. The resultant F2-F1 values were then plotted against their F1 correlates. Having plotted the F2-F1 values against F1, using a spreadsheet, the scatter plot feature was then selected. The resultant outcome is the graph in Figure 5.

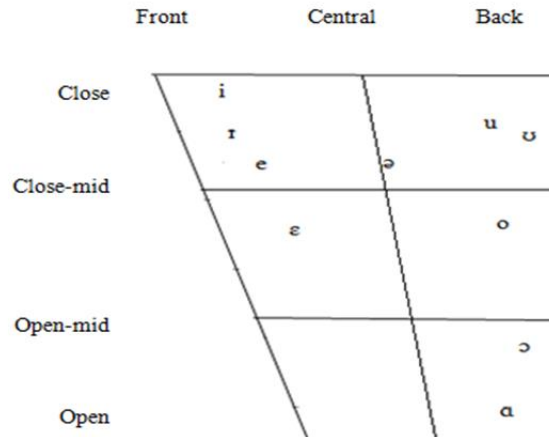
Figure 5: A Graphic Representation of F1 of Alege Vowels



From the representation in Figure 5, the F1 axis shows that while vowel [i] is higher than [ɪ], the vowel [ɪ] is higher than both [e] and [ɛ]. Vowel [ə] is significantly lower than [ɪ] but also higher than [e]. As the speaker moves from [u] to [ʊ], the F1 also increases. So, on the graph we see that [u] is higher than [ʊ] while [ʊ] is higher than [o] and [o] higher than [ɔ]. The lowest vowel on this axis which represents the vowel with the highest first formant value is [ɑ]. The F2-F1 axis shows three broad categories of vowels; [i ɪ e ɛ], [ə] and [u ʊ o ɔ ɑ]. The vowel with the highest F2-F1 value is [i]. This value decreases significantly as we move from [ɪ] to [e] and to [ɛ]. In the second category, the graph in Figure 4 clearly shows that the F2-F1 value of [ə] is distinctly lower than that of [i ɪ e ɛ] which makes it further back than the first category of vowels. In the last category, we see that [u] is closer to [ə] while [ʊ] is further back. The F1 axis correlates with the tongue height (high, mid, low) while the F2-F1 axis correlates with the tongue position (front, central, back) during the articulation of these vowels. So on the F1 axis, [i ɪ u ʊ] are all high vowels (with varying degrees of height), [e ɛ ə o] are generally mid vowels while [ɔ ɑ] are low vowels. Consequently, on the F2-F1 axis, we have [i ɪ e ɛ] as front vowels, central vowel [ə] and

back vowels [u ʊ o ɔ ɑ]. Based on these acoustic parameters, the vowels of Alege are represented on the traditional vowel chart as shown in figure 6.

Figure 6: A Phonetic Chart of Alege Vowels



In addition to the oral vowels presented, eight phonetic nasal vowels and nine phonetic long vowels were also identified. With the exception of [ɐ] and [o], all other oral vowels in Alege have nasal counterparts as can be seen in the (2).

- | | | | |
|--------|-----|--------------------|---------------------|
| (2) a. | [ĩ] | àńĩ | ‘bird’ |
| b. | [ĩ] | ṭĩ | ‘tame, domesticate’ |
| c. | [ē] | bik ^w é | ‘leftovers’ |
| d. | [ē] | ìdzé | ‘truth’ |
| e. | [ũ] | íbũ | ‘rust’ |
| f. | [õ] | ìfõ | ‘cloth’ |
| g. | [õ] | ídõ | ‘thorn’ |
| h. | [ã] | ìpã | ‘feast’ |

The phonetic long vowels in Alege are [i: ɪ: e: ε: ɑ: ɔ: o: ʊ: u:] as exemplified below in (3).

- | | | | |
|--------|------|---------------------|------------------|
| (3) a. | [i:] | kizi: | ‘feed’ (animals) |
| b. | [ɪ:] | resi: | ‘twenty’ |
| c. | [e:] | ìníéné: | ‘know’ |
| d. | [ε:] | rik ^w è: | ‘long’ |
| e. | [ɑ:] | òjà: | ‘river bed’ |
| f. | [ɔ:] | ínò: | ‘straight’ |
| g. | [o:] | dzófò: | ‘continue’ |
| h. | [ʊ:] | hó: | ‘ask’ |
| i. | [u:] | rùfù: | ‘forward’ |

3.2 Phonemic Analyses of Alege Vowels

Thus far, we have identified twenty-seven phonetic vowels in Alege comprising ten oral vowels [i ɪ e ε ə ɑ ɔ o u], eight nasal vowels [ĩ ã ẽ õ ù] and nine long vowels [i: ɪ: e: ε: ɑ: ɔ: o: u:]. However, not all of them are phonemic. In order to determine which sound is a phoneme in the language and which sound is an allophone, we shall consider two relevant parameters: minimal contrast and distribution.

3.3 Minimal Contrast

Based on the principle of minimal contrast, our analyses provided all the possible minimal pairs of the different vowels captured in the data collected. The data below show minimal contrast among nine vowels. In cases where we could not find a perfect minimal pair, near minimal pairs are used (for instance, /ɪ/ versus /ɑ/ and /ɪ/ versus /ɔ/).

/i/ versus /ɪ/

tí	‘shell’ (v), ‘burst’	tí	‘drag’ (v)
ʃí	‘nurse’ (a baby) (v)	ʃí	‘say’ (v)

/i/ versus /e/

rédí	‘nose’	rédé	‘year’
gí	‘pluck’	gé	‘jump’ (v)

/i/ versus /ε/

èmi	‘I’	èmè	‘you’ (singular)
tí	‘shell’ (v), ‘burst’	té	‘carve’

/i/ versus /ɑ/

isísó	‘cockroach’	àsísó	‘ringworm’
mí	‘sprinkle’ (v)	má	‘touch’ (v)

/i/ versus /ɔ/

bí	‘be ripe’	bó	‘skin’ (v)
sí	‘cover’ (v)	só	‘fetch (firewood)’

/i/ versus /o/

ìré	‘flame’	òré	‘iron’ (n)
tí	‘shell’ (v), ‘burst’	tó	‘fade’

/i/ versus /u/

sì	‘create’	sô	‘wash’ (v)
mí	‘sprinkle’ (v)	mô	‘fall’(v)

/i/ versus /u/

ìkám	‘stump’	ùkám	‘thorn tree’
sí	‘cover’ (v)	sú	‘swing’ (v)

/i/ versus /e/

a.	rìjǐ	‘head’	rèjǐ	‘entrance’
b.	isǎ	‘thunder’	èsǎ	‘melon’

/i/ versus /ɛ/

kpí	‘continue’	kpè	‘save’ (life)
rítsí	‘vagina’	rítsé	‘head pan’ (to lift soil or cement on construction sites)

/i/ versus /a/

tí	‘drag’ (v)	ità	‘bamboo’
ǐjǐ	‘say’ (v)	èǐǎ	‘leaf’

/i/ versus /ɔ/

ǐjǐ	‘say’ (v)	ǐjó	‘slide’ (v)
tí	‘drag’ (v)	étó	‘play, game’ (n)

/i/ versus /o/

ìjńó	‘breath’	òjńó	‘time’
ìjńà	‘meat’	òjńà	‘caterpillar’

/i/ versus /o/

ìtsò	‘antelope’	òtsò	‘waist’
ìká	‘jaw’	òká	‘stone’ (n)

/e/ versus /ɛ/

rìbé	‘lick’ (v)	tsé	‘lay’ (v)
rìbé	‘marriage’	tsé	‘faint’ (v)

/e/ versus /a/

pé	‘pay [for goods/services]’	pá	‘husk’ (v)
fé	‘put’	fá	‘castrate’

/e/ versus /ɔ/

àkpè	‘hawk’ (n)	àkpò	‘box’
dzé	‘go, move’ (v)	dzó	‘cut’ (v)

/e/ versus /o/

émú	‘juice’	ómú	‘flour’
té	‘dig’ (v)	tó	‘fade’ (v)

/e/ versus /ɔ/

ég ^w é	‘body’	óg ^w é	‘hand’ (n)
k ^w é	‘die’ (v)	k ^w ó	‘play [a flute]’

/e/ versus /u/

òjńè	‘wife’	òjńù	‘mouth’
k ^w é	‘die’ (v)	k ^w ú	‘crow’ (v)

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/ɛ/ versus /a/

òtsé	‘husband’	òtsá	‘sheep’
mé	‘recover’	má	‘touch’ (v)

/ɛ/ versus /o/

nè	‘spread out’	nò	‘dance’ (v)
ìdʒé	‘language’	ìdʒó	‘thirst’

/ɛ/ versus /ɔ/

dzé	‘be fat’	dzó	‘cut’ (v)
nè	‘spread out’	nó	‘choke’ (v)

/ɛ/ versus /ʊ/

pré	‘mix’ (v)	pró	‘fly’ (v)
nè	‘spread out’	nó	‘push’ (v)

/ɛ/ versus /u/

ètsè	‘tears’ (n)	ùtsè	‘medicine’
sé	‘sweep’ (v)	sú	‘swing’ (v)

/a/ versus /o/

àkè	‘basket’	òkè	‘gift’
g ^w á	‘join’	g ^w ó	‘remember’

/a/ versus /ɔ/

má	‘touch’ (v)	mò	‘carry [a child]’
bà	‘sharpen’	bó	‘skin’ (v)

/a/ versus /ʊ/

àkè	‘basket’	óké	‘patch’ (n)
má	‘touch’ (v)	mô	‘fall’ (v)

/a/ versus /u/

àsó	‘calabash’	ùsó	‘root’ (v)
rá	‘stop’ (v)	rú	‘drive away’

/o/ versus /ɔ/

kó	‘find’ (v)	kó	‘tell [a story]’
ìkpò	‘hat’	ìkpò	‘shell’ (n)

/o/ versus /ʊ/

òké	‘kernel’	óké	‘patch’ (n)
ódí	‘gallbladder’	òdì	‘venom’

/o/ versus /u/

ófí	‘month’	úfí	‘moon’
òré	‘money’	úré	‘sleep’ (n)

/ɔ/ versus /ʊ/

ìnó	‘chaff [of maize]’	ìnó	‘soul’
nó	‘choke’ (v)	nó	‘push’ (v)

/ɔ/ versus /u/

só	‘fetch’ (firewood)	sú	‘swing’ (v)
énó	‘sap’ (n)	énù	‘salt’

/o/ versus /u/

k ^w ó	‘play [a flute]’	k ^w ú	‘crow’ (v)
òrè	‘forge’ (n)	úré	‘sleep’ (n)

Based on the principle of contrast, we observe from these minimal pairs that nine vowels /i ɪ e ε a ɔ o u/ contrast in identical/near identical environments and as such are regarded as phonemes in the language. Although the open-mid back rounded vowel /ɔ/ does not occur in syllable-initial position, it still exhibits contrast in other environments. The only instance where [ɔ] appears in syllable-initial position is in the word /ó**b**ǔ/ ‘king’ which is borrowed from the Efik language. This leaves out the vowel [ə] which we have analyzed as an allophone of [e] based on the principle of distribution and acoustic properties.

3.4 Distribution Patterns

Distributions patterns help in ascertaining the status of nasal vowels and long vowels in the language. First, we consider the status of the close-mid central vowel [ə] which is the only vowel for which contrast was not established. In terms of their acoustic properties, the F1 values (that determine the tongue height) for both the close-mid front vowel [e] and the close-mid central vowel [ə] are very similar. From our spectrograph, while the F1 value for [e] is 345, that of [ə] is 342. This means that they share phonetic similarity.

Phonologically, the distribution pattern of both vowels is complementary in the language. The close-mid front vowel [e] is widely distributed in different phonological environments in the language (the examples in section 3.3 reflect this). Apart from its distribution within the word, in word-initial and final positions, [e] also has both nasal and long counterparts in the language (recall the data in examples 2 and 3). On the other hand, [ə] does not have nasal and long counterparts. Its distribution pattern is restricted to occurring only before nasal codas. In this position, [e] is absent.

Apart from the open-mid back rounded vowel /ɔ/ which we have already ascertained to be a phoneme that is not as widely distributed as other

vowels in the language; before nasal codas, the close-mid front vowel [e] which is widely distributed is absent while the close-mid central vowel [ə] which does not occur in any other phonetic environment is present. In this phonetic environment, every other vowel save for the close-mid front vowel [e] is present. Consider the examples in (4).

(4) a.	[i]	èrím	‘deity’
b.	[i]	ízìn	‘few’
c.	[ɛ]	kém	‘gather’
d.	[ə]	ván	‘break’ (v); ñgóm ‘fist’
e.	[ɑ]	pám	‘avoid’
f.	[o]	ík-wón	‘mystery’
g.	[ɔ]	ófóm	‘storm’
h.	[u]	ìlùm	‘bulb’

In example (4), all the vowels that show wider distribution in the language are captured in the data above with the exception of the close-mid front vowel [e]. We argue that in its place, the close-mid central vowel [ə] which is absent in every other environment is present here. Hence our analysis considers the close-mid central vowel [ə] as an allophone of the close-mid front vowel /e/ that occurs before nasal codas while [e] occurs elsewhere.

In Alege, nasalization is a contrastive feature as vowels that bear nasality contrast with their oral counterparts as seen in example (5).

(5) a.	mì	‘sprout’ (v)	mĩ	‘me’
b.	tí	‘drag’ (v)	tĩ	‘domesticate, tame’
c.	bik ^{wé}	‘ten’	bik ^{wě}	‘leftovers’
d.	tsé	‘faint’ (v)	tsě	‘clear’ (land for planting)
e.	rírú	‘voice’	rírũ	‘knee’
f.	só	‘stink’	sũ	‘wash’ (v)
g.	dzó	‘cut’ (v)	dzũ	‘cross’ (river)
h.	fá	‘castrate’	fã	‘vomit’ (v)

For phonetic long vowels in Alege, a straightforward unified analysis is to examine them as instances of *vowel doubling* (Welmers, 1973); the main reason being that they do not contrast with the short vowels. Secondly, their occurrence is restricted to the word-final position. Instances of long vowels are found in word-final position in verbs in their imperative forms as shown in example (6).

(6) a.	ʃĩ	‘cry!’
b.	ʃíí	‘bring up!’
c.	tséé	‘plug!’
d.	nòò	‘straighten!’

Again in this same environment (that is, word-finally), in the language, we find cases of non-identical vowel sequences as exemplified in (7).

- (7) a. ríé ‘buy’ (v)
b. miò ‘melt’
c. míá ‘sour’
d. súí ‘sit’
e. dʒòé ‘laugh’

Vowel length is thus not phonemic but phonetic. It is analyzed as a case of vowel hiatus where sequences of both identical and non-identical vowels are allowed in the language.

One defining quality of the vowel system of most Niger-Congo languages is vowel harmony which is mostly based on the Advanced Tongue Root (ATR) feature. Languages within the Benue-Congo group of languages manifest either a partial or total form of this type of vowel harmony. For instance in Degema, a ten vowel language, the vowels are divided into two sets of five each based on the ATR feature. As such, [i e ə o u] are [+ATR] or expanded vowels while [ɪ ɛ ɔ ʊ] are [-ATR] or non-expanded vowels (Kari, 2007). Interestingly, Alege language which belongs to the Benue-Congo group does not show any form (total or partial) of vowel harmony.

- (8) a. édzé ‘great’
b. òdzé ‘owner’
c. úré ‘sleep’ (n)
d. òrè ‘forge’ (n)
e. iné ‘spot’ (n)
f. ibòbè ‘valley’

In the above example, [+ATR] and [-ATR] vowels co-occur in simple words. It is clear that there is no restriction on the set of vowels that can co-occur in a word. Even in a hiatus situation, there is no evidence of vowel harmony in Alege as shown in example (9).

- (9) a. itfiò ‘beards’
b. miò ‘melt’
c. ríé ‘buy’ (v)
d. ófúé ‘peak’
e. édúé ‘liver’
f. ífúé ‘curse’ (n)

4.0 Conclusion

Based on the principles of contrast and distribution, we identified nine phonemic vowels /i ɪ e ε a ɔ o ʊ u/ in the Alege language. The open-mid back rounded vowel /ɔ/ is not as widely distributed as the other vowel phonemes in the language as it does not occur word-initially. The close-mid front vowel /e/ occurs in all positions in the word except before nasal codas. In this position, the close-mid central vowel [ə] occurs instead. Considering phonetic similarity and complementary distribution, [ə] was analyzed as an allophone of /e/. Nasalization and length are two characteristic properties of the Alege vowel system. Apart from /ɔ/, all other vowel phonemes have nasal counterparts. All nine vowel phonemes exhibit phonetic vowel length. While nasalization is a contrastive feature, phonetic vowel length is considered to be an instance of identical vowels in a sequence (that is, vowel hiatus). One distinguishing feature of the vowel system of Alege language is that unlike most Benue-Congo languages, Alege does not show any form of ATR vowel harmony. Alege is an interesting language with rich cultural and linguistic features. It is hoped that further research will focus on describing other aspects of its grammar such as the morphology and syntax, as well as documenting some of its linguistic practices.

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