



THE PHONETICS SYSTEM IN BUGINESE LANGUAGE

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Abstract: Buginese language or Bahasa Bugis is the language of people who inhabited in the Celebes (Sulawesi) island, eastern part of Indonesia, which is exactly in South Sulawesi province. Buginese has affiliation with Austronesian language family that spreads into the several parts of the province, such as Bone, Pinrang, Soppeng, Parepare, Sidrap, Barru, Sinjai and Sengkang. Buginese has roughly 3.6 million native speakers which is the largest among any other three ethnic groups in South Sulawesi; Makassar, Mandar, and Toraja. This paper aims to examine the phonetics system of this largest active language in South Sulawesi. Simply put, this article will identify the consonants and vowels which exist in Buginese language and analyse the occurrence of those consonants and vowels.

Key Terms: *Buginese, language, South Sulawesi, phonetics, consonants, vowels*

DOI: <https://doi.org/10.33479/klausa.v3i01.146>

INTRODUCTION

Buginese language or Bahasa Bugis is the language of people who inhabited in the Celebes (Sulawesi) island, eastern part of Indonesia, which is exactly in South Sulawesi province (Pelras, 1996). Buginese has affiliation with Austronesian language family that spreads into the several parts of the province, such as Bone, Pinrang, Soppeng, Parepare, Sidrap, Barru, Sinjai and Sengkang. SIL International logs Buginese language has roughly 3.6 million native speakers (cited in Arka, 2007) which is the largest among any other three ethnic groups in South Sulawesi, i.e. Makassar, Mandar, and Toraja.

For that reason, in this research, I chose to examine the Buginese language. The initial preparation has been conducted such as a brief investigation of Buginese language to recognise the common consonants and vowels in Buginese. Furthermore, to see the implementation of the Buginese phonetics, I made a recording process from a native Buginese to get the accurate phonetic transcriptions. The volunteer for this research is originally from Bugis, South Sulawesi, Indonesia. He is a 24 years old male who is the native speaker of Buginese with dialect variation, namely Sengkang. Therefore, the aim of the paper is to identify the consonants and vowels that exist in Buginese language and analyse the occurrence of those consonants and vowels.

TRANSCRIPTION OF RECORDING

In this section, I will provide a table of the transcription of 100 words from a recording by the native speaker who already give his permission to be recorded. For the recording

process, I ask the speaker to pronounce every single of those 100 words for three times each, in order to see if there are any differences found. The recording then be transcribed using PRAAT, a computer software designed for spectrogram analysis, to identify all the consonants and vowels among the 100 words. For instance, here is the table that shows the recording transcriptions:

| No. | English Equivalent Word | Sound 1 | Sound 2 | Sound 3 |
|-----|---------------------------|-----------|---------|----------|
| 1. | I | ija | | |
| 2. | You | idiʔ | idi | idi |
| 3. | Don't | aɟ̃ja | | |
| 4. | This | ije: | | |
| 5. | That | jarɔ: | | |
| 6. | Who? | i:ga | | |
| 7. | What? | a:ga | | |
| 8. | Not | tɔŋɲa | | |
| 9. | All (of a number) | jamanəŋ | | |
| 10. | Many | maega | | |
| 11. | One | seʔdi | | |
| 12. | Two | du:a | | |
| 13. | Good | makanja | | |
| 14. | Long | malampe | | |
| 15. | Smart | mac̃ca | | |
| 16. | Woman | makundrai | | makunrai |
| 17. | Man (adult male human) | burane | | |
| 18. | Person (individual human) | tau | | |
| 19. | Fish | bale | | |
| 20. | Frog | tup̃paŋ | | |
| 21. | Dog | asu | | |
| 22. | Louse | u:tu | | |
| 23. | Tree | fop̃poŋ | | |
| 24. | Seed | bi:ne | | bine |
| 25. | Leaf | daŋ | | |
| 26. | Root | urə | | |
| 27. | Grass | adu: | | |
| 28. | Skin | oli: | | |
| 29. | Flesh (or meat) | dagiŋ | | |
| 30. | Blood | dara | | |
| 31. | Bone | buku | | |
| 32. | Grease (or fat) | mac̃mo | | |
| 33. | Egg | təlo: | | |
| 34. | Horn (of bull etc.) | tandru | | tanru |
| 35. | Tail | ik ko | | |

| | | | | |
|-----|--------------------------|---------------|------|-------|
| 36. | Claw | kanu:ku | | |
| 37. | Hair (on head of humans) | gmə | | |
| 38. | Head | ulu | | |
| 39. | Ear | doc̄ cili | | |
| 40. | Eye | ma:ta | | |
| 41. | Nose | iŋəʔ | | |
| 42. | Mouth | ti:mu | | |
| 43. | Tooth | i:si | | |
| 44. | Tongue | li:la | | |
| 45. | Thigh | fop̄ paŋ | | |
| 46. | Foot | a:je | | |
| 47. | Knee | ut tu: | | |
| 48. | Hand | ja:ri | | |
| 49. | Belly (or stomach) | bəb̄ bua | | |
| 50. | Neck | əloŋ | | |
| 51. | Chest | aro: | | |
| 52. | Heart | ja:tuŋ | | |
| 53. | Liver | a:te | | |
| 54. | Drink (verb) | me:nuŋ | | |
| 55. | Eat (verb) | mandre | | |
| 56. | Bite (verb) | ik̄ kiŋ | | |
| 57. | See (verb) | mak̄ ki:ta | | |
| 58. | Hear (verb) | mareŋka'li:ŋa | | |
| 59. | Know (facts) | iʃ:ŋ | | |
| 60. | Sleep (verb) | tindro | | |
| 61. | Die (verb) | ma:te | | |
| 62. | Kill (verb) | ma:b̄ bu:no | | |
| 63. | Swim (verb) | na:ŋe | | |
| 64. | Fly (verb) | lut̄ tu | | |
| 65. | Walk (verb) | jo:k̄ ka | | |
| 66. | Come (verb) | əŋka | | |
| 67. | Lie (on side, recline) | le:wu | le:u | le:wu |
| 68. | Sit (verb) | tu:daŋ | | |
| 69. | Stand (verb) | tət̄ toŋ | | |
| 70. | Stay up (verb) | maddo:ja | | |
| 71. | Kiss (verb) | məŋpu:u | | |
| 72. | Sun | əso: | | |
| 73. | Moon | u:ŋ | | |
| 74. | Star | bintaŋ | | |
| 75. | Water (noun) | wa:i | | |
| 76. | Rain (noun) | bo:si | | |
| 77. | Stone | batu | | |

| | | | | |
|------|------------------|----------|-------|------|
| 78. | Sand | kʃ:i | kʃ:iʔ | kʃ:i |
| 79. | Earth (or soil) | li:no | | |
| 80. | Cloud | hawaŋ | hawaŋ | awaŋ |
| 81. | Smoke (noun) | maʔdumpu | | |
| 82. | Fire | aʔi | | |
| 83. | Ash(es) | awu | | |
| 84. | Burn (verb) | mat tunu | | |
| 85. | Path (or road) | laŋ | | |
| 86. | Mountain | bu:lu | | |
| 87. | Red | cəlaʔ | | |
| 88. | Green | kuda:ra | | |
| 89. | Yellow (colour) | oŋpi | | |
| 90. | White (colour) | fu:te | | |
| 91. | Black (colour) | bo:loŋ | | |
| 92. | Night | wŋi | | |
| 93. | Hot (adjective) | maʔəla | | |
| 94. | Cold (adjective) | macek ke | | |
| 95. | Full | fəno | | |
| 96. | New | baru | | |
| 97. | Good | makʃ:ŋ | | |
| 98. | Round | male:bu | | |
| 99. | Dry | marak ko | | |
| 100. | Name | a:sŋ | | |

Table 1.

FINDINGS AND ANALYSIS

Consonants

The following table shows that there are several consonants exist in Buginese language.

| | Bilabial | Labio-dental | Alveolar | Palatal | Velar | Uvular | Glottal |
|----------------------------|----------|--------------|----------|---------|-------|--------|---------|
| Plosive | p b | | t d | c ɟ | k g | | ʔ |
| Nasal | m | | n | ɲ | ŋ | | |
| Trill | | | r | | | | |
| Fricative | ɸ | f | s | | | | h |
| Approximant | | | | j | w | | |
| Lateral Approximant | | | l | | | | |

Table 2.

Stop Consonants

The above table shows that Buginese language has nine Stop Consonants. However, as an important note, I found that there are also stop which are unexploded and marked as [̚], which stands for “no audible release” (Ladefoged and Johnson, 2015). It means that there are two consonants which have similarity within the word boundary. For instance, there are two bilabial stops [p] that occurred right after another such as in ‘tuᵑ paŋ’ (20) in which the first one is unreleased and the second one is exploded. I assume that this phenomenon is commonly occurred in Buginese language.

a. Voiceless bilabial stop [p] and voiced bilabial stop [b]

It appears that this language has two bilabial stops [p] and [b]. For more details, here is a table shows the environments where both [p] and [b] occur and the respective location of each environment in Table 1.

| Bilabial stop | Environments | Table 1 (numbers) |
|---------------|--------------|-------------------|
| [p] | [m] ___ [e] | 14 |
| | [m] ___ [u] | 81 |
| | [ᵑ] ___ [a] | 20, 45 |
| | [ᵑ] ___ [o] | 23 |
| | | |
| [b] | # ___ [u] | 17, 31, 86 |
| | # ___ [a] | 19, 77, 96 |
| | # ___ [i] | 24, 74 |
| | # ___ [ə] | 49 |
| | # ___ [o] | 76, 91 |
| | [b̚] ___ [u] | 49, 62 |
| | [e] ___ [u] | 98 |

Table 3.

As can be seen, stop [b] more likely occur in this language, and it is clear that [p] and [b] are in complementary distribution which means both are allomorphs of one phoneme /b/. They are never in the same environment as [p] occurs only in ‘C ___ V’ while [b] occurs elsewhere. The rule is as follows:

/b/ → [p] / [consonant] ___ [vowel]

[b] / elsewhere

b. Voiceless dental alveolar stop [t] and voiced dental alveolar stop [d]

It appears that this language has two dental alveolar stops [t] and [d]. The environments where both [t] and [d] occur and the respective location of each environment in Table 1 can be seen below:

| Dental alveolar stop | Environment s | Table 1 (numbers) |
|----------------------|---------------------------|-------------------|
| [t] | # ___ [ə] | 8, 33, 69 |
| | # ___ [a] | 18, 34 |
| | # ___ [u] | 20, 68 |
| | # ___ [i] | 42, 60 |
| | [u] ___ [u] | 22 |
| | [a] ___ [a] | 40 |
| | [a] ___ [e] | 53, 61 |
| | [i] ___ [a] | 57 |
| | [a] ___ [u] | 77 |
| | [u] ___ [e] | 90 |
| | [t̥] ___ [u] | 47, 64, 84 |
| | [n] ___ [a] | 74 |
| | [d] | |
| [d] | [i] ___ [i] | 2 |
| | [a] ___ [u] | 27 |
| | [u] ___ [a] | 68, 88 |
| | # ___ [u] | 12 |
| | # ___ [a] | 25, 29, 30 |
| | # ___ [o] | 39 |
| | [ʔ] ___ [i] | 11 |
| | [ʔ] ___ [u] | 81 |
| | [n] ___ [r] | 16, 34, 55, 60 |
| | [d̥] ___ [o] | 70 |

Table 4.

As can be noticed, alveolar stops [t] and [d] are minimal pairs as the bolded-environments above show that there are two pairs of environment which could exist between them such as ‘**[a]** ___ **[u]**’ and ‘# ___ **[a]**’ which means [t] and [d] are in contrastive distribution and two distinct phonemes. Since they are in the same environment but different in meaning. The rule is as follows:

/t/ → [t] / elsewhere

/d/ → [d] / elsewhere

c. *Voiceless palatal stop [c] and voiced palatal stop [j]*

Buginese language has two palatal stops [c] and [j]. The environments where both [c] and [j] occur and the respective location of each environment in Table 1 can be seen in the table below:

| Palatal stop | Environments | Table 1 (numbers) |
|--------------|--------------------|-------------------|
| [c] | [c̄] ___ [a] | 15 |
| | [m] ___ [ṁ] | 32 |
| | [c̄] ___ [a] | 39 |
| | # ___ [ə] | 87 |
| | [a] ___ [e] | 94 |
| [j] | [j̄] ___ [a] | 3 |
| | [n] ___ [a] | 13 |
| | [a] ___ [e] | 46 |
| | # ___ [a] | 48, 52 |
| | # ___ [o] | 65 |
| | [o] ___ [a] | 70 |
| | | |

Table 5.

The above dataset shows that palatal stops [c] and [j] are minimal pairs as a bolded-environment indicates that there is a pair of environment which occurs in both of them that is ‘[a] ___ [e]’. It proves that [c] and [j] are in contrastive distribution and two distinct phonemes since they are in the same environment but different in meaning. The rule would be like this:

/c/ → [c] / elsewhere

/j/ → [j] / elsewhere

d. *Voiceless velar stop [k] and voiced velar stop [g]*

This language has two velar stops [k] and [g]. The details about their environments where both [k] and [g] occur and the respective location of each environment in Table 1 is shown in the following table:

| Velar stop | Environments | Table 1 (numbers) |
|------------|----------------|-------------------|
| [k] | [a] ___ [a] | 13 |
| | [a] ___ [u] | 16 |
| | [u] ___ [u] | 31, 36 |
| | [kɪ]] ___ [o] | 35, 99 |
| | [kɪ]] ___ [i] | 57 |
| | [ŋ] ___ [a] | 58, 66 |
| | [kɪ]] ___ [a] | 65 |
| | # ___ [ɕ] | 78 |
| | # ___ [u] | 88 |
| | [kɪ]] ___ [e] | 94 |
| | [a] ___ [ɕ] | 97 |
| | | |
| [g] | [i] ___ [a] | 6 |
| | [a] ___ [i] | 29 |
| | # ___ [m] | 37 |

Table 6.

The table displays that velar stop [k] is widely used in this language, and it is obvious that [k] and [g] are in complementary distribution which means both are allomorphs of one phoneme /k/. They are never in the same environment as [g] occurs only in ‘V__V’ and ‘#__ [m]’ while [b] occurs elsewhere. The rule is as follows:

/k/ → [k] / [vowel] ___ [vowel]

___ [m]

[g] / elsewhere

Glottal stop [ʔ]

There are several glottal stops [ʔ] in Buginese. The environments where the glottal occurs and the respective location of each environment in Table 1 is shown below.

| Glottal stop | Environments | Table 1 (numbers) |
|--------------|--------------|-------------------|
| [ʔ] | [i] ___ # | 2 |
| | [e] ___ [d] | 11 |
| | [ə] ___ # | 41 |
| | [a] ___ [d] | 81 |
| | [a] ___ # | 87 |

Table 7.

Most of the glottal sounds occur in the environment of word-finally and interestingly, the pattern of the glottal stop when in the end of a word could be spot by reading the spectrogram. In addition, the information shown in the spectrogram is always in a set of red pacifiers which formed a vertical line.

Nasals

There are four nasals identified in Buginese language, in which they are bilabial nasal [m]; dental alveolar nasal [n]; palatal nasal [ɲ]; and velar nasal [ŋ]. It is important to note that I found that nasals can be syllabic which the mark [,] under a consonant indicates that it is syllabic (Ladefoged and Johnson, 2015). It means that there is a consonant that forms a syllable on its own, for instance, nasal [m] as in ‘gṃaə’ (37) is syllabic. This phenomenon does not occur in Buginese language. The environments where these four nasals occur and the respective location of each environment in Table 1 can be seen in Table 8 below:

| Nasals | Environments | Table 1 (numbers) |
|--------|--------------|--|
| [m] | [a] ___ [a] | 9 |
| | # ___ [a] | 10, 13, 14, 15, 16, 32, 40, 55, 57, 58, 61, 62, 70, 81, 84, 93, 94, 97, 98, 99 |
| | [a] ___ [p] | 14 |
| | [c] ___ [o] | 32 |
| | [g] ___ [ə] | 37 |
| | [i] ___ [u] | 42 |
| | # ___ [e] | 54 |
| | [u] ___ [p] | 81 |
| | | |
| [n] | [ə] ___ [ɲ] | 8 |
| | [a] ___ [ə] | 9 |
| | [a] ___ [ʃ] | 13 |
| | [u] ___ [d] | 16 |
| | [a] ___ [e] | 17 |
| | [i] ___ [e] | 24 |
| | [a] ___ [d] | 34, 55 |
| | [a] ___ [u] | 36 |
| | [a] ___ [t] | 52 |
| | [e] ___ [u] | 54 |
| | [a] ___ [d] | 60 |
| | [u] ___ [o] | 62 |
| | # ___ [a] | 63 |
| | [i] ___ [t] | 74 |
| | [i] ___ [o] | 79 |
| | [u] ___ [u] | 84 |
| | [o] ___ [ɲ] | 89 |

| | | |
|-----|--------------------|--------------------|
| | [w] ___ [i] | 92 |
| | [ə] ___ [o] | 95 |
| | | |
| [ɲ] | [n] ___ [a] | 8 |
| | [ə] ___ [u] | 71 |
| | [u] ___ [u] | 71 |
| | [n] ___ [i] | 89 |
| | | |
| [ŋ] | [ə] ___ # | 9, 85 |
| | [a] ___ # | 20, 45, 68, 74, 80 |
| | [o] ___ # | 23, 50, 69, 91 |
| | [au] ___ # | 25 |
| | [i] ___ # | 29, 56, 97 |
| | [i] ___ [ə] | 41 |
| | [u] ___ # | 52, 54 |
| | [e] ___ [k] | 58 |
| | [i] ___ [a] | 58 |
| | [s] ___ # | 59, 100 |
| | [a] ___ [e] | 63 |
| | [ə] ___ [a] | 66 |
| | [l] ___ # | 73, 85 |

Table 8.

The dataset above is showing that in bolded-environments, there are minimal pairs between [m] and [n] as in ‘# ___ **[a]**’; between [n] and [ɲ] as in ‘**[u]** ___ **[u]**’; also between [n] and [ŋ] as in ‘**[a]** ___ **[e]**’. **They are in** contrastive distribution. However, there is no indication of minimal pair between [m] and [ɲ], [m] and [ŋ], or [ɲ] and [ŋ], which means that they might be allophones of the same phoneme (complementary distribution). The table also demonstrates that Buginese frequently uses nasal consonants in its vocabulary.

Alveolar Thrill [r]

There are a significant number of alveolar thrill [r] in this language. The environments where the alveolar thrill occurs and the respective location of each environment in Table 1 are shown below:

| Alveolar thrill | Environment s | Table 1 (numbers) |
|--------------------|------------------|-------------------|
| [r] | [a] ___ [o] | 5, 51 |
| | [d] ___ [a] | 16 |
| | [u] ___ [a] | 17 |
| | [u] ___ [ə] | 26 |
| | [a] ___ [a] | 30, 88, 99 |
| | [d] ___ [u] | 34 |
| | [a] ___ [i] | 48 |
| | [d] ___ [e] | 55 |
| | [a] ___ [e] | 58 |
| | [d] ___ [o] | 60 |
| | [a] ___ [u] | 96 |

Table 9.

According to Table 9, Alveolar thrill (r) in this language only occurs in the environment of either ‘[vowel]___[vowel]’ or ‘[consonant]___[vowel]’. Additionally, it appears that the pattern of the alveolar thrill could be noticed by reading the spectrogram. In addition, the [r] shown in the spectrogram is always in a set of vibration that formed a vertical line.

Fricatives

There are four fricatives indicated in this language, in which they are voiceless bilabial fricative [ɸ]; voiceless labiodental fricative [f]; voiceless alveolar fricative [s]; and voiceless glottal fricative [h]. It is important to note that, besides nasals, I found that fricative [s] can also be syllabic, since there is a syllabic which sounds like ‘sss’ as in ‘kɕ:i a’ (78). This phenomenon occurs occasionally in Buginese language. Simply put, the environments where these fricatives occur and the respective location of each environment in Table 1 are displayed below.

| Fricatives | Environments | Table 1 (numbers) |
|------------|--------------|-------------------|
| [ɸ] | [a] ___ [i] | 82 |
| | [a] ___ [a] | 93 |
| | | |
| [f] | # ___ [o] | 23, 45 |
| | # ___ [u] | 90 |
| | # ___ [ə] | 95 |
| | | |
| [s] | # ___ [e] | 11 |
| | [a] ___ [u] | 21 |
| | [i] ___ [i] | 43 |

| | | |
|-----|-------------|-----|
| | [i] ___ [ŋ] | 59 |
| | [ə] ___ [o] | 72 |
| | [o] ___ [i] | 76 |
| | [k] ___ [i] | 78 |
| | [k] ___ [ŋ] | 97 |
| | [a] ___ [ŋ] | 100 |
| | | |
| [h] | # ___ [a] | 80 |

Table 10.

The table above shows that fricative [s] commonly occurs in this language, and it is obvious that [ϕ], [f], [s], and [h] are in complementary distribution which means they are allomorphs of one phoneme /s/. Since they are never in the same environment as [ϕ] occurs only in ‘V___V’; [f] occurs only in ‘#___V’; [h] occurs only in ‘#___a’; and [s] occurs elsewhere. The rule is as follows:

/s/ → [ϕ] / [vowel ___ [vowel]

[f] / # ___ [vowel]

[h] / # ___ [a]

[s] / elsewhere

Approximants

There are two approximants in Buginese, which are palatal approximant [j] and labiovelar approximant [w]. The environments of these three and the respective location of each environment in Table 1 are shown in the table below: .

| Approximant | Environments | Table 1 (numbers) |
|-------------|--------------|-------------------|
| [j] | [i] ___ [a] | 1 |
| | [i] ___ [e] | 4 |
| | # ___ [a] | 5, 9 |
| | | |
| [w] | # ___ [a] | 75 |
| | [a] ___ [a] | 80 |
| | # ___ [n] | 92 |

Table 11.

The dataset above shows that approximants [j] and [w] are minimal pairs as a bolded-environment denotes that there is a pair of environment in both approximants which is ‘# ___ [a]’. It attests that [j] and [c] are in contrastive distribution and two distinct phonemes since they are in the same environment but different in meaning. The rule would be like this:

/j/ → [j] / elsewhere

/w/ → [w] / elsewhere

Lateral Approximant [l]

There are a significant number of lateral approximants [l] in this language. The environments they occur and the respective location of each environment in Table 1 can be seen in the table below:

| Lateral approximant | Environments | Table 1 (numbers) |
|---------------------|--------------|-------------------|
| [l] | [a] ___ [a] | 14, 85 |
| | [a] ___ [e] | 19, 98 |
| | [o] ___ [i] | 28 |
| | [ə] ___ [o] | 33, 50 |
| | [u] ___ [u] | 38, 86 |
| | [i] ___ [i] | 39 |
| | # ___ [i] | 44, 79 |
| | [i] ___ [a] | 44 |
| | [a] ___ [i] | 58 |
| | # ___ [u] | 64 |
| | # ___ [e] | 67 |
| | [u] ___ [ŋ] | 73 |
| | # ___ [a] | 85 |
| | [a] ___ [ŋ] | 85 |
| | [ə] ___ [a] | 87 |

Table 12.

Based on Table 12, it appears that Lateral approximant [l] in this language occurs only in the environment of either ‘[vowel]___[vowel]’ or ‘# ___[vowel]’. In addition, it appears that there are a few velarized [l] found in this language where the symbol for velarization is marked as [~] through the middle of the symbol (Ladefoged and Johnson, 2014). It occurs in the word “finallyæ or before a consonant as in ‘u:ŋ’ (73)

Vowel

It appears that Buginese language has a total of 6 vowels according to the findings and analysis of the data in Table 1. They are: open (low) front unrounded vowel [a]; close (high) back rounded vowel [u]; close-mid front unrounded vowel [e]; close (high) front unrounded vowel [i]; close-mid back rounded vowel [o]; and mid central vowel schwa [ə]. The vowel chart in Buginese is shown below:

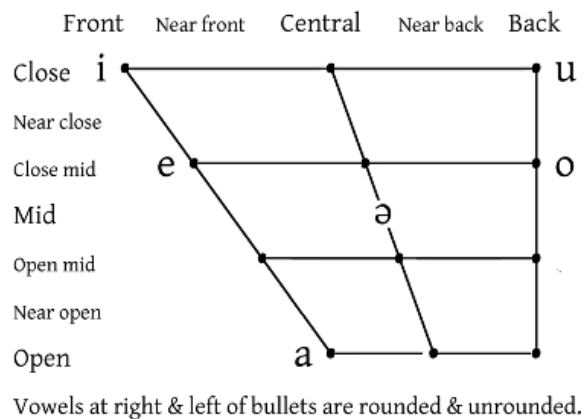


Figure 1. (Vowel chart)

Next, by using Praat, I will try to measure both formant 1 (F1) and formant 2 (F2) in Hertz as well as the mean value of each of the 6 vowels. There will be around 6 examples for every vowel for the measurement. After getting the result, I will then draw a chart showing the movement of the formants for each of the outcome.

Open (low) front unrounded vowel [a]

Here is the measurement of the F1 and F2 along with the mean of the six examples in Table 1 which contains vowel [a].

| No. | Word examples | F1 (Hz) | F2 (Hz) |
|-----|--------------------------|---------|---------|
| 1. | [a] in 'jaro:' | 630 | 1651 |
| 2. | [a] in 'i:ga' | 700 | 1578 |
| 3. | [a] in 'təŋpa' | 745 | 1532 |
| 4. | [a] in 'burane' | 928 | 1615 |
| 5. | [a] in 'tuṽ paŋ' | 908 | 1555 |
| 6. | Long vowel [a] in 'a:je' | 865 | 1630 |
| | Mean= | 796 | 1593 |
| | Standard Deviation= | 122 | 46 |

Table 13.

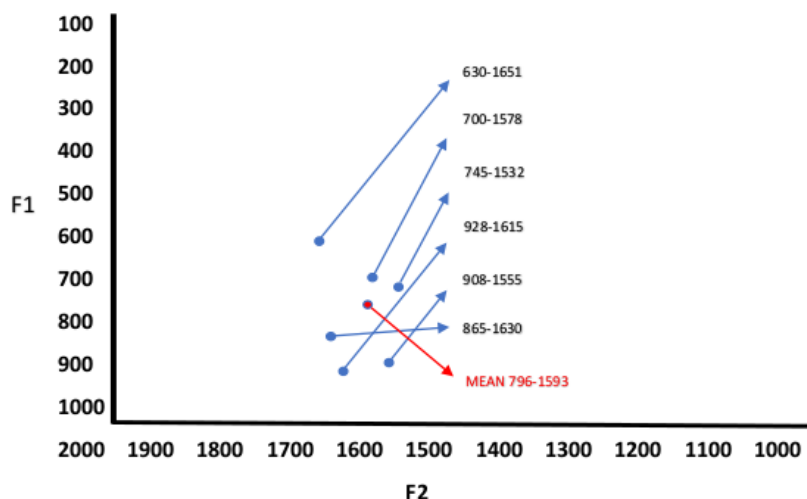


Figure 2. (Chart for vowel [a])

Close (high) back rounded vowel [u]

Here is the measurement of the Fr and F2 along with the mean of the six examples in Table 1 which contains vowel [u].

| No. | Word examples | F1 (Hz) | F2 (Hz) |
|-----|--------------------------|---------|---------|
| 1. | [u] in 'urə' | 336 | 938 |
| 2. | Long vowel [u] in 'adu:' | 286 | 912 |
| 3. | [u] in 'tandru' | 389 | 949 |
| 4. | [u] in 'jantʊŋ' | 371 | 1026 |
| 5. | Long vowel [u] in 'u:ŋ' | 276 | 826 |
| 6. | [u] in 'awu' | 308 | 800 |
| | Mean= | 327 | 908 |
| | Standard Deviation= | 46 | 85 |

Table 14.

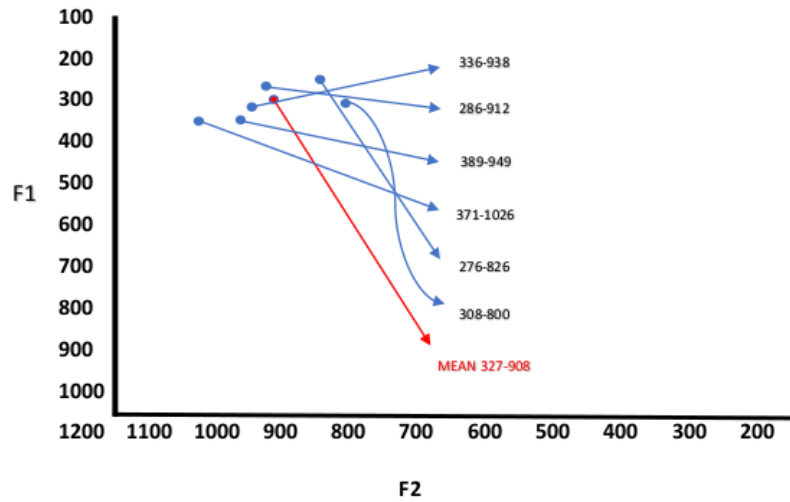


Figure 3. (Chart for vowel [u])

3.2.3 Close-mid front unrounded vowel [e]

Here is the measurement of the F1 and F2 along with the mean of the six examples in Table 1 which contains vowel [e].

| No. | Word examples | F1 (Hz) | F2 (Hz) |
|-----|---------------------------|---------|---------|
| 1. | Long vowel [e] in 'ije:' | 453 | 2300 |
| 2. | [e] in 'malampe' | 455 | 2272 |
| 3. | [e] in 'bale' | 470 | 1977 |
| 4. | [e] in 'mareŋka'li:ŋa' | 507 | 2126 |
| 5. | Long vowel [e] in 'le:wu' | 421 | 2270 |
| 6. | [e] in 'fu:te' | 401 | 1981 |
| | Mean= | 451 | 2154 |
| | Standard Deviation= | 37 | 149 |

Table 15.

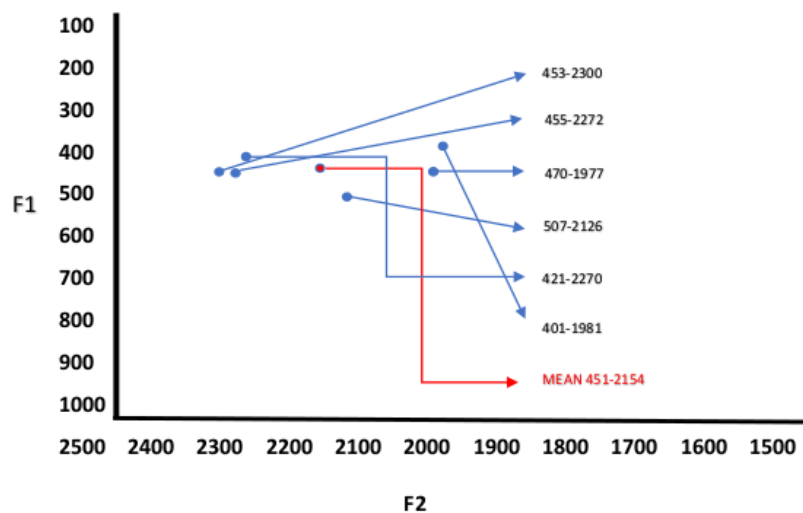


Figure 4. (Chart for vowel [e])

Close (high) front unrounded vowel [i]

Here is the measurement of the F1 and F2 along with the mean of the six examples in Table 1 which contains vowel [i].

| No. | Word examples | F1 (Hz) | F2 (Hz) |
|-----|---------------------------|---------|---------|
| 1. | [i] in 'ija' | 288 | 2493 |
| 2. | [i] in 'seʔdi' | 293 | 2548 |
| 3. | Long vowel [i] in 'bi:ne' | 299 | 2512 |
| 4. | Long vowel [i] in 'oli:' | 282 | 2562 |
| 5. | [i] in 'ikI ko' | 292 | 2320 |
| 6. | [i] in 'onpi' | 318 | 2757 |
| | Mean= | 295 | 2532 |
| | Standard Deviation= | 12 | 140 |

Table 16.

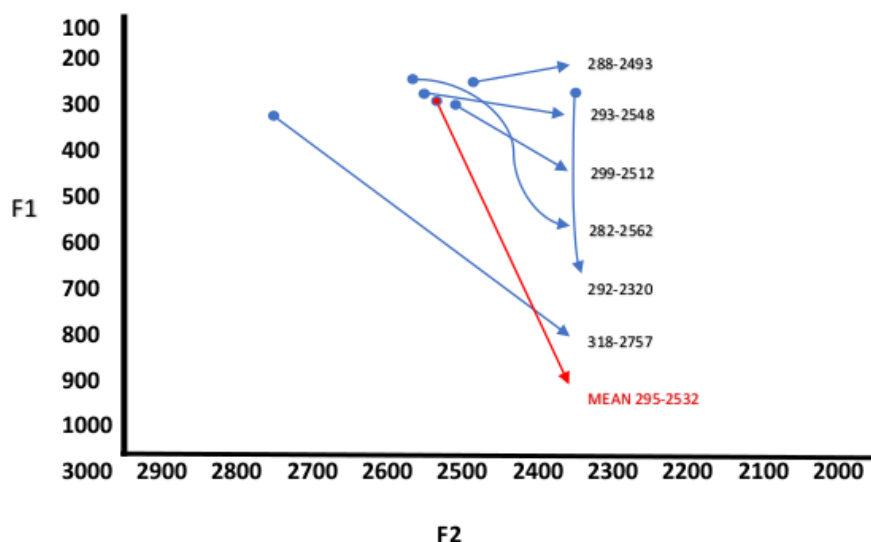


Figure 5. (Chart for vowel [i])

Close-mid back rounded vowel [o]

Here is the measurement of the F1 and F2 along with the mean of the six examples in Table 1 which contains vowel [o].

| No. | Word examples | F1 (Hz) | F2 (Hz) |
|-----|---------------------------|---------|---------|
| 1. | [o] in 'təlo:' | 510 | 1002 |
| 2. | [o] in 'foṽ paŋ' | 537 | 901 |
| 3. | [o] in 'əloŋ' | 652 | 1103 |
| 4. | Long vowel [o] in 'aro:' | 517 | 940 |
| 5. | Long vowel [o] in 'bo:si' | 453 | 934 |
| 6. | [o] in 'oŋpi' | 505 | 979 |
| | Mean= | 529 | 976 |
| | Standard Deviation= | 66 | 71 |

Table 17.

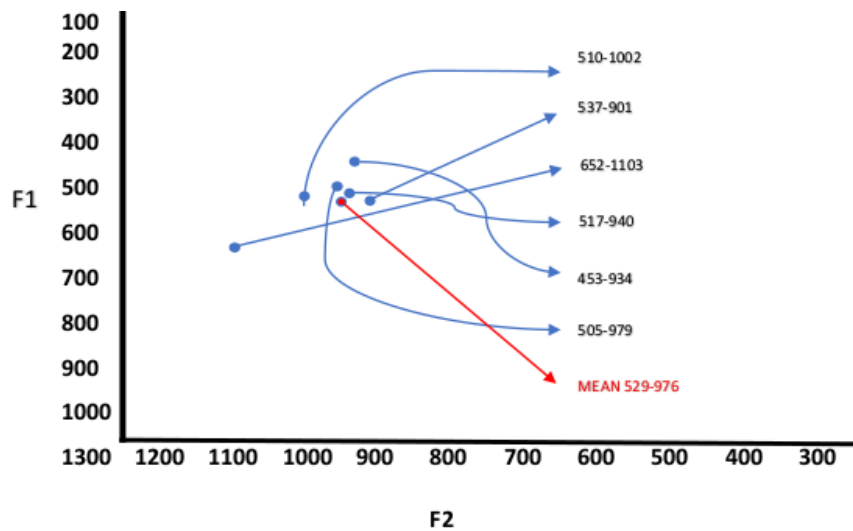


Figure 6. (Chart for vowel [ə])

Mid central vowel schwa [ə]

Here is the measurement of the F1 and F2 along with the mean of the six examples in Table 1 which contains vowel [ə].

| No. | Word examples | F1 (Hz) | F2 (Hz) |
|-----|---------------------|---------|---------|
| 1. | [ə] in 'jamanəŋ' | 334 | 1635 |
| 2. | [ə] in 'urə' | 547 | 1665 |
| 3. | [ə] in 'gɪaə' | 353 | 1365 |
| 4. | [ə] in 'bəb' bua' | 488 | 1385 |
| 5. | [ə] in 'əŋka' | 247 | 1246 |
| 6. | [ə] in 'əso:' | 618 | 1563 |
| | Mean= | 431 | 1476 |
| | Standard Deviation= | 142 | 168 |

Table 18.

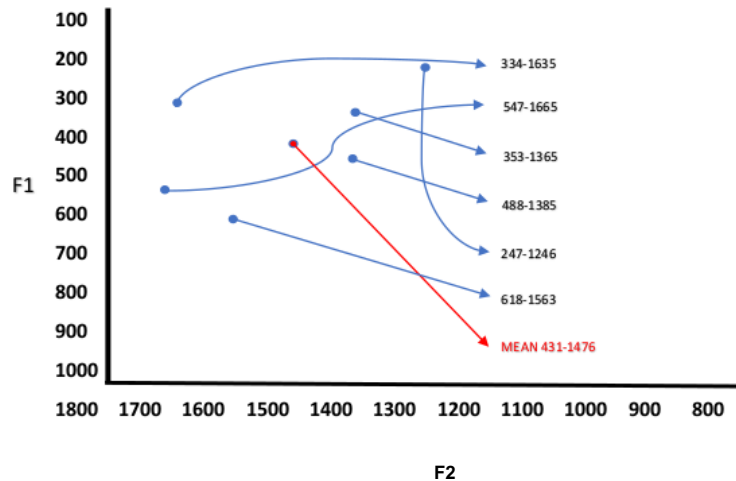


Figure 7. (Chart for vowel [ə])


CONCLUSION

Overall, the findings and analysis clearly show that Buginese language has 21 consonants and 6 vowels. Regarding consonants, there are some consonants that are also found in English such as: plosives [p t k b d g ʔ]; nasals [m n ŋ]; fricatives [f s h]; approximants [j w]; and lateral approximant [l], but exclusively in Buginese such as: has plosives [c ɟ]; nasal [ɲ]; and fricative [ɸ]. What makes Buginese also special is that there are so many ‘no audible release’ found in plosives, and several syllabic consonants in nasals and fricative [s], as well as a few number of velarized [l]. With regard to vowels, Buginese has 5 vowels [a i u e o ə] in their phonetics inventory.

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ISSN: 2301-4822 (p)
2620-9527 (e)
DOI: 10.33479/klausa.v0301

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