CHAPTER FIVE
SUMMARY AND CONCLUSION

5.0 Introduction

This chapter presents the summary and conclusions on the main findings of the study.

5.1 Summary and main findings

In this thesis we have examined the vowel quality of Dagbani. The analysis has been based on the three dialects of Dagbani namely Nanuni, Nayahili, and Tomosili. The first aim was to establish the formant characteristics of the language that bring about similarities and or differences between speakers of the various dialects of Dagbani. The second aim was to find acoustic qualities of some pairs of vowel sounds that are impressionistically claimed to be allophones of some phonemes. To investigate these issues, a series of tests were performed on the frequency data obtained from a spectrographic analysis carried out on the speech data for native speakers of the Nanuni, Nayahili, and Tomosili dialects of Dagbani. Durations of the vowels for the speakers were examined to find the differences that existed between the long and short vowels of Dagbani.

The results of the analysis present the frequency characteristics of the vowels of sounds for Dagbani speaking males and females for the three dialects (Nanuni, Nayahili, and Tomosili). A typical shape of the Dagbani vowel space and those for the various dialects are produced from the data under study.

An examination of the frequency values of the vowels confirmed that [i] and [□] have no significant differences in both F1 and F2 for each of the three dialects of Dagbani. The mean formant plots for the dialects and that of the overall mean plot, all in chapter four confirm this finding. This means that speakers of Dagbani do not distinguish between the two sounds.

The current data also suggests that the short vowels [e] and [ɛ] have the same quality in the open syllable environment for the speakers of Dagbani. The results for each dialect have placed the two sounds in the mid front area of the vowel space. The positions of the tokens of these vowels display similar characteristics for both F1 and F2 for each dialect, an indication that speakers are producing the same sound each time.

The data has also shown that [ə] is a central mid vowel. Nayahili and Tomosili have their [ə] in the center of the vowel space. Nanuni displays a fronted [ə] as compared to those of Tomosili and Nayahili.

The position of [a] for the three dialects, as well as the overall mean plot reveal a characteristic that has not been expected. Linguists have often described the Dagbani [a] as a low central vowel; however the present data shows that [a] is towards the back. None of the three dialects under this study has shown [a] at a really central position. Even though it appears towards the back, it is not as far back as the traditional back vowels. For the long vowels [i:,

e:, a:, o:, u:], the [i:] of Nanuni and that of the overall mean data appear with their [i, □] clusters while those of Nayahili and Tomosili appear as separate sounds respectively. [e:] for Nayahili, Nanuni, and the overall mean plots occur with their [e, ɛ] counterparts respectively while that of Tomosili occurred as a separate sound at the front of the vowel space. For all the three dialects as well as the overall mean plots [a:] appeared significantly lower than its shorter counterpart [a]. Tomosili [o:], [u:] and [ɷ] formed a cluster at the back of the vowel space. Nayahili and the overall mean [u:] occur with [ɷ], while [o:] for Nanuni, Nayahili and the overall mean occur as separate sounds from their counterpart [o].

The findings in chapter four show that the differences between the three dialects in the vowel space occur in the back vowels. As can be seen in figure 11, the Nanuni vowel space is lower than those of Nayahili and Tomosili. The cause of this finding can be attributed to higher F1 values for the Nanuni speakers in their back vowels. Nayahili and Tomosili are more closely related than Nanuni in this circumstance. Indeed, Nayahili and Tomosili are sociolinguistically seen as sub dialects of Dagbani while Nanuni is seen as different from the two. Perhaps this explains why previous works by the various linguists do not include Nanuni as a dialect of Dagbani. However, both frequency data and statistical results in the present study prove that Nanuni is not a different language from Dagbani. The differences between these dialects are not significant at all. The present data also shows that each of the three dialects has the back vowels [ɔ, o, ɷ, u] as independent sounds. This means that the four sounds are individual sounds in the dialects of Dagbani. The vowel space for the overall mean plot of the thirty speakers under this study also displayed significantly differences between the back vowels. From the frequency data discussed so far in the present study, we can conclude that the back vowels of Dagbani are significantly different from one and another.

Statistical analyses were carried out in two forms to establish firstly, how differently the speaker of Dagbani produce their vowels, and secondly, how vowel sounds described in previous works as allophones of the same phonemes are related in the current phonetic environment. This is not to say the tests were used to establish which sounds were phonemes or allophones of the same phoneme, but to test relevant characteristics between those pairs of vowels. Each of these tests was carried out separately for the individual dialects and a combination of the thirty speakers as a whole.

An analysis of variance (ANOVA) test for significance between speakers of the various dialects and that of the overall mean displayed slight differences in the way speakers of the various dialects produce their vowels. Post hoc analysis measuring the significance for speakers' first two formants revealed that speakers of the various dialects have uniformly produced their F1 and F2 in the present data.

The paired vowels test reports in chapter four showed that Nayahili speakers displayed results similar to that of the overall 30 speakers' comparison. There were no distinctions between the productions of the pairs of vowels [i, □] and [e, ɛ]. The report for the Nayahili speakers however contrasts with the view

by displaying significant differences for the pairs of vowels [i, ə], [ɔ, o], and [ɷ, u]. This means that while the former pairs of sounds have very similar acoustic qualities, the later pairs differ significantly in their formant quality. The paired vowel test results for Tomosili showed that speakers distinguish between the production of the paired vowels [i, ə], [ɔ, o] and [ɷ, u] while they do not distinguish between the pairs [i, □] and [e, ɛ]. The paired vowel test results for Nanuni displayed similar patterns as Nayahili and Tomosili. The results indicated significant difference between their production of the [i, ə], [ɔ, o] and [ɷ, u]. The results showed that speakers did not distinguish between the production of the pairs [i, □] and [e, ɛ] respectively. The results for the combined 30 speakers displayed significant difference for the pairs of vowels [i, ə], [ɔ, o], and [ɷ, u]. The patterns displayed by the individual dialects as well as the combined 30 speakers for the paired vowel test shows that there is a continuum between the dialects of Dagbani in the way they produce their vowels.

To sum up, the mean formant frequency plots and statistical results reported for the individual dialects in chapter four have shown that each dialect has its vowels as front [i, □] and [e, ɛ], central [ə] and back [a], [ɔ], [o], [ɷ] and [u]. The long vowels did not show a uniform pattern as descried in the early pages of this chapter; however [a:] has distinctively occurred uniformly across the three dialects lower than its counterpart [a] in each case. The other long vowels have mostly occurred with their shorter counterparts.

The frequency plots for gender (figure 14) confirms Ladefoged (1982) conclusion that women will have larger vowel space because they have higher formant frequency values as a result of narrow vocal cords.

An examination of the durational characteristics of the vowels has shown that there are two degrees of length for the Dagbani vowels. Short vowels found to be approximately 62.4% the length of their longer counterparts. The results also showed that gender characteristics of vowel length are not uniform across all vowels. While the males produced relatively longer short back vowels, the females on the other hand produced longer front short vowels. The males also produced longer long vowels with the exception of [u:] which had almost the same length for both males and females. We can therefore conclude that Dagbani has eight short vowels [i, ə, e, a, ɔ, o, ɷ, u] and five long vowels [i:, e:, a:, o:, u:].

5.3 Conclusion

The aim of the present study has been to produce a description of the quality of the vowels of Dagbani produced in the CV frame by 30 adults from the Nayahili, Nanuni, and Tomosili dialect areas of Dagbani. Formant frequency values of the vowels have been presented providing data that has not previously been available in the literature.

The analyses carried out in this study have been restricted in a number of ways to ensure control of the data. The speech samples were strictly limited to citation form; the speakers were selected from restricted geographical areas and age group. Since the vowel data in the present study was restricted to open monosyllabic (CV) phonetic environment, the future progression from this is an examination of a wider range of phonetic environments. Future research will also involve collection of data from a large sample of population to enable generalization of the findings to Dagbani speakers and provide a more representative picture of the state of the dialects.

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