UNIVERSITY OF EDUCATION, WINNEBA

SOME INFLECTIONAL PROCESSES IN DAGBANI

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DECLARATION

STUDENT'S DECLARATION

I, Abukari Mahama, hereby declare that this thesis, with the exception of quotations and references contained in published works which have all been identified and duly acknowledged, is entirely my own original work, and it has not been submitted, either in part or whole, for another degree elsewhere.

Signature……

Date……

SUPERVISORS' DECLARATION

We hereby declare that the preparation and presentation of this work was supervised in accordance with the guidelines for supervision of Thesis as laid down by the University of Education, Winneba.

PROF. SAMUEL ALHASSAN ISSAH (PRINCIPAL SUPERVISOR)

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Date……

DEDICATION

To

Almighty Allah, the Giver of Life, Wisdom and Health, My brother, Abdul-Rahaman Mohammed, My dear wife, Amidu Salima and our children Maltiti, Timtooni, Faako, Katari, Zaazooma, and Yumzaa

&

My late father, Mahama Seidu.

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LIST OF ABBREVIATIONS

1	First person
2	Second person
3	Third person
A-N	Adjective-Noun
[+ATR]	Advanced Tongue Root
[-ATR]	Un-advanced Tongue Root
BACE	Bagabaga College of Education
D/A	District Assembly
DIR	Directional maker
HAB	Habitual
HNA	Homorganic Nasal Assimilation
IMP	Imperative
IMPERF	Imperfective
JHS	Junior High School
N-A	Noun-Adjective
N. d.	No date
NP	Noun Phrase
PERF	Perfective maker
PL	Plural
PROG	Progressive
SG	Singular
SHS	Senior High School
TACE	Tamale College of Education
WC	Word class
Ø	Null morpheme
*	Ungrammatical
-	Morpheme boundary marker

ABSTRACT

This study investigates some inflectional processes in Dagbani, a Mabia language spoken in the Northern part of Ghana. It identifies Dagbani inflections and their associate functions, and as well explored some morpho-phonological processes observable in the inflectional processes. The study is descriptive in nature and used qualitative approach to analyze the data. The data sources are primary and secondary. The primary data were collected through observation and self-generated, through native speaker's introspection. The secondary data were obtained from Dagbani texts including text books, articles, theses etc. Based on the analysis, it is discovered that there are some significant prefixes and suffixes used as inflections in Dagbani. The prefixes are **n-**, **bu-/bʊ**, and **dɪba-**. The prefix **n-** has allomorph of **-a**. The nominal singular/plural suffix pairs are **-a/-ba, -Ø/-di, -Ø/-a, -i/-a, -di/-a, -li/-a, -li/-ya, -gu/-a, -a/-hi, -e/-hi, -o/-hi, -u/-hi, -ga/-ri, -ɣu/-ri, -u/-ri, -a/-si, -ga/-si, -gu/-si, -o/-ti, -gu/-ti, -a/-nima, -ba/-nima, -e/-nima, -i/-nima, -u/-nima,** and **-Ø/-nima.** These function as number markers. The adjectival singular/plural suffix pairs are **-Ø/-a, -i/-a, -o/-a, -li/-a, -li/-la, -li/-ma, -a/-hi, -e/-hi, -ga/-si,** and **-ɣu/-si** which equally serve as number markers. It is also revealed that The functions of the nominal and adjectival inflectional suffix pairs mark the distiction between their sigular and plural forms in Dagbani. Finally, the verbal suffixes are **-Ø, -ya, -di/-da, -ni/-na, -ri/-ra, -ti/-ta, -mi/-ma,** and **-na.** Whereas **-ni, -ri,** and **-ti,** are allomorphs of the morpheme **-di,** the morpheme **-da** too has variants of **-na, -ra,** and **-ta**. The suffixes **-mɪ** and **-ma** are however observed as seperate morphemes that mark imperative when inflected on some Dagbani main verbs**.** Hence, the verbal suffixes mark aspect, imperative, and direction as well. It is found that vowel harmony, homorganic nasal assimilation, epenthesis and elision, vowel raising and vowel reduction, vowel lengthening, consonantal alternation are some of the phonlogical processes identified in the inflectional processes.

CHAPTER ONE

GENERAL INTRODUCTION

1.0. Introduction

This thesis discusses some inflectional processes in Dagbani, a Mabia, previously considered Gur language in northern Ghana. Dagbani belongs to the Niger-Congo language family (Bodomo et al. 2018; Bendor-Samuel, 1971; Naden, 1988; Hyman, 1992; Olawsky, 1999; and Good, 2013 & 2018). Bodomo (1993) suggests the name Mabia as a collective name for the northern language family. Morpho-semantically, the **ma** means 'mother', and the **bia** means 'child'. Henceforth, **Mabia** translates to 'mother's child', for the northern languages' group. This presupposes that the languages (Buli, Dagaare, Dagbani, Kasem, Kusal, Mamprili, Safaleba, etc.) are closely related. Abdul-Rahaman (2005), Hudu (2010), and Abubakari & Issah (2023), contrary to the idea of Wilson (1970) that Dagbani is obviously categorized into Tomosili and Nayhili. They claim Dagbani is a multi-dialectal language of Tomosili, Nayahili, and Nanuni, spoken in the Western (Tamale and its environs), Eastern (Yendi and the surrounding communities), and Southern (Bimbila's territory) parts, respectively. This thesis aims to contribute to the understanding of some aspects of the linguistics of Dagbani. However, the entire thesis is descriptive in nature.

The study of inflections is of interest to well-known scholars of linguistics, who have explored the phenomena. Among them include Bodomo (1997), Olawsky (1999), aspect of Dagbani grammar. Hudu (2005), Dorvlo (2008), Mangula (2012), Gariba (2017), Ekiugbo & Ayunku (2018), Doku (2019), Tariq et al. (2020), Andayani (2022), Wahome

et al. (2023) and others. Dagbani, like other languages have ways of inflecting their words. Base on that, this current study seeks to explore the ways of inflecting in the major word classes of Dagbani. Dagbani words inflected are nouns and adjectives for number (singular and plural), and verbs for aspect. Khan (2016) compares English and Pashto, both descendants of the Indo-European language family, and finds that there are similarities in the functions of inflectional morphemes.

This study is exactly about how Dagbani major word classes are inflected by marking the grammatical and/or semantic contrast. However, the little studies on Dagbani inflections in the work of Olawsky (1999), Hudu (2005), and Adam (2007) among others point out the fact that there is a need for more data with accurate transcription to offer a thorough discussion on the inflectional processes in the language.

This chapter continues with Section 1.1 as the statement of the problem, purpose of the study being stated in section 1.2, which is followed by the objectives and research questions in section 1.3 and 1.4 respectively. Whereas section 1.5 presents the significance, the delimitation of the study is presented in section 1.6. The organization of the chapters is outlined in section 1.7, and section 1.8 summarizes the discussions in the chapter.

1.1 Statement of the problem

Scholars into the morphology of Dagbani have discussed several aspects of the morphology of the language, among them include, Wilson (1970) studies verbal sequence

and case marking in Dagbani, Abu-Bakri (1988), works on Dagbani word classes; Adam (2007) examines some word formation processes in Dagbani, Gurundoo (2012) investigates the morpho-syntactic features of Dagbani verbal phrase, Fuseini (2020) studies nominalization processes in Dagbani; Iddrisu & Issah (2023) discusses Dagbani Mɔfology mini Sintaɣisi, and others.

However, most of the scholarly works on morphology, or word structure, make use of English, one of the most extensively researched and studied languages in the entire world. Nonetheless, it must be noted that English morphology, like all other aspects of English grammar, is not always a representative sample of other languages (Mangula, 2012, cited Hudson, 2000).

Morphology as a course of study for hopeful linguists in universities has so far been the subject of uncountable studies, and it is still being studied today. Several studies suggest that there is yet more concealed information that needs to be revealed. To better understand the morphology of Dagbani, this study focused on inflectional processes as a key morphological feature. For instance, some affixes are affixed with nouns, adjectives, and verbs in Dagbani for grammatical achievements. However, it has been established that Mabia languages exhibit a suffixal structure, especially in the noun class system (Glienicke, 2020:20). These suffixes (inflections) are grammatical when they result in the buildup of new forms of words from existing ones when attached to base words, and they also maintain meaning and the lexical category of the base words. Particularly, the noun, adjective, and verb suffixes, together with their semantic relations in the language.

Though Dagbani inflectional morphology has been studied to some extent, but there are still areas of concern that need to be investigated the more. For instance, Olawsky (1999) discusses inflectional morphology but has not been able to cover morpho-phonological processes of Dagbani major word classes. Hudu (2005) discusses only number marking in Dagbani nouns and adjectives. Adam (2007) too studies some Dagbani word formation processes in general by dealing with compounding, derivation, reduplication and some semantic shift as word formation processes. Though, some inflections were briefly discussed but that was not the focus. Hence, to the best of my knowledge, there is little or no known research giving formal account or a systematic description that is solely dedicated to inflectional processes in the language yet. This means that such a study is still not extensively exhausted, and that creates a research gap that needs to be filled.

As Nordquist (2020) discusses that, the distinctions between inflection and derivation are not always clear, and studying these processes aid in understanding a language more deeply. Hence, the misapplication of derivation and inflectional morphemes in Dagbani sometimes is worrisome and need to be detailly investigated. The choice of this topic is also motivated by the fact that, the inflectional morphemes play individual roles that are worthy of investigation. Besides, research of this kind needs to be done due to the need for more Dagbani studies specializing in the morphological domain. It is based on these that the researcher chose to work on it to fill the research gap. Consequently, this current study seeks to explore a bit further on the inflectional morphology of Dagbani.

1.2 Purpose of the study

The purpose of this study is to explore some inflectional processes in Dagbani.

1.3 Objectives of the study

The objectives of this research are:

1) to identify inflectional morphemes of Dagbani major word classes;
2) to investigate the grammatical functions of these inflectional morphemes;
3) to account for some of the morpho-phonological processes that occur in Dagbani inflectional processes.

1.4 Research questions

The study is guided by the following research questions:

1) What are the inflectional morphemes of Dagbani major word classes;
2) What are the grammatical functions of these inflectional morphemes;
3) What are some of the morpho-phonological processes that are occur in Dagbani inflectional processes.

1.5 Significant of the study

The findings of the study when completed will complement the existing literature within the domain of morphology in Dagbani and thereby contribute to knowledge on the similarities and differences in terms of inflections in Dagbani lexical composition. This will again form the basis for other studies. It will also be useful to the general public, particularly those who wish to study the grammar of Dagbani. Besides, the study will

serve as a reference point for future researchers on the inflectional morphology. It will finally enhance teaching and learning of Dagbani at all levels of the educational setup.

1.6 Delimitation

The study is delimited to the analysis of some inflectional processes in Dagbani. The primary focus of the study is how words in the major word classes, such as nouns, adjectives, and verbs, are inflected. Even though Dagbani has three dialects, the Tomosili dialect is what is concentrated in this study. The research is carried out in Sagnarigu, with participants including the researcher, Dagbani facilitators, and a language consultant. The data was collected within the Sagnarigu Municipality in the Northern Region of Ghana.

1.7 Organization of the study

This study is organized into five chapters; and such that chapter one is the general introduction to the thesis, covering the background to the study, statement of the problem (the need for the study to be conducted), the purpose of the study, the objectives and research questions of the study, the significance, delimitations, and as well the organization of the study.

Chapter two focuses on relevant literature review and the theoretical framework for the study. It reviews relevant literature on Mabia languages, Kwa language groups in Ghana, and non-Ghanaian languages as well.

The research methodology is presented in Chapter 3. This covers the research approach and design, populations, sample size and sampling techniques, data collection strategies, data analysis, and data presentation. Chapter four is on the analysis of the noun, adjective, and verbal inflections, including the functions of the suffixes, considering their roots, and also examines some morpho-phonological processes relevant to the study. Chapter five summarizes the major findings and offers conclusion remarks as well as some recommendations for further investigations.

1.8 Chapter Summary

This section summarizes chapter 1, as the chapter concerns the general introduction of the thesis, the background to the study, the problem statement, the research purpose, objectives, and questions, delimitation, and significance of the study, as well as how the study is organized on chapter base.

CHAPTER TWO

REVIEW OF RELEVANT LITERATURE AND THEORETICAL FRAMEWORK

2.0 Introduction

This chapter provides a literature review on inflectional morphology. This part serves as a guide to broaden our horizon of knowledge and awareness of relevant issues raised and discussed in the various inflectional morphology across languages globally. However, the theoretical framework is basically descriptive. This chapter is divided into eight sections. Section 2.1 outlines the notion of inflection. Section 2.2 discusses inflection in major word classes; and Section 2.3 deals with inflection in Mabia languages, while Section 2.4 and 2.5 deliberate on inflection in Kwa and non-Ghanaian languages; respectively. Section 2.6 covers some morpho-phonological processes observable in the inflectional processes. The summary of the chapter is put in Section 2.7.

2.1 The notion of inflection

The notion of inflectional morphology is examined in this section. The notion of inflection when introduced will help readers to appreciate the phenomenon before we see how it operates in the major word classes of Dagbani in chapter 4. However, one cannot talk of inflection without a brief overview of morphology.

The term morphology means ‘form’ or ‘shape’ in Greek, which denotes ‘the internal structure of words’ (Singleton, 2000:33) and the study thereof. Based on Singleton‘s observation, Morphology is perceived as the study of the internal arrangement of words and how the various constituents of complex words, or inflected words, are patterned.

The constituents that make up the inflected words are referred to as morphemes. A morpheme can be free or bound, depending on whether it can stand alone as a word or has to be attached to another component for meaning (McCarthy, 2002:18). Internally, the structures of a word and the segmentation into its various kinds of morphemes are so essential to modifications of the existing words in a language. As Lawer (2017) put it that, words in human languages have their own internal compositions that are combined in a particular acceptable manner called morphotactics. This explains that, like sentence structures, the word too has an internal composition that constitute smaller units organized with respect to each other in an acceptable way. For instance, the word 'call' can stand alone as a word. In that case, it is a free morpheme. But when the component -ed is attached, it becomes 'called', making the later a past tense form of the former. This means that the -ed, which occurs in the word 'called', cannot stand alone and be understood unless it is linked up with the base, 'call' for grammatical meaning. Hence, -ed is a bound morpheme, the inflectional one to be precise. An instance of lexical morphology is seen when the suffix -ness is affixed to the adjective 'sweet' to yield the noun 'sweetness.' Conversely, an illustration of inflectional morphology in English based on this premise is the addition of the suffix -s to the verb 'eat' when used in the present tense with third-person singular subjects. The words that are studied together with the strategies involve in inflectional morphology is termed inflectional processes (Nordquist, 2020).

A plethora of work is available on the inflectional morphology of different languages in the world, e.g., Tswana (Cole, 1955), Fulfulde (Arnott, 1970), Japanese (Tatsuki, 1981), English (Palmer, 1988), Degema (Kari, 1995), Igbo (Emenanjo, 1978; 2015), Echie (Ndimele, 1987; 2003), and Dagbani (Issah, 2013; Hudu, 2014), and others. The discussion of inflectional morphology in these languages, regardless of the theoretical persuasion, basically concerns the identification and/or analysis of affixal and non-affixal morphemes in the formation of nominal, adjectival, and verbal bases, among others, and in the expression of categories such as number, person, tense, aspect, mood, etc. in different constructions.

Lieber (2009) posits that 'Inflection refers to word formation that does not change category and does not create new lexemes, but rather changes the form of lexemes so that they fit into different grammatical contexts. She goes further to say that the grammatical meaning of inflection can include information about number (singular vs. plural), person (first, second, third), tense (past, present, future), and other distinctions as well' (p.88). Similarly, Aliero (2013) posits that inflection is a morphological process which involves the formation of grammatical forms that neither change word class nor create new lexeme.

On the part of Booij (2007), inflection is defined as the morphological marking of properties on a lexeme resulting in a number of forms for that lexeme, a set of grammatical words.

According to Afful (2018), an inflectional morpheme does not have the capacity to amend the meaning or the syntactic class of the word it is bound to, and will have that predictable meaning for all such words. That is to say that, the past form of a verb will mean same regardless of the verb inflected, the noun or an adjective will remain so. For instance, the inflectional morphemes -er and -est cannot be meaningful in isolations, but when attached to a free morpheme like 'dirty', inflected words such as 'dirtier' and 'dirtiest' are obtained. The words 'dirty', 'dirtier' and 'dirties' all belong to the grammatical class of an adjective. However, the effect or individual roles played by the inflectional morphemes -er and -est is comparison between two or more things. However, the distinction between -er and -est in context is the level or degree at which the comparison is made. Better still, the dative case will have same value for all nouns, likewise adjectives as stated above.

Morphemes, in general, are used in two main ways. That is, to create new words (derivational) and to mark different forms of already existing words (inflectional), as shown above. This suggest that, morphology has two main divisions. Thus, derivational morphology and inflectional morphology. So, when a word is composed of both derivational and inflectional morphemes (suffixes), they always appear in that order as Yule (2006) proposes. For instance, the derivational suffix -er is attached to the verb, 'read' to obtain 'reader', which further inflects with the plural marker -s to yield 'readers'. The focus of this study however, is solely on inflectional morphology particularly inflectional processes in Dagbani. Hence, in a clean morphological cunning,

it is expected that the word's components (morphemes) contribute their distinct meanings and forms to the entire meanings and forms of the words of which they are composed.

Nordquist (2020) observes that, the inflectional system of Modern English is limited and distinctions between inflection and derivation are not always clear, studying these processes is helpful in understanding the language more deeply. Inflectional morphology as the author put consists of at least five categories, provided in the following excerpt from Language Typology and Syntactic Description: the prototypical inflectional categories include number, tense, person, case, gender, and others, all of which usually produce different forms of the same word rather than different words. Thus, 'leaf' and 'leaves', or 'write' and 'writes', or 'run' and 'ran' are not given separate headwords in dictionaries. In contrast, derivational categories do form separate words, so that 'leaflet', 'writer', and 'rerun' for instance will figure as separate words in dictionaries. Generally, inflectional categories do not also amend the basic meaning expressed by a word; they merely add specifications to a word or emphasize certain aspects of its meaning. 'Leaves', for instance, has the same basic meaning as 'leaf', but adds to this the specification of multiple exemplars of leaves. Derived words, by contrast, generally denote different concepts from their base. For instance, 'leaflet' refers to different things from 'leaf', and the noun 'writer' calls up a somewhat different concept from the verb 'to write'. Inflection is therefore defined as those categories of morphology that are regularly responsive to the grammatical environment in which they are expressed, these include; tense, past tense, present participle, past participle, comparative degree, and superlative degree etc (Nordquist, 2020).

Finally, the verb inflectional process establishes the fact that the verb roots accommodate some inflectional morphemes that do not only mark tense and aspect but also indicate command or imperativeness, and directionality as well which are all in the fraternity of inflections. In admiration of the inflectional morphemes by the lexical roots of Dagbani words, there is the likelihood of certain constraints, thereby resulting in the ill-form of the inflected words that need to be repaired, and this study covers that as well.

Taking account of the various definitions above, one can describe inflectional morphemes as linguistic expressions that are attached to words to mark changes in their grammatical properties, such as number (singularity and plurality) on the part of nouns and adjectives, and aspect in verbs.

2.2 Inflection in major word classes

The various categories of words used in grammar are referred to as word classes, sometimes called parts of speech (Afreh, 2006). Thus, word classes of the same category are expected to share same grammatical properties and functions. The major cross-linguistic word classes are nouns, adjectives, verbs, and adverbs, but there are also minor word classes such as pronouns, conjunctions, prepositions and others. As established earlier, this study is limited to only nouns, adjectives, and verbs because they are inflectionally productive in Dagbani.

Various scholars discuss inflection in different ways taking the word classes in to consideration. It is evident from the scholars' opinions that inflection exists in natural

languages. Many linguists from around the world are drawn to study it. As such, inflection is essential to enhancing a language's key vocabulary. The Dagbani language is not exception to the rule that almost all languages in the world have nouns, adjectives, verbs, and other words that deal with inflections in various ways, like prefixation, infixation, suffixation, and so forth.

2.2.1 Nominal inflections

Basically, nouns are naming words. Like the other languages of the world, nouns are put into various categories, such as: proper noun, common noun, collective noun, abstract noun, countable noun, etc. Languages contain nouns cross-linguistically, which make good use of inflections. All the noun categories mentioned above have their own sub-categories, which contain numerous examples that make good use of inflections for grammatical achievements cross-linguistically. Nominal is a derivative form of a noun, which has generally been described as words that help identify persons, places, things, etc (Afreh, 2006). A noun is defined as the category that typically holds the head position in an NP, as Gómez (2009) notes. According to him, it typically inflects for number and can have a variety of dependents attached to it, including determinatives, adjective phrases, and relative clauses. According to Gómez (2009), nouns can have multiple functions; the head's function is one that is characteristic but not the only one that could exist. He goes on to say that nouns function as modifiers, changing the head of the noun phrase to give it those particular attributes that are particular to the head noun or given entity. He claims that in addition to giving the head noun in construction more information, optional modifiers also define and characterize the head noun. For Dagbani, this explanation is

essentially the same. This is a result of both languages using the same explanations for noun categories. The discussions of nouns in this study concentrate on the inflected forms (singular and plural). Abubakari and Issah (2023) observed that, nouns are grouped according to notions like people, spirituality, shapes, protection, among others. They further argued that religious as well as traditional beliefs and practices are capable of being traced in the nominal classification systems.

The nominal classification presents a feature that is one of the common relating features in African languages, with mabia languages from Mabia branch being no exception (Abubakari, 2021 cited in Abubakari and Issah, 2023). They postulated with reference to (Welmers, 1973:159; Katamba, 2003:10; Bodomo and Marfo, 2006; Abubakari, 2021) that, previous studies indicate that about two third of African languages have some kind of noun classification system that is mainly based on affixes. Basically, the categorization of nominal in Mabia languages deal with roots and suffixes (Nsoh, 2002; Bodomo, 1997; Olawsky, 1997, 1999; Abubakari, 2021).

2.2.2 Adjectival inflection

'Adjectives are words that modify the meanings of nouns or pronouns' (Doku, 2019:39). Abloh-Odjidja (1961) as confirmed in Doku (2019:39) describes adjectives as **gbɛi kadilɔ aloo gbɛi shishitsɔɔlɔ**. This translates to 'noun modifiers or definers'. He observes also that it is through suffixation that plural formation of these noun modifiers can be realized. According to Afreh (2006), adjectives describe or modify a person or a thing

(p.102). He observes that, adjectival inflections are morphemes or affixes that change the forms of adjectives but not the classes of the adjectival words.

Dixon (2004) lists value, color, age, dimension, physical attributes, position, difficulty, resemblance, human tendency, and qualification as some of the semantic types of basic adjectives. Adjectives in Dagbani are equally grouped as Dixon depicts, but inflectionally sound especially in nouns-adjectives relations.

2.2.3 Verbal inflection

A verb according to Afreh (2006) is a word that expresses a state, an action or a process (p.48). He continues that verbal inflections are affixes or morphemes that follow verbal roots or stems. Dorvlo (2008) sees the verb as a lexical category that inflects for tense and aspect from a morphological perspective. Dorvlo considers the verb as the primary and significant part of a sentence, displaying morphological differences in terms of tense, aspect, mood, person, voice and number. Dorvlo avers that without careful examination of the verb, syntactic analysis cannot move forward. This statement is accurate for Dagbani, since a sentence in Dagbani cannot have any meaningful form without a verb.

2.3 Inflections in Mabia languages

This sub section discusses relevant literature on some Mabia languages, such as Dagaare, Gurenɛ, Kusaal, and Dagbani, etc.

2.3.1 Inflections in Dagaare

According to Bodomo (2004), the Dagaare lexical noun phrase does not explicitly indicate gender or case. This is demonstrated in: **Ayuo bie gánè**, which means 'Ayuo's child's book', has the same morphology in its nominative or subjective and accusative or objective occurrences. As previously noted, gender is likewise not overtly indicated in Dagaare since there is no morphological distinction between the nominative and genitive forms of the first-person pronoun. Though, Bodomo's work is the syntax of nominalized complex verbal predicates in Dagaare including noun phrase while this current study examines inflectional processes in Dagbani, but both languages belong to Mabia languages family and therefore share some common grammatical features.

According to Bodomo (1997), Dagaare is not a case-marking language. However, a few suffixes, such as **-daa**, **-saraa, -nyangaa** as in **bodaa** 'he-goat', **bosaraa** 'a young she-goat', and **bonyangaa** 'an old she-goat', respectively, are put on nouns denoting living things. Dagaare nouns are not automatically divided into masculine, feminine, and neuter forms, as it is done in most European languages. Singular and plural suffixes are marked for most nouns in the language. These are added to noun stems, varying according to classes. Bodomo identifies some singular and plural suffixes, as stated in the following table:

Table 1: Dagaare nominal inflectional morphemes (suffixes)

Inflectional Morphemes (Suffixes)	
Singular Classification	**-ɛ/-e, -ɔ/-o, -u, -a, -ɪ/-I, -rɪ/-ri, -ba, -mɔ, etc.**
Plural Classification	**-ɛ/-e, -o, -a, -rɪ/-ri, -ba, -mɪnɪ, -bɔ/-bo, -mɛ, -nɛ/ne, -nɪ/-ni, etc.**

(Bodomo, 1997: 54)

He advanced that an advantage of this approach is the straight-forwardness with which nouns sharing singular affixes can be categorized. On the other hand, nouns sharing plural affixes can be equally grouped. However, the main disadvantage is that some important phonological and semantic generalizations are missed when nouns with the same natural phonological phenomena are put in different cases. As will be shown, one consistent natural phonological observation in Dagaare is that all nouns with nasal singular affixes also have nasal plural affixes; they belong to the same natural classes, putting them in the morpho-phonemics of the language. Besides the singular and plural classification of affixes (suffixes), Bodomo (1997) also grouped the noun lexical roots based on the singular and plural affixes (suffixes) they accommodate. The author further stated that 'nouns in the same class must have similar singular affixes (p. 56). He, however, stressed that the phonological processes of the language should be given some attention in order to understand the ten noun classes proposed as the noun class system of Dagaare. He provided some data below (see p. 55-60 for more data).

(1) Root (SG)	**Gloss**	**Suffix**	**inflected (PL)**	**Gloss**
a. **tì -é**	'tree'	**-rí**	**tìì-rí**	'trees'
b. **dì-é**	'room'	**-rí**	**dè-rí**	'rooms'
c. **bu-ɔ**	'goat'	**-rí**	**bʊ́ʊ́-rí**	'goats'

d.	**kóg-ó**	'chair'	**-rí**	**kóg-rí**	'chairs'
e.	**pɔ́ɣ-ɔ́**	'woman'	**-bɔ́**	**pɔ́ɣíbɔ́**	'women'
f.	**bààl-á**	'sick person'	**-bá**	**bààl-bá**	'sick people'

(Bodomo, 1997: 55-60)

Bodomo again argued that Dagaare is based mainly on an interface between the phonological and the morphological components of the grammar of the language. The author stated that the criterion used in the data above is mainly morphological.

Bodomo (1997) postulated that the basic system of the Dagaare verb is often labeled as an aspect. That is perfective and imperfective. It may also be termed event and process, punctiliar and linear (Bender Samuel, 1971, as cited in Bodomo, 1997). In this basic system, the speaker sees the action as either completed or not yet completed, irrespective of whether the action is viewed as being in the past or not.

He further argued that Dagbani and Mampruli have another inflectional positive imperative suffix, **-ma,** added to the verb as an addition to the basic inflectional system. This is demonstrated below:

(2) **ɪsi-ma**

Get up-imper

'Get up'

Furthermore, as he put it, there are additional verbal suffixes, **-ya** and **-ng** in Dagbani/Mampruli and Dagaare, respectively, which confirm or highlight the verbal action. The term factitive, as has been used in Dagaare illustrations, is still binding here, as can be seen below:

(Dagbane/Mamprull)

(3) a) **O** **isi-ya**
She get up-fact
'S/he has gotten up'

(Dagbane/Mampruli)

b) **O** **kyam-ya**
She walk-fact
'She has gone'

(Dagaare)

(4) a) **O** **kyeng-ee-ng**
She walk-perf-intr-fact
'She has walked' (Bodomo, 1997:89)

Bodomo's observation is that the factive/affirmative affixes are in complementary distribution with the so-called post-verbal **lá** in Dagaare, Dagbani, and Mampruli. The claim is inappropriate in the sense that, firstly, **isi-ya** and **kyam-ya** are prototypically **yiɣsi-ya** and **chaŋ-ya** instead. Besides, the **-ya** in **yiɣsi-ya, chaŋ-ya,** and **yiɣisi la** may not mean the same because while **-ya** as it is stated marks perfection, **lá** rather marks focus instead of being an inflectional morpheme, according to Issah (2013) in Dagbani, especially. Contrary to Olawsky (1999), even though both hold a similar view that the post-verbal **la** is a focus marker, the representation causes the distinction in that Olawsky (1999:33-34 and 101) sees the **la** to be part of the verb as if it is an inflectional morpheme, which Issah denied. It is further discussed that the most basic part of the verb is the root or stem, and the relationship between the verb roots and their affixes is necessary for the sake of categorization, as stated by Bodomo (1997). He listed **nyu**

'drink' and **zo** 'run', for instance, as Dagaare verb roots. In addition to these, he stated the infinitive forms of the verbal roots as **a nyu** 'to drink' and **a zo** 'to run', respectively.

Like Dagbani, Dakubu (2005) posited as Bodomo earlier stated that. Dagaare's verb structure morphologically has two aspectual forms. That is perfective and imperfective. She said that, in contrast to the imperfective aspect, which permits affix attachments and views the action as continuing or occurring over a period of time, the perfective form does not require affix attachments, and the activity is thought to have a connection to the present.

2.3.2 Inflection in Gurenɛ

According to Haskew (n.d.) in A-Ingkonge (2020), there are five classes in terms of the Gurenɛ nominal system; thus, all the nouns are classified into five different groups. The only guide that may show us to which group or class a noun belongs is the ending of the word, although there are many exceptions. Each class has a singular ending and a plural ending. When the same noun that takes the singular suffix also takes the same plural suffix, then such a noun or nominative is said to have the same class or grammatical gender. Farefari (Gurenɛ) has five genders and a few irregular pairings classified as sixth genders, according to him**.** Below are the genders grouped into various classes:

(5)	**Class**	**Suffixes**	**Examples**	**Gloss**
	1&2	**/-a-ba/**	**/pɔɣa/ pɔɣeba**	wife/wives
	3&4	**/-ka-si/**	**/poka/ pɔgesi**	woman/women
	5&6	**/-di, -al/**	**/vire/yca**	house/houses
	7&8	**/-ku, -fu/**	**/duks/ duyers**	pot/pots

9&10 **/-bu -I/** **/lagefa ligeri** money/monies

(A-Ingkonge, 2020: 25)

Mutaka (2000: 203) states that an adjective 'generally describes a noun by specifying the quality or state of the noun.' The existential verb 'be' can be followed by an adjective before a noun, after a phrase, or both. The majority of the adjectives in several African languages come directly from the verb. This is possibly the reason why the adjective and verb have a lot in common.

Nsoh (2010) discussed many adjective kinds in Farefari in great detail. The class-type and concord types I and II are among them. He emphasized how closely structurally related class-type adjectives are to nouns, only agreeing with them in number but not gender. Mostly generated from intransitive stative and property concept verb predicates, they are a particularly productive class. The class-type adjectives are listed below:

Class-type adjectives

(6)	**Singular**	**Plural**	**Gloss**
i.	**pika**	**pigest**	'small'
ii.	**kate**	**kara**	'big'
iii.	**woko**	**wogero**	'long/tall'

(A-Ingkonge, 2020: 27)

However, the number of Concord type I adjectives is quite small-about twelve. They also come from intransitive verbs and share gender and number variations with the nouns they modify. They include the following:

Concord type I Adjectives

(7)	Adjective	Gloss
i.	**suŋa**	'good/nice'
ii.	**mɔlega**	'red/fair'
iii.	**pɛɛlega**	'white'

(A-Ingkonge, 2020: 27)

2.3.3 Inflection in Kusaal

In the literature, the classification of nouns in Kusaal has gained a lot of attention (Abubakari, 2011, 2018; Niggli, 2014; Musah, 2018 and others). These studies agreed to the fact that stems and suffixes make up the language's nouns, both in their singular and plural forms.

Musah (2018: 98-111) focuses basily on the morphology of noun classes, giving less attention to the function of semantics in Kusaal's nominal classification. He observes the below groups of nouns: **{1/2 -V –d/-b, -Ø/nam, 3/4-vŋ/-Ni, 5/6-r/-a, 12/13-g/-s, 15/21-g/-d, 19/4-f/-l, 20/13-bil/-bibis, 14-b, 22, 23-m}**. Singular classes are paired with corresponding plural classes. Thus, class 1 is singular and class 2 is plural of the class one.

The nominal system of the Kusaal spoken in Burkina Faso, which speakers agree reflect dialectal variations with the Kusaal spoken in Ghana, is also examined by Niggli (2014:98–117). Niggli's work concentrated mainly on the morphological arrangements in the nominal system of the language. The observed classes are 14 which are signified as

follows: **1. (sg) -a, 2. (pl) -ba/- p, 3. (sg) -Ø/-ba/-ma/-p, 4. (pl) -nama/nam, 5. (sg) -ga/-k(a)/ŋ(a)/-wa/-ya, 6. (pl) -sE, 7. (sg) -go/-ko/-ŋo/ne, 8. (pl) -rɪ/-tɪ/-t/Et/-Ot, 9. (sg) -rE/-IE/-ne/-dE/-bE/-t, 10. (pl) -a/-ya, 11. (sg) -fo, 12. (pl) -gi-i/-Ø, 13. -bo, 14. m/um/-lim/-sim**. The fact that classes one and two in Abubakari (2018, 2021) have been combined into four classes in Niggli (2014) could help to explain some of the observed 14 classes in Niggli (2014). It is therefore evident that in Kusaal, morphology acts as a doorway to nominal classification.

Based on morphology, Abubakari (2011) distinguished seven classes of nouns in Kusaal where a noun's corresponding plural and singular forms are designated as belonging to the same class. In an effort to provide a thorough explanation of the categorization scheme, Abubakari (2018) divides the singular and plural forms into 11 distinct classes such as: **(1a –a, 2a -ba, 1b -V, -ba, 2b -nama, 3 -gV, 4 -sɪ/ɛ, 5 -fɔ, 6 -gi, di, 7- gV, 8 -dɛ, 9 -rV, 10 -aa, 11 -m)**. She goes on to say that morphology, phonology, and semantics are all interwoven into the Kusaal system of noun classification. Her assertion holds for Dagbani too.

According to a study by Abubakari (2021:118), a detailed examination of all earlier research on nominal classification in Kusaal reveals the presumption that nouns with similar morphological characteristics also have similar semantic attributes. This is somewhat accurate, as some noun classes can be said to form semantic fields, but there are a lot of escapes in the generalization because classifications based only on semantic field cannot account for the inclusion of some nouns that have different semantic features

but identical morphological and phonological characteristics (Abubakari and Issah, 2023).

According to Abubakari (2021), the idea of a semantic network should be used to classify nominal in Kusaal semantically. Nominal are categorized according to the proposal into six arbitrary semantic networks of classes. There are six classes in all: Class 1 is for humans and their kin relationships; Class 2 is for 'non-human' living things; Class 3 is for protection; Class 4 is for totemic creatures; Class 5 is for shapes; and Class 6 is for non-count nouns.

Faso (n.d.) avers that adjectives are integrated into the noun class system. Usually, they are combined with a noun and thus marked by number through the class suffix. The author opines that, while the noun is used in its stem form and precedes the adjective, thus, adjectives usually come after nouns in Kusaal (Bukina Faso dialect). However, an adjective has its own class suffix. The author further postulates that adjectives are mostly descriptive in meaning and, in most cases, only occur as part of a complex nominal word. It can then be added to any nominal stem wherever it is semantically appropriate. The assertion of Faso is similar to most of the Mabia languages, including Dagbani. Examples of that include:

(8) a) **pɔ'a** « wife » + **paal** « new » **pɔ'ɔ-paal** « newly wedded wife »

b) **fuuk** « dress » + **paalık** « new » **fu-paalık** « new dress »

Faso (n.d.: 121)

2.3.4 Inflection in Dagbani

This sub-section presents inflections in Dagbani. Though, Ziblim (2018:62) discusses morpho-syntax of noun phrase in Dagbani, he briefly discussed in it the cardinal numbers as part of noun phrases. That is the numerals for counting in Dagbani but has not been able to realize that the nasal **n-** observed in the counting numbers is prefixing the various roots as confirmed in a recent study, Iddrisu and Issah (2023). Such roots include: **yi** 'two', **ta** 'three', **nahi** 'four' up to **wai** 'nine'. Ziblim provided the following to buttress his claim: **ndam** 'one', **nyi** 'two', **nta** 'three' **nnahi** 'four' **nnu** 'five', **nyɔbu** 'six' **npɔin** 'seven' **nnii** 'eight' **nwɔi** 'nine' **piya** 'ten' (Ziblim, 2018:62). He argues further that, whereas the counting forms take **/n/**, the modifying forms take **/a/** except **yini** 'one' and **piya** 'ten'. Below is the illustration:

yini 'one', **ayi** 'two', **ata** 'three', **anahi** 'four', **anu** 'five', **ayɔbu** 'six', **apɔin** 'seven', **anii** 'eight', **awɔi** 'nine', **piya** 'ten' (Ziblim, 2018:63)

The researcher sees the **n-** and the **a-** and even **bu-** and **diba-** as allomorphs of the same morpheme **n-** in the cardinal numbers. This means that they are prefixes to the roots: **yi** 'two', **ta** 'three', **nahi** 'four' up to **wɔi** 'nine'.

As discussed above, it has been confirmed in a study by Iddrisu and Issah (2023) that Dagbani operates with prefixes, but not as much as suffixes. They provided the table below for clarification:

Table 2: Dagbani biɛlimpahira ŋan dooni bachi tooni

Word	**Prefix**	**Root**	**Gloss**
ayi[1]	**a-**	**Yi**	'two (animate)'
Dibaayi	**dibaa-**	**Yi**	'two (inanimate)'
Buyi	**bu-**	**Yi**	'twice'
kpɨkpɨllɨ	**kpɨ-**	**kpɨllɨ**	portably round
gbɨgbɨllɨ	**gbɨ-**	**gbɨllɨ**	'very chubby'
pumpɔŋɔ	**pum-**	**pɔŋɔ**	'right now'

(Iddrisu & Issah, 2023:6)

It is observed that their claim falls short, as they are limited to what is in the table. The native speaker also uses /n/ in counting, and even that is for Numiral 1–9. For instance, **ndam** 'one', **nyi** 'two', **nta** 'three', etc. Even though this is restricted to Numiral 1–9, their observation is limited to Numiral 2–9. This is because it will be ungrammatical to say ***a-yini** or ***a-dam** 'one', ***diba-ayini** or ***diba-ndam** 'one', or ***bu-yini** or ***bu-yindam** 'one'.

Hudu (2005) looks at number marking in Dagbani and mentions that there are three different kinds of number suffixes in Dagbani: regular plural and singular suffixes, irregular plural suffixes, and the default plural suffix (Abu-Bakari 1978 and Olawsky

[1] Readers should note that I have modified the data presentation the table above, by changing the words in the heading from Dagbani to English. This is based on the fact that the cited work is written in Dagbani and that necessitated the modification done to fit the context of this work.

1999). He pointed out that Dagbani has suffix pairs that fit into one of the productive patterns in Dagbani noun classes and that typically replace one another in singular and plural suffixation. He says that in plural formation, the singular suffix **-lə** takes **-a**. He observes that speakers can predict the plural form of a noun or adjective with the singular suffix **-lə** and vice versa using this pair of forms. He contends that irregular singular and plural suffixes exhibit an exception to the productive pattern that nouns and adjectives exhibit in the language, making it challenging to categorize them. He goes on to say that suppletion is a common morphological process in Dagbani that is used to mark irregular plurals. He gave examples of this, such as **[kpe:]** 'colleague' to **[taba]** 'colleagues.' Because it is applied to nouns and adjectives that are not designated for a distinct singular suffix in the singular form, the default plural suffix, **-nəma**, gets its name. The bulk of words in this category are loanwords, primarily from Hausa, Arabic, Akan, and English. Though all nouns taking the default form **-nəma,** for instance, mark for singularity since they have singular relations to items they represent, the idea that the default plural suffix **-nəma** has no mark for singular suffix in the singular form is inappropriate. This will be justified in Chapter 4 of this thesis. Although both studies are in Dagbani, Hudu's work focuses on number marking in Dagbani, and this one examines Dagbani inflectional processes in general.

Naturally, in a noun-adjective combination, it is the adjective that describes or modifies the noun cross-linguistically. According to Bendor-Samuel (1971), nominal phrases in Gur languages are much simpler and easier to understand because they have constructions or structures where a demonstrative or numeral or modifier comes after a

noun. However, he claims there is never a string of adjectives following the head noun in mabia languages, and it is even uncommon for an adjective to follow a noun. Nonetheless, the claims were presented by a few Gur scholars, including Saanchi (1980), Bodomo (1993), Olwasky (1999), and Issah (2013). They discovered situations where nouns in constructions are modified by adjectives. The current study examines certain inflectional processes in Dagbani and refutes Bendor-Samuel's argument in his study that examines nominal phrases in mabia languages, including Dagbani, and asserted that those languages lacked a string of adjectives.

It is observed in Issah (2013) that when there is contact between a singular or plural noun and an adjective, the singular or plural marker to the noun is either lost or shifted to the adjective. Thus, the adjective takes the number marker instead. The adjective can be more than one; all modify the noun they follow. In that case, the number markers of both the noun and the adjectives, apart from the final adjective, are elided (cf. Iddrisu & Issah, 2023:32). This phenomenon shall be examined in Chapter 4.

Another point worth notifying established by Ziblim (2018) is that nouns function as modifiers (adjectives) in Dagbani. In other words, within a noun phrase or noun-adjective combination, nouns can change other nouns to behave or function differently. In this case, unlike adjectives that come after the nouns they modify, nouns serving as modifiers always come before the head noun they modify. In that case, the number marker(s) to the head noun in the phrase is not lost or shifted to the noun modifying. This is interesting and will be clarified more in chapter 4.

The assertion of Bodomo about the verb infinitive forms in Dagaare (cf Bodomo,1997:89) is expressed differently in Dagbani as **n-nyu** 'to drink' and **n-zo** 'to run', respectively as observed by Olawsky (1999:80). In connection to this assertion, Olawsky (1999) claims that prefixes exist in Dagbani, as he rightly displayed that, one of the ways of determining whether a word is a verb in Dagbani is the word's morphological properties, and that all verbs have a kind of infinitival or citation form, which is realized by the prefixation of **n-** or one of its equivalents, **m-,** or **ŋ-'** to the root, because of phonological reason(s). Consequently 'to drink' would be reduced as **n-nyu**. The data below further testify his claim:

(9)	**Root**	**Gloss**	**Prefix**	**Inflective**	**Gloss**
i)	**da**	'buy'	**n-**	**n-da**	'to buy'
ii)	**ba**	'ride'	**n-**	**m-ba**	'to ride'
iii)	**ko**	'hoe'	**n-**	**ŋ-ko**	'to hoe'

(Olawsky, 1999:80)

However, the glossing for **ko** as 'hoe' and 'to hoe' for **ŋ-ko** based on my native introspection, should have been 'farm' for **ko** and 'to farm' for **ŋ-ko**.

It is observed that Bodomo (1997) shares similar sentiment with Olawsky, only that, the orthographical representations make the distinction between Dagaare and Dagbani. However, Issah (2013) argues that, the **n** preceding the verb rather serves as a focus marker instead.

In summary, this subsection has reviewed works on inflection in the mabia languages drawing data from Dagaare,Dagbani, Gurenɛ, Kusaal.

2.4 Inflection in Kwa languages

This section discusses a review of related literature on some Kwa languages, such as Akan, Ga, Dangme, Ewe, among others, as far as a study on inflectional processes is concerned.

2.4.1 Inflection in Akan

According to Osam (1993), the Akan language may have formerly possessed a noun class system for prefixed single nouns. Although this system may have disintegrated, it is believed to have facilitated the creation of a new class system based on plural marking in the language. He quotes Dolphyne (1988) as saying that a noun's singular noun prefix or noun class may determine the kind of prefix it gets.

Like nouns, verbs are equally borrowed in Akan. Apenteng & Amfo (2014) argue that verbs are borrowed and nativized in the Akan. Therefore, borrowed verbs are exposed to the various tense-aspect-mood-polarity inflections in Akan. This explains that, for instance, English stems are maintained and the grammatical forms such as tense, aspect, and mood of the target language (Akan) are attached. These are the markings of present, past, future tense, perfect and progressive aspects, and negation. This assertion is not different from Dagbani. Only that, while future tense can be marked with a prefix such as **bɛ-** in Akan, Dagbani verbs in general do not mark future and even negation with inflections (see Issah, 2023). Like Dagbani, Akan does not have an overt form of a morpheme that marks the present tense in the language. That is, the present tense form is realized in the bare form of the verb.

Apenteng & Amfo (2014) express that verbs that occur in the third person morphologically mark the present tense forms in English, which are quite divergent taking Dagbani into consideration. For instance, the morpheme used is the suffix -s, which has two variants. Thus, -s and -es, and three spoken realizations. However, past tense marking in Akan, according to Apenteng & Amfo (2014), takes varied forms, whether a complement follows the verb or not, and also the final sound that ends the verb, either a vowel or a consonant (cf. Osam, 2003). When a direct object or an adverbial follows a verb, the past occurs in the form of the lengthening of the final vowel or consonant of the verb stem. This has a low tone. Some examples are **bɔ̀ -ɔ̀** 'hit', **yí-ì** 'took', and **pám̀-m̀** 'sewed'. When the verb is at clause final, the past is realized as a low-tone vowel (**/i/** or /**ì** /) suffix that agrees with the verb stem in terms of ATR harmony. The **-yɛ** suffix has been used to mark the past in the same context. Examples include **ká-è** / **káá-yɛ̀** 'remembered', **bú-ì** / **bùù-yɛ̀** 'broke' claimed by Apenteng & Amfo (2014) (cf. Osam 2003:5). The past tense morpheme on regular English verbs is the suffix {-ed}, which has three variants. These are: **/ɪd**/ when a base ends in /**d**/ and **/t**/; **/d**/ when a base ends in voiced sounds other than /**d**/; and **/t**/ when a base ends in voiceless sounds other than **/t**/ (Apenteng & Amfo, 2014). In conformity with the rules in Akan, the past tense suffix assigned to Akan borrowed verbs is not specific. There is lengthening of the final vowel for verbs with direct objects or adverbials, as in: **…yúùsú-ú atere no** '…used the spoon' **…kòlàpòsí-i nnera** '... collapsed yesterday'. Additionally, in the Asante, the suffix {**-yɛ}** is used for verbs at clause final positions as in: **yúùsúú-yɛ̀** 'used' and **kòlàpòsíí-yɛ̀** 'collapsed'.

The prefix **a-** marks perfect aspect morphologically in Akan (Dolphyne, 1988). Examples of perfect inflection in Akan are the verbs **ɔ-a-kasa** 's/he has spoken', **yɛ-a-didi** 'we have eaten', and **a-muni** 'it has rolled' (Apenteng & Amfo, 2014). Compared to English, English varies between the present and the past, for which the present is marked with have/has + the past participle (en) form of the verb, whereas the past is shown by had + past participle form of the verb. Examples are 'Mary has eaten' and 'I had worked'.

The prefix {re-} marks progressive aspect morphologically in Akan. In the Asante dialect, according to Apenteng & Amfo (2014), the vowel before the verb stem is lengthened as a substitute for the re- progressive aspect. Some examples are found in the forms: **mere-kasa** pronounced as **/mɪ-ɪ-kasa/** 'I am talking', **ɔ-re-muni-muni** pronounced as **/ɔ-ɔ-muni-muni/** 'she/he is rolling', and **wo-re-didi** pronounced as **/wu-u-didi/** 'you are eating'. The English progressive form is morphologically marked with the present tense form of the verb + -ing suffix. English marks progressive on dynamic verbs. These verbs include activity verbs, process verbs, verbs of bodily sensation, transitional event verbs, and momentary verbs. Some examples are 'slic-ing', 'chang-ing', 'feel-ing', 'arriv-ing', and 'tap-ing' (Quirk and Greenbaum 2000: 46–47), cited in Apenteng & Amfo (2014). A borrowed stem is prefixed with the progressive affix re- which is realized by lengthening the pronoun in the NP subject position. This is confirmed by Osam (2004), cited in Apenteng & Amfo (2014), that Asante speakers of Akan realize the progressive prefix by lengthening the vowel of the preceding syllable. In the case of the borrowed verb, their data show that pronouns, progressive aspects, and the borrowed verbs combine as an entity. This obeys the Akan grammar rules. In the source language (English), however, only the verb and progressive suffix are combined. The pronoun occurs

separately from the verb and its inflection. This observation is a fact and true about Dagbani; just that, Dagbani takes different forms to express the progressive aspect. The following depict how the progressive aspect is marked on Akan loan verbs.

(10) a) **ɔ̀-ɔ̀-dɛ̀kùlétí**
3SG-PROG-decorate
'S/he is decorating'

b) **ɔ̀-ɔ̀-dɔ̀ɔ̀gyí**
3SG-PROG-dodge
'S/he is dodging'

The perfective aspect shows that the action has taken place over a period of time and has been completed. The imperfective aspect, on the other hand, describes ongoing (progressive) actions as just seen above and habitual actions or events described by the verb (Lawer, 2017).

2.4.2 Inflection in Ga

Nouns are typically thought of as a category of words that allude to the names of people, places, or things. In order to distinguish between the various types, nouns in Ga, for instance, are grouped together, much like in other languages. In Ga, nouns are grouped into **kɔsoaŋgbɛi** 'proper noun', **kwamaŋgbɛi** (common noun), **kɔɔyɔɔgbɛi/Gbɛi ni anaaa** 'abstract noun', **Gbɛikushao** 'collective noun', etc. (Doku, 2019), etc. Names of people like **Adole** and **Adjei**, names of places like **Ada** and **Ga**, and names of things like **Saŋɔ** and **Kpeeshi,** 'the names of Accra's lakes', and others which are proper nouns in Ga, are examples of names of people, things, and places. Abstract nouns as **miishɛɛ**

'happiness' and **toiŋjɔlɛ** 'peace', common nouns as **omɔ** 'rice' and **onufu** 'snake', and the collective noun **mlɛshɔŋ** (ensemble) and **shia** (sand) (Doku, 2019). A morphological noun is seen as a lexical category in some languages that may inflect for case, number, or gender. In Ga, nouns can be morphologically defined as the lexical category that can inflect for number, as in **akutui enyɔ kɛ shɛ kome** 'two oranges and one sugarcane' (Doku, 2019). This means that the suffix -i in akutui marks plurality.

Given that single and plural nouns differ in the Ga language, numbers can be considered an obligatory, inherent category. Similar to the Akan, Ga also has distinct plural morphemes, according to Osam (1993) and Dolphyne (1988). All of these plural morphemes, in contrast to the two languages indicated above, are suffixes.

Adjectives in Ga can be divided into two categories, according to Ollennu (2014): derived and basic adjectives. Derived adjectives are mostly those adjectives that are obtained from verbs through reduplication and lengthening of the final vowel in the verb's stem after the reduplication. On the other hand, the fundamental adjectives, or what Amfo et al. (2007) refer to as deep-level adjectives, are those that are not derived from other lexical categories, such as (tiny, short, or white) for English sake. The Dagbani adjectives, which are not derived words like **kɔɣu** 'slim', **biɛɣu** 'ugle', **jia** 'short' and so on, support their notion that an adjective has a deep level. The study examines the fundamental makeup of adjectives in Ga as well as the procedures through which they are inflected. When an adjective is used in an attribution sense, it modifies the head noun in the noun phrase by coming after it, but when it is used in a predicative sense, as

demonstrated by Ollennu (2014), it modifies the verb in the verb phrase (see Afreh, 2006).

The property idea of adjectives is discussed by Campbell (2017) as terms that syntactically fit with what are classified as adjectives and may alter a noun in a noun phrase. As a result, attributive modification helps identify the noun referent. She asserts that terms from this category can be found in three of the four fundamental semantic classes of property notions, including age, value, and color (cf. Dixon, 2004). The Campbell submission is correct in the sense that nouns in noun phrases can be modified by terms from classes or groups other than adjectives (cf. Ziblim, 2018:58). This submission is crucial to this current study because it provides a clue for the analysis.

In contrast to nouns, verbs in a language have more monosyllabic, monomorphic CV than disyllabic and polysyllabic stems, as confirmed by Campbell (2017). Examples of monosyllabic stems are **ju** 'bath' and **fo** 'carry'; disyllabic stems are **tsine** 'sneeze' **gumɔ** 'peel', while some polysyllabic stems are **doŋkɔ** 'to model', **fliki,** 'to fly' in the Ga language.

The Akan verb **bra,** 'come,' is the source of the morpheme **bɛ**, which represents the future tense in Akan (Dolphyne, 1988). The basic form of the verb together with affixes can be used to create the future tense in Ga. Adjei (1999) as cited in Doku (2019) uses tense to differentiate future from non-future. This is because the Ga language has future tense that is determined by **baa-**. In contrast to English, which expresses future time through modal verbs like (will, shall, and may). This English assertion is consistent with Dagbani, since

Dagbani lacks inflectional signals for future tenses. The future tense prefix **baa-** is a blend of the verb **ba** and the future marker **aa-** to obtain the **baa-** protests by Adjei (1999).

In terms of verb morphology, the Ga verb is composed of the lexical verb head plus several clitics and inflectional affixes that encode the pronominal subject as well as different tense, aspect, mood, and polarity values (Campbell, 2017). The verb head itself is the only component of the verb that is required. A deictic auxiliary verb, a future, progressive, subjunctive, or perfect prefix, and a pronominal clitic may come before this verb head. The iterative/distributive and habitual suffixes, as well as the negative and habitual suffixes, can come after the verb head. Campbell (2017) divides bare verb interpretations into three groups. The first type includes verbs that have been interpreted in the past. These include dynamic verbs like **ŋma** 'write' and **wo** 'wear', as well as verbs that are either punctual or instantaneous (achievement verbs) like **yi** 'beat' and **na** 'see', or they can be durative activity and accomplishment verbs, as confirmed by Doku (2019). For example, while **e-na** translates to 'she/he/it saw', **amɛ-sara** interprets 'they visited'. This means that, the pronouns **e-** and **amɛ-** are written alongside the verbs; **na** and **sara** in the autograph of Ga. Hence, they are inflected with the pronouns to get the past form of the verbs. This assertion is completely different in Dagbani. The manner in which such a phenomenon operates in Dagbani shall be discussed subsequently in chapter 4.

However, it has been discovered that there is no inflection in the past tense, which is the only tense used in the Ga language (Campbell, 2017). Thus, unless inflections are added to indicate otherwise, it is presumed that every verb in its root form in Ga is in the past,

as supported by Doku (2019). This is not the case with Dagbani, as the past tense of verbs in Dagbani are marked implicitly and explicitly.

2.4.3 Inflection in Dangme

This sub-section discusses inflections in Dangme. According to Caesar (2012) the form '**ngɛ...e** or **hii…e** is a discontinuous auxiliary verb that combines with the independent verb to mark the progressive aspect. Complements of transitive verbs are pre-posed before the verbs, while **-e** is suffixed to the verbs to express the progressive in Dangme'. Caesar attests to this with the below examples in bold.

(11) a. **Dèdé ngɛ̄ là-é.**
Dèdé be.at sing-PROG
'Dèdé is singing.'

b. **Bàbá hìí pà gbè-é.**
Bàbá be.at: river beat-PROG
'Bàbá is fishing in the river.' (Caesar, 2012: 20)

It is observed from the above that while the verb in example 11a is intransitive, which shows the act of singing, an ongoing event, example 11b is rather transitive, which shows the act of fishing, an ongoing event as well. This is because it has an object, **pà** 'the river' occurring in between the verb **gbè-é** 'fishing' and the modal **hìí** 'is'. Caesar (2012) observes that the interpretations of examples (11a & b) involve the use of the progressive aspect. The focus here is on the functions of the inflectional suffixes **-é** in the words **là-é** 'singing'**,** and **gbè-é** 'fishing', which express progressive and/or imperfective. That is the

reason for those words being bold. Consequently, **-é** is a progressive or continuous, and/or imperfective marker in the various words in the Dangme data above. Caesar further discusses that the habitual marker **-ɔ** sometimes metamorphosis, as [**-i**] or [**-a**], attaches to the verb stem. This functions or marks habitual in the Dangme verbs. The below for instance proves Caesar's opinion.

(12) a. **È** **bá-á.**
3SG come-HAB
'He comes.'

b. **È** **sĩ̀- í.**
3SG fry-HAB
'He fries' (Caesar, 2012: 20)

2.5 Inflection in non-Ghanaian languages

This sub-section discusses relevance literature on some non-Ghanaian languages such as Selogudigan dialect in Indonesia, German, Arabic, English, Igbo and others.

According to how the main word classes are affected, Katamba (1993) divides the features of the inflectional category into groups. The characteristics he refers to are configurational, inherent, and agreeable. According to Katamba, verb tenses, aspects, and moods are examples of the inherent qualities of verbs. Regarding the agreement qualities, he discusses how several languages include verbs with agreement markers that are typically chosen based on the features of other words in the same composition. The agreement qualities have to do with nouns and other elements like articles and adjectives indicating agreement in gender and/or number. The intrinsic attributes of nouns include number, gender, or class. The Dagbani language can use these Katamba-proposed

features since words in different classes have syntactic agreement and undergo inflections.

According to Newya (2013) who examines inflection in the **Imilike** dialect of the Igbo language with emphasis on the verb inflection, verbs can be inflected for tense/aspect, mood and polarity in **Imilike**. Newya (2013) postulates that an inflections can thus summarily be defined as a morphological process by which a word is adjoined with an affix to undergo a pattern of change to express a grammatical and syntactic relation in terms of case, number, gender, person, tense/aspect and polarity. In line with this, Agbedo (2000:89) cited in Newya (2013:01) that inflectional affixes mark gender, case, tense, number, aspect, mood, person and voice. He observes that inflections are more of relevant in syntactic analysis than morphology.

Joseph (2023) observes that The Igbo term for affix is **mgbakwunye**. It works with the verb root to modify the meaning of the verb root. It could be prefix, suffix or interfix. The Igbo term for prefix is **nganiihu**, suffix is **nsonaazụ**, while interfix is **nnọneetiti**, one or more verbs could be prefixed, suffixed or interfixed to form other form or variant of the root word. In his view, inflection is a word-formation mechanism that expresses different grammatical categories such as tense, mood, voice, aspect, person, gender, number and case. Inflectional morphology is often realized by the concatenation of bound morphemes (prefixesand suffixes) to a root form or stem, but non-concatenative processes such as ablaut and infixation are found in many languages. According to Joseph (2023) verb inflection in Ngwa a dialect of Igbo serves to expand meanings and enrich the

information conveyed within a sentence, providing important details about an action, its participants, and the context in which it takes place. This system of inflected verbs in Ngwa dialect of Igbo language makes it possible to express complex ideas more efficiently and accurately, facilitating effective communication between speakers (Joseph, 2023:42). This author observed that different verbs and how their inflected forms express different grammatical categories such as tense, person, number, gender and so operate in the Ngwa dialect of Igbo. He as a result used some verbs such as; **ga, bia, me, de, ri, kpe**, to exhibit present and past tenses in the dialect as follow: **ga** 'go' + **ra** → **gara** 'went', **bịa** 'come + **ra** → **biara** 'came', **me** 'do'+ **la** → **meela** 'done/did', **de** 'write' + **re** → **dere** 'wrote' **ri** 'eat' + **la** → **riela** 'eaten/ate', **kpe** 'pray' + **la** → **kpela** 'prayed' and many more especially the other aspects of grammar mentioned.

Similarly, Ballard (2013) defines inflection as the process of word production in linguistic morphology wherein a word is altered to reflect several grammatical categories such tense, case, voice, aspect, person, number, gender, mood, animacy, and definiteness. Stated differently, inflection is the process of creating new words by adding elements to the root form of a word in order to convey grammatical meanings.

One of the primary morphological processes that adds an affix to a word is inflection; an inflectional affix adds a specific grammatical function to a word without altering its category or even creating a new word. The inflected forms develop into different forms of the same word (Haspelmath & Sims 2010).

A study by Andayani et al. (2022) discusses the patterns and kinds of prefixes and suffixes of the Selogudigan dialect, a Javanese dialect used by the Selogudig society

living in the Probolinggo district of Indonesia. It is realized based on their analysis that there are four significant inflectional prefixes and eight significant inflectional suffixes used in the Selogudigan dialect. These prefixes are **N-, i-, sə-, a-**. The prefix **N-** has allomorphs of **m-, n-, ŋ-, ɲ-**. On the other hand, the suffixes realized are **-i, -an, -ane, -ni, -ən, -nɔ, -ɔnɔ, -e**. These are testified in the data following: **[tuku]** 'buy' → **[ituku]** 'to be bought', **[wɔʧɔ]** 'read' → **[mɔʧɔ]** 'to read', **[dulaŋ]** 'feed' → **[ndulaŋ]** 'to feed', **[kerIm]** 'send' → **[ŋerIm]** 'to send', **[ʧatət]** 'note' → **[ɲatət]** 'to note', **[paŋan]** 'food' → **[paŋanan]** 'food', **[anaʔ]** 'child' → **[anaʔe]** 'the child', **[paja]** 'tired' → **[pajaʔan]** 'often tired', **[tolIs]** 'write' → **[tolIsən]** 'write it', among others. The result of this study implies that the affixes that form the morphological pattern of Selogudig vocabularies are often pronounced differently than the original affixes. Though there are several other affixes observed, they seek to alter the word class of the root morpheme of the Selogudigan dialect which are not entertained in this study because that is not the study's focus.

Both prefixes and suffixes as kinds of affixation are chosen because they are often used in the Selogudigan dialect, just like some of the Ghanaian languages (Kwa) that use prefixes and suffixes. However, the observation here is different in terms of the Mabia languages, especially Dagbani, which operate with only suffixes.

Andayani et al. (2022) identify some inflectional morphemes Selogudigan dialect as prefixes and suffixes and their functions as well. Below are some examples:

Table 3: Some Noun inflectional Prefixes of Selogudigan Dialect

(13)	Root	Gloss	Prefix	inflected words	Gloss
	[dinɔ]	'day'	**sə-**	**[sədinɔ]**	'a day'
	[miŋgu]	'week'	**sə-**	**[səmiŋgu]**	'a week'

(Andayani et al., 2022: 213)

It is shown in the above data that the prefix **se-** serves as indefinite article used in Selogudigan Dialect. The function of the prefix **se-** is to indicate the singular number in the Selogudigan nouns. Usually, it does not alter the word class of the root. That is to say, the word class (noun) of the root word remains a noun even when inflected. For instance, **[dinɔ] → [sədinɔ], [miŋgu] → [səmiŋgu],** etc. It can be observed that it is only affixation as a morphological process that occurs in the above inflectional process of the Selogudigan dialect.

Table 4: The Noun inflectional Suffixes of Selogudigan Dialect

(14)	Root	Gloss	Suffix	inflected words	Gloss
	[əmaʔ]	'mother'	**-e**	**[əmaʔe]**	'the mother'
	[anaʔ]	'child'	**-e**	**[anaʔe]**	'the child'
	[buku]	'book'	**-e**	**[bukuwe]**	'the book'

(Andayani et al., 2022: 215)

The suffix **-e** functions as a definite article for the noun in the Selogudigan dialect. For example, **[əmaʔ] → [əmaʔe], [anaʔ] → [anaʔe]**, etc.

Adjective inflectional morphemes are also identified by Andayani et al. (2022) in a Selogudigan dialect and in their study. The table below buttresses their stand:

Table 5: Some Adjective inflectional Prefixes of Selogudigan Dialect

(15)	Root	Gloss	Prefix	inflected	Gloss
	[gɛgɛr]	'rowdy'	**ŋ-**	**[ŋgɛgɛr]**	'often rowdy'
	[lamaʔ]	'impolite'	**ŋ-**	**[ŋlamaʔ]**	'to be impolite'

(Andayani et al., 2022: 213)

Based on the above data, the prefix **ŋ-,** as mentioned earlier, is an allomorph of the prefix **N-**, whose function is to add more meaning to the adjectives. In this case, the affixation does not change the word class of the root but rather maintains the word category as an adjective when the root word is inflected, as in the words: **[geger] → [ŋgeger], [lamaʔ] → [ŋlamaʔ],** etc. however, meanings of the adjectives are rather modified. Below are examples for clarification.

Table 6: The Adjective inflectional Suffixes of Selogudigan Dialect

(16)	Root	Gloss	Sufffix	inflected	Gloss
	[gəʤe]	'big'	**-an**	**[gəʤejan]**	'bigger'
	[adɔ]	'far'	**-an**	**[adɔwan]**	'further'
	[ʧiliʔ]	'small'	**-an**	**[ʧiliʔan]**	'smaller'
	[diluʔ]	'short'	**-an**	**[diluʔan]**	'shorter'

(Andayani et al., 2022: 215)

As it can be testified in Table 6, **-na** functions as the comparative marker of the adjective system of the Selogudigan dialect.

In the work of Andayani et al. (2022), verbal inflectional morphemes such as prefixes and suffixes in the Selogudigan dialects are identified in the below illustration. The role these verbal inflectional morphemes play in the Selogudigan dialect is likewise highlighted underneath:

Table 7: Some Verb inflectional Prefixes of Selogudigan Dialect

(17)	Root	Gloss	Prefix	inflected	Gloss
	[tolIs]	'write'	**n-**	**[nolIs]**	'to write'
	[tandUr]	'plant'	**n-**	**[nandUr]**	'to plant'
	[tamba]	'add'	**n-**	**[namba]**	'to add'
	[siram]	'flush'	**ɲ-**	**[ɲiram]**	'to flush'
	[ʧatət]	'note'	**ɲ-**	**[ɲatət]**	'to note'
	[pɛgʰəʔ]	'hold'	**m-**	**[mɛgʰəʔ]**	'to hold'
	[buwaʔ]	'throw away'	**m-**	**[mbuwaʔ]**	'to throw away
	[ombe]	'drink'	**ŋ-**	**[ŋombe]**	'to be drunk'
	[gawe]	'make'	**ŋ-**	**[ŋgawe]**	'to be made'
	[buwaʔ]	'throw away'	**i-**	**[ibuwaʔ]**	'to be threw away'
	[tolIs]	'write'	**i-**	**[itolIs]**	'to be written'
	[wɔʧɔ]	'read'	**i-**	**[iwɔʧɔ]**	'to be read'
	[kɛkɛt]	'fight'	**a-**	**[akɛkɛt]**	'to fight'

(Andayani et al., 2022: 213)

It is observed that deletion of certain segments has been effected before the addition of the morpheme (prefix) **N-** to most roots to produce the inflected words. But for most roots, the prefix **N-** has been added straight forward to some existing roots. It is realized again that **n-, ɲ-, m-, ŋ-, i-, a-** each preceded the inflected words in the data. It is only **i-, a-,** and **N-** that are the prefixes on their own, but **n-, ɲ-, m-, ŋ-** all serve as allomorphs of the morpheme (prefix) **N-**. Each of them occurs in a specific phonological environment. Thus, the allomorphs occur because of the initial sound of the roots attached by the prefix **N-**. Such melting occurs in a homorganic (cf. sub-sec. **2.6.1.1.1**) manner in the Selogudigan dialect (Andayani et al., 2022). For examples: [**paŋan] + N- → [maŋan], [tolIs] + N- → [nolIs], [pegʰəʔ] + N- → [megʰəʔ]**. All the allomorphs of the prefix **{N-}** function as the makers of the verb, either active transitive or intransitive. The function of the prefix **i-** is as the maker of the passive verb in the Selogudigan dialect. The roots, which are verbs, can be reformed into passive verbs if they are attached to the prefix. An example is **[pegʰəʔ] → [ipegʰəʔ].** The function of the prefix **a** is to mark intransitive verbs. Examples include **[kɛkɛt] → [akɛkɛt]**, etc. Below is a table of verbal suffixes.

Table 8: The Verb inflectional Suffixes of Selogudigan Dialect

(18)	Root	Gloss	Sufffix	inflected	Gloss
	[ombe]	'drink'	**-ni**	**[ombɛni]**	'drink it'
	[pɛgəʔ]	'hold'	**-ən**	**[pɛgəʔən]**	'hold it'
	[gəpUʔ]	'hit'	**-ən**	**[gəpoʔən]**	'hit him'
	[wɔʧɔ]	'read'	**-nɔ**	**[wɔʧɔʔnɔ]**	'read it'
	[tolIs]	'write'	**-nɔ**	**[tolIsnɔ]**	'write it'

[tamba]	'add'	**-ɔnɔ**	**[tambaɔnɔ]**	'add it'
[tolIs]	'write'	**-ɔnɔ**	**[tolIsɔnɔ]**	'write it'

(Andayani et al., 2022: 215)

The suffixes **-ni, -ən, -nɔ,** and **-ɔnɔ** all serve as imperative markers that issue command in the verbal system of the Selogudigan dialect as far as the data is concerned.

In consideration of the study by Aini et al. (2015), their work discusses the Selogudigan dialect's affixation. From a morphological perspective, their article focuses on the Selogudigan word repetition. In terms of affixation, it links the repetition with the suffix **-an**. It splits the discussion into the repetition of a word with **-an** and without the suffix. In this case, Aini's research is different from Andayani's work and that of this current one. Though they both worked on the Selogudigan dialect. The research of Andayani et al. (2022) is relevant and related to this current research in manner that it provides an in-depth discussion of the use of affixes in general and the function of some inflectional affixes. The research also describes the morphophonemic process of the allomorphs of the nasal prefix occurring in homorganic manners. This current study, however, focuses on inflectional processes in Dagbani.

Schlücker & Hüning (2009) point out that while compounds and phrases clearly differ from one another formally, their semantics and pragmatics cannot be distinguished. They contend that when determining whether an A+N combination is a compound or phrase in German, pragmatics and semantics cannot be used as deciding factors.

2.6 The Morpho-phonological processes

This section introduces the likely occurrences during inflection. That is to say, I focus on what happens when inflectional morphemes are attached to base words. Thus, the morphology-phonology interface. The resulted words undergo some processes termed as phonological processes for reason of well-formed grammar in lexical configuration.

2.6.1 Phonological Processes

The phonological process is a common phenomenon in the phonology of words in natural languages. The phonological process is the change in sound in utterances due to certain conditions. The process involves changing from different to the same, which is assimilation; the change from similar to different is dissimilation; the omission is the omission; and the ordering of sounds changes (Lass, 1998, cited in Wibowo, 2012). Among the phonological processes that shall be studied are assimilation and syllable structure processes. (cf. Diamanti et al., 2014:3; Kpodo, 2015:120–136; Adomako & Issah, 2016:57–64).

2.6.1.1 Assimilatory Processes

Assimilation is the influence drilled by one sound segment upon the articulation of another, such that the sounds become alike or more identical (Wibowo, 2012, cites Crystal, 1991), or modification of sounds in order to make them more similar to some other sounds in their neighboring environment (Katamba, 1989, mentioned in Wibowo, 2012) (see Saah, 2007:100; Spencer, 1996). ‘A phonological process by which one segment, the target, takes on a feature or a set of features of another segment (i.e., the

trigger), within a specified domain is referred to as assimilation' (Negash, 2015:242). The vast majority of language assimilation processes occur between strictly adjacent segments, but some languages display long-distance assimilation effects. 'Phonetically, local assimilation may be attributed to the minimization of articulatory effort (i.e., to avoid unnecessary shifts in stricture or place of articulation within a sequence of segments).' (Youssef, 2013:23, as cited in Negash, 2015:242). The researcher further discusses that assimilation includes partial engagement, in which one consonant becomes more similar but not identical to a neighboring consonant, and total assimilation, in which the adjacent sounds become identical, forming false geminate; sequential consonants occur one after the other. Assimilation involves: palatalization, that is, the velar consonant is made partly in the palatal region; labialization (rounding); voice assimilation; place of articulation assimilation; manner of articulation assimilation; and nasalization (Katamba, 1989, cited in Wibowo, 2012). (see Saah, 2007:101–102). Upon examination of views for the various scholars, I see assimilation as a process that causes a segment to resemble another segment it occurs with, in at least an aspect, as listed above by Katamba (1989), named in Wibowo (2012). Due to the direction of assimilation, there are various kinds of assimilation that Spencer (1996) identifies. These are right-to-left (regressive, anticipatory assimilation) or left-to-right (progressive, perseverative assimilation). (see Wibowo, 2012). Based on this observation, Wibowo (2012) postulates that Indonesian words like **konfirmasi, informasi, and kompensasi** undergo assimilation. In the examples, as the alveolar sound **/n/** is influenced by the labiodental sound /f/, which is regressive as mentioned above, sound **/n/** is pronounced **/ŋ/** because sound **/f/** is labiodental (Wibowo, 2012). Besides being regressive, this process is called

place of articulation assimilation because alveolar sound **/n/** becomes labiodental nasal **/ɱ/** to suit the following labiodental consonant **/f/**. The same case also applies to the word **inventaris,** which is pronounced **/iɱvəntaris/**. An interesting fact is that assimilation goes beyond the change of sounds. In a unique case, it is not the change of alveolars to labiodentals, but the change of alveolar nasal sound **/n/** to become bilabial nasal sound **/m/** and labiodentals fricative sound **/f/** to become bilabial plosive **/p/**. In other words, there is a change of labiodentals to be bilabial. So the words **konfirmasi** and **informasi** are articulated as **/kɔmpirmasi/** and **/impɔrmasi/**. Another interesting thing to analyze might be the addition of sound in such a way to suit the following sound within a lexical item. In words that begin with **/b/** as **'bali'** and **'bandung',** for instance, some Indonesian speakers add **/m/** before the words **bandung** and **bali** to pronounce **/mbali/** and **/mbandunŋ/,** respectively. Regarding the phonological process, this phenomenon might be classified as prosthesis. That is the insertion of the initial segment (Lass, 1998; Wibowo, 2012). However, this is not purely insertion, as the insertion also takes into account what is following. Since the following sound is bilabial plosive **(/b/)**, what precedes this sound is bilabial nasal **(/m/)**. Referring to Wibowo (2012), this is the case of nasalization, or pre-nasalization. That is, a constituent of nasal articulation occurs before or at the initial part of the basic articulation of a segment. In a nutshell, assimilation is mostly related to the place of articulation. This is related to this current study because, in the attachment of the inflectional suffixes to their base or root words, some of these are likely to prop up. Such and related assimilatory issues in the inflectional processes shall be examined in Chapter 4.

2.6.1.1.1 Homorganic Nasal Assimilation (HNA)

The term homorganic, according to Kpodo (2015), is a combination of two words. That is **homo,** meaning 'same' or 'one', and **organic,** meaning 'organ'. Thus, **homorganic** being the blend, meaning 'the same organ' or 'the same place of articulation'. He discusses further that, in homorganic nasal assimilation, whenever a nasal consonant precedes an oral consonant, both the nasal consonant and the oral consonant must be produced at the place of articulation of the oral consonant. Homorganic nasal assimilation is a common phonological rule in many languages around the world, as many researchers attest. In Akan, for instance, the form of the negative marker **/n-/** changes, and that depends on the place of articulation of the initial sound of the verb to which it is prefixed. The negative marker surfaces as **/n-/** when the verb begins with an alveolar consonant but changes to either **/m-/, /ŋ-/, /ɲ-/**, or /**ŋ-/** when the verb begins with either a bilabial, labiodental, palatal, or velar consonant, respectively. The Akan process is exemplified in the following data.

(19)	**Verb**	**Gloss**	**Negative**	**Gloss**
	/sa/	'fetch'	**/n-sa/**	'not fetch'
	/tɔ/	'buy'	**/n-tɔ/**	'not buy'
	/kɔ/	'go'	**/ŋ-kɔ/**	'not go'
	/a/	'get'	**/ɲ-na/**	'not get'
	/fa/	'take'	**/ŋ-fa/**	'not take'

(Kpodo, 2015:126)

According to Negash (2015), nasal consonants are homorganic with a following obstruent in many languages. This process is probably the most common phonological process in languages around the world. Negash (2015). It is a phonological process where a nasal phone **/n/** in Arsi-Bale Afan Oromo assimilates in place of the closely following consonant. The assimilation can be both partial and total, the researcher said. Homorganic nasal assimilation takes place in different environments in Arsi-Bale Afan Oromo. It occurs after **/n/** within the morpheme or when the emphatic marker prefix **/hɪn/** is followed by: (1) stop sounds **/b, m, k, g/** (2) ejective sound **/k'/**, (3) fricative **/f/**, (4) liquids **/l, r/** and (5) semi-vowels **/w, j/**. The assimilation is partial for the stop sound under 1, an ejective sound under 2, and a fricative sound under 3, where they share the place of articulation and liquids under 4 share the manner of articulation. The researcher testifies with the below data to illustrate that the Arsi-Bale Afan Oromo dialects spoken in Ethopia comprise words with partial assimilation of the nasal phone **/n/** to their respective phones.

(20) a) Prefix boundary + word with initial **/b/**

Underlying form	**Output**	**Meaning**
/hɪn + beeka/	**[hímbèekà]**	'he knows'
/hɪn + barbaada/	**[hímbàrbàadà]**	'he wants'

b) Prefix boundary + word with initial **/ m /**

Underlying form	**Output**	**Meaning**
/hɪn + morma/	**[hímmòrmà]**	'he protests'
/hɪn + mulʔata/	**[hímmùlʔàtà]**	'it is seen'

b) Prefix boundary + word with initial **/k/**

Underlying form	**Output**	**Meaning**
/hɪn + kaasa/	**[híŋkàasà]**	'he picks'
/hɪn + kuusa/	**[híŋkùusà]**	'he stores'

d) Prefix boundary + word with initial **/g/**

Underlying form	**Output**	**Meaning**
/hɪn + guba/	**[híŋgùbà]**	'he burns'
/hɪn + guddata/	**[híŋgùdàtà]**	'he grows'

e) Prefix boundary + word with initial **/k'/**

Underlying form	**Output**	**Meaning**
/hɪn + k'aba/	**[híŋk'àbà]**	'he owns'
/hɪn + k'aak'a/	**[híŋk'àak'à]**	'he talks'

f) Prefix boundary + word with initial **/f/**

Underlying form	**Output**	**Meaning**
/hɪn + fajja/	**[hímɲfàjjà]**	'he will be healed'
/hɪn + foojjaʔa/	**[hímɲfòojjàʔà]**	'it will be better'

g) Prefix boundary + word with initial **/l/**

Underlying form	**Output**	**Meaning**
/hɪn + /laala/	**[híllàalà]**	'he sees'
/hɪn + /lalaafa/	**[híllàlàafa]**	'it softens'

h) Prefix boundary + word with initial

Underlying form	**Output**	**Meaning**
/hɪn + rafa/	**[hírràfà]**	'he sleeps'
/hɪn + raasa/	**[hírràasà]**	'he jerks'

(Negash, 2015: 244)

In this, the phonological process occurs at the prefix boundary, as the examples above illustrate, and within the domain of the morpheme, as in **hanba [hámbà],** 'left over'. **dangaa [dáŋgáa]** 'Territory', **sink'ee [síŋk'ée]** 'stick' **hanfala [hámɲfálá]** 'sash'. Based on the generalizations and the illustrative examples of the phonological process of homorganic nasal assimilation in Arsi-Bale Afan Oromo, the situations of this process are as follows:

(21) a. **/nb/** → **[mb]**

b. **/nm/** → **[mm]**

c. **/nk/** → **[ŋk]**

d.	**/ng/**	→	**[ŋg]**
e.	**/nk'/**	→	**[ŋk']**
f.	**/nf/**	→	**[ɱf]**
g.	**/nl/**	→	**[ll]**
h.	**/nr/**	→	**[rr]**

(Negash, 2015:244)

As it can be observed from the data above, the coronal /n/ undergoes the process of assimilation when it combines with an underlying word at the initial position or in morphemes where phonemes, namely: **/b/, /m/, /g/, /k/, /k'/, /f/, /l/,** and **/r/,** occur after **/n/**. In other words, when the alveolar **/n/** in the prefix boundary within the morpheme is followed by a word with initial stops **/b/, /m/, /g/, /k/,** ejective **/k'/,** fricative **/f/,** and liquids **/l/, /r/,** partial homorganic nasal assimilation occurs. The work of Negash (2015) is so relevant to this current research because the current research seeks to explore the noticeable phonological processes in it. Even though Negash's work is on homorganic nasal assimilation in Arsi-Bale Afan Oromo: A Non-Linear Phonology, which is a part of this current research that looks at inflectional processes in Dagbani.

2.6.1.1.2 Vowel Harmony (VH)

Vowel harmony is another common phenomenon in the analysis of lexical items in natural languages, of which Dagbani is one. According to Spencer (1996), a type of assimilation that plays an important role in many languages is called harmony. Vowel harmony has been defined as a phonological process that permits only one set of vowels to appear in a word that has more than one vowel (Gariba, 2017). This usually affects

vowels; hence, vowel harmony. This is found in a wide variety of languages and operates in a number of different ways. Below are illustrations of the vowel harmony in some Hungarian nouns inflected in a case form meaning (amongst other things) 'about, concerning:

(22)	a)	**te:rke:prø:l**	'map'
		si:nrø:l	'colour'
	b)	**u:rro:l**	'gentleman'
		forgo:l	'tooth'

(Spencer, 1996:58)

However, these examples are in broad IPA transcription, not the official Hungarian orthography. Clearly, there is a case suffix that has two allomorphs, **-ro:l/rø:l/**. The first of these has a back vowel, **/o:/,** and the second has the corresponding front vowel, **/ø:/**. Moreover, the front vowel allomorph occurs after stems that have front vowels in (a), while the back vowel allomorph occurs after stems that have back vowels in (b). It is noticed that the vowel of the suffix has assimilated along the front-back dimension to the value of the stem vowel. As it happens, the **/ro:1/** allomorph occurs independently elsewhere in the language, and one traditional way to describe the situation is to say that the underlying representation for the suffix is **//ro:l//** and that in the examples of (a), the suffix vowel is changed from back to front under the influence of the stem. An interesting feature of this process is that it systematically ignores intervening consonants. This is typical of vowel harmony. Such a phenomenon is sometimes referred to as a case of

'action-at-a-distance' Spencer, (1996). However, it is interesting that in genuine harmony systems, the basic process takes place between vowels in adjacent syllables. Much less commonly, we find consonant harmony. One type of language where this crops up with great regularity, however, it is a child's language. For instance, many children go through a stage of 'Velar Harmony' when a coronal consonant at the beginning of a word harmonizes with a velar consonant at the end. Typical examples of this would be those underneath.

(23)
i. **gɔg** 'dog'
ii. **keik** 'take'
iii. **ŋɪk** 'Nick'

(Spencer, 1996:59)

According to Dolphyne (1988), cited in Apenteng & Amfo (2014: 222-223), ATR vowel harmony is operational in the Akan language. What this means is that, in any Akan word of two or more syllables, it is only the vowels of a set that should occur. The two sets are as follows:

(24) **Set I** (Advanced Tongue Root Vowels) - /**i, e, æ, o, u** /
Set II (Unadvanced Tongue Root Vowels) - /**ɪ, ɛ, a, ɔ, ʊ** /

(Dolphyne, 1988: 18 cited in Apenteng & Amfo, 2014: 222)

Some examples are provided below to support the point made above. The examples in **Set I** contain only advanced tongue root vowels, while those in **Set II** contain unadvanced (retracted) tongue root vowels. Consider the below:

(25)	Set I	Set II
	1a. **efie** 'house/home'	1b. **ɛfɪ(ɛ)** 'vomit'
	2a. **o**w**uo** 'death'	2b. **ɛwʊɔ** 'honey'
	3a. **æd**i 'outside'	3b. **ad**ɪ**(ɛ)** 'something'

(Apenteng & Amfo, 2014: 223)

In Dagbani, Hudu (2010) discusses this kind of harmony. He uses that study to define the harmony between the vowels in Dagbani words in relation to the position of the tongue root, Le. He does this by describing whether the vowels are created with an advancement or retraction in the location of the tongue root. While un-advanced (retracted) tongue root [-ATR] vowels are generated with the root of the tongue brought further back from the typical position of the tongue, advanced tongue root (ATR) vowels are formed with the root of the tongue pushed forward. Dagbani has five (5) long vowels and ten (10) short vowels, according to Hudu (2010). He divided them into two categories: [+ATR], which is in one category (I), and [-ATR], which is in another category. They are stated below:

(26) Category I Vowels [+ATR]: **i i: e e: o o:** u u: **ə**

Category II Vowels [-ATR]: **ɨ ɛ a a: ɔ ʊ**

(Hudu, 2010:5)

As a result, vowels that appear in a word will typically be chosen nearly completely from just one of the groups, not from both sets at once. Building up on this ideas, Bodomo (1997) explains that the criterion used in sub-section 2.3.1, example (1) that, the data is mainly morphological. Thus, the stem form of the nouns and their singular and plural

affixes. For instance, the stem forms for 'children' and ‘trees’ are [bi] and [t:ɪ] respectively. The singular affixes -e and -ɛ are therefore needed to realize the full word forms: [bie] and [tiɛ]. This morphological explanation, according to Bodomo, is insufficient. Phonological explanations are therefore necessitated for further clarification. He further explains that, Dagaare has a system of advanced tongue root [ATR] vowel harmony, and the stem vowels, which are [+ATR], need similar suffix vowels; likewise, the [-ATR] stem vowels and their suffix. This explains the differences between **bie** and **tiɛ**. Furthermore, facts about vowel lengthening need to be explained regarding plural formation. It is therefore necessary to note that the stem vowel in most of the Dagaare nouns, such as **bié** ‘child’ and **zié** 'place', must be lengthened to form the plural as **bíírí** ‘children’ and **zíírí** 'places', respectively. Hence the need for both morphological and phonological information to establish the various class systems with Dagaare. This confirms the working hypothesis that the noun class system of Dagaare is a product of the interface between morphology and phonology.

2.6.1.2 Syllable Structure

The syllable structure process is yet another phonological process that refers to violations of some phonotactic constraints that are repaired through the phonological process (Kpodo, 2015). In other words, it is a process that reorganizes and maintains the syllable into an acceptable structural form. Dagbani is one of the languages in which an open-syllable system functions over a closed-syllable system. It is a few syllables that have codas and that usually have nasals or lateral **/l/** at the coda positions. Also, syllabic nasals operate in Dagbani. It has been verified by Olawsky (1999), Hudu (2010), Abdul-

Rahaman (2013), and Nindow (2017) that Dagbani syllable structure permits /m, l. n, and ŋ/ as in CVVN words and a small number of CVN words to occupy coda places (see Fuseini, 2020, and Iddrisu, 2020 too). Additionally, Dagbani displays internal coda places. In words like **kanli** (number countered), **kɔbli** (bone), and **kɔɣsi** (to grow lean or to lose weight), etc. The following segments are permitted in word internal coda positions: **/m, n. m. n. 1, b, r,** and **ɣ/**. Olawsky (1999) argues that Dagbani has two segments that appear in the word final position, and these are **/m/** and **/ŋ/**. In words like **kom** (water), **ʒim** (blood), **nam** (chieftancy), **gbaŋ** (a skin), **sɔŋ** (help), **pɔŋ** (odour), for instance, He further claims that **/l/** and **/n/** do not occur in the word's final position. There are specific vowels in Dagbani that occupy the initial position. In Dagbani, vowel-initial words are either interjections or borrowed words rather than lexical elements. These terms typically start with vowels like **/a/, /e/, /i/,** and **/o/**. Most often, it is in borrowed words that these four vowels occur without consonantal onsets. It is noted in Olawsky (1999:166) that Dagbani has seven different syllable kinds, including V, VC, CV, CVC, N, CVV (with two identical vowels) or CVVN, CVC, V, and VC. I note that, as confirmed by Abdul-Rahman (2013) and Fuseini (2020), the VC syllables identified by Olawsky are either the loans or the interjections. It has been noted that /a/ and /o/ that stand for the V syllable are personal pronouns. The four vowels mentioned before do appear in Dagbani on the onsets without consonants having to be onsets, but only when the words are largely loan words, as was previously indicated. They use words like **anabi** (prophet-SG), **alikalimi** (pen-SG), **alahari** (sunday), which are Arabic words, **abe** (palm nut) from Akan, **imaansili** (generous), from Hausa, **adaka** (box-SG), **arizichi** (treasure-SG), **iin** (yes), **ata** (three), etc. From English, **Itali** is (Italy)**, a** (you-pro.2SG), **o** (he, she,

it-pro.3SG), **Amarika** (America) Fuseini (2020). Additionally, a syllable can consist entirely of a nasal consonant. Thus, the first-person pronoun /n/ in Dagbani is a syllabic nasal, which can allophone either **/m/ or /ŋ/** depending on where the segment that comes after it is articulated. But the labio-velar, labiodental, and palatal nasals such as **/ŋm/, /ɱ/,** and **/ɲ/,** respectively, do not, however, ever serve as a syllabic nasal in Dagbani. In conclusion, Dagbani does not have complex onsets, but it does have simple onsets within a single C, and complex codas are distinguished from simple ones (Fuseini, 2020). Contrary to the Olawsky view about the syllable types in Dagbani, Issahaku (2006), cited in Nindow (2017), avers that there are eight different types of syllables in Dagbani. There are: V, N, CV, CVC, CV:, CV:N, VC, and V:. He discovered that Dagbani's syllable structure is essentially open, confirming that the CV syllable type is unmarked in Dagbani as well as other languages, according to typological observations.

Faso (n. d.) observes that the syllable structure of Kusaal is N, V, CV, CVC, and VC, where the V may be a long or short vowel, a nasal vowel, or an oral vowel. The Kusaal words are made up of one, two, three, or four syllables, rarely four syllables. The division between syllables is always marked with a full stop. CVv and VvC contain a long vowel, represented as Vv here. A sequence of two identical vowels is always realized as one syllable, as are words with diphthongs (for example, **dààʋ̀k** «wood» CVvVC). Faso's assertion is dissimilar to that of Dagbani; however, like Dagbani, Kusaal syllables do not allow any consonant clusters (*CC). In situations of that sort, vowel insertion is resorted to break the consonant clusters in. Faso further discusses that syllable structure changes occur when a suffix is attached to a word. These changes are motivated by a syllable

contact law. Sonority often determines permissible syllable templates in a given language, and it is also a driving force behind many phonological processes and tendencies related to syllable structure. Sonority is generally defined either in an articulatory term, as the degree of openness of the vocal tract, or in acoustic terms, as related to a property such as the intensity of a given segment (Faso, n. d.). However, like Dagbani and other Mabia languages, Kusaal operates with monosyllabic, disyllabic, and multisyllabic words.

2.6.1.2.1 Elision

Elision, as observed by Abakah (2004), is a 'phonological process by which a vowel, consonant, and sometimes a syllable, which is an intrinsic property of a morpheme in an isolated style, is dropped in a combinative style'. Some sounds are so weakly articulated that they no longer have auditory significance, or they may be omitted totally in the stream of running speech in particular, but not exclusively in causal or fast speech (Wibowo, 2012) (cf. Abakah, 2004; Saah, 2007:105). Elision involves deletion of the initial sound of a word (aphaeresis), the internal sound of a word (syncope), and/or the final sound of a word (apocope) (Lass, 1998; Wibowo, 2012). Aphaeresis is the deletion of the initial segment of a word. For instance, there is a loss of /**k**/ before /**n**/ in know /**no:**/ and knife /**naiθ**/. Syncope is the internal deletion or deletion of a segment within a word. For instance, /**sɛkritɛri**/ becoming /**sɛkritri**/ will bring about the deletion of /**ɛ**/. In the same vein, this is realized when a stem and an affix are in contact, or better yet, when the last sound of the first word is the same as the first sound of the second word, like **prime minister /praim/ /ministə/** becoming **/praiministə/**. This also occurs in

Indonesian, as in **Mas Samin, /mas/ /samin/** becoming **/masamin/**. Even though this can bring about a diverse perception by Indonesian speakers as to whether the name is **samin** or **amin,** Apocope is a term used for the deletion of a final segment. For instance, the word **next, /nekst/,** is articulated as **/neks/**. It is observed that the sound /t/ has been lost. Notably, the elision discussed can be classified into sound and syllable. Elimination of syllables can be seen in the pronunciation of words like **universitas** and **klasifikasi**. The words **universitas** and **klasifikasi** are rightly pronounced as **/univərsitas/** and **/klasifikasi/**, but in a given condition, some speakers of the Indonesian language pronounce them as **/unisitas/** and **/klasikasi/,** which mean the same. This means that there is a loss of **/ver/** and **/fi/** in **universitas** and **klasifikasi,** respectively. The examples are illustrated below:

Table 9: Syllable Elision

(27)	Word	Intended pronunciation	Factual pronunciation	Case
	universitas	**/univəsitas/**	**/unisitas/**	syllable **/və/** elision
	klasifikasi.	**/klasifikasi/**	**/klasikasi/**	syllable **/fi/** elision

i. Vowel Elision

Elision occurs on vowels too. The existence of the vowel /ɔ/, for instance, in an adjacent position, some researchers have called it long vowels, such as /ɔɔ/. This brings about the omission of one of the vowels. The word **koordinasi,** for instance, should actually be pronounced **/kɔɔrdinasi/** in Indonesian, but it is sometimes pronounced **/kɔrdinasi/**, meaning /ɔ/ is omitted.

In Akan, as observed by Saah (2007), the possessive pronouns are: **me** 'my,' **wo** 'your,' and **ne** 'his/her.' When these occur before nouns that begin with vowels, the vowel of the possessive pronoun is elided in the articulation. For example:

(28) a. **me adamfo** 'my friend' **m'adamfo** 'my friend'

b. **wo ani** 'your eyes' **w'ani** 'your eyes'

c. **ne aso** 'his/her ears' **n'aso** 'his/her ears'

(Saah, 2007:105).

In the examples in (28), the vowels of the pronouns are elided before the nouns. This is to avoid saying two vowels together. In the Akan orthography, the apostrophe (') is used to indicate that a vowel has elided. Saah's observation is related and relevant to this current study in that the phenomenon exists in the articulation of Dagbani lexical items, especially in noun-adjective combinations. This idea will be examined in Chapter 4 of this thesis.

ii. Vowel lengthening

This section talks about vowel lengthening. This is the recurring of two or more same-vowel sounds within a word. This phenomenon exists in languages and in the inflectional process of Dagbani major word classes too, which shall be examined in the data analyses of this study.

2.6.1.2.2 Epenthesis

This section discusses epenthesis as one of the phonological processes. Epenthesis, according to Kager (1999), is the insertion of a segment into the output of an input that was not in the input form. Dagbani exhibits both vowel and consonant epenthesis, as the situation demands. This segment epenthesis is a repair mechanism in the inflectional process for a well-formed grammatical structure in many languages, including Dagbani.

Lawer (2017) works on compounding in Dangme. As part of his work, some phonological processes are discussed. He discussed that, during compounding like the affixation, phonological processes are frequently initiated. This clearly illustrates how morphology and phonology interact. Assimilation, segment insertion, segment deletion, and prosodic modifications are some of these phonological processes. In certain Kwa languages, compounding initiates phonological processes that are examined in this section.

According to Dolphyne (1988), cited in Lawer (2017), Akan compounds have a number of phonological characteristics, including homorganic nasal assimilation, affix vowel deletion, vowel harmony, tone shifts, and nasalization of voiced stops are some of these phonological processes. She says that because these phonological processes do not occur in phrases, they can be used to discriminate between phrasal constructions and compounds. But this is not the case in Dagbani because, in N-A combinations, be they compound or phrase, some of them do occur, especially during affixation.

Even though the work of Lawer (2017) is on compounding in Dangme, it is so relevant and related to this current topic for discussion, which is inflectional processes in Dagbani.

This is because it provides the basis for the analysis of this current study. As a result, an attempt has been made to find out which of these morpho-phonological processes Dagbani employs in its inflectional processes.

2.7 Chapter summary

This chapter was devoted to providing a literature review on inflectional processes on major word classes. I started by examining the notion of inflection. The general idea of inflection using data from certain languages was covered in this chapter. I also reviewed pertinent literature in the field. A few linguistic processes, including morphological and phonological processes were also covered in this chapter. Affixation is the morphological process that is covered, and homorganic nasal assimilation, vowel harmony, elision, epenthesis, etc. are the phonological processes that the study found. Finally, the study's theoretical underpinnings were also examined here.

CHAPTER THREE

METHODOLOGY

3.0 Introduction

This chapter examines the research methodology used in this study. The research approach and design, data sources and data collection procedures, research site, population, sample size and sampling technique, data collection strategies, the data analysis procedure and ethical issues of the study are all discussed. The chapter is organised as follows: section 3.1 outlines research approach and design. Section 3.2 discusse data source and data collection procedures. Section 3.3 discusses the research site. While section 3.4 discusses the study population, section 3.5 provides sample size and sampling technique. The data collection strategies are discussed in section 3.6. Data analysis procedure and ethical issues of the study are respectively discussed in sections 3.7 and 3.8. Finally, section 3.9 provides summary of the entire chapter.

3.1 Research approach and design

The research approach used for the study is a qualitative. This kind of research approach, according to Dörnyei (2007:129), 'involves data collection procedures that result primarily in open-ended, non-numerical data, which is then analyzed primarily by non-statistical methods'. That is the description of events without the use of numerical data. The research design on the other hand, is mainly descriptive in nature. The process of research involves emerging questions and procedures, data typically collected in the participants' setting, and then analysis inductively (Creswell, 2013). According to Ochieng (2013), to get detailed information on a particular phenomenon, the qualitative

approach is the most appropriate option. The data collection procedures used in this kind of research include elicitation and the native speaker's intuition. In this study, elicitation and a native speaker's intuition are employed, and also relied on both published and non-published documents as strategies for collecting the data.

3.2 Data source and data collection procedures

In this study, two main sources of data were collected: primary and secondary data. Data is called primary if it is collected by the researcher for the first time under controlled conditions, and data become secondary when the data are already collected by a third party other than the researcher, which the researcher relies on for the analysis of the study (Creswell, 2014).

The primary data were collected from Dagbani speakers (facilitators) through observation and spontaneous utterances made by Dagbani speakers as they interact with one another and myself occasionally at social gatherings. The researcher took note of the discourse focusing on the interests of this study. Secondary data were also obtained from available written texts such as Abu-bakari (1988), Olawsky (1999), the Dagbani Orthography Guide (2004), Blench (2004), Adam (2007, 2020), Iddrisu and Issah (2023), etc. to support the study.

3.3 Research site

There are Dagbani speakers all over Ghana. Majority of them are in Northern Ghana. However, the research had been carried out in four communities made up of Bamvim,

Sagnaigu, Savulugu and Tolon. These are communities in the Northern Region of Ghana. These places had been chosen because, they are among communities where the indigenous and custodians of the Tomosili dialect speak.

3.4 The study population

According to Dörnyei (2007:96), population is 'a group of people whom a study is about'. This means that a population is a set of individuals on whom a researcher aims to generalize a research finding(s) on. Population, as posited by Polit & Hungler (1999), 'is the totality of all subjects that conform to a set of specifications, comprising the entire group of persons that is of interest to the researcher and to whom the research results can be generalized' (see Ziblim, 2018:44). Anggraeni (2011) observes that a population is a group of people with determined characteristics. Population for this study was therefore speakers of Tomosili dialect of Dagbani in the northern region of Ghana. The participants were chosen from the Sagnarigu traditional area, a Dabani-speaking community. This is because Sagnarigu is one the indigenous home of the Tomosili speakers of Dagbani, the dialect chosen for this study.

3.5 Sample and sampling technique

Dörnyei (2007:96) describes a sample as 'the group of participants that are actually examined in a study'. And sampling being the 'process of selecting samples from a group or population to become the foundation for studying a population in order to obtain data to address a research problem' **(**Boateng, 2015, cited in Ziblim, 2018:41). A purposeful sampling technique was adopted in the selection of participants for the study. Purposive

sampling is a sampling technique used in selecting respondents because it is the technique needed to serve the purpose of the study. This means that participants were not chosen at random, but rather at the researcher's own will or decision because the researcher believes they possess the needed qualities, such as having practiced knowledge on the subject being investigated, and including them in the sample will enable them provide the accurate and reliable data needed by the researcher. For this reason, the researcher has adopted a purposive sampling technique to aid in the data gathering process in order to provide answers to the research questions of this thesis. It is relied on because it is manageable since a limited number of respondents are used.

Generally, 20 responders were selected across social variables such as: literacy, age, and sex. These variables were used because the researcher considers them as factors affecting word usage in Dagbani. Respondents made up of one primary, two JHS, and two SHS facilitators from Bamvim community. While two primary, one JHS, one SHS, one Bace and one Tace facilitators were selected from Sagnarigu community also, one primary, two JHS, and two SHS facilitators were selected too from Savulugu. Finally, two primary, one JHS, and one SHS from Tolon traditional area were also selected to support the study. These respondents comprised of 15 males and 5 females who are Dagbani facilitators at the various levels of the educational set up because they are among the speakers who poses the linguistic knowledge. The respondents ages range from 30-50 years. The following table displays the distribution of the respondents.

Table 10: Distributions of respondents according to communities and schools.

Community	Basic School	No	Senior High School	No	College of Educ.	No	Total
Bamvim	Bamvim Presby Primary Sharp Brain Academy JHS	1 2	Presby SHS	2	-		5
Sagnarigu	Bagabag Primary School Wurishe JHS	2 1	Tamale SHS	1	Bace Tace	1 1	6
Savulugu	Malja Primary School Watania JHS	1 2	Savulugu SHS	2	-		5
Tolon	Tolon D/A Primary 'A' Watugu D/A JHS	2 1	Tolon SHS	1	-		4
Total	-	12	-	6	-	2	20

3.6 Data collection strategies

The data for this study were elicited through documentation, observation, and native introspection.

3.6.1 Documentation

Documentation is a way of receiving data by gathering information from existing written documents. Anggraeni (2011) refers to it as a method of data collection by studying books, transcriptions, newspapers, advertisements, and magazines, among others. This point of view was confirmed by Gariba (2017) and Fuseini (2020). Some of the written

documents used included Dagbani word classes by Abu-Bakari (1988), Aspects of Dagbani Grammar by Olawsky (1999), Dagbani dictionaries such as Dagbani-English Dictionary by Blench (2004) and Mahama (2007, 2010), Some Word Formation Processes in Dagbani by Adam (2007), Hudu (2010), Dagbani: An Introduction for Beginners (2020), Fuseni (2020), Iddrisu (2020), to mention a few. It was realized in some of these doccument that some phonological processes that this study would be analyzing were revealed in the diction of some writers. The data gotten by this means were therefore considered primary because the data (inflected words) were not presented in a form of linguistic analysis as Nindow (2017) too observed.

3.6.2 Observation

Observation as one of the basic means of data collection was used. Two lessons each of the Dagbani facilitators selected were observed on Dagbani morphology (grammar) in a manner that the researcher positioned himself outside but in a way as to be able to see, hear, and listen to what transpired between the facilitators and their learners. Utterances such as sentences and the rest were taken note of by the researcher focusing much on the concept, inflection. The researcher later confronted each one of the facilitators for post observation discussions. A long list of the inflected words of the major word classes of Dagbani was made of the discussions and sent to a language expert for confirmation and re-shaping before usage.

3.6.3 Researcher's native intuition

As a native speaker of Dagbani, the native intuition was trusted to fetch some of the necessary data for this study. The researcher constructed sentences and phrases that focused on the phenomenon of the thesis, inflection. In some of these sentences and phrases, the occurrence of some inflectional morphemes in some of the major word classes led to the omission of some segments to ensure well-formedness. Whereas segments were inserted in some cases, others went through some assimilation processes to avoid ill-formed inflected words in the language, as Fuseini (2020) also observed in a study on nominalization in Dagbani. Also, when the researcher interacted with Dagbani speakers both in public places and at home and elsewhere, the researcher's intuition as a native speaker got some data that were pertinent to this study. My native speaker's intuition was a major source of the data for this thesis. This data collection technique was therefore employed because of its simplicity and also an economical way of gathering a relatively large amount of data. It is also more natural compared to other strategies.

3.7 Data analysis procedure

Data analysis is one of the most essential part of any research. Evans et al. (2011) obsetrves variables and categories as concepts in every aspect of data management and presentation of result(s). This explains that, the concepts reflect ones understanding of a research data. For instance, one can comprehensively analyse a research data when occurrenses are asigned to classifications (Evans et al., 2011). After the data had been collected, the next was coding and classification based on the research objectives and the grammatical categories such as nouns, adjectives, and verbs. The words' endings as well

as the phonological issues such as assimilation and syllable structure processes, and others were aslo considered. The data were then analysed based on the research design for findings. The analysis involved interpretation of the data collected through analytical and logical reasoning to determine patterns or trends in the inflectional processes.

3.8 Ethical consideration

It is worthy to consider research ethics when conducting research of this kind. Research ethtics are moral principles that guide researchers on how to carry out researches. The principles are used to shape research rules and regulations agreed upon by the researcher and the respondent(s). Ethical issues play a fundamental role in the data collection process. For this reason, the researcher opened up to the respondents on the need for the information to set their minds on the confidentiality of their responses. According to Creswell (2009), research ethics must be adheared throughout a research process, from research problem to solutions (findings). Creswell further discussed that it is necessary respecting vulnerable groups (respondents) rather than putting them in danger. Creswell also clarified that, though, some individuals might not want their identity to be kept secret. In line with this, the researcher did not hide anything from the respondents, but made it clear to them that the research was for academic purposes and that their identity was protected. Also, the researcher sought permission from the respondents by providing consent notices to the research participants before the study began. Throughout the study, respondentnts' privacy was respected. Consequently, the researcher considered all research directives by maintaining confidentiality, openness, honesty, and responsibility, as well as seeking permission from the required informants.

3.9 Chapter summary

This chapter discusses the sources of data, data collection strategies, and how the research was conducted. The study was to be achieved by identifying inflectional morphemes, discussing the functions of these morphemes, and finally accounting for some morpho-phonological processes that occur in the inflectional processes of Dagbani main words. It also considered the methods and procedures followed to answer the research questions posed in the study. The methodology chapter was discussed in the following order: research approach and design; research site; population; sample and sampling technique for the study; data collection strategies; and data analysis plan. Finally, it is exhibited in the chapter how participants' rights were respected throughout the study.

CHAPTER FOUR

SOME INFLLECTIONAL PROCESSES IN DAGABANI

4.0 Introduction

This chapter presents data analysis on some inflectional processes in Dagbani major word classes. The study seeks to identify and investigate the grammatical functions of the inflectional morphemes and to account for some of the morpho-phonological processes that occur in the process of attaching these inflectional morphemes in Dagbani. The chapter is structured as follows: Section 4.1 presents the various inflectional morphemes and their associate functions in the major word classes of Dagbani; Section 4.2 discusses the morpho-phonological processes that occur in the inflectional processes of Dagbani major words; and Section 4.3 summarizes the entire chapter.

4.1 Inflectional morphemes and their functions in Dagbani major word classes

This section discusses inflectional morphemes and their functions in the major words of Dagbani. Dagbani nouns, adjectives and verbs are noted for their inflectional marking. Prototypically, as the noun and the adjectives inflect for number (singular and plural), the verbs inflect for aspect as will later be shown in this chapter.

4.1.1 Dagbani nominal inflections and their functions

This sub-section discusses Dagbani nominal inflections. The nominal inflections are the various inflections attached to nominal roots or stems for grammatical purposes such as the marking of number, thus singular and plural formations of Dagbani nouns. However, it is necessary talking about the noun-class system in the discussion of nominal

inflections of a language. The concept of the noun-class system has been given considerable attention. However, there are still differing opinions in the literature about how many noun classes Dagbani has. For example, Benzing (1971), Wilson (1972), Abu-Bakari (1978), Hyman (1993), Olawsky (2004; 1999), and Issah (2013) agreed that Dagbani nouns fall into five groups according to the noun class system. Nonetheless, Hudu (2005) offers a nine-class proposal for a more complex version of Dagbani's nominal class system. He acknowledges, nonetheless, that there are possible subclasses within his classification. The most prevalent kind of nouns that 'exhibit morphological complexity in that they are composed of a root and a suffix' are countable nouns (Olawsky, 2004:128). He goes on to say that a noun's root is not a standalone entity and that the suffix that is integral to the root is what transforms it into a phonological and grammatical word (p. 129). Since the confusion of number and noun class in nominal affixes is known from various related languages, this root-suffix analysis is easily observable and a well-established fact in the literature (Nsoh, 1997, 2011; Dakubu, 1996). The noun singular and plural suffix pair classifications in Dagbani are therefore exemplified as follows:

Table 11: Dagbani nominal inflectional morphemes

The table below constitutes singular and plural morphemes of nominal inflections:

S/N	SINGULAR MORPHEME	PLURAL MORPHEME
1	-a	-ba
2	-Ø	-di
3	-Ø -i -di -gu -li	-a
4	-li	-ya
5	-a -e -o -u	-hi
6	-u -ɣu -ga	-ri
7	-a -ga -gu	-si
8	-o -gu	-ti
9	-ba -a -e -i -u -Ø	-nima

(Hudu, 2014b)

Nominal inflections do not function in isolation, even when identified. This explains that before the function of a nominal inflectional morpheme is examined, it has to be attached to its root or base word. These inflections (suffixes) identified above are individually linked to their noun stems based on the classes and sub-classes of the nouns. Thus, these nominal inflectional suffixes together with their roots that aid in exposing their functions are illustrated below based on the categorizations such as: human animate, human animate body parts, non-human animate, both human and non-human animate, animate, human animate, together with some loanwords (nouns). Above all, some are based on their endings, thus the suffixes they end with. The singular and plural suffixes are, however, needed to realize the full forms of singular and plural nouns in the language. Like the nominal singular suffix, the plural one too appears in different variants such as **-a, -ya, -ba, -hi, -ri, -si, -ti** and **-nima** and the singular suffix being **-Ø, -a, -ba, -i, -di, -ga, -gu, -li, -e, -o, -u, and -ŋu**. The choice of any depends on the nature of the stem. In Hudu's (2014b) opinion, a set of suffixes serves as the basis for the classification of Dagbani nouns, with the outcome that nouns within a set of classes assume singular and plural nominal suffixes, as testified by Bodomo (1997) in Dagaare. For instance, as observed by Benzing (1971, Wilson (1972), Olawsky (1999), and Hudu (2005) in Hudu (2014b), nouns that take the singular nominal suffix **-li** also take the counterpart plural nominal suffix **-a** and thus belong to a unique set of classes. Consequently, the nominal suffixes form bases for putting nouns into classes. However, there are instance Dagbani nouns lack overt singular markers although have plural morphemes. In the noun morphology where there is no overt singular morpheme, **Ø** is used as a morphological

representation of the singular markers. These are subsequently display with their stems as below:

Table 12: Some non-human animate and inanimate regular nouns that end in nasal /-ŋ/ but assume **-Ø** and **-a as singular and plural number markers, respectively**

The table below depicts data of some non-human animate and inanimate regular nouns that end in nasal **/-ŋ/** but assume **-Ø** and **-a** as their singular and plural number markers, respectively

	Nominal root	SG Suffix	Gloss	PL Suffix	Plural	Gloss
(29)	a) **dundɔŋ**	**-Ø**	'compound'	**-a**	**dundɔn-a**	'compounds'
	b) **bunzɔŋ**	**-Ø**	'pen'	**-a**	**bunzɔn-a**	'pens'
	c) **gungɔŋ**	**-Ø**	'drum'	**-a**	**gungɔn-a**	'drums'
	d) **kunkɔŋ**	**-Ø**	'tin'	**-a**	**kunkɔn-a**	'tins'
	e) **ŋariŋ**	**-Ø**	'canoe'	**-a**	**ŋarim-a**	'canoes'

From the above, it is seen that the singular stems end with nasal consonant **/ŋ/** in example 29(a-e) of Table 12, the present of the null morpheme **(Ø)** in the singular forms shows that the singular number markers are covertly used in the singular forms. However, when the plural suffix **-a** is affixed to the singular stems, the plural forms of the singular nouns are obtained as seen at the extreme end of Table 12 before the glossing. This assertion leads to the generalization that both non-human animate and inanimate regular noun

classes that end in nasal consonants of the singular nouns adapt **-a** in the plural formation of such category of nouns.

Table 13: Some inanimate regular nouns that end in nasal /-ŋ/ but accept **-Ø** and **-di as singular and plural markers, respectively**

The following table discusses some inanimate regular nouns that end in nasal **/-ŋ/** but accept **-Ø** and **-di** as singular and plural markers, respectively

Nominal root	SG Suffix	Gloss	PL Suffix	Plural	Gloss
(30) a) gbaŋ	**-Ø**	'letter'	**-di**	**gban-di**	'letters'
b) **gbaŋ**	**-Ø**	'skin'	**-di**	**gban-di**	'skins'
c) **pɔŋ**	**-Ø**	'pan'	**-di**	**pɔn-di**	'pans'
d) **zɔŋ**	**-Ø**	'hall'	**-di**	**zɔn-di**	'halls'
e) **sɔŋ**	**-Ø**	'mat'	**-di**	**sɔn-di**	'mats'

Similar to example 29 of Table 12, the data in example 30(a-e) of Table 13 too end with nasal consonant **/ŋ/.** The zero morpheme representing **-Ø,** is equally interfaced to again indicate the implicit usage of the singular number markers in this class of nouns. However, when the plural suffix **-di** is attached to the singular nouns, the plural forms are obtained, as depicted in example 30(a-e) of Table 13. This ascertained that inanimate regular noun classes that end in nasals consonant /**ŋ**/ of the singular nominal stems take on **-di** in the plural formation in Dagbani.

Table 14: Some human animate regular nouns that end with -a and -ba as SG & PL markers, respectively

The below table displays some human animate regular nouns that end with **-a** and **-ba** as SG & PL markers, respectively

	Nominal root	SG Suffix	Gloss	PL Suffix	Plural	Gloss
(31)	a) **sɔŋd**	**-a**	'helper'	**-ba**	**sɔŋd-ba**	'helpers'
	b) **paɣ**	**-a**	'woman'	**-ba**	**paɣ-ba**	'women'
	c) **gul**	**-a**	'keeper'	**-ba**	**gul-ba**	'keepers'
	d) **maan**	**-a**	'repairer'	**-ba**	**maan-ba**	'repairers'
	e) **dɔɣir**	**-a**	'sibling'	**-ba**	**dɔɣir-ba**	'siblings'
	f) **nachim**	**-a**	'male adult'	**-ba**	**nachim-ba**	'male adults'
	g) **kpɛm**	**-a**	'elder'	**-ba**	**kpam-ba**	'elders'
	h) **dagban**	**-a**	'person'	**-ba**	**dagbam-ba**	'persons'
	i) **san**	**-a**	'stringer'	**-ba**	**saam-ba**	'strangers'
	j) ***do**	**-o**	'man'	**-ba**	**dab-ba**	'men'

As observed from the data above, the singular marker in the singular nouns is **-a**, and the corresponding plural marker in the plural nouns is **-ba** in example 31(a-i) of Table 14. This explains that, while **-a** serves as a singular nominal marker, **-ba** tasks as a plural nominal marker for this class of nouns, but the **-a** is deleted before the attachment of the **-ba**. The data presupposes that, when stems of human animate regular nouns end with consonants such as **/d, ɣ, l, m, n,** and **r/**, whether simplex or complex nouns, they affix **-a** and **-ba** as singular and plural nominal markers, respectively. The **-a** is deleted for the **-ba**

to be suffixed for the plural forms. It is only the plural stem in example 31(i) of Table 14 that has been compensated by lengthening the vowel in the plural stems after the deletion has occured. The data discussed here depict human-animated regular nouns, as table 14 shows. However, the stem in the singular form of **do-o** 'man' in example 31(j) of Table 14 ends with a segment **/o/** but affixes to **-ba** in the plural form as **dab-ba** 'men' in the Tomosili dialect. This phenomenon is observed as an irregular noun, though it belongs to the human animate noun category. Similarly, we have **kpee** 'colleague' as well as **ta-ba** 'colleagues' and many others. (cf. Olawsky, 1999:94) who refers to this as supletive.

Table 15: Some inanimate or common regular nouns that end in -i and **-a as SG and PL number markers, respectively**

It is discussed in the underneath table, some inanimate or common regular nouns that end in **-i** and **-a** as SG and PL number markers, respectively

Nominal root		SG Suffix	Gloss	PL Suffix	Plural	Gloss
(32)	**a) pin**	**-i**	'gift'	**-a**	**pin-a**	'gifts'
	b) pin	**-i**	'yam mound'	**-a**	**pin-a**	'yam mounds'
	c) bin	**-i**	'a thing'	**-a**	**bin-a**	'things'
	d) tan	**-i**	'a material'	**-a**	**tan-a**	'materials'
	e) wun	**-i**	'god'	**-a**	**wun-a**	'gods'
	f) maan	**-i**	'okro'	**-a**	**man-a**	'okra'
	g) zuun	**-i**	'dawadawa seed'	**-a**	**zun-a**	'dawadawa seeds'
	h) yuun	**-i**	'a year'	**-a**	**yum-a**	'years'
	i) goon	**-i**	'wall'	**-a**	**gɔm-a**	'walls'

It can be seen from the above data that the singular stems in example 32(a-i) of Table 15 and the plural stems of example 32(a-i) of table 15 end with nasal consonant **/n/** before the singular and plural number markers **-i** and **-a** respectively affixed to them, while the plural stems in example 32(h & i) of table 14 end with nasal consonant **/m/** before the plural marker **-a** is apended. Apart from marking numbers in the various stems, both the singular and the plural number markers also mark the complete forms of the singular and plural nouns. To sum up, one may conclude that when a singular noun ends with **-i**, the noun stem drops it and take up the suffix **-a** to obtain the plural form. Some members have the same forms and functions, but belong to different classifications as shown in Table 16 below.

Table 16: Some human and non-human animate body parts regular nouns that end in -i and -a as SG & PL markers, respectively

The table below depicts some human and non-human animate body parts regular nouns that end in **-i** and **-a** as SG & PL markers, respectively

Nominal root		SG Suffix	Gloss	PL Suffix	Plural	Gloss
(33)	**a) nin**	**-i**	'an eye'	**-a**	**nin-a**	'eyes'
	b) nyin	**-i**	'tooth'	**-a**	**nyin-a**	'teeth'
	c) pan	**-i**	'vagina'	**-a**	**pan-a**	'vaginas'
	d) gbun	**-i**	'buttock'	**-a**	**gbun-a**	'buttocks'

It is observed that example 32(a-i) and 33(a-d) in Tables 15 and 16 respectively possess similar forms regarding the inflectional marking. The only distinction is that while Table

16 belongs to the classification of human and non-human animate body parts regular nouns, Table 15 is on inanimate or common regular nouns. The **/i/** was deleted from singular forms and the suffix **-a** added on to form the plural forms. However, there are some nouns that belong to the class of Table 16 but take **-hi** as their plural markers. Such are the states below.

Table 17: Some human and non-human animate body parts regular nouns that end in -e, -a, -u and -hi as SG & PL markers, respectively

The table below talk about some human and non-human animate body parts regular nouns that end in **-e, -a, -u** and **-hi** as SG & PL markers, respectively

Nominal root		SG Suffix	Gloss	PL Suffix	Plural	Gloss
(34)	**a) pu**	**-a**	'a pregnancy'	**-hi**	**pu-hi**	'pregnancies'
	b) nu	**-u**	'hand'	**-hi**	**nu-hi**	'hands'
	c) nye	**-e**	'nose'	**-hi**	**nyɛ-hi**	'noses'
	d) she	**-e**	'a waist'	**-hi**	**shɛ-hi**	'waists'

As it can be seen in example 34(a-d) of Table 17, the singular stems are affixed with singular nominal suffixes, which are vowels that are being preceded by another vowels in the singular stems. The plural number suffixes are made up of **-hi,** which are also preceded by vowels. It can be said or concluded based on the data that, when a singular number noun ends with a long vowel or a diphthong, the last vowel is dropped for the plural suffix **-hi** to be attached to form a plural noun.

Table 18: Some human & non-human animate and some inanimate regular nouns that end in -a, -e or **-o and -hi as SG & PL markers, respectively**

The table below illustrates some human & non-human animate and some inanimate regular nouns that end in **-a, -e** or **-o** and **-hi** as SG & PL markers, respectively

	Nominal root	SG Suffix	Gloss	PL Suffix	Plural	Gloss
(35) a)	**ba**	**-a**	'a dog'	**-hi**	**ba-hi**	'dogs'
b)	**che**	**-e**	'a bird'	**-hi**	**chɛ-hi**	'birds'
c)	**ne**	**-e**	'a tree'	**-hi**	**nɛ-hi**	'trees'
d)	**zo**	**-o**	'a fly'	**-hi**	**zɔ-hi**	'flies'
e)	**do**	**-o**	'dawadawa tree'	**-hi**	**dɔ-hi**	'dawadawa trees'
f)	**bi**	**-a**	'a child'	**-hi**	**bi-hi**	'children'
g)	**ti**	**-a**	'a tree'	**-hi**	**ti-hi**	'trees'
h)	**mi**	**-a**	'a rope'	**-hi**	**mi-hi**	'ropes'
i)	**su**	**-a**	'a knife'	**-hi**	**su-hi**	'knifes'

As seen in the above Table 18, like the example 34(a-d) of Table 16, the singular stems in example 35(a-i) of Table 18 end in vowels that are suffixed with another vowels, **-a, -e, or -o,** respectively, to indicate not only singular numbers for each of the nouns but to show the entire structure of the nouns and their classification as indicated. The plural stems of example 35(a-i) of Table 18 on the other hand, equally end with vowels, and the plural number marker **-hi** is suffixed to form the plural nouns. This means that, when a noun ends with either a long vowel or different vowel quality as far as this classification

is concerned, the supposed singular markers shift for the suffix **-hi** to attach for a plural form.

Table 19: Some inanimate regular nouns that end in -di and -a as SG & PL markers, respectively

This table contains some inanimate regular nouns that end in **-di** and **-a** as SG & PL markers, respectively

Nominal root		SG Suffix	Gloss	PL Suffix	Plural	Gloss
(36)	a) **bin**	**-di**	'faeces'	**-a**	**bin-a**	'faeces'
	b) **nim**	**-di**	'meat'	**-a**	**nim-a**	'meat'
	c) **zahin**	**-di**	'a dream'	**-a**	**zahim-a**	'dreams'

It is observed that both the singular and plural stems end with nasal consonants in example 36(a-c) of Table 19. The singular stems and their singular number marker **-di** together form the complete forms of the singular nouns. However, when the plural marker **-a** is affixed to form the plural nouns, the singular suffix **-di** was omitted before the suffixation. Henceforth, when a singular noun ends with **-di** and being preceded by a nasal sound, the suffix **-a** is appropriate in the plural form.

Table 20: Some non-human animate and inanimate regular nouns that end in -li and -a as SG & PL markers, respectively

The beneath table expresses some non-human animate and inanimate regular nouns that end in **-li** and **-a** as SG & PL markers, respectively

	Nominal root	SG Suffix	Gloss	PL Suffix	Plural	Gloss
(37)	**a) gɔnd**	**-li**	'pawpaw plant'	**-a**	**gɔnd-a**	'pawpaw plants'
	b) ŋɔŋ	**-li**	'grass-cutter'	**-a**	**ŋɔŋ-a**	'grass-cutters'
	c) sab	**-li**	'a mouse'	**-a**	**sab-a**	'mice'
	d) waɣir	**-li**	'giant'	**-a**	**waɣir-a**	'giants'
	e) dabis	**-li**	'a day'	**-a**	**dabis-a**	'days'
	f) salin	**-li**	'a story'	**-a**	**salim-a**	'stories'
	g) diɣ	**-li**	'dwarf'	**-a**	**diɣ-a**	'dwarfs'
	h) sim	**-li**	'groundnut'	**-a**	**sim-a**	'groundnuts'
	i) yil	**-li**	'a song'	**-a**	**yil-a**	'songs'

Example 37(a-i) depicts similar singular and plural stems in Table 20 above. Though the data is classified as non-human animate and inanimate or common nouns, the suffixes **-li** and **-a** are noted as their singular and plural number markers respectively. As seen in the table, the singular and plural stems end with consonants **/b, d, ɣ, l, m, n, ŋ, r,** and **s/** before the number suffixes. In this case, the **-li** is deleted for **-a** to be appended to represent plural formation in the non-human animate and inanimate regular nouns classification in Dagbani.

Table 21: Some human and non-human animate, and some inanimate regular nouns that end with -li and -ya as SG & PL markers, respectively

Table 21 examines some human and non-human animate, and some inanimate regular nouns that end with **-li** and **-ya** as SG & PL markers, respectively.

	Nominal root	SG Suffix	Gloss	PL Suffix	Plural	Gloss
(38)	**a) be**	**-li**	'elderly brother'	**-ya**	**biɛ-ya**	'elderly brothers'
	b) dakɔ	**-li**	'bachelor'	**-ya**	**dakɔ-ya**	'bachelors'
	c) pakɔ	**-li**	'widow'	**-ya**	**pakɔ-ya**	'widows'
	d) kpakpu	**-li**	'tortoise'	**-ya**	**kpakpu-ya**	'tortoises'
	e) polo	**-li**	'frog'	**-ya**	**pɔlɔ-ya**	'frogs'
	f) ka	**-li**	'tradition'	**-ya**	**ka-ya**	'traditions'
	g) nyu	**-li**	'jealousy'	**-ya**	**nyu-ya**	'jealousies'
	h) po	**-li**	'hernia'	**-ya**	**pɔ-ya**	'hernias'
	i) gaa	**-li**	'fruit'	**-ya**	**ga-ya**	'fruits'
	j) tuu	**-li**	'seed of beans'	**-ya**	**tu-ya**	'beans seeds'

Example 38(a-j) of Table 21 too illustrates the **-li** as the singular marker for singular stems that end in vowels such as **/a, aa, e, o, u, uu/** before the number suffixes. In a situation like this, the **-li** is dropped for **-ya** to be affixed as shown in the table. The data is classified as human and non-human animate and inanimate or common nouns, which depict **-li** and **-ya** as the singular and plural number markers, respectively. In this case, the **-ya** is suffixed for the plural nouns after the **-li** has been omitted.

Table 22: Some non-human animate and inanimate regular nouns that end in -gu and -a as SG & PL markers, respectively

Below displays some non-human animate and inanimate regular nouns that end in **-gu** and **-a** as SG & PL markers, respectively**.**

	Nominal root	SG Suffix	Gloss	PL Suffix	Plural	Gloss
(39)	**a) bindir**	**-gu**	'food'	**-a**	**bindir-a**	'foods'
	b) binyiɣɪr	**-gu**	'flyer'	**-a**	**binyiɣir-a**	'flyers'
	c) bimbɔr	**-gu**	'need'	**-a**	**bimbɔr-a**	'needs'
	d) sabis	**-gu**	'gecko'	**-a**	**sabis-a**	'geckos'
	e) jil	**-gu**	'tendon'	**-a**	**jil-a**	'tendons'
	f) yil	**-gu**	'horn'	**-a**	**yil-a**	'horns'

Still, as shown in example 39(a-f) of Table 22, some non-human animate and animate regular nouns mark **-gu** as a singular number marker in such a category. The singular stems drop the **-gu** and attach the suffix **-a** in the plural formation. It is observed that both the singular and plural stems end in consonants such as **/l, s,** and **r/.** This explains that when a regular noun in the mentioned class ends with a singular marker **-gu,** and being preceded by the said consonants, **-a** is adopted as a plural number marker for the singular nouns as seen in Table 22.

Table 23: Some inanimate regular nouns that end in -u, -ɣu, or -gu and -ri as SG & PL markers, respectively

The following table discusses some inanimate regular nouns that end in **-u, -ɣu, or -gu** and **-ri** as SG & PL markers, respectively.

	Nominal root	SG Suffix	Gloss	PL Suffix	Plural	Gloss
(40)	**a) duɣ**	**-u**	'cooking pot'	**-ri**	**duɣ-ri**	'cooking pots'
	b) pɔɣ	**-u**	'cover'	**-ri**	**pɔɣ-ri**	'covers'
	c) kɔb	**-gu**	'feather/fur'	**-ri**	**kɔb-ri**	'feathers/fur'
	d) pu	**-u**	'farm'	**-ri**	**pu-ri**	'farms'
	e) lɔ	**-ɣu**	'drinking pot'	**-ri**	**lɔ-ri**	'drinking pots'
	f) ʒɛ	**-ɣu**	'storm'	**-ri**	**ʒɛ-ri**	'storms'
	g) va	**-ɣu**	'leaf'	**-ri**	**va-ri**	'leafs'

In example 40(a-g) of Table 23, the data covers some inanimate regular nouns in Dagbani. It is observed that the class of nouns in the table contains nouns that end with **-u, -ɣu** and **-gu** as singular markers, and **-ri** as their plural marker, whereas example 40(a-c) contains singular and plural stems that end with consonants, 40(d-g) of the Table 23 entail singular and plural stems that end with vowels as well, with **-ɣu** and **-ri** marking singular and plural numbers respectively. Consequently, when an inanimate regular noun ends with **-u, -gu, or -ɣu** as a singular noun, it assumes **-ri** by dropping the singular number suffixes in the plural formation.

Table 24: Some human, and non-human animate, and some inanimate regular nouns that end in -a, ga, or -gu and -si as SG & PL markers, respectively

The table below constitutes some human, and non-human animate, and some inanimate regular nouns that end in **-a, ga,** or **-gu** and **-si** as SG & PL markers, respectively.

	Nominal root	SG Suffix	Gloss	PL Suffix	Plural	Gloss
(41)	**a) baɣ**	**-a**	'soothsayer'	**-si**	**baɣ-si**	'soothsayers'
	b) ŋmaaŋ	**-a**	'monkey'	**-si**	**ŋmaan-si**	'monkeys'
	c) luŋ	**-a**	'drum'	**-si**	**lun-si**	'drums'
	d) nɔŋ	**-a**	'scorpion'	**-si**	**nɔn-si**	'scorpions'
	e) kpib	**-ga**	'orphan'	**-si**	**kpib-si**	'orphans'
	f) nyɛb	**-ga**	'crocodile'	**-si**	**nyɛb-si**	'crocodiles'
	g) yɛr	**-ga**	'go to heel'	**-si**	**yɛr-si**	'go to heels'
	h) bɔh	**-gu**	'question'	**-si**	**bɔh-si**	'questions'
	i) gbel	**-gu**	'a stare'	**-si**	**gbel-si**	'stares'
	j) kpɛr	**-gu**	'play'	**-si**	**kpɛr-si**	'plays'

As observed in example 41(a-j) of Table 24, the nominal stems of the singular and plural end in consonants. While **-a** and **-ga** mark singular in the human and non-human animate regular noun categories, the inanimate class takes **-a, -ga,** and **-gu** as the singular number markers. However, all these categories regarding their singular number markers assume **-si** as plural number markers. This concludes that when singular regular nouns end with **-a, -ga,** or **-gu,** considering the classifications above, **-si** is the appropriate number marker for the plural forms.

Table 25: Some human and non-human animate, and as well some inanimate regular nouns that end in -gu, or -o and -ti as SG & PL markers, respectively

Below is atable of some human and non-human animate, and as well some inanimate regular nouns that end in **-gu,** or **-o** and **-ti** as SG & PL markers, respectively.

	Nominal root	SG Suffix	Gloss	PL Suffix	Plural	Gloss
(42)	**a) bir**	**-gu**	'dumb'	**-ti**	**bir-ti**	'dumbs'
	b) gbar	**-gu**	'cripple'	**-ti**	**gbar-ti**	'cripples'
	c) dor	**-o**	'sickness'	**-ti**	**dɔr-ti**	'sicknesses'
	d) pal	**-o**	'plot'	**-ti**	**pal-ti**	'plots'
	e) jaŋkun	**-o**	'cat'	**-ti**	**jaŋkun-ti**	'cats'

Example 42(a-e) of Table 25 contains same semantic classification as Table 24. The singular and plural forms equally end with consonants alright, but take on the suffix **-gu** and **-o** as the singular number markers for such classification. The singular number markers are replaced with the suffix **-ti** for each of the singular stems to deduce their plural forms. Hence, the suffix **-ti** marks plurality in this category of nouns.

Table 26: Some human animate, and some inanimate regular nouns including loan and non-loan nouns that end in -Ø -a, i, or -ba and -nima as SG & PL markers, respectively

The table below shows some human animate, and some inanimate regular nouns including loan and non-loan nouns that end in **-Ø -a, i,** or **-ba** and **-nima** as SG & PL markers, respectively.

	Nominal root	SG Suffix	Gloss	PL Suffix	Plural	Gloss
(43)	a) **ba**	**-Ø**	'father'	**-nima**	**ba-nima**	'fathers'
	b) **ma**	**-Ø**	'mother'	**-nima**	**ma-nima**	'mothers'
	c) **bɔɣati**	**-Ø**	'bucket'	**-nima**	**bɔɣati-nima**	'buckets'
	d) **buku**	**-Ø**	'book'	**-nima**	**buku-nima**	'books'
	e) **nakɔh**	**-a**	'a butcher'	**-nima**	**nakɔhi-nima**	'butchers'
	f) **kulpal**	**-a**	'fisherman'	**-nima**	**kulipali-nima**	'fishermen'
	g) **musulim**	**-i**	'muslim'	**-nima**	**musulim-nima**	'Muslims'
	h) **gɔmnant**	**-i**	'government'	**-nima**	**gɔmnanti-nima**	'government
	i) **pir**	**-ba**	'aunt'	**-nima**	**piri-nima**	'aunts'
	j) **ŋah**	**-ba**	'uncle'	**-nima**	**ŋahi-nima**	'uncles'

Example 43(a-j) of Table 26 comprises four sub-classes of the main class. This is because about four different kinds of singular number markers take **-nima** as the only plural marker. Though, the nouns are semantically put into various groups, it is noticed that the singular and plural nominal stems of example 43(a-d) of the Table 26 ends with vowels and suffixed with the zero morpheme, **-Ø** and the suffix **-nima** as singular and plural

number markers, respectively, while the singular and plural nominal stems of example 43(e-j) of Table 26 ends with consonants and suffixed with **-a, -i** or **-ba** and **-nima** as the singular and plural number markers respectively. Hence, it can be generalized that human animate and inanimate, including loan and non-loan, regular nouns that mark **-Ø, -a,** and **-ba** in the singular formation are often dropped for **-nima** in the case of establishing the plural forms in Dagbani.

Aside from the nominal suffixes, nominal prefixes are noticed in the cardinal numbers of Dagbani, as confirmed by Iddrisu and Issah (2023:6). As a result, this part of the sub-section discusses the cardinal numbers as part of the inflectional processes. The inflected cardinal numbers include: **ndam** 'one', **ayi** 'two', **nta** 'three', **bunahi** 'four', **dibanu** 'five', etc. The details shall follow. It is therefore deduced from the stated cardinal number names that the prefix **n-** is the inflectional prefix of which **a-**, **bu-,** and **diba-** are the variants.

The sub-section goes on with the discussion that prefixes are affixes that are added to the beginning of words not to change their grammatical categories but to perform grammatical functions, including easy and accurate articulation of the number names (cardinal numbers), especially below ten (10) with the exclusion of zero (0). Thus, they are restricted to countable numbers between zero (0) and ten (10), except for the **bu-** that attaches to all number names. In other words, this does not include zero (0) and one (1). Though the data regarding the Dagbani prefixes is limited, four of the prefixes, as identified above, are discussed underneath. However, headings are labeled as: A=Prefix

1, B=Prefix 2, C=Prefix 3, D=Prefix 4, E=Root, F=(Prefix1+Root), G=(Prefix2+Root), H=(Prefix3+Root), I=(Prefix4+Root), J (Same Gloss for F, G, H, & I). This is illustrated in Table 26 below:

Table 27:Number names for Dagbani cardinal numbers between zero(0) and ten(10)

The table below depicts number names for Dagbani cardinal numbers between zero(0) and ten(10).

(44)	**A**	**B**	**C**	**D**	**E**	**F(A+E)**	**G(B+E)**	**H(C+E)**	**I(D+E)**	**J**
a)	**n-**	**a-**	**bu-**	**dɪba-**	**daam**	**ndaam**	***adaam**	***bʊdaam**	***dɪbadaam**	'one'
b)	**n-**	**a-**	**bu-**	**dɪba-**	**yi**	**nyi**	**ayɪ**	**buyi**	**dɪbayɪ**	'two'
c)	**n-**	**a-**	**bu-**	**dɪba-**	**ta**	**nta**	**ata**	**bʊta**	**dɪbata**	'three'
d)	**n-**	**a-**	**bu-**	**dɪba-**	**nahɪ**	**nnahɪ**	**anahɪ**	**bʊnahɪ**	**dɪbanahɪ**	'four'
e)	**n-**	**a-**	**bu-**	**dɪba-**	**nu**	**nnu**	**anʊ**	**bunu**	**dɪbanʊ**	'five'
f)	**n-**	**a-**	**bu-**	**dɪba-**	**yobu**	**nyobu**	**ayɔbʊ**	**buyobu**	**dɪbayɔbʊ**	'six'
g)	**n-**	**a-**	**bu-**	**dɪba-**	**yɔpɔin**	**nyɔpɔin**	**ayɔpɔin**	**bʊyɔpɔin**	**dɪbayɔpɔin**	'seven'
h)	**n-**	**a-**	**bu-**	**dɪba-**	**nii**	**nnii**	**anɪɪ**	**bunii**	**dɪbanɪɪ**	'eight'
i)	**n-**	**a-**	**bu-**	**dɪba-**	**wai**	**nwai**	**awaɪ**	**buwai**	**dɪbawaɪ**	'nine'

It is observed in example 44(a-i) of Table 27 that one(1)-nine(9) number names for counting in Dagbani are inflected for easy articulation. It is realized that the prefix **n-** is the inflectional morpheme to which **a-, bu-,** and **dɪba-** are allomorphs. This means that where any of the prefixes finds itself, the other prefixes cannot feature there, since they perform the same function. All the number names in 44(a-i) of Table 27 except in

G(B+E), H(C+E), and I(D+E) of example 44(a) are grammatically constructed in the language. This is because the prefixes **a-** and **bu-** attached to the noun root **daam** do not naturally exist in the language, which renders their composition ungrammatical.

4.1.2 Dagbani adjectival inflections and their functions

This sub-section discusses adjectival inflections and their functions in Dagbani. The adjectival inflections are the various inflections attached to adjectival roots, and do change the forms instead of the grammatical classification of the adjectives as opined by Afreh (2006). Thus, just like the nouns, Dagbani adjectives also mark or inflect for number as shown in Tables below:

Table 28: Adjectives that end in nasals /m/ or /ŋ/ and take -Ø as SG & -a for PL markers, respectively

Table 28 displays adjectives that end in nasals **/m/ or /ŋ/** and take **-Ø** as SG & **-a** for PL markers, respectively

	Adjectival root	SG Suffix	Gloss	PL Suffix	Plural	Gloss
(45)	**a) baŋkɔm**	**-Ø**	'green'	**-a**	**baŋkɔm-a**	'green'
	b) dozim	**-Ø**	'yellow'	**-a**	**dozim-a**	'yellow'
	c) jahimpiŋ	**-Ø**	'biggest'	**-a**	**jahimpim-a**	'biggest'
	d) kpɛŋ	**-Ø**	'hard'	**-a**	**kpɛm-a**	'hard'
	e) suŋ	**-Ø**	'good'	**-a**	**sum-a**	'good'

As seen in examples 45(a-e) of Table 28 above, both the singular and plural stems end with nasal consonants **/m/** and **/ŋ/**. The zero morpheme **-Ø** is used to indicate how the singular markers are implicitly used in the singular forms of the adjectives. This presuposses that, when an adjective ends with a nasal consonant, the singular numbers are covertly marked, while the suffix **-a** marks the plural forms in this class of adjectives.

Table 29: Adjectives that end in -i or -o and -a as SG & PL markers, respectively

This table accounts for adjectives that end in **-i** or **-o** and **-a** as **SG & PL** markers respectively.

	Adjectival root	SG Suffix	Gloss	PL Suffix	Plural	Gloss
(46)	**a) maan**	**-i**	'minute'	**-a**	**mam-a**	'minutes'
	b) moon	**-i**	'ripe'	**-a**	**mɔm-a**	'ripe'
	c) mun	**-i**	'enclose'	**-a**	**mun-a**	'enclose'
	d) pal	**-o**	'new'	**-a**	**pal-a**	'new'

Exampe 45(a-d) of Table 29 shows adjectives whose stems of the singular and plural end with the nasal **/n/** and lateral **/l/**, but mark the singularity with **-i** and **-o**, and plurality with **-a**. However, the **-i** and **-o** are deleted in order to append the marker **-a** to the stems for plural forms. The singular suffixes **-i** and **-o** are more and less allomorphs of the same morpheme because **-i** is affixed after a nasal consonant **/n/** and **-o** after a lateral **/l/**. The semantic implication here is that, whereas **-i** is used in adjectives that describe both animate and inanimate, **-o** is only used in adjectives that modify only animate in Dagbani.

Table 30: Adjectives that end in -li/-gu and -a as SG & PL markers, respectively

This table illustrates adjectives that end in **-li/-gu** and **-a** as **SG & PL** markers, respectively.

	Adjectival root	SG Suffix	Gloss	PL Suffix	Plural	Gloss
(47)	**a) piɛl**	**-li**	'white'	**-a**	**piɛl-a**	'white'
	b) pal	**-li**	'new'	**-a**	**pal-a**	'new'
	c) tul	**-li**	'hot'	**-a**	**tul-a**	'hot'
	d) tims	**-li**	'heavy'	**-a**	**tims-a**	'heavy'
	e) nyaɣis	**-li**	'nice'	**-a**	**nyaɣis-a**	'nice'
	f) mah	**-li**	'wet'	**-a**	**mah-a**	'wet'
	g) kar	**-li**	'big'	**-a**	**kar-a**	'big'
	h) kur	**-li**	'old'	**-a**	**kur-a**	'old'
	i) kur	**-gu**	'old'	**-a**	**kur-a**	'old'

Example 47(a-i) of Table 30 depicts **-li** and **-gu** as singular markers and **-a** as plural markers that are preceded by consonants in the adjectival stems. It is obvious that when the plural suffix marker **-a** is attached to the singular adjectival stems, it causes elision of the last syllables (singular markers), **-li,** and **-gu** of the singular adjectives. The semantic distinction is that while the **-gu** is affixed to adjectives that modify animates, the **-li** is suffixed to adjectives that describe inanimate.

Table 31: Adjectives that end in -li and -la as SG & PL markers, respectively

The table below discusses adjectives that end in **-li** and **-la** as SG & PL markers, respectively.

	Adjectival root	SG Suffix	Gloss	PL Suffix	Plural	Gloss
(48)	**a) sabin**	**-li**	'black'	**-la**	**sab-la**	'black'
	b) waɣin	**-li**	'long'	**-la**	**waɣ-la**	'long'
	c) wubin	**-li**	'big'	**-la**	**wub-la**	'bigger'
	d) gbaɣin	**-li**	'biggest'	**-la**	**gbaɣ-la**	'biggest'

Example 48(a-d) of Table 31 also shows **-li** as the singular marker, but **-la** as the plural number marker here. The singular adjectival stems end with the nasal segment **/n/**, whereas the plural adjectival stems end in consonants such as **/b** and **ɣ/**. It is observed that when the plural adjectival marker **-la** was suffixed for the plural forms, the singular marker -li was deleted alongside the nasal segment **/n/**. Henceforth, when a singular adjective ends with the syllable **/li/** and it is being preceded by the nasal consonants **/n/, -la** is the suitable suffix to mark the plurality of the adjective.

Table 32: Adjectives that end in -li and -ma as SG & PL markers, respectively

This table composes adjectives that end in **-li** and **-ma** as SG & PL markers, respectively

	Adjectival root	SG Suffix	Gloss	PL Suffix	Plural	Gloss
(49)	**a) yɛlin**	**-li**	'wide'	**-ma**	**yɛl-ma**	'wide'
	b) zilin	**-li**	'deep'	**-ma**	**zil-ma**	'deep'
	c) **mulin**	**-li**	'elongated'	**-ma**	**mul-ma**	'elongated'

In example 49(a-c) of Table 32, the **-li** is still identified as a singular number maker, but takes the suffix **-ma** in the plural forms. Though the singular adjectival stems here have almost the same structure as the singular adjectival stems in the resent Table 31, Therefore, like the Table 31 above, the singular adjectival stems equally end in the nasal consonant **/n/** before the singular marker **-li** in the singular forms. However, the **-li** together with the nasal consonant **/n/** was dropped as in example 49(a-c) of Table 31, for the suffix **-ma** in order to accomplish the plural formations.

Table 33: Adjectives that end in -e or -a and -hi as SG & PL markers, respectively

The below table shows adjectives that end in **-e** or **-a** and **-hi** as SG & PL markers respectively.

	Adjectival root	SG Suffix	Gloss	PL Suffix	Plural	Gloss
(50)	**a) ʒe**	**-e**	'red'	**-hi**	**ʒɛ-hi**	'red'
	b) kanva	**-a**	'green'	**-hi**	**kanva-hi**	'green'
	c) ŋma	**-a**	'short'	**-hi**	**ŋma-hi**	'shorts'
	d) ji	**-a**	'short'	**-hi**	**ji-hi**	'shorts'
	e) bil	**-a**	'small'	**-hi**	**bi-hi**	'small'

Example 50(a-e) of Table 33 contains adjectives that discuss their singular and plural nature. The table shows singular and plural stems that end in vowels. It is observed as **-a** and **-e** mark the singularity, the **-hi** as well marks the plurality in the plural forms of the adjectives. This explains that the **-hi** is the appropriate suffix in the case of plural number marking, when an adjective ends in either **-a** or **-e** in Dagbani**.**

Table 34: Adjectives that end in -ga and -si as SG & PL markers, respectively

This table exhibits adjectives that end in **-ga** and **-si** as SG & PL markers, respectively

Adjectival root		SG Suffix	Gloss	PL Suffix	Plural	Gloss
(51)	**a) nyiriŋ**	**-ga**	'minute'	**-si**	**nyirin-si**	'minute'
	b) muɣiliŋ	**-ga**	'narrowed'	**-si**	**muɣilin-si**	'narrowed'

It is observed in example 51(a-b) of Table 34 that the suffix **-ga** marks the singular form of the adjectives and being preceded by a velar nasal consonant **/ŋ/**. The plural form is therefore marked with the suffix **-si,** which is preceded by a nasal consonant **/n/**. This is probably as a result of phonological reason(s) that is or are discussed in sub-section 4.2.3. The marker **-ga** was deleted to pave way for the suffix **-si** in order to compose the plural forms of the singular adjectives.

Table 35: Adjective that end in -ɣu and -ri as SG & PL markers, respectively

This table highlights adjective that end in **-ɣu** and **-ri** as SG & PL markers, respectively.

	Adjectival root	SG Suffix	Gloss	PL Suffix	Plural	Gloss
(52)	**a) tɔ**	**-ɣu**	'bitter'	**-ri**	**tɔ-ri**	'bitter'
	b) kɔ	**-ɣu**	'slim'	**-ri**	**kɔ-ri**	'slim'
	c) ʒiɛ	**-ɣu**	'fair'	**-ri**	**ʒiɛ-ri**	'fair'
	d) biɛ	**-ɣu**	'dirty'	**-ri**	**biɛ-ri**	'dirty'
	e) liɛ	**-ɣu**	'very small'	**-ri**	**liɛ-ri**	'very small'

Example 52(a-e) of Table 35 exhibits data on adjectives that use **-ɣu** in the singular forms and **-ri** in the plural forms. The singular and plural stems end in vowels before the affixation of the number markers. The suffix **-ɣu** that serves as the singular marker was deleted for the plural suffix **-ri** to be attached. Meaning, when an adjective ends with **-ɣu** as a singular marker, the right suffix to make the plural form is **-ri.**

4.1.2.1 Inflectional morphology on Dagbani adjectives

The data here illustrate a phenomenon that, adjectives or more than one adjectives may follow a noun they all modify, as the earlier scholars observed. Ziblim (2018) supported this idea of the earlier scholars by arguing that adjectives or noun modifiers can be more than one following a head noun they modify. The inflectional number marking to all the adjectives as a result of them being with the noun is dropped except for the last and/or latest adjective that bears the inflectional number marker, be it singular or plural. This assertion is confirmed in Iddrisu & Issah (2023:32) too. However, the data on this is so

limited that one may not get as reasonable a number of plural number markers in order as discussed for the nouns and adjectives above. This phenomenon of serial adjectives, from example 53-58 is illustrated in the below data:

	Serial Adjectives (SG)	**Serial Adjective (PL)**
(53)	a) ba' **ʒe' yinya-a**	b) ba' **ʒe' yinya -hi**
	dog red mad-SG	dog red mad -PL
	'A red mad dog'	'Red mad dogs'
(54)	a) no' **pupu' bil' piɛl - li**	**b)** no' **pupu' bil' piɛl -a**
	fowl grey small white-SG	fowl grey small white-PL
	'A small grey fowls'	'Small grey fowls'
(55)	a) na' **paɣ' ʒe' bil' wab-ga**	b) na' **paɣ' ʒe' bil' wab-si**
	chief wife fair young lame-SG	chief wife fair young lame-PL
	'A young lamed queen'	'Young lamed queens'
(56)	a) jan' **bil' ʒe' piɛl' biɛ' tita-li**	b**)** jan' **bil' ʒe' piɛl' biɛ' tita-ŋa**
	Monkey male fair white ugle big-SG	monkey male fair white ugle big-PL
	'A small fair-whitish big ugly monkey'	'Small fair-whitish big ugly monkey'

(57) a)	b)
paɣ' **ji' gbun' bil' bundaan' kɔ' sabin-li**	paɣ' **ji' gbun' bil' bundaan' kɔ' sab-la**
lady short buttock small worthy slim black-SG	lady short butock small worthy slim black-PL
'A small short black slim worthy buttocks lady'	'Small short black slim worthy butocks ladies

(58) a)	b)
***do' ji' sabli tita-li**	***do' ji' sabli tita-**ŋa
man short black fat-SG	man short black fat-PL

It is gratifying to note that in example 58(a & b), the idea of all the number markers being dropped in the case of serial adjectives does not work here because the singular adjectival marker **-li** in **sab-li** fails to drop, which means it is not all circumstances the phenomenon work.

4.1.3 Dagbani verbal inflections and their functions

This sub-section discusses the verbal inflections and their functions in Dagbani. One of the verbal domains where inflection is realized in Dagbani is with the marking of aspect. Aspect as a verbal category refers to the grammatical property of verbs which specifies whether the action denoted by the verb is seen as perfected or ongoing (Issah, 2015: 31). However, Adger (2004: 50) opined that the 'semantic difference between ongoing and

completed action is one of aspect'. Typically, verbal aspect comes in two forms; perfective versus imperfective: also called completive or progressive in the literature. It is worth noting that the imperfective generally indulges habitual and progressive. The perfective in Dagbani is realized in two ways: the use of **-ya** and the one marked with a null morpheme **-Ø**. Table 36 below illustrates that.

Table 36: Perfective markers -ya & -Ø in Dagbani

This table discusses perfective markers **-ya** & **-Ø** in Dagbani.

	Verbal root	Gloss	Suffix	Perfective	Gloss
(59)	**a) da**	'buy'	**-ya**	**da-ya**	'bought'
	b) che	'allow'	**-ya**	**chɛ-ya**	'allowed'
	c) bii	'warm'	**-ya**	**bii-ya**	'warmed'
	d) deei	'collect'	**-ya**	**dee-ya**	'collected'
	e) bɔli	'call'	**-ya**	**bɔl-ya**	'called'
	f) barigi	'lose'	**-ya**	**barigi-ya**	'lost'
	g) zu	'steal'	**-Ø**	**zu-Ø**	'steal'
	h) zaŋ	'take'	**-Ø**	**zaŋ-Ø**	'took'
	i) guhim	'nod'	**-Ø**	**guhim-Ø**	'nodded'
	j) kɔhim	'cough'	**-Ø**	**kɔhim -Ø**	'coughed'
	k) walim	'hustle'	**-Ø**	**walim-Ø**	'hustled'

As observe from example 59(a-k) of Table 36 above, the verbal roots are in their bare forms and end with vowels and nasal consonants as well, and take on the suffix **-ya** and the null morpheme **(-Ø)** to mark perfection. When the **-ya** is suffixed, caused deletion of

the high front vowel **/i/** in examples 59(d & e). However, vowel reduction is observed when **/e/** has changed to **/ɛ/** in example 59(b), but no deletion has occur when the null morpheme (**-Ø)** is appended. As pointed out earlier, the choice or use of the two aspectual markers depends on whether the verb will have an overt object or not. This syntactic issue is however not the focus which this current study observes.

Table 37: Imperfective (Progressive) markers -di/-da in Dagbani verbs

The below table highlights imperfective (Progressive) markers **-di/-da** in Dagbani verbs.

	Verbal root	Gloss	Suffix	Imperfective	Gloss
(60)	**a) guni**	'circumcise'	**-di**	**gun-di**	'circumcising'
	b) nani	'scrub'	**-di**	**nan-di**	'scrubbing'
	c) jɛm	'worship'	**-di**	**jɛm-di**	'worshiping'
	d) sɔŋ	'help'	**-di**	**sɔŋ-di**	'helping'
	e) bili	'rape'	**-da**	**bin-da**	'raping'
	f) goli	'fork'	**-da**	**gɔn-da**	'forking'
	g) dulim	'urinate'	**-da**	**dulin-da**	'urinating'
	h) kpalim	'ululate'	**-da**	**kpalin-da**	'ululating'
	i) wum	'listen'	**-da**	**wum-da**	'listening'
	j) ŋɔŋ	'fetch'	**-da**	**ŋɔŋ-da**	'fetching'

From example 60(a-j) of Table 37, it is observed that examples (a, b, e & f) end in high vowel **/i/**, while examples (c, d, g, h, i & j) end in nasal consonants **/m/** and **/ŋ/** respectively. The suffix **-di** is attached to the verbal roots of examples 60(a-d) to yield

progressive imperfective forms of the verbs. However, deletion of the high front vowel **/i/** in examples 60(a & b) was made before the attachment. The suffix **-da** is then attached to the verbal roots of examples 60(e-j) to equally produce the progressive imperfective forms of the verbs. It is observed in the table 36 that when the verbal suffix **-da** was attached to the verbal stems of example 60(e-j), there was a syllable of **/li/** deletion in examples 60(e & f). However, an insertion of the nasal **/n/** has also been effected in examples 60(e-j). This nasal insertion is phonologically established, which is accounted for in sub-setion 4.2.3 of the study. The suffix **-di/-da** however functions as a progressive imperfective aspectual markers. Henceforth, the choice of **-di/-da** is dependent on whether the verb requires an explicit object or not.

Table 38: Imperfective (Progressive) markers -ni/-na in Dagbani verbs

Below are the imperfective (Progressive) markers **-ni/-na** in Dagbani verbs.

	Verbal root	Gloss	Suffix	Imperfective	Gloss
(61)	**a) dɛli**	'dry'	**-ni**	**dee-ni**	'drying'
	b) dɔni	'lie'	**-ni**	**doo-ni**	'lying'
	c) kuli	'intoxicate'	**-ni**	**kuu-ni**	'intoxicating'
	d) bari	'collect refuse'	**-ni**	**baa-ni**	'collecting refuse'
	e) gali	'survive'	**-ni**	**gaa-ni**	'surviving'
	f) kali	'count'	**-na**	**kaa-na**	'counting'
	g) kɔli	'sweep'	**-na**	**koo-na**	'sweeping'
	h) vuli	'dress'	**-na**	**vuu-na**	'dressing'
	i) zani	'stop'	**-na**	**zaa-na**	'stopping'
	j) ʒini	'sit'	**-na**	**ʒii-na**	'sitting'

From example 61(a-j) of Table 38 above, it is observed that the verbs end with syllables **/li**, **ni** and **ri/**. These syllables are elided to create room for the suffixes **-ni/-na** to be affixed for the inflected forms. Prior to the deletion, the verbal roots were compensated by lengthening their vowels before the attachment of the suffixes **-ni/na** which functions as progressive imperfective aspectual markers. Meanwhile, there have been raise in some vowels in some of the examples. As it can be seen in example 61(a) that, the half-open front unrounded un-advanced vowel **/ɛ/** has been raised to a half-open front unrounded advanced vowel **/e/** and the half-open back rounded un-advanced vowel **/ɔ/** too being raised to a half-open back rounded advanced vowel **/o/** in example 61(b & g).The choice of the suffixes **-ni/na** is therefore based on the syntactic environment.

Table 39: Imperfective (progressive) markers -ri/-ra in Dagbani verbs

This table dscusses imperfective (Progressive) markers **-ri/-ra** in Dagbani verbs.

	Verbal root	Gloss	Suffix	Imperfective	Gloss
(62)	**a) do**	'weed'	**-ri**	**dɔ-ri**	'weeding'
	b) du	'climb'	**-ri**	**du-ri**	'climbing'
	c) di	'eat'	**-ri**	**di-ri**	'eating'
	d) duɣi	'cook'	**-ri**	**duɣ-ri**	'cooking'
	e) duɣi	'swim'	**-ri**	**duɣ-ri**	'swimming'
	f) guui	'run'	**-ra**	**guu-ra**	'running'
	g) kooi	'conclude'	**-ra**	**koo-ra**	'concluding'
	h) jahi	'sieve'	**-ra**	**jah-ra**	'sieving'
	i) guhi	'wait'	**-ra**	**guh-ra**	'waiting'
	j) gbihi	'sleep'	**-ra**	**gbih-ra**	'sleeping'

Example 62(a-j) of Table 39 discusses the suffix **-ri/-ra.** It is observed that the verbal stems end in vowels. However, when the suffix **-ri/-ra** is affixed to the verbal stems, it resulted into omission of the front high vowel **/i/** in examples 62(d-j). However, no deletion is observed in examples 62(a-c). The suffix **-ri/-ra** therfore functions as progressive imperfective marker as the data display. Consequently, the **-ri/-ra** is the right suffix for making the progressive imperfection on mono and disyllabic verbs in Dagbani.

Table 40: Imperfective (progressive) markers -ti/-ta in Dagbani verbs

This table displays imperfective (Progressive) markers **-ti/-ta** in Dagbani verbs.

	Verbal root	Gloss	Suffix	Imperfective	Gloss
(63)	**a) biri**	'sow'	**-ti**	**bir-ti**	'sowing'
	b) ŋari	'cheat'	**-ti**	**ŋar-ti**	'cheating'
	c) chɛri	'cut into pieces'	**-ti**	**chɛr-ti**	'cutting into pieces'
	d) dari	'pull'	**-ti**	**dar-ti**	'pulling'
	e) gɔri	'sign'	**-ti**	**gɔr-ti**	'signing'
	f) miri	'get close'	**-ta**	**mir-ta**	'getting close'
	g) piri	'wear'	**-ta**	**pir-ta**	'wearing'
	h) gari	'pass'	**-ta**	**gar-ta**	'passing'
	i) gari	'mix'	**-ta**	**gar-ta**	'mixing'
	j) wari	'split'	**-ta**	**war-ta**	'splitting'

The data in example 63(a-j) of Table 40 shows that the verbal stems end with a front high vowel **/i/,** which is omitted in order to establish imperfective progressive forms. This

means that when a stem of Dagbani main verb ends with the alveolar trill **/r/**, the right affix for the continuous imperfective forms is **-ti/-ta**.

Table 41: Imperfective (habitual) markers -di/-da in Dagbani verbs

The table below constitute imperfective (habitual) markers **-di/-da** in Dagbani verbs.

	Verbal root	Gloss	Suffix	Imperfective	Gloss
(64)	**a) daŋ**	'be first'	**-di**	**daŋ-di**	'become(s) first'
	b) bam	'try'	**-di**	**bam-di**	'try(ies)'
	c) gbam	'crawl'	**-di**	**gbam-di**	'crawl(s)'
	d) tam	'step'	**-di**	**tam-di**	'step(s)'
	e) tum	'work'	**-di**	**tum-di**	'work(s)
	f) jam	'worship'	**-da**	**jam-da**	'worship(s)'
	g) lam	'taste'	**-da**	**lam-da**	'taste(s)'
	h) chɔm	'insight'	**-da**	**chɔm-da**	'insight (s)
	i) mɔni	'struggle'	**-da**	**mɔn-da**	'struggle(s)'
	j) pini	'shave'	**-da**	**pin-da**	'shave(s)'
	k) pili	'roof'	**-da**	**pin-da**	'roof(s)'

Example 64(a-k) of Table 41 shows verbal roots that end with nasal consonants **/ŋ, m** & **n/** and are preceded by vowels in the monosyllabic verbs in example 64(a-h), while example 64(i-k) end with a front high vowel **/i/** but preceded by the nasal **/n/** in the disyllabic verbs of example 64(i & j), which is deleted for the suffix **-di/-da** to be affixed for habitual imperfection. The ending segment of the verbal root of examples 64(i & j) is

/i/, which is also deleted for the habitual imperfection. In example 64(k), which equally ends with the vowel **/i/** but preceded by the lateral **/l/**. The syllable **/li/** in the example 64(k) is deleted also for the suffix **-di/-da**. However, an insertion of a nasal **/n/** is effected before the attachment of the suffix **-di/-da**. This nasal insertion is phonological, whose accountability is justified in sub-setion 4.2.3

Table 42: Imperfective (habitual) markers -ni/-na in Dagbani verbs

The underneath table indicates imperfective (habitual) markers **-ni/-na** in Dagbani verbs.

	Verbal root	Gloss	Suffix	Imperfective	Gloss
(65)	**a) kuli**	'go home'	**-ni**	**ku-ni**	'go(es) home'
	b) yili	'sieve/sing'	**-ni**	**yii-ni**	'sieve(s)/sing(s)''
	c) ʒini	'sit'	**-ni**	**ʒii-ni**	'sit(s)'
	d) lɛli	'lick'	**-ni**	**lee-ni**	'lick(s)'
	e) gbeli	'stair'	**-na**	**gbee-na**	'stair(s)'
	f) mali	'repair'	**-na**	**maa-na**	'repair (s)'
	g) mɔli	'announce'	**-na**	**moo-na**	'announce(s)'
	h) pili	'begins/start'	**-na**	**pii-na**	'begin(s)/start(s)'
	i) yuli	'watch'	**-na**	**yuu-na**	'watch(es)'

Example 65(a-i) of Table 42 depicts data with verbal roots that end with the front high vowel **/i/**. The syllables **/li/** and **/ni/** have been deleted in the later part before the suffix **-ni/-na** has been appended for the habitual imperfective forms. As a result of the syllable deletion, each of the verbal roots has been compensated by lengthening the remaining

vowels before the suffixation. However, the half-open front unrounded un-advanced vowel /**ɛ**/ is observed to have been raised to a half-open front unrounded advanced vowel /**e**/ and compensated by lengthening the vowel /**e**/ before the suffixation in example 65(d).

Table 43: Imperfective (habitual) markers -ri/-ra in Dagbani verbs

The below table composes of imperfective (habitual) markers **-ri/-ra** in Dagbani verbs.

	Verbal root	Gloss	Suffix	Imperfective	Gloss
(66)	**a) ku**	'kill'	**-ri**	**ku-ri**	'kill(s)'
	b) kpe	'carve'	**-ri**	**kpɛ-ri**	'carve(s)'
	c) kpa	'peg'	**-ri**	**kpa-ri**	'peg(s)'
	d) kpaai	'pour out'	**-ri**	**kpaa-ri**	'pour(s)'
	e) kɔhi	'sell'	**-ri**	**kɔh-ri**	'sell(s)'
	f) gbahi	'catch'	**-ri**	**gbah-ri**	'catch(s)'
	g) labi	'throw'	**-ra**	**lab-ra**	'throw(s)'
	h) kpihi	'quench'	**-ra**	**kpih-ra**	'quench(es)'
	i) kpuɣi	'take'	**-ra**	**kpuɣ-ra**	'take(s)'

As observed in example 66(a-i) of Table 43, the verbal roots of examples 66(a-i) end with vowels in general. However, the vowel /e/ has been reduced to /**ɛ**/ in example 66(b). The front high vowel **/i/** in the verbal roots of example 66(d-i) is lost when the suffix **-ri/-ra** was attached for the habitual imperfective forms. This implies that when a verbal stem ends with a vowel, the suffix **-ri/-ra** is chosen for the habitual imperfective marking.

Table 44: Imperfective (habitual) markers -ti/-ta in Dagbani verbs

As briefly pointed out earlier, **ti/-ta** is another imperfective allomorph like others already discussed. It is a suffix of which its distribution occurs in disyllabic words that have their second syllables begin with /**r**/. This is illustrated in table below:

	Verbal root	Gloss	Suffix	Imperfective	Gloss
(67)	**a) kari**	'sack'	**-ti**	**kar-ti**	'sack(s)'
	b) kpari	'lock'	**-ti**	**kpar-ti**	'lock(s)'
	c) liri	'attack'	**-ti**	**lir-ti**	'attack(s)'
	d) piri	'separate'	**-ti**	**pir-ti**	'separate(s)'
	e) ŋmuri	'mash'	**-ti**	**ŋmur-ti**	'mash(es)'
	f) nyari	'crawl'	**-ta**	**nyar-ta**	'crawl(s)'
	g) gari	'mix'	**-ta**	**gar-ta**	'mix(es)'
	h) wari	'nurse'	**-ta**	**war-ta**	'nurse(es)'
	i) kɔrigi	'slaughter'	**-ta**	**kɔr-ta**	'slaughter(s)'

In examining the data in example 67(a-i) of Table 44, it is seen that the bare forms of the verbs end with a front high vowel **/i/** and preceded by an alveolar trill **/r/**. The front high vowel **/i/** has been deleted from the verbal stems in examples 67(a-h) before the suffixation of **-ti/-ta.** However, the syllable **/gi/** in example 67(i) has also been elided before the attachment of the suffix **-ta** . This clarifies that when a verbal stem ends with the alveolar trill /**r**/, **-ti/-ta** is the right suffix for marking habitual imperfection. In each of the verbs exemplified above, the affixation of **-ti/-ta** to the verbal stems does not change

the grammatical category, but only indicates that a grammatical function of aspect is marked. It is on the basis of this, that the **-ti/-ta** is treated as an inflectional morpheme.

Table 45: Imperative marker -mɨ/-ma in Dagbani verbs

This table discusses imperative marking **-mɨ/-ma** of verbs in Dagabni.

	Verbal root	Gloss	Suffix	Imperative	Gloss
(68)	**a) lu**	'fall'	**-mɨ**	**lʊ-mɨ**	'fall'
	b) nyu	'drink'	**-mɨ**	**nyʊ-mɨ**	'drink'
	c) pii	'pick out'	**-mɨ**	**pii-mɨ**	'pick out'
	d) ŋme	'shoot'	**-mɨ**	**ŋmɛ-mɨ**	'shoot'
	e) ŋmaai	'cut off'	**-mɨ**	**ŋmaa-mɨ**	'cut off'
	f) paɣi	'wash'	**-ma**	**paɣ-ma**	'wash'
	g) ŋubi	'chew'	**-ma**	**ŋub-ma**	'chew'
	h) kuli	'go home'	**-ma**	**kul-ma**	'go home'
	i) puhi	'greet'	**-ma**	**puh-ma**	'greet'
	j) pili	'cover'	**-ma**	**pil-ma**	'cover'

As observed in example 68(a-j) of Table 45, the verbal stems end in vowels. The front high vowel **/i/** in example 68(c-j) is elided when the suffix **-mɨ/-ma** was attached to all the verbal stems in examples 68(a-j). Whereas the suffix **-mɨ** syntactically require object, the suffix **-ma** does not. This is because when **-mɨ** is attached to a verbal root, it transforms the verb to transitive, and **-ma** when added to a verbal root, makes the verb intransitive**.** Yet, both function as imperative markers in context, thereby issuing

command in the verbal slot. However, these syntactic properties expressed is not the emphasis of this study.

Table 46: Directional marker -na in some Dagbani verbs

This table discusses location or directional marker **-na** in some Dagbani verbs.

	Verbal root	Gloss	Suffix	Directive	Gloss
(69)	**a) wa**	'dance'	**-na**	**wa-na**	'dance towards the speaker'
	b) labi	'return'	**-na**	**lab-na**	'come back/return here'
	c) siɣi	'descend'	**-na**	**siɣ-na**	'descended here'
	d) yɛli	'speak'	**-na**	**yɛl-na**	'speak towards the speaker'
	e) vooi	'pull'	**-na**	**vɔ-na**	'pull towards the speaker'
	f) kuhi	'cry'	**-na**	**kuh-na**	'cry towards the speaker'
	g) suhi	'beg'	**-na**	**suh-na**	'beg towards the speaker'
	h) kuli	'come home'	**-na**	**ku-na**	'came home'
	i) kuli	'come home'	**-na**	**kun-na**	'coming home'

It can be seen in example 69 of Table 46 that, the verbal stems end in vowels. However, when the suffix **-na** was attached, the front high vowel **/i/** in example 69(b-i) disappeared, while the syllable **/li/** in example 69(h & i) too got deleted. The long vowel **/oo/** in example 69(e) has been shortened to a half-open back unrounded advanced vowel **/o/** and further reduced to a half-open back unrounded un-advanced vowel **/ɔ/** before the suffixation. These are the effects of the suffix **-na,** which serves as locative or directional marker, as the data demonstrated. Like the Ga language, as Cambell (2017) argued,

Dagbani verbs, compared to the nouns, have more monosyllabic and monomorphic CV than the disyllabic and polysyllabic stems. All are considered because they are inflectionally sound.

The following buttress the discussion of inflectional morphemes and their functions discussed in tables above. The morpheme **-di** has allomorphs, **-ni, -ri,** and **-ti,** which together with the morpheme function as imperfective progressive markers and equally function as habitual imperfective depending on the context of usage in Dagbani. Similarly based on context, the morpheme **-da** and its variants, **-na, -ra,** and **-ta** individually functions as imperfective progressive markers in examples 60(a-j) of Tables 37 and example 63(a-j) of Table 39 respectively. The distinction between the morphemes functioning as progressive and habitual imperfection mostly depend on the syntactic property of transitivity.

However, the morpheme **-mi** in **chami**. 'go' and the morpheme **-ma** in **chama**. 'go' for instance, are individually morphemes and not allomorphs of a particular morpheme in the sense that, while **-mi** is attached to produce transitive verbs, **-ma** is attached to obtain intransitive verbs. Interestingly, both function as imperative markers that issue command in the Dagbani verbs. In relation to the syntactic property talked about, the **-mi** signifies that the verb **chami**. 'go' must take object because without the object, the utterance is not completed, thereby rendering the construction ungrammatical. Hence, the correct form is illustrated in example 70(a) and the ill-formed form in example 70(b) below:

(70) a) **Cha-mɨ** **shikuru.**
Go-IMPER school
'go to school.'

b) ***cha-mɨ.**
go-IMPER

However, the implication of the morpheme **-ma** is that the verb **cha-ma** 'go' must not take an object within a sentence; otherwise, it will nullify the grammatical content of the construction. Example 71(a) below is the acceptable illustration, while example 71(b) depicts the ungrammatical form.

(71) a) **cha-ma.**
Go- IMPER
'Go.'

b) ***cha-ma shikuru.**
Go-IMPER school

As exhibited by Doku (2019:73), the Ga expresses the future aspect by using the prefix **baa-,** which most of the time makes use of the deictic markers **ba-** and **ya-.** These two directional or locational markers show whether the action is near or far. Interestingly, Doku expresses further that when the prefixes **bàá-** and **bá-** are added, it results in **baaaba-,** which, when affixed to the Ga verb, indicates that the motion is towards the speaker. He postulates, on the other hand, that when the Ga future marker **baa-** is added to the deictic **ya-,** it produces the prefix **baaya-** which, when affixed to the Ga verb, gives the indication that the action is away from the speaker. To make it more clearer, Doku supported his observation with the below structures:

(72) a) **baa-ba-ŋma** ‘will come and write’

b) **baa-ya-ŋma** ‘will go and write’

Similar to Dagbani, this phenomenon of directionality operates as one of the functions of the verb inflectional markers (morphemes). As shown in Table 45, the suffix **-na** functions as a locative or directional marker. For instance, when there is a question, **O be ya**? ‘Where is she?’ And the response is **O ku-na** ‘she has come home'; it explains that the **ku** is the stem form of ‘come’, and the suffix **-na** becomes the inflectional morpheme, which serves as a directional marker in the construction. The expression **O ku-na** ‘she has come home’ has been interpreted as meaning that 'she has already done the movement, which is directed towards the speaker who is at home’. Henceforth, the suffix **-na** functions as a directional marker. Some linguistic scholars refer to this as a ventive marker (see Adam, et al. 2010:36-43). Consider another example below with the focus on main verb:

(73) **O** **kun-na**

3SG. Come-DIR

‘S/he is coming home’

It is observed that, **kuni** means ‘coming/going’, but when the suffix **-na** was attached, the front high vowel **/i/** was elided, and resulted **kun-na,** which means ‘coming/going home’. This means that the suffix **-na** is indicates direction as to where the action which has to do with movement is geared towards, in this case, it is geared towards where the speaker has positioned himself or herself at the time of the speech or utterance.

4.2 Some morpho-phonological processes in Dagbani inflectional processes

This section discusses some morpho-phonological processes that occur in the inflectional process of Dagbani major words. Generally, it has been observed that inflecting the major words has been noted to trigger some phonological processes in natural languages, including Dagbani. An understanding of these phonological processes would help illuminate the Dagbani grammar's interface between morphology and phonology**.** Some of the phonological processes include assimilation processes such as Homorganic Nasal Assimilation (HNA hereafter), vowel harmony, etc., and syllable structure processes like elision, epenthesis, vowel reduction, vowel lengthening, etc. The goal of this section is indeed to explain these phonological processes in Dagbani inflectional processes.

4.2.1 HNA & Vowel harmony system in Dagbani inflectional processes

This sub-section discusses HNA (cf. Sec. 2.6.1.1.1), and the vowel harmony system which comprises advanced tongue root [+ATR] and Un-advanced Tongue Root [-ATR] vowel features (cf. Sec. 2.6.1.1.2) as some of the morpho-phonological issues that arose in the inflectional process of Dagbani major words. The stems of Dagbani major words are prefixed and suffixed mostly with some grammatical markers that result HNA & Vowel harmony in the inflectional processes. The HNA & Vowel harmony of Dagbani major words in the inflectional processes are discussed below:

In reference to example 44(a-i) of Table 27 in sub-section 4.1.1 of the study, the HNA as discussed in the literature of this study by Kpodo (2015) and Negash (2015), naturally occured in example 44(a, c, d, e & h) of **F(A+E)**, where the **n-** is prefixed to the nominal roots in **E** of the Table 26 except in example 44(b, f, g & i) of the Table 26 where the

prefix **n-** co-occured with an aveo-palatal segment /y/ in the example 44(b, f & g) and also co-occured with a bilabial segment /w/ in example 44(j). It is also observed that the data is made up of vowel harmony system. Thus, the choice of the prefixes from example 44**(B-D)** is determined by the ATR vowel features of the nominal roots. Whereas the prefix **bu-** with the [+ATR] vowel attached to the nominal roots in example 44(b, e, f, h, and i) of **H(C+E)**, the prefixes **a-, bʊ-** and **dɪba-** with the [-ATR] vowels are attached to the nominal roots in E of the example 44(a, c, d, and g) to obtain the inflected forms in **G(B+E), H(C+E)** and **I(D+E)**. However, the syllable types for the inflectional prefixes recognized are C, V, CV, and CVCV, as in **n-, a-, bu-/bʊ-,** and **dɪba-**.

Table 47: HNA & Vowel harmony of Dagbani major word classes (WC hereafter)

The Table 46 below constitutes data that discusses HNA & Vowel harmony of Dagbani major word classes (WC hereafter).

	Word	Gloss	WC	Suffix	Output	Gloss	WC
(74)	**a) sɔŋ-Ø**	'a mat'	noun	**-di**	**sɔn-dɪ**	'mats'	noun
	b) mʊɣɪlɪŋ-ga	'narrow'	adj.	**-si**	**mʊɣɪlɪn-sɪ**	'narrow'	adj.
	c) karim	'learn'	verb	**-da**	**karɪn-da**	'learning'	verb
	d) luŋ-a	'drum'	noun	**-si**	**lun-si**	'drums'	noun
	e) nɔŋ-a	'scorpion'	noun	**-si**	**nɔn-si**	'scorpions'	noun
	f) nyiriŋ-ga	'minute'	adj	**-si**	**nyirin-si**	'minute'	adj
	g) dulim	'urinate'	verb	**-da**	**dulin-da**	'urinating'	verb
	h) kpalim	'ululate'	verb	**-da**	**kpalin-da**	'ululating'	verb
	i) dagban-a	'person'	noun	**-ba**	**dagbam-ba**	'persons'	noun
	j) bɪl-a	'small'	adj	**-hi**	**bi-hi**	'small'	adj.

Example 74(a-j) of Table 47 composed of data made up of some of the words that are inflectionally productive in Dagbani. Thus, the data is on nouns, adjectives and verbs with varied inflectional endings that trigger some phonological issues in the inflectional processes. It is however observed that HNA occurs throughout the data, from example 74(a-i). This is because when different inflectional morphems such as **-di, -da,** and **-si** were attached to the various stems resulted in a change in the last segments of of the stems in examples 74(a-h). That is from the nasal segments /ŋ/ and **/m/** to **/n/** to conform to the place of articulation of the oral and initial segments **/d/** and **/s/** of the inflectional suffixes; **-di, -da**, and **-si** as exhibited also in Arsi-Bale Afan Oromo (Negash, 2015:244). The nasal **/n/** in the stem of example 74(i) on the other hand is noticed to have acquired the features of the bilabial segment **/b/** of the inflectional suffixes; **-ba** and subsequently altered the **/n/** to **/m/** in order of alignment to the place of articulation of the oral sound **/b/** as (Kpado, 2015:126) and Negash (2015:244) opined.

The data also depict vowel harmony. Thus, [ATR] vowel features. This is seen in examples 74(a-c) of Table 47, where the stems and the inflectional suffixes influence one another by effecting some changes in order to conform to the rule of the language that, vowels must come from one set of vowels (either +ATR or -ATR) rather from the two sets of vowels, however, the vowel **a** is neutral (Hudu, 2010: 5). The neutrality in this case means that, the vowel **a** can be found in words with either the +ATR or –ATR vowels. This idea of Hudu is also established in the literature of other languages such as Akan (cf. Dolphyne, 1988: 18 cited in Apenteng & Amfo, 2014: 222), Kusaal (cf. Faso, n d), etc.

4.2.2 Elision, & Epenthetic /i/ & /n/ in Dagbani inflectional processes.

This sub-section concentrates on elision, and epenthesis (cf. Sections **2.4.1.2.1** and **2.4.1.2.2**) as some of the morpho-phonological processes that occurred in the inflectional process of Dagbani major words. Dagbani words are sometimes grammatically affixed with morphemes that phonologically amend the original words. The elision and epenthetic issues are noticed and discussed in Table 47 below:

Table 48: Elision, & Epenthetic /i/ & /n/ in Dagbani major word classes

	Word	Gloss	WC	Suffix	Output	Gloss	WC
(75)	**a) maan-i**	'okro'	noun	**-a**	**man-a**	'okra'	noun
	b) nakɔh-a	'butcher'	noun	**-nima**	**nakɔhi-nima**	'butchers'	noun
	c) gɔmnant-i	'government'	noun	**-nima**	**gɔminanti-nima**	'governments'	noun
	d) sabin-li	'black'	adj	**-la**	**sabi-la**	'black'	adj
	e) waɣin-li	'long'	adj	**-la**	**waɣi-la**	'long'	adj
	f) zilin-li	'deep'	adj	**-ma**	**zili-ma**	'deep'	adj
	g) mulin-li	'elongated'	adj	**-ma**	**mʊli-ma**	'elongated'	adj
	h) bili	'rape'	verb	**-di**	**bin-di**	'raping'	verb
	i) goli	'fork'	verb	**-da**	**gɔn-da**	'forking'	verb
	j) pili	'to roof'	verb	**-da**	**pin-da**	'roof(s)'	verb

It is observed in example 75(a-j) of Table 48 that an elision of the vowel **/a/** has occurred in the stem of example 75(a) before the suffixation of **-a** to obtain the plural form in the output as shown. Besides, it is generally observed that there is deletion of singular

number markers of the nouns and adjectives for the plural number markers to be attached to produce the plural forms. The syllable **/li/** of the bare forms of the verbs in example 75(h-j) has also been elided alongside the nasal segment that precedes it for suffixation to obtain imperfective progressive and habitual forms.

Epenthesis, on the other hand, is observed throughout example 75(b-j) of Table 47. This is realized when /ɨ/ is epenthesis in example 75(b-g) before the plural number markers of the nouns and adjectives. However, the nasal **/n/** is also inserted in the verbal stems of example 75(h-j) before the progressive and or habitual imperfective markers **-di** and **-da** were appended. This insertion is for the fact that the segment **/d/** in the inflectional suffixes harmonizes with heavy syllables in context rather than the light ones in Dagbani. (cf. Nindow, 2017).

4.2.3 Vowel rising/reduction and vowel lengthening in Dagbani inflectional processes.

This sub-section provides a discussion on vowel rising and reduction, as well as vowel lengthening as some of the morpho-phonological processes in the inflectional processes of Dagbani. These form part of the mechanisms for repairing ill-formed words in the inflectional processes. These mechanisms are shown and discussed in Table 48 below:

Table 49: Vowel reduction, Vowel rising, & Vowel lengthening in Dagbani major word classes

		Word	Gloss	WC	Suffix	Output	Gloss	WC
(76)	**a)**	**zo-o**	'fly'	noun	**-hi**	**zɔ-hɨ**	'flies'	noun
	b)	**kpɛm-a**	'elder'	noun	**-ba**	**kpam-ba**	'elders'	noun
	c)	**san-a**	'stranger'	noun	**-ba**	**saam-ba**	'strangers'	noun
	d)	**zom-a**	'blind person'	noun	**-ba**	**zoom-ba**	'blind person'	noun
	e)	**zilin-li**	'deep'	adj	**-ma**	**zɨl-ma**	'deep'	adj
	f)	**ʒe-e**	'red'	adj	**-hi**	**ʒɛ-hɨ**	'red'	adj
	g)	**che**	'allow'	verb	**-ya**	**chɛ-ya**	'allowed'	verb
	h)	**ŋme**	'shoot'	verb	**-mi**	**ŋmɛ-mi!**	'shoot!'	verb
	i)	**lɛlɨ**	'lick'	verb	**-ni**	**lee-ni**	'licking'	verb
	j)	**mɔli**	'announce'	verb	**-na**	**moo-na**	'announce(s)'	verb

Example 76(a-j) of Table 49 shows data on vowel reduction, vowel rising, and vowel lengthening. It is noticed also from the data that the phonological processes that occurred in the inflectional processes of the major words in Dagbani include vowel reduction. This is observed in the example 76(a, b, e, f, g, & h) where the vowels **o**, **ɛ, i,** and **e** are reduced to **ɔ, a, ɨ, ɛ** respectively. As observed, the data also show vowels **ɛ** and **ɔ** in example 76(i & j) being rose to **e** and **o** respectively. Vowel lengthening on the other hand is yet a phonological process observed in example 76(c, d, i & j) where the vowel segments such as **/a/, /o/, /e/** and **/o/** are being lengthened in the output of the inflectional process.

4.3 Summary of the chapter

This chapter discusses data presentation and its analysis of inflectional processes in Dagbani major word classes. The inflectional processes in Dagbani, though a morphological process, touches on other levels of the grammar of the language, including the phonology. This section of the study deals with affixation in that, inflectional morphemes are affixed to the roots or base words to obtain the inflected forms. However, this process is mostly done through suffixation, except few instances where a prefix and its variants have been interfaced, and that is in the cardinal numbers of the Dagbani (cf. Sub-section 4.1.1 of example 44(a-i) in Table 27). The study also examined the phonological processes that occured when the major words in Dagbani are inflected. The study reveals that the inflectional processes in Dagbani usually conditions some phonological processes, like assimilatory and syllable structure processes. The analysis of the phonology of Dagbani-inflected words has shown that, to adequately account for the inflectional processes in the language, one needs to understand the phonology of the language well.

CHAPTER FIVE

THE STUDY'S SUMMARY, FINDINGS AND RECOMMENDATIONS

5.0 Introduction

This thesis sought to investigate how the major words of Dagbani are inflected. This chapter conveys conclusiveness to the study of some inflectional processes in Dagbani. By the way, it provides a summary of the discussions in the various chapters, summarizes the findings drawn from the study of Dagbani inflections, and offers some suggestions or recommendations for further researches. This chapter is divided into three sections, as follows: Section 5.1 presents a summary of the study; Section 5.2 presents a summary of the findings made in the study; and finally, Section 5.3 offers some suggestions or recommendations for further studies.

5.1 Summary of the study

This section discusses a summary of the study. To recap, inflection is the process by which certain bound morphemes are attached to the stem or root and/or base words to modify the meanings through pluralization, and aspect rather than change of the meanings or grammatical classes to which the words belong.

Briefly put, chapter one of this study covered background to the study, statement of the problem, purpose of the study, objectives and research questions of the study, significance and as well delimitation of the study.

Chapter two discussed the notion of inflection: inflection in major word classes; inflection in Mabia languages; and inflection in Kwa and non-Ghanaian languages. The chapter further examined morpho-phonological processes observable in the inflectional processes as well as summary of the chapter.

A comprehensive description of research methodology is captured in Chapter 3. The study based its findings on existing literature, both published and unpublished Dagbani studies, to obtain data. Another source of data was through observation and familiar means, usually through discussions with not only the language speakers but also facilitators of the language. Finally, as a native speaker of Dagbani, the researcher native intuition assisted in obtaining some data for this thesis. Among the major sources for the data, the native intuition was one.

Chapter four was devoted to the analysis of the data on the inflections of the various major word classes in Dagbani. The collected data were coded and classified into various groups of grammatical categories such as nouns, adjectives and verbs not forgetting of their affixes such as prefixes and suffixes. Thus, after the affixes (inflectional morphemes) have had contact with their lexical roots.

The study revealed the existence of inflection in Dagbani, and with that, suffixation is the most productive and predictable device in inflectional processes of Dagbani.

Finally, a conclusion on the various findings of the study and a summary of the findings were presented in Chapter 5. Some recommendations for future researches were also made in this chapter.

5.2 Summary of findings

This section presents a summary of the study's findings. The study explored some inflectional processes in Dagbani. It identified the inflections of the major words in Dagbani, examines functions of the inflections, and investigate the morpho-phonological processes involved in the inflectional processes. Generally, the inflectional processes in Dagbani are mostly achieved through a morphological process of affixation (prefixation and suffixation).

The kinds of inflections identified in the study are the nominal inflections, thus being categorized into singular and plural pairs such as **-a/-ba, -li/-a, -u/-hi, -ɣu/-ri, -ga/-si, -gu/-ti, and -i/-nima** etc; adjectival inflections, that is, they are being grouped like the nominal inflections as **-i/-a, -li/-a, -li-la, -li/-ma, -e/-hi, -ga/-si, -ɣu/-ri**, etc; and the verbal inflections such as **-ya, -di, -da, -mi, -ma, -na,** etc.

Usually, the inflectional morphemes function as grammatical entities, such that the nominal inflections play the role of number marking, be it singular or plural. The adjectival inflections, like the nominal inflections, also function as singular and plural number markers. The functions of the nominal and adjectival inflections in connection to their suffix pairs mark the distinction between their singular and plural forms in Dagbani.

The verbal inflections, on the other hand, play the role of aspectual marking, imperative, locative and or directional marking.

It is found that these suffixes are selected based on the morpho-phonological endings of the major words. For instance, nouns that ended with either nasal sounds, **/m/** or **/ŋ/** and **/i, di, gu,** and **li/,** took on **-a** as the plural suffix. Still, some singular nouns ended with **-li** but took on **-ya** in the plural forms. Nouns that ended with long vowels or diphthongs assumed the suffix **-hi** in the plural forms, except for a few words like **naa** 'a chief', **duu** 'a room', **puu** 'a farm', **nia** 'aim', and **pia** 'ten' that are not in conformity with the rule because they naturally took on **-ri** in their plural forms instead. Nouns with **/u, ɣu**, and **ga/** endings assumed **-ri** in their plural forms. Some of the nouns ended with **-a** but took the suffixes **-ba** and **-si** as their plural markers. Interestingly, nouns with the **-ba** plural suffix belong to the semantic class of human animate. In few instances, one or two nouns, such as **baɣa,** 'soothsayer', is noted to be exceptional because, though it belongs to the human animate class, but rejected the **-ba** and took on **-si** in the plural form. Otherwise, nouns that took on the suffix **-si** in the plural forms either belong to the semantic class of non-human animate or inanimate. It is only a few nouns again here that do not follow the rule but follow the same pattern of pluralization. Such nouns are **baɣa** 'soothsayer' which belongs to the human animate, and **teeŋa** 'chin' which belongs to human animate body parts classification. Besides, nouns with the singular endings **-ga** and **-gu** took on the **-si** in the plural forms. However, they belong to the animate classification except **wabga,** 'lamed person', which belongs to human animate. Some singular nouns ended with the vowel **/o/** and a syllable **/gu/** but adopted the **-ti** suffix in the plural formations. It is found

out that apart from one or two nouns such as **birigu** 'dumb' and **jaŋkuno** 'cat' that belong to human animate and non-human animate classes, respectively, the rest of the nouns in this set belong to the animate class. Like the class that ended with the nasal sounds in the singular forms, this final set of singular nouns too ended with the same nasal consonants, with the null morpheme (**-Ø),** marking their singularity. Whereas some ended in vowels, others ended with the syllable **/ba/** but adopted the default **-nima** in their plural forms as observed also by Hudu (2005). It has been discovered that the default plural is not only applied to loanwords in Dagbani but to other typical nouns too. It is again discovered, as Hudu (2005) claimed, that the plural forms of the nouns can indeed be determined from the singular forms. The analysis discovered that the noun forms inflectionally productive in Dagbani are countable and regular nouns.

Similarly, the singular forms of the adjectives are marked in the bare forms, which are equally suffixed for plural forms like the nouns. As observed however, some of the adjectival plural suffixes took different forms, besides some having the same forms as the nominal suffixes. It has been found out also that some adjectives ended with nasal consonants /**m**, **ŋ**/ and the segment **/i/**, as well as the syllables **/gu/** and **/li/**. All these selected **-a** in their plural forms. Some of the adjectives that ended with the syllable **/li/** employed the suffix **-la** in the plural forms. Beter still, some of the adjectives still end with **-li** but took on the plural suffix **-ma** instead. It is also discovered that, like the nouns, some of the singular forms of the adjectives ended with either long vowels or diphthongs, such observed the suffix **-hi** in the plural forms. There is, however, a similarity here in terms of the number marking, regarding the nouns and the adjectives. The adjectives

whose singular and plural markers are **-ga** and **-si,** respectively, are observed to have limited data, as 51(a-b) of Table 34 shows. Some bare forms of the adjectives ended with the syllable **/ɣu/,** which mark the singular forms, and adopted the suffix **-ri** in the plural forms. Also, it has been discovered that adjectives can be more than one following the noun they modify. In that case, the root forms of the nouns were used, and the number forms of the adjectives except the latest were observed to have dropped too, as observed also by Ziblim (2018) and Abubakari and Issah (2023:6). The study also revealed that it is not always the case where the number markers of the adjectives drop, as the scholars observed (see example 58(a & b) in sub-section 4.1.2.1).

On the part of verbs, it is found out that the bare forms of the main verbs represent simple present and past forms depending on the context of usage. However, the suffix **-ya** has also observed marked past events, and thus expressed perfection. Dagbani verbs are noted for their perfective and imperfective nature, as discussed in previous sub-section 4.2.3. It was discovered that the morpheme **-di** operated with allomorphs of **-ni, -ri,** and **-ti** which together functioned as imperfective markers in the verbal domain, as the data showed. Syntactically, the suffix **-di** and the allomorphs are attached to verbs that require object(s). The morpheme **-da** and its variants **-na, -ra,** and **-ta** that equally mark imperfective events are attached to verbs that syntactically require no object(s). The study again revealed that the suffixes **-di** and **-da,** together with each of their variants, expressed habitual, as the context will suggest. Hence, some of the inflectional morphemes are observed to be dual or multifunctional.

Furthermore, the suffixes **-mɨ** and **-ma** are seen as separate morphemes ...that mark imperative. Thus, each when inflected on the main verbs issues commands. Whereas the **-mɨ** was attached to produce transitive verbs, the **-ma** was attached to obtain intransitive verbs. Also, the suffix **-na** inflected on the verbs, marking location or direction within the verbal system of Dagbani. Conclusively, Dagbani verbs are inflected for aspect.

In the case of phonological processes, some of the processes identified in the inflectional processes of Dagbani major words are assimilation processes such as HNA, vowel harmony, and syllable structure processes like vowel and syllable elision, vowel reduction and/or vowel raising, vowel shortening, epenthesis, vowel lengthening, consonantal alternations, nasal insertion, etc. Generally, it is discovered that the syllable structure for the Dagabni inflectional morphemes covers C, V, CV, and CVCV for prefixes and V, CV, and CVCV suffixes of the nouns, adjectives and the verbs. There was indeed evidence of some of the morpho-phonological processes in the study. As observed by some linguistic scholars, these processes are applicable to the inflectional processes of the major words in Dagbani to ensure well-formed inflected words. The phonological processes are therefore perceived as tools or mechanisms for repairing ill-forms of inflected words in Dagbani.

Throughout the analysis in Chapter 4, it was obvious that there is indeed a strong relationship between morphology and phonology. This is because the morphological aspect deals with the composition of word structures. That is, the stems and their affixes meaningfully joined. This explains that, morphological analysis cannot be completed

without interference of phonology. Thus, segments in the inflectional component and the stems interact and end up influencing one another productively. This further clarifies that knowledge of the sound systems, as well as the phonological processes, aid in the analysis of the inflectional processes.

Consequently, Dagbani employs overt strategies in marking number for some nouns and some adjectives as well as aspect for some verbs. Finally, this study contributes information from Dagbani to the continuing discussions on the study of inflectional morphology in natural languages.

5.3 Recommendations

This section presents some recommendations. As the saying goes, no amount of research work is said to be outright. For this reason, works can still be carried out regarding inflections in Dagbani. This is because, issues that are not discussed in this study might be discovered. It is therefore believed that there are still relevant issues to research into, because this study though serves as one of the major works on Dagbani inflections; but, can be improved on by still perusing the phenomenon, focusing on the syntax of inflectional processes in Dagbani. Also, description and a functinnal approach for formal investigation is recommended.

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