

UNIVERSITY OF EDUCATION, WINNEBA

MORPHOLOGICAL PROCESSES IN MO



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DECLARATION

I, Samuel Akwasi Konney, 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:.....

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SUPERVISORS' DECLARATION

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

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Signature:.....

Date:.....

..... (Co-Supervisor)

Signature:.....

Date:.....

DEDICATION

I dedicate this piece of work to my adorable mother, Rose Afriyie, my late father, Samuel Akwasi Konney and all my siblings.



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First, I would like to thank the Lord God Almighty for seeing me through yet another phase of life. It has been difficult, but His grace and mercy have been there.

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GLOSSARY

1. A Adjective
2. ELP Endangered Languages Project
3. GILLBT Ghana Institute of Linguistics, Literacy and Bible Translation
4. IA Item and Arrangement
5. IP Item and Process
6. NOM Nominal
7. N Noun
8. PRES Present Tense
9. PL Plural
10. RED Reduplicant
11. SUF Suffix
12. SIL Summer Institute of Languages
13. SERCH Service, Education, Research, Community and Hope
14. V Verb
15. WP Word and Paradigm

ABSTRACT

The study investigates morphophonological processes in Mo under the framework of Item and Arrangement (Hockett, 1954). Interviews and documents were the instruments used to arrive at the data. Four morphological processes were identified, namely; compounding, affixation, reduplication and multiple formations. The study established that N+N, N+A and N+V are the various patterns of compounds found in Mo and with their accompanying prominent phonological processes such as vowel, lateral and syllable deletion, vowel shortening, vowel lengthening and homorganic nasal assimilation. The study also revealed that two semantic types of compound words exist in Mo: endocentric and exocentric compounds. The study equally identified the suffixes **-t**, **-a**, **-i**, **-nĩ**, **-nã**, **-la**, **-ra**, **-nar**, **-e** and **-rt** as inflectional suffixes for plural marking on nouns in Mo whereas the suffixes **-yie**, **-wie**, **-tu/-tuna**, **-i**, **-a**, **-ga**, **-ɔ**, **-u**, **-v**, **-li**, **-rt** and **-t** were identified as derivational suffixes in the language. The study revealed that verbs with different syllable structures undergo both full and partial reduplication with some phonological instances of vowel shortening and consonant elision. Additionally, the study discovered that the formation of agentive nouns in Mo involves the amalgamation of two morphological processes, reduplication and suffixation, and with vowel harmony as the phonological process that characterises their formation. The study established some unique functions of the morphological processes in Mo. Compounding was identified as a derivative mechanism, affixation as pluralisation (inflectional) and nominalisation (derivational) mechanisms, and reduplication as an adverbialisation (derivational) mechanism.

CHAPTER ONE

INTRODUCTION

1.0 Introduction

Language qualifies one as a member of a particular speech community or group. In fact, it is the only means by which humans conduct their activities. It is therefore, in the light of the importance of language that Syal and Jindal (2007, p. 6) say “It is as important as the air we breathe and it is the most valuable possession of man. In the scheme of things, all humans are blessed with language”.

According to Radford (1997, p. 83), communication is meaning-dependent, and these meanings depend on the make-up of words which are the morphemes which in turn are environment dependent. Morphemes are those basic elements of meaning that are arbitrarily united which cannot be analysed into smaller or simpler elements. They are grouped into free morphemes (root words) that can stand on their own; the bound morphemes that cannot stand on their own, and the zero morphemes – those unseen reflections in a word where no inflectional essence is seen, like in the changing of some verbs into nouns in English language. The study of these morphemes forms an important part of linguistics as it is an inquiry that serves as the bridge between syntax and phonology.

The primary focus of the study is to explore the morphological processes and their accompanying phonological processes as well as the functions of the morphological processes in Mo. This chapter offers a general introduction to the study. It begins with a brief description of the background of the language under study and the location of the

language speakers in Ghana. This will be followed by an outline of the crucial issues relating to the study, ranging from statement of the research problem, purpose of the study, research questions, significance of the study, delimitations and organisation of the study.

1.1 Background of the Language

The Mo/Deg language, according to Atta-Akosah (2004, p. 14-16), belongs to the Gur language family and is a member of the Grushi cluster which includes Tampilma, Chakali and Sisaala, all in Ghana. Atta-Akosah (2004) postulates that there are two mutually intelligible dialects of Mo/Deg, namely Longoro and Mangom. The former is the main dialect spoken in most communities in south of the Black Volta River, with the exception of villages like Nyambwe, Sabule and Chaara where Mangom is spoken. The latter is spoken in the north except Chebrenyua and Nipui (Carpenter) that also speak Longoro. A variation of the Mangom dialect is spoken in Cote d'Ivoire and in the Jaman North District in Bono Region. The Dega in Ghana call those in L'Cote d'Ivoire 'Lamoolatina' which means 'people beyond the river'. The study will use data from the Longoro dialect of Mo/Deg because it is the dialect spoken by the researcher's informants and predominantly spoken in the research areas. The Mangom variety is also not often considered as pure Mo hence the choice for the Longoro variety which is considered as pure. The indigenous speakers of the language call themselves Dega, meaning 'to blossom', 'multiplying', 'spreading quickly' or 'fertility'. One person is called a Deg, the language is also known as Deg. Other ethnic groups in Ghana know them as Mo, meaning 'thank you' in the Akan language. Why the Deg language is called Mo is a piece of oral history. Having migrated down south from the north, precisely from

a town called Tiwii in Sisaala, after a misunderstanding with the Sisaal over the head of a dog, the Dega settled among the Gonjas north of the Black Volta and the Akans south of the Black Volta. Atta-Akosah (2004, p. 15) recounts that in 1893, the people of Nkoranza and Abease were attacked by the Ashantis. The Dega were well known for their bravery and exploits in war and so the Nkoranza people came asking them for help when they realized they were losing the fight. Although Nkoranza and her allies were defeated, they came back to the Dega with a congratulatory message for their gallant role, saying ‘Mo!’, ‘Mo!’, ‘Mo!’ meaning ‘thank you’ or ‘well done’. This then became the name of the people and their language. Therefore, the researcher would prefer to use the name Mo in this thesis because that is what many people can easily relate to especially in the Ghanaian context.

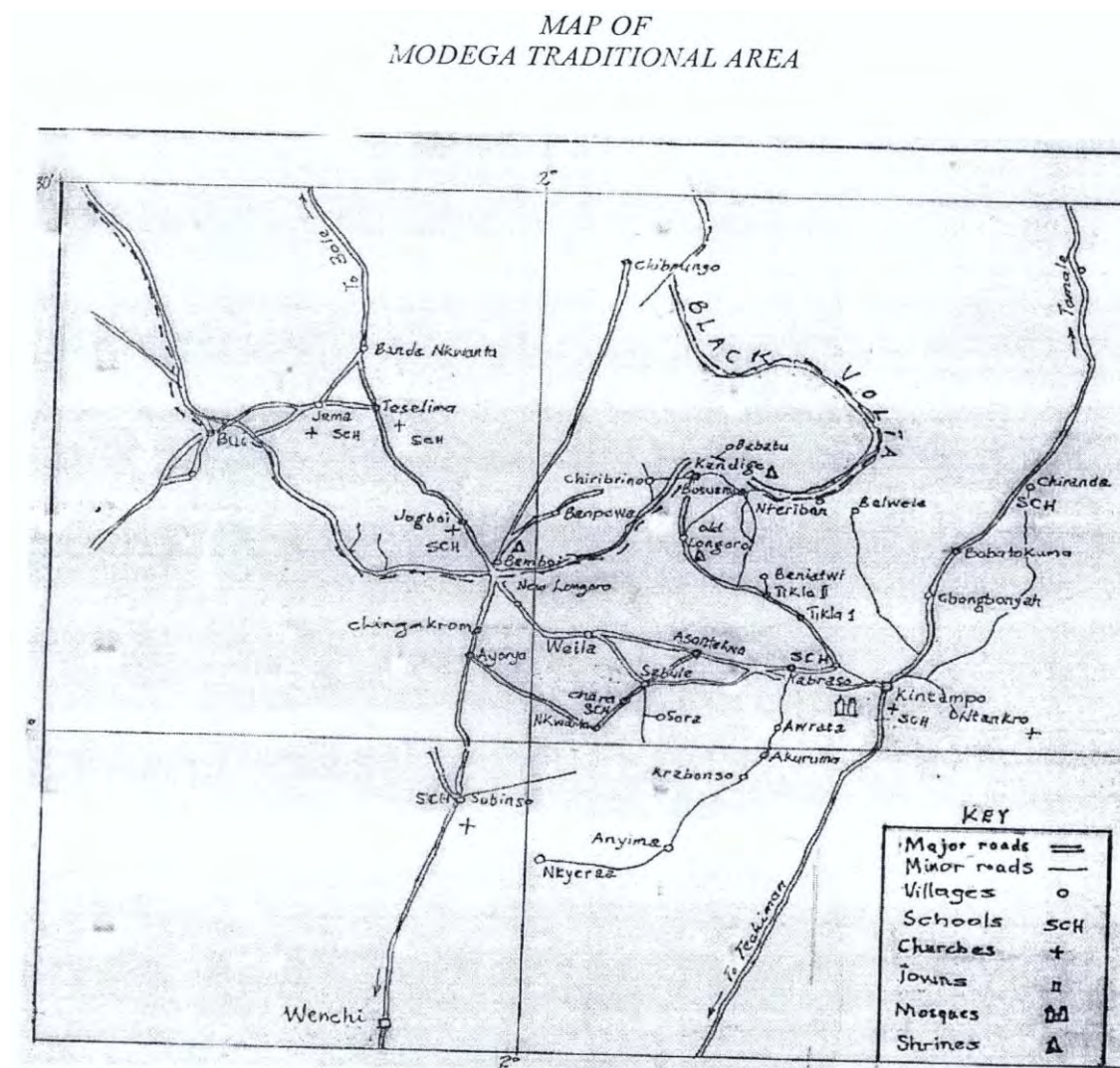
The Dega people live within both the Bono East and Savannah Regions of Ghana. The two regions are divided by the Black Volta River which also separates the two towns of Mo/Dega, New Longoro (Mantukwa) in the Bono East Region and Bamboi (Gbanboi) in the Savannah Region. The entire Dega area used to be within the Ashanti Territory until the British colonial government created the Northern Territory in 1908 and used the Black Volta River as a boundary without due cognizance of the fact that one ethnic group had been divided over two territories. The people are therefore, split among the Bole district in the Savannah Region and Kintampo district in the Bono East Region. They (the people) are surrounded by the Nafaana people on the West, the Bono in the South and the Gonja in the North. There are some Dega in the Jaman district and are in villages like Bonakire, Adadiem and Dokachina. There are yet others in Cote d’Ivoire and villages like Dwoboi, Wireke and Zagala (Atta-Akosah, 2004).

1.2 The Location of the Mo/Dega in Ghana

The Mo language is spoken by a particular group of people within the Bono East and the Savannah Regions of Ghana. The two regions are divided by the Black Volta which also separates the two major towns of Mo which have two paramount chiefs, New-Longoro (Mantukwa) in Bono East and Bamboi (Gbambwɛ) in Savannah Region. The whole Mo/Deg land as earlier mentioned was within the Ashanti Territory till the British colonial government carved out the Northern Territory in 1908, using the Black Volta river as the boundary without due consideration of the fact that one ethnic group had been divided over two territories. The people are therefore split among the Bole District in the Savannah Region, the Kintampo Municipality in the Bono East Region and the Wenchi Municipality in the Bono Region.

The Mo/Dega in the north speak the Mangom dialect in places such as Bamboi, Jama, Jugboi, Nepui(Kapinta), Tasilima, and a few other places, while those in the south speak the Longoro dialect in places like: Busuama, Kintampo, Old Longoro, Manchala, Fignyoa (Ahenakom), Kandige, Yaara, Tarbaŋ, Soronuasi, Babatokuma, and other places. Within the Longoro dialect is another brand of the Mangom dialect different from the northern Mangom, and it is spoken in Mansie (Nyambwɛ). Yet another slightly different form of the Mo/Deg language which is between Mangom and Longoro is spoken in places like Adadiem, Dokachina and Bonakire in the Jaman North District of the Bono Region. Below is a map showing the land area of the Mo/Dega people as could be seen in figure 1.

Figure 1: Map of Mo/Dega Traditional Area (Mensah, 1983, p. 15)



1.3 Statement of Problem

The Mo language is less known in terms of academic research, especially in Morphology, relative to the neighbouring languages such as Sisaali, Gonja, and the Asante Twi dialect of Akan from which it borrows a number of its words. The language stands the risk of falling out of use as its speakers and even teachers of Mo shift or switch to speaking other languages such as Asante Twi and Sisaali. Also, this has greatly affected a cross-section of the Dega, especially, the younger generation, to the extent that they are not well

grounded in the use of the language. For this reason, it is considered endangered according to the classification of endangered languages in Ghana (Summer Institute of Languages International [SIL], 2009). Although, the Ghana Institute of Linguistics, Literacy and Bible Translation (GILLBT) has made tremendous efforts by conducting some research into the Phonology and Orthography of the language, this effort is still not adequate. Apart from the efforts made by the GILLBT, there are other equally important studies that have been conducted on the language. One of the studies worth mentioning is Atta-Akosah (2004) which particularly focused on Bible translation in Christian mission with specific focus on the spiritual and socio-cultural impact of the Bible translation strategy of the GILLBT on the Dega people of Ghana. Anto (2014) also investigated the differences between English and Mo nominal group (NG) qualifiers. The primary focus of his study was to identify any similarities within the nominal group qualification structures of these languages. Again, Anto and Okrah's (2015) syntactic and descriptive study which focused on exploring the structure of the Mo adjective phrase is worth noting. On the contrary, Brew et al., (2015) study is another scholarly study on the language. Their study was both descriptive and comparative in nature with primary focus on exploring the linguistic or grammatical items which complement the verb in both English and Mo and, examining the differences and similarities between the two languages in terms of their verbal complementation. While the resourcefulness of the aforementioned linguistic accounts on the language cannot be downplayed, none of them caters for the focus of the present study.

Though it is also formally studied in community adult classes and in some basic schools in the Mo communities, the Morphology aspect of the grammar of the language has

received less scholastic attention. It is based on these that the current study seeks to investigate into the morphology of the language with specific focus on exploring the morphological processes and their functions in Mo thereby filling this linguistic gap and contributing to the linguistic knowledge in Morphology as well as the ongoing academic discussion on the grammar of the language.

1.4 Objectives of the Study

The objectives of the study are:

1. To identify the morphophonological processes in Mo.
2. To identify the functions of the morphological processes in Mo.

1.5 Research Questions

This research seeks to answer the following specific questions:

1. What are the morphophonological processes in Mo?
2. What are the functions of the morphological processes in Mo?

1.6 Significance of the Study

The significance of this study are:

1. It will contribute to the description of the grammar of the language.
2. It will serve as a valuable resource material for people who desire to work on the language.
3. The study will also serve as a basis for further research into the morphology of the language.

1.7 Delimitations of the Study

The study is delimited to morphological processes in Mo but not phonological, syntactic, semantic, etc. in spite of the fact that there may be other morphological processes such as conversion, internal modification and back derivation in Mo, the study is delimited to solely the identified morphological processes such as compounding, affixation, reduplication and multiple formations in the language. Though Mo has one other different dialect, the study is also delimited to only the Longoro dialect of Mo because of limited time and resources.

1.8 Organisation of the Study

The rest of the thesis is organised as follows: Chapter two presents a review of works that relate to the current study, some aspects of the phonology of Mo as well as a discussion of the theoretical framework to be employed in the analysis of data. In chapter three, the methodology used for data collection is discussed and a comprehensive analysis of the data is presented in chapter four. The conclusion, summary of findings and recommendations of the study are also discussed in chapter five.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

This chapter reviews works in relation to the present study. The literature is reviewed on morphological processes in general and under the following sub headings: inflection, derivation, compounding, reduplication, affixation and nominalisation. Some aspects of the phonology of Mo are also reviewed. It also presents a discussion on the theoretical framework, Item and Arrangement model (Hockett, 1954). Some detailed discussions on the other morphological models, their strengths and weaknesses in relation to morphological analysis are equally presented in this chapter.

2.1 Morphological Processes

Generally, linguists view morphological process from two perspectives based on their function: inflectional and derivational processes. The former yields forms of lexemes and the latter new lexemes (Bauer, 2003, p. 91; Booij, 2005, p. 112; Booij, 2006, p. 654). Rochelle Lieber claims that “inflectional word formation is word formation that expresses grammatical distinctions like number (singular vs. plural); tense (present vs. past); person (first, second, or third); and case (subject, object, possessive), among others. It does not result in the creation of new lexemes, but merely changes the grammatical form of lexemes to fit into different grammatical contexts” (Lieber, 2010, p. 7). Another difference, according to Aronoff and Fudeman (2005) is that “inflectional morphology does not change the core lexical meaning or category of the words they are attached to, while derivational morphology brings about changes in meaning”. It is vital to keep in mind that the borderlines between the two kinds of morphology will become complicated

when we try to analyse more data in this study. Accordingly, it is essential to remind ourselves that it is in fact not always easy to decide whether we are dealing with an inflectional or derivational affix in a given context. As we will see below, the main difference between inflection and derivation lies in their function.

2.1.1 Inflection and Derivation

Morphology can be divided into two categories namely inflection and derivation, we might find it necessary to examine what lies behind this dichotomy approach. Bauer (2003, p. 14-15) lists the following three major strategies of differentiating between an inflectional affix and derivational one:

1. Listing the categories (of the base, stem and new word-form)
2. Identifying the affix meaning
3. Checking the productivity

Below, we will observe how the three ways work. By the phrase “listing the categories (of the base, stem and new word-form)”, we mean that we see what part of speech we have after an affix in English, normally either a prefix or suffix, is combined with a base or stem. If a new word-form and its base belong to different categories, we may then conclude that it is derivation, and if the new word-form and its stem are of the same category and the affix involved is a suffix, we would say that this is inflection (Bauer, 2003, p. 14). Table 1 summarises the above points.

Table 1: Inflectional Affixes versus Derivational Affixes (Categories)

No.	Base/Stem	Complex Word	Inflection/Derivation
1	kick (V, stem)	kick.ed (V)	Inflection
2	calculator (N, stem)	calculator.s (N)	Inflection
3	able (Adj, base)	en.able (V)	Derivation
4	critical (Adj, base)	critical.ly (ADV)	Derivation
5	do (V, base)	undo (V)	Derivation
6	consistent (Adj, base)	inconsistent (ADJ)	Derivation

The second strategy is to identify the meaning of the affix of a complex word. In English, ‘inflection always carries a regular meaning and derivation may or may not do so’ (Bauer, 2003, pp. 14-15). For instance, the inflectional affixes **-ed** and **-s** in the Table above. The meaning of the suffix **-ed** which is added to a regular present tense verb as in **kicked** is constant, namely either ‘past tense’ or ‘past participle’, depending on context. Similarly, the meaning of the inflectional suffix **-s** which is combined with a singular countable noun as in **calculators** is the same at all times, that is, ‘plural’.

Now let's raise this question: What is the meaning of the derivational prefix **en-** as in the words **enable**, **encourage** and **encamp**? Firstly, we can say that the prefix **en-** means ‘to make X’, where X may refer to any adjective. Therefore, **enable** means ‘make (an object) able’ as in ‘The machines **enable** us to create copies without losing quality’. Secondly, we might want to say that the derivational affix **en-** also means ‘to make somebody or something have X’ as in the verb **encourage**. So, **encourage** may mean ‘to make somebody or something have courage’ as in the sentence ‘Teachers **encourage** their students to express their ideas’. Thirdly, **en-** might also mean ‘to put (somebody or something) in X’, where X refers to any noun. Thus, the complex word **encamp** means

‘to put somebody or something in camp/place’ as in the sentence ‘He plans to **encamp** himself overnight in the high school gym’. To conclude, we see here that the meaning of the derivational prefix **en-** tends to be irregular. Table 2 summarises the second strategy, which helps us to point out the distinction between inflection and derivation.

Table 2: Inflectional Affixes versus Derivational Affixes (Meaning)

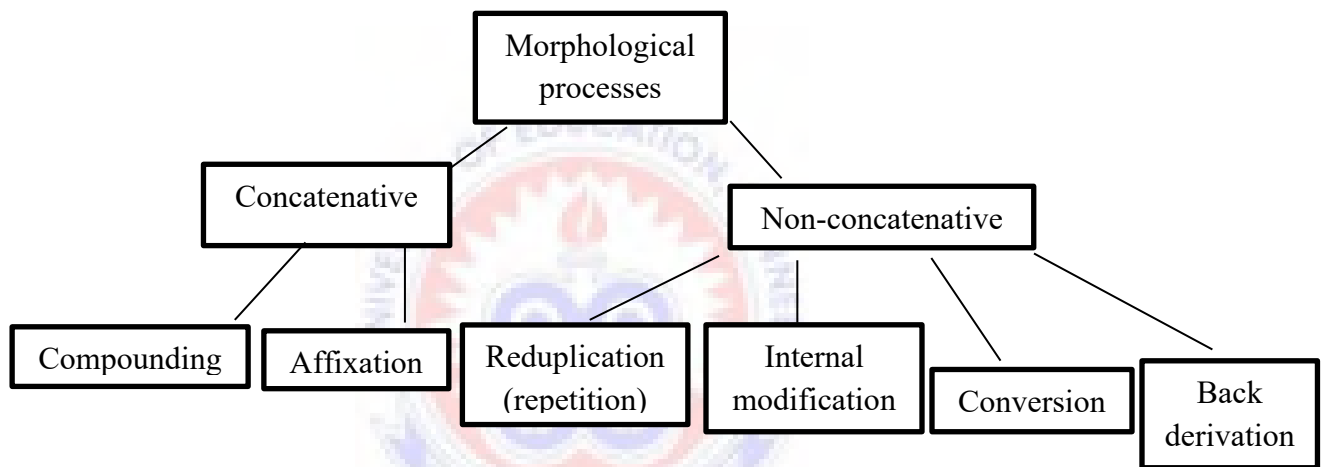
No.	Affix (Prefix/Suffix)	Meaning (Regular/Irregular)	Inflection/Derivation
1	-ed eg. kick-ed	‘past tense’ or ‘past participle’ (regular)	Inflection
2	-s eg. calculator-s	‘plural’ or ‘more than one’ (regular)	Inflection
3	en- eg. a. en-able b. en-courage c. en-camp	‘At least three possible irregular meanings’ a. ‘to make X’ b. ‘to make sb/sth have X’	Derivation

The third strategy is to check the productivity of the affix. In this context, productivity refers to the extent of an affix which can be used to create new word-forms (Bauer, 2003, p. 70). For clarification, let us once again refer to Table 2. We classify **-ed** into inflectional affixes because it can basically be combined with every (regular) present tense verb. The suffix **-s** meaning ‘plural’ is also categorised into inflection and it is extremely productive because it can be added to the majority of singular countable nouns. On the other hand, the derivational affix **en-** can be combined only with certain, limited adjectives and nouns. In today's English, we do not, for example, add **en-** to glad, hot or campus to come up with the verbs **englad** ‘to make sb/sth glad’, **enhot** ‘to make sth hot’ or **encampus** ‘to put sb/sth into campus’. These are, nevertheless, possible English words. This seems to further lead us to say that derivation is less productive than

inflection. As we have seen above, there are three main properties which may help us to distinguish inflection from derivation in English namely the category, meaning and productivity.

The John Paul II Catholic University of Linking (as cited in Obuasi, 2016) groups morphological processes into two broad perspectives as in the following sketch.

Figure 2: Classification of morphological processes



2.1.2 Concatenative and Non-Concatenative Processes

Here, all morphological processes are grouped into two: the concatenative processes and the non-concatenative processes. The concatenative processes involve the linear combination of morphemes as in compounding (e.g. news + paper = newspaper, wrist + watch = wristwatch, foot + ball = football, time + keeper = time keeper) and affixation (e.g. dis + ability = disability, suffix + ation = suffixation etc.). On the contrary, the non-concatenative processes involve the alternation of internal structure of morphemes as in reduplication (e.g. ding-dong, zigzag etc.). It occurs when a part or a whole word is repeated exactly or with slight change. Though all morphological processes entail

modification, internal modification as a non-concatenative process is used here to refer to those processes that leave some segments of a word unchanged, while a part or two is changed for change in meaning. The modifications can be in the phonetic substractions that leave a form with segments that remain constant, while in some cases, the vowel quality undergoes substitution, alternation, shortening or lengthening as graduation e.g. sing, sang, sung, song (Obuasi, 2016). Conversion is a word-class exchange of modification in function not form, also called zero derivation since only implicit transposition takes place and no overt change in form e.g. **English** man - verb, man- noun and **Igbo** àkwá = sewing -verb, àkwà = cloth –noun (Obuasi, 2016). Back derivation involves the blending or shortening of complex words. In English it can be done through clipping (shortening in an arbitrary way) or blending (bringing two or more words as phonetic coinage to form a new word e.g. brunch = breakfast and lunch. The rest of the sectioning is focused on the definition of key concepts as well as review of studies related to the current study.

2.1.2.1 Compounding

A fairly good number of scholars who have researched into compounding as a word formation process have viewed the concept with different lenses. For some, compounding is a combination of lexemes to form a new lexeme. This is, for instance, observed in the definition of Bauer (1988, p. 239) when she observes that the term refers to “the formation of new lexemes by adjoining two or more lexemes”. Bauer (1988, p. 102) again defines compounds as “sequences of lexemes”. On the other hand, Katamba (1993) contends that compounds may be formed by joining together pre-existing words that rhyme.

For some others too, a compound consists of two or more separate words to form a new word. Proponents of this view include Yule (2010, p. 55) and Omachonu and Abraham (2012, p. 186), who respectively define compounding as “the process of combining two separate words to get a single form” and “a word formation process where two or more words are put together to form another word in a language” Bauer (1983) again observes it as “the process of putting two words together to derive a third”. Adejumo and Osunbande (2014) add their voice and define compounding as “the process of forming words, which involves the combination of two or more words”.

For another school of thought, compounding is a word formation that fuses two or more stems. This is clearly seen in the voice of Luri (2011) when he observes that the concept refers to “the fusing together of two stems”. Katamba and Stonham (2006) also observe the concept in a more differing way when they define a compound as “a word which contains more than one root”. Words formed out of compounding are referred to as compounds or compound words in the literature. Incorporating the diverse definitions in the literature, the term compounding can be defined in Mo as the stringing together of two or more roots into a single word whose semantic import is optionally obtained from the individual roots strung together.

Myriad of contemporary morphologists argue that morphologically complex words are assumed to have heads (Selkirk, 1982; Fabb, 2001; Ogunkeye, 2002 among others). Selkirk (1982, p. 13) and Fabb (2001, p. 66-67) classified compounds into two categories based on whether they have heads or not. They termed compound words that have heads as endocentric compounds and compounds that do not have heads as exocentric

compounds. Fabb (2001, p. 67) however identifies a third type of compound and refers to it as a co-ordinate compound where he argues that, the two words put together to form the compound share “head-like characteristics”. The head of a compound has been defined both semantically and syntactically in the literature. Semantically, the head of a compound carries the meaning of the compound word (endocentric, exocentric and co-ordinate) and syntactically, the head of a compound can occur at the right-hand side, left-hand side of a given word or can be headless.

It appears that all the three types of compound, endocentric, exocentric and co-ordinate (Selkirk, 1982; Fabb, 2001), can be found in Mo, as we shall observe in chapter four.

Williams (1981, p. 248) as cited in Taiwo (2009, p. 31) proposes the Right-hand Head Rule (RHR) for morphology. He argues that in morphology, we define the head of a morphologically complex word (e.g. compounds) to be the right-hand member of that word. Taiwo (2009, p. 33) argues that the Right-hand Head Rule for morphology proposed by Williams does not hold for Yorùbá, arguing that morphologically complex words in Yorùbá (i.e. compounds) may or may not have heads. He further argues that Yorùbá compounds belong to the three types identified above, namely, endocentric compounds, exocentric compounds and co-ordinate compounds.

Contrary to both Williams (1981) and Taiwo’s (2009) observations, it appears that compounds in Mo may either be right-headed or left-headed. As a result, following Taiwo (2009), the head of a compound may be referred to as one that carries the semantic meaning of the compound, and it can occur syntactically at the right-hand or left-hand side of the compound depending on the language in question.

2.1.2.1.1 Related Studies on Compounding

Omachonu and Abraham (2012) discussed compounding in Igala, a West Benue-Congo language spoken in north central Nigeria. They identified compounding and derivation as the major word formation processes in Igala. They focused on the criteria used to define a compound, the forms and the functions of compounds. They acknowledged that it is very hard to define compounding in some African languages. The study sought to address two main research questions: what features help to define compounding in Igala? And how productive is compounding as a word formation process in the language? They noted that compoundhood has been defined in the literature using phonological, syntactic and semantic means. They argued that, defining compoundhood in Igala however demands a semantic approach than the phonological and syntactic approaches employed by most of the world's languages.

The analysis reveals among other things that, compounding is a very productive way of adding new words into Igala. Also, it indicates that compounding in Igala is used in the naming of new concepts and ideas that were originally not in the language.

Omachonu and Abraham's study is of relevance to the current study. This is because the current study also seeks to investigate into compounding as one of the morphological processes in Mo and will want to find out how productive this process is in the language. However, the current study differs from Omachonu and Abraham's as it does not only use the semantic criteria in defining compounds but also the syntactic criteria.

Abdul-Rahman's (2013) research on Elision in Dagbani is worth discussing in this study. The study's aim was to project elision as a prominent syllable structure process in

compound word formation in Dagbani. The data for the study were analysed under the auto-segmental phonology framework. He argued that noun-noun compounds, noun-adjective compounds and a few verb-verb compounds cause elision in Dagbani. Also, he claimed that elision occurs in plural formation in Dagbani. He contended that the environment in which elision occurs is always at word boundaries and that the elision in Dagbani is a leftward one. He identified the vowels [a, o, u], the nasals [m, ŋ] and syllables as segments that are mostly affected by the elision process in Dagbani.

It appears that elision is possible to also take place when compound words are formed in Mo and that the elision in Mo is a phonological occurrence similar to the one in Dagbani with some slight differences. It can be argued in this study that elision in Mo may be sparked by three patterns of compounds; noun-noun, noun-adjective and noun-verb.

Christaller (1875, 1881), Boadi (1996) and Dolphyne (2006) have all discussed various aspects of the features of compounds and compounding in Akan, focusing mainly on the phonology of the identified types. These scholars have classified compounds usually based on the putative category membership of the constituents as: N+N (**ɛ̀ndùà+dáń** ‘wooden house’), N+Adj (**àsɛ̀m`+pá** ‘good news’), etc., as well as class membership plus phrase-internal function like Object+Verb (**àdzè+twóń** ‘selling’). Examining their work has given me the plain ground to determine the way forward following the research gaps identified in the literature. Appah (2009, p. 2) identifies that there are no clear criteria for distinguishing between compounds and phrases; the lack of clear criteria has led to the proliferation of compound types in the language, the semantic relations between compound members, have not been discussed and issues like headedness have not

received any focused research attention. Following Appah (2009), it is very important to state that dealing with the issue of headedness in Mo compounds is also the focus of this study as it will be observed in chapter four.

2.1.2.2 Affixation

Mathews (1991) defines affixation as “the morphological process whereby an affix is attached to a root or stem”. Affixation has also been defined by Liu¹ and Lui² (2014, p. 23) as “a word-formation process of attaching something to the base”. Alonso (2011) agrees with the stance of Liu¹ and Lui² when he refers to affixation as “the attachment of an affix to base”. Taking the three definitions into consideration, I define affixation as a morphological process whereby a morphological marker (affix) is attached to a stem or base. This is a very common morphological process in several languages and Mo is not exception.

According to Katamba and Stonham (2006), affixes are morphemes attached to other morphemes such as roots, stems and bases. Yule (1996) calls them ‘small’, ‘bits’ which are not listed separately in the dictionaries. Affixes are categorised into three main types in the literature, namely, prefixes, infixes and suffixes.

Prefixes are attached before a word such as **re-** (as in revisit), **in-** (as in inconsistent) and **un-** (as in uneducated). On the other hand, suffixes are attached after a word such as **-er** (as in painter), **-ly** (as in recently) and **-ment** (as in arrangement), while infixes are incorporated inside the word.

2.1.2.2.1 Related Studies on Affixation

Some studies on the morphological process of Igbo language have been carried out. Emenanjo (1983, p. 43) from his research states “The verb is the only form class from which useful plethora of cognate lexical items or varying morphological structure and equally of varying syntactic behaviour has been derived and can still be derived, at least for a good majority of them”.

In the same line, Onukawa (2000, p. 57) adds that “majority of verbal derivatives are nouns and the main morphological processes involved in their derivation are prefixation, interfixation and reduplication”. This supports the views of some scholars that most morphological processes entail some kind of affixation. Onukawa focused on only three language forms or varieties of Igbo- Ohuhu, Onitsha, and Nimo.

This empirical review is evident that the morphological processes of Igbo language have received attention by researchers with stress on reduplication and affixation. This study will therefore add to the studies done on Mo by portraying affixation as a very productive morphological process available in Mo language.

Obuasi (2016) conducted a study on the morphological processes in Anaku, a language variety of Igbo. The study sought to identify the various morphological processes in Anaku. The research paper was conducted using descriptive qualitative approach. In the study, the researcher discussed affixation as one of the major morphological processes in the language and demonstrated that prefixation in Anaku Igbo makes the verbs change to either nouns or verbal nouns/gerunds, which makes prefixation an inflectional as well as derivational operation in the language. She again argues that suffixation and infixation exist in the language but not in large numbers.

Obuasi's (2016) study is relevant to the current research as the current research investigates some morphological processes in Mo and hypothesizes affixation as one of the productive ways of forming new words in Mo. The current research like Obuasi's work will also focus on derivational affixes and inflectional affixes that are likely to occur in Mo. Contrary to Obuasi (2016), the current study will not pay attention to prefixation and infixation as the data that will be analysed in chapter four would reveal suffixation as an inflectional as well as derivational operation in Mo.

Another study which is of relevance to the current research is Unubi and Yusuf (2017). Their paper focused on the topic "Selected Derivational Morphological Processes in English, Hausa, Igala and Some other Languages of the World". In their article, the researchers have arduously and ardently examined these languages to bring out their rich and interesting morphological processes. However, the current researcher reviews their work in relation to only Igala. They identified that in Igala, out of the seven vowels of the language, six of them, namely: **á-**, **é-**, **ì-**, **ó-**, **o-** and **u-** are said to be derivational affixes and serve as prefixes in the language. They further argued that when any of them is affixed or attached to the verb roots/stems (usually before them), they change their grammatical class from that of a verb to that of a noun. Their work is relevant to the current study as the current study investigates some morphological processes in Mo and postulates affixation as a derivational operation in Mo which performs some functions in the language. The current study will also focus on the discussion of the inflectional suffixes that exist in Mo and how they are utilised in the language which was not the focus of Unubi and Yusuf's (2017) research paper.

It can be contended in this thesis that, Mo employs suffixes in the creation of words as there are no known prefixes or infixes in the data collected so far, and that when these suffixes are attached to already existing words in Mo, they will either maintain or change the grammatical category or word class of the bases or stems with their accompanying phonological processes. Inflection is a major category of morphology. When suffixes are added to words to realise morphemes such as present, past, present participle, plural, they are said to be inflectional. They do not change the nature of the word to which they are added. Below are some examples from Sisaalt as reported by Gariba (2017).

1)

a. **hà:l** ‘woman’ **hà:l-á:** ‘women’

b. **bà:l** ‘man’ **bà:l-á:** ‘men’

The Sisaalt plural suffix **-á:** did not change the word class of the plural nouns.

Gariba (2017) also investigated some word formation processes in Sisaalt. She identifies suffixation as an inflectional process in Sisaalt, a sister language of Mo. The researcher argues in the analysis of the data on suffixes in her master’s dissertation that suffixes in Sisaalt are attached to words not to change their word classes or grammatical categories but to perform grammatical functions such as to indicate number, show diminutiveness or show identity. She cites examples from English and compares them with that of Sisaalt words. According to her, when the English suffix “-s” is added to the noun “**book**”, the resulting word is “**books**”, which is also a noun, but it indicates number as the original word is singular while the resultant word is plural. She further examines that in the same vein, if you add the number suffix **-sìŋ**’ to the noun **bàgá** ‘farm’, you derive the word

bàgìsìŋ ‘farms’, and if you add diminutive suffix marker **-wìé** to the noun **vàhá** ‘dog’, you derive **vàwìé** ‘small dog’ in Sɩsaali.

In this thesis however, the discussion concerning affixation is based not only on suffixation as an inflectional process in Mo as in the case of Gariba’s work but premium attention is given to suffixation as a derivational process in Mo.

2.1.2.3 Reduplication

Linguists have held divergent views concerning the definition of reduplication in the literature. Some of the various definitions of the linguistic phenomenon in the literature are as follows: Kantamba and Stonham (2006, p. 180) define reduplication as “a process whereby an affix is realised by phonological material borrowed from the base”. Dolphyne (2006) also observes the term as “a way of forming compounds by repeating part or the whole of a stem”. Russel’s (as cited in Boakye, 2015) definition of the term ties up with Dolphyne’s observation as he refers to reduplication as “a phenomenon of copying all or part of the stem to mark certain meaning in a language”.

My working definition of reduplication in this thesis is that it is a process which involves the creation of words from pre-existing stems by repeating all or part of the stem for specific communicative functions in a language.

2.1.2.3.1 Types of Reduplication

Reduplication has been categorised into two main types in the literature; partial reduplication and full/complete reduplication. Katamba and Stonham (2006) argued that full reduplication occurs when the entire word is copied while partial reduplication occurs

when just part of the word is copied. It is contended in this study that Mo may exhibit both the full and the partial reduplication in the formation of words as shown in the Sisaali data reported by Gariba (2017, p. 22) below.

2) Full reduplication in Sisaali

a. **dé:** ‘fast’ → **dé:-dé:** ‘very fast’

b. **mùá** ‘small’ → **mùá-mùá** ‘very small or little or gently’

A critical examination of example (2) reveals that Sisaali reduplication copies the entire word in the reduplicant.

Examples of partial reduplication in Sisaali are shown in example (3)

3) Partial reduplication in Sisaali

a. **tù:sí** ‘insult’ → **tù-tù:sí** ‘continue to insult’

b. **yìgí** ‘push’ → **yì-yìgí** ‘continue to push’

c. **lì:sí** ‘remove’ → **lì-lì:sí** ‘continue to remove’

A close look at the examples on partial reduplication reveals that the reduplicant copies the first CV syllable from the base.

2.1.2.3.2 *Related Studies on Reduplication*

In a study done by Ihezuonu and Anedo (2008) on the language form or variety of Okwudo in Igbo, they observed that complete reduplication involves the reduplication of the whole V-structure, and is used for the formation of nouns from verbs in Okwudo. Their study adds that this process is a bit more complicated in Igbo than English, because there must be an addition of a prefix before the doubling process. Examples:

4)

- | | |
|---|---------------------------------------|
| a. chì = rule/reign, o + chì+chì | o-chì-chì = reigning or ruling |
| b. nụ = marry, o + nụ+nụ | o-nụ-nụ = marrying |
| c. ji = hold, o + ji+ji | o-ji-ji = holding |

Their work observed that the added prefixes have tone. Their work is relevant to the current study in that it is observed that Mo verbs can undergo complete reduplication to form other verbs, an observation that is different from Ihezuonu and Anedo's (2008) observation in Okwudo, a variety of Igbo.

Issah's (2011) work on the phonology of Dagbani verbal reduplication is worth discussing in this study. The aim of the work was to describe reduplication of verbs in Dagbani under the framework of Optimality Theory. He asserted that there are three types of reduplication in Dagbani- epenthetic reduplication, partial reduplication and complete reduplication. He contends that, the reduplicated segment in Dagbani reduplication is required to have two moras. That is to say, the reduplicant must have a long vowel (CVV), two light vowels (CV.CV) or a (CVN) syllable.

Issah makes further claims in his work that a complete copying of the base of (CVV), (CV.CV) and (CVN) syllables will yield complete reduplication because a full copying of the base produces the required number of moras needed by the reduplicant. He cited the word **píú** 'to select', reduplicated to become **pùù- píú** 'to select repeatedly' and the word **dám** 'to shake' reduplicated to become **dám-dám** 'to shake repeatedly', as examples because, a complete copying of their bases produced adequate moras to fulfill the size requirement of the reduplicative stem.

He however argues that a complete copying of the base of /CV/ syllable words will not produce enough moras to satisfy the requirement of the reduplicated segment. This he noted then calls for additional segment (epenthesis), and the additional segment is always a homorganic nasal. He refers to this type of reduplication as epenthetic reduplication citing **kpé** ‘to enter’ reduplicating to become **kpèn- kpé** ‘to enter repeatedly’ and **gbí** ‘to dig’ reduplicating to become **gbìn- gbí** ‘to dig repeatedly’ as examples.

Issah further claims that in CVV.V stems, a complete copying of the base will yield a size that will be larger than the size required by the reduplicative stem. This he said will result in a deletion of the second syllable, turning the CVV.V stems into CVV in the reduplicant. He termed this type of reduplication as a partial reduplication, citing **sáái** ‘to price’ reduplicating to become **sàà-sáái** ‘to price repeatedly’ and **dééí** ‘to receive’ reduplicating to become **dèè-dééí** ‘to receive repeatedly’ as examples.

Again, Issah’s study reveals that the reduplicants in Dagbani verbal reduplication do not copy the tonal features of the base since the data shows the reduplicant always shown have a low tone. He however called on future researchers to investigate more into the tone to unravel any relationship between tone in the language and reduplication as his study did not provide any detailed information about that.

It appears that the reduplication in Mo is likely to be similar to the reduplication in Dagbani as discussed by Issah with some slight differences. The reduplication in Mo and the reduplication in Dagbani may be similar in the sense that, some reduplicants in Mo reduplication are likely to copy the entire base (complete reduplication), for instance disyllabic words with a CVC syllable structure ending in nasal consonants will copy the

entire base of the word when reduplicated whilst other reduplicants will copy some segments of the base (partial reduplication) as we shall discuss in chapter four.

The reduplication in Mo is also likely to undergo elision in that, there may be segment elision in Mo reduplication as this differs from the case in Dagbani. However, Issah's work was limited to only verbal reduplication. The work did not cater for reduplication of other words which belong to other word classes such as adjectives and adverbs. It is this gap, that, the current study seeks to fill, as it seeks to explore reduplication of other word classes such as adjectives and adverbs, but like Issah's, I will not account for the impact of tone on the reduplicant because of time constraint.

Another work worth discussing is Boakye (2015) which treated reduplication in Akan under the frameworks of Optimality Theory and Autosegmental Phonology. The aim of the thesis was to identify the role of reduplicated words in Akan language, and find out the morphophonological characteristics of reduplicants in Akan, a Kwa language. The researcher argued that, reduplicated nouns and adjectives copy the entire base of the word without any sound change in the reduplicant. Boakye cited the noun **nɛm** reduplicating to be **nɛm-nɛm** 'issues' and the adjective **nkɔkɔ** 'plural adjective – red' reduplicates to be **nkɔkɔ-nkɔkɔ**. Boakye however contends that, verbs in Akan behave slightly differently because not all verbs copy the entire base without any sound change in the reduplicant as the verb reduplicants require a [+ High] vowel, and so any base with a [- High] when reduplicated will be changed to a [+ High] vowel that agrees with it in terms of ATR and or rounding harmony.

Boakye argues in the analysis of his data under the autosegmental phonology that, the reduplicant copies the base elements because the autosegmental phonology puts forward a template, which has an empty slot that has to be filled by copying the base elements. Boakye concurs that, on the issue of tone, the autosegmental phonology gives room for Akan reduplication to copy tonal features, but this is not the case for all the word classes. He argues that, in the reduplication of nouns in Akan, the reduplicant does not copy the tonal features of the base rather it has an underlying low tone. He also claimed that, in the reduplication of adjectives, the reduplicant copies the tonal features of the bases that have tone, whilst bases that do not exhibit tonal effects have their reduplicants taking a high tone.

Concerning the functions of reduplication in Akan, Boakye argues that, reduplicated forms can change the word class or semantics of a word. They can also be used to indicate plurality, as well as show emphasis and imitation.

In this study, there is a strong likelihood that the reduplication in Mo and the reduplication in Akan may have some similarities in that, nouns and adjectives are likely to also undergo a full reduplication as Boakye reported for the case of Akan. Also it can be concured that reduplicated forms in Mo may be used to indicate repeated actions or to show emphasis as in the case of Akan.

2.2 Nominalisation

The concept nominalisation is used interchangeably with nominal derivation and the present study does not intend to discriminate between these concepts. Following Appah (2003, p. 1), one can say that nominalisation refers to the process of forming nouns from

lexical items of different form classes as well as from non-lexical categories (including many clause and phrase types). In the words of Bodomo (1997, p. 76), nominalisation is a process involving the formation of nouns from verbs and adjectives. Bisilki (2019) observes that the several definitions given to nominalisation in the literature, sometimes, have contextual underpinnings as these definitions may be oriented towards specific languages or theoretical leanings. In respect of nominalisation involving the lexical categories, a noun can be derived from a verb, an adjective or even another noun as in examples (5) and (6) from Appah (2003):

- 5) a. **kekan** → **a-kenkan** [Akan]
 ‘read’ SG-reading
 ‘the act of reading’
- b. **kɛsɛɛ** → **ɔ-kɛsɛɛ**
 ‘big’ SG-big
 ‘the fat one/the prominent one’ [Akan]

In (5a), we see verb nominalisation while in (5b); we find a case of adjective nominalisation. Similarly, in example (6), again, from Appah (2003, pp. 46-49), non-lexical categories are nominalised as follows:

- 6) a. **ɔ-ko** **de foro boɔ** → **ɔ-koforoboɔ** [Akan]
 3SG;SBJ-fight.HAB take climb stone ‘the mount-climbing warrior’
 ‘He climbs hills whilst fighting.’
- b. **ɔ-be-dzi** **edziban** → **edzibandzi** [Akan]
 3SG;SBJ-FUT-eat food ‘eating’
 ‘S/he will eat.’

(6a) involves the nominalisation of an entire clause whereas (6b) illustrates the nominalisation of a verb phrase (VP). The nominalisation strategies used in (6a) and (6b) are termed as subject dropping and object fronting respectively. Appah (2003, p. 45) further talks of these strategies as argument structure process with morphological implications. Although I intend to follow the notion of nominal derivation, largely, from Appah (2003), the present study concentrates on lexical nominalisation, specifically in a circumscribed sense of how the sub-lexical category of posture verbs and other verbs like action verbs are nominalised in Mo. That is, this study excludes nominalisable structures that are non-lexical. It is also worth noting that modelling after Appah's (2003) analysis; this study is solely situated in segmental morphology and does not seek to dabble in any related functions of prosody.

Nominalisation, as the alternative term, *nominal derivation* suggests, is a derivative process. This is to say that to nominalise requires the use of morphological operations and devices that have a derivational function in the particular language concerned. For our present context, the derivational devices are morphemic segments. Just as the concept of nominalisation itself, the notion of *derivational morpheme* has been looked at in somewhat differing senses. For Katamba and Stonham (2006, p. 49), a derivational morpheme is that which when added to a base, results in a new word of only a different meaning or of a totally varying word class. From the angle of Katamba and Stonham (2006), then, the morphemes *-ness* and *un-* as in *kind-ness* and *un-kind* both classify as derivational affixes. The stance of Thakur (2010, p. 12) ties up with the view of Katamba and Stonham (2006) when Thakur maintains that derivational morphemes are either class changing or class maintaining. Nevertheless, Boadi (2016, p. 1) holds the view that a

derivational affix is one which changes the class distribution of a linguistic form to which it is added. Although Katamba and Stonham (2006) and Thakur (2010) definitions, probably, relate to English, these definitions more aptly capture the pattern found with the Mo action verbs and posture verb nominalisation as will be revealed in this thesis.

2.2.1 Related Studies on Nominalisation in Mabia

Studies touching on nominal derivation as relate to the Mabia (Gur) languages of Ghana are not much of a scarcity. What is very clear, however, is that these studies with the exception of one as will be discussed do not share focus with the present study.

One of the studies to mention in relation to nominalisation in the Mabia languages of Ghana is Bodomo's (1997) seminal work, *The structure of Dagaare*. Chapter 8 of this work is devoted to a very brief discussion of some nominal processes in Dagaare. These processes include nominalisation, compounding and nominal incorporation. While this chapter in itself is of a highly limited length of about three pages or so (pp. 76-79), it does not concentrate on nominal derivation alone as already mentioned. The analysis provided on nominalisation in the referenced context has naturally tended to be scanty in every sense of it. Only a handful of verbs and adjectives are tabulated to illustrate how they are nominalised (Bodomo, 1997, p. 76). From the few examples provided and from Bodomo's own explicit remarks, the processes of nominalising Dagaare verbs and adjectives remain suffixation and vowel lengthening or diphthongization. The subject of nominalisation as treated in Bodomo (1997) has a broad affinity with the present study in two respects: First, nominalisation receives some attention in both contexts. Second, both

studies attempt an account on nominalisation in two Mabia (Gur) languages spoken in Ghana.

On the contrary, the point of departure between these two studies is that whereas the present work solely investigates nominalisation, with specific focus on nominal derivation from verbs, Bodomo (1997) neither has any such emphasis nor constitutes any comprehensive representation on nominalisation.

In further exploring related literature, Olawsky (1999) deserves mention. As its title suggests, Olawsky's (1999) work is a grammatical sketch on Dagbani, with emphasis placed on the phonology and morphology of the language. Olawsky (1999) lends some space to nominalisation under what he captions as *derivational morphology*. He focuses on noun and adjective formation in describing derivational morphology in Dagbani, with the latter phenomenon falling out of interest of the present study. Olawsky (1999) discusses fourteen suffixes and a derivational vowel lengthening as the means of nominal derivation in Dagbani. While the resourcefulness of Olawsky's (1999) nominalisation account cannot be underrated, it has tended to represent fewer verbs in that regard. A chunk of data in his section is weighted more towards noun→noun derivation and adjective→noun derivation.

Akanlig-Pare (1999) looks at nominalisation in Buli, an equally Mabia (Gur) language of northern Ghana. Nonetheless, whilst this appears to be a considerably short paper, it is neither focused on verbal nominalisation nor geared towards posture verb nominalisation as presently being pursued.

Dakubu (2005) also incorporates an aspect of nominalisation in her study on Dagaare grammar, although this is equally sketchy. Overall, the scope of Dakubu's (2005) section on *derived nouns* barely goes beyond a few examples illustrating how abstract, agentive and instrumental nouns are derived from verbs. What is more of a pertinent issue is that a thorough gleaning of her examples does not show the inclusion of any posture verb element or how it is nominalised. That much, Dakubu (2005) hardly caters for the focus of the present study.

Two most recent and equally closest studies to the present study are Abubakari (2015) and Bodomo et al. (2018), which concentrate on predicate clefting and serial verb nominalisation respectively. Again, these two studies have no overlap with this study as they are based on different verb typologies other than posture verbs. The two do not also cite any data from Mo.

Another equally most recent work relevant to the present study is Bisilki (2019) which focuses on posture verb nominalisation in a little researched Mabia (Gur) language known as Līkpākpāln (Konkomba). With only very minimal theoretical inspirations, the study observes that the morphological as well as the syntactic features of nominalised posture verbs are, largely, compliant of the generally known linguistic characteristics of Konkomba nouns. Thus, the obligatory features of affixation, simple and non-simple stem types are attested in the derived nominal. In nominalisation strategy, Bisilki (2019) argues that Līkpākpāln posture verb nominalisation sees a preponderant synchronisation of the processes of prefixation and a reduplication of the posture verb base. Another relevant finding of his study is that the figurative uses and meanings of nominal derived

from Līkpākpāln posture verbs reinforce the claim in Newman's (2002) socio-cultural domain of semantic frame for the analysis of postural senses. Bisilki's (2019) work is very close to the current study in two ways: First, both studies focus on two Gur languages. Second, both studies investigate posture verb nominalisation. However, the point of departure between both studies lies in the processes involved in the nominalisation of posture verbs in both languages. Accordingly, whereas posture verb nominalisation in Konkomba remains the amalgamation of two morphological processes, thus, prefixation and reduplication, in Mo, posture verb nominalisation involves only suffixation with some accompanying phonological processes as it shall be observed in the analysis of the data in chapter four.

2.3 Posture verbs

In Ameka and Levinson (2007), posture verbs come under the cover term, locative verbs or locative constructions as in other studies. Nonetheless, as observed by Atintono (2013, p. 25), several other alternative terms used with slightly varying or in the overlapping sense exist in the literature. Such terms include: verbs of posture, verbs of body position, positional verbs, positional verbs of spatial location, etc.

The proliferation of tags in relation to locative verbs is possibly because, in many languages, this family of verbs tends to cover a broad semantic range that can further be subjected to sub-groupings. For instance, it is found in Gurenɛ, locative construction sub-delineates into six types, namely, verbs of body position or posture, elevation verbs, attachment verbs, distribution verbs, general locative verbs and proximate or propinquity verbs (Atintono, 2013, p. 25).

Bisilki (2019) takes a cue from Atintono (2013, p. 24), and considers a posture verb in his work as a verb which semantically codes the static assumed body position or posture of animate entities. He asserts in other words, that posture verbs are a sub-class of predicates that describe the different body positions or postures of humans and animals. It is in the preceding sense that the terms posture verb and verb of posture will be employed synonymously in the present study as used by Bisilki (2019). The forms **tui** ‘to stand’ and **eno** ‘to lie down’ are cited as examples of posture verbs from Manam (an Austronesian language) (Newman, 2002, p. 5). Similarly, **zi** ‘be in a sitting posture’ and **kpa** ‘be kneeling’ are mentioned as examples of posture verbs in Gurene (Atintono, 2013, p. 29).

Bisilki (2019, p. 10) also examines seven Līkpākpāln verbs of posture: **sil** ‘to be standing’, **kāl** ‘to be in a sitting position’, **gbáán** ‘to be kneeling’, **bóón** ‘to be in a stooping posture’, **dóón** ‘to be in a lying body posture’, **dìn** ‘to be leaning against something’ and **sóón** ‘to be in a squatting position’ in his paper. Following the classification paradigm of Welmers (1973, p. 344) which typologises verbs into primary and auxiliary verbs, Bisilki (2019) further posits that Līkpākpāln verbs of posture can be placed under primary verbs as they consist of single bases and do not construct with any auxiliaries in their basic structure. The researcher again postulates in his paper that Līkpākpāln posture verbs are essentially intransitive in the basic sense that they do require direct objects or indirect object arguments. However, he argues that as occurs in Tongan (Austronesian), Swahili (Niger- Kordofanian) and Cantonese (Newman, 2002), a posture verb in Līkpākpāln may take a locative complement as shown in the examples he cites:

7)

a. **Kánjɔ́ kál ñ-jà-l bɔ́**

Kánjɔ́ sit.PFV CL;SG-chair-CL;SG on

‘Kánjɔ́ sat on a chair’

b. **Kánjɔ́ dóón kíííí**

Kánjɔ́ lie.PFV ground

‘Kánjɔ́ lay on the ground’

2.4 Review of some of the Aspects of the Phonology of Mo/Deg

This sub-section discusses some studies that have been undertaken by members of the Ghana Institute of Linguistics, Literacy and Bible Translation (GILLBT) with the help and advice of Deg colleagues on some aspects of the phonology of Mo. This literature has been written for those Dega who are already literate in English and want to learn to read and write Mo. It was originally printed in August, 1982, and reprinted in October, 1993. The third edition is what is currently being reviewed. Some of the aspects of Mo phonology to be discussed are the vowel sounds and the consonants.

2.4.1 Mo/Deg Vowels - Short

When we write English, we use the letters from the English alphabet.

a b c d e f g h i j k l m n o p q r s t u v w x y z

When we write Mo vowels, we use some of the same letters, as seen from the following English vowel letters:

[a, e, i, o, u]

Notice how these vowel letters are used in Mo:

/a/ as in *ba* ‘to come’

/e/ as in *we* ‘to hurt’

/i/ as in *di* ‘to eat’

/o/ as in *jo* ‘to enter’

/u/ as in *ku* ‘to break’

However, in Mo, some of the vowel letters are used for more than one sound. This means some words will be spelled the same but pronounced differently. The way they are used in the sentence will show the meaning.

/a/ as in *pagri* ‘to spread out’

and in *pagre* ‘to shatter’

Nomel *pagri* yal la. ‘Someone spread the cloth’

Nomel *pagre* vii la. ‘Someone shattered the pot’

/e/ as in *le* ‘to drop’

and in *le* ‘to go out, leave’

O le *hare*. ‘It dropped to the ground’

O le *buse*. ‘He went out of the house’

/o/ as in *jo* ‘fishing net (type)’

and in *jo* ‘to enter, go into’

Ba *jo* lo *ghera* la sie. ‘Their net lay on the front of the boat’

Ba *jo* *ghera* la sie. ‘They got into the front of the boat’

These letters [a , e , o] are each used for two vowel sounds in Mo.

Another equally important thing that is worth mentioning is the two vowel letters in Mo that are different from the English ones. They are /ɛ/ and /ɔ/. These are used in some other Ghanaian languages as well. Sometimes /e/ is confused with /ɛ/. The following pairs of words illustrate the difference.

/e/	/ɛ/
ke ‘to protect’	kɛ ‘to give a gift’
le ‘to drop’	lɛ ‘to get’
ge ‘also’	gɛ ‘that’

Sometimes, /o/ is confused with /ɔ/. The following pairs illustrate the difference between the two in pronunciation.

/o/	/ɔ/
lo ‘to take out t.z’	lɔ ‘to beat’
dom ‘sleep’	dɔm ‘enemy’
ol ‘meat’	hɔl ‘charcoal (embers)’

2.4.2 Mo/Deg Vowels – Long

Aside the short vowel sounds in Mo, there are some words with long vowel sounds. It is important to state that the difference between the long and short vowel sounds is in the way they are written. This is seen in the following Mo sentences and particularly the italicised words.

O dɔ <i>da</i> .	‘He has a stick’
O dɔ <i>daa</i> .	‘He has sticks’
Na <i>pe</i> !	‘Look at a yam’

Na <i>pee</i> nɔ!	‘Look at this yam’
N dɛ <i>li</i> dɔr.	‘I am dipping into the soup’
N dɛ <i>lii</i> gɛ.	‘I think so’
O dɛ <i>lo</i> koo dɛ tɛ mɛ.	‘She’s taking out t.z. for me’
O dɛ <i>loo</i> hɛne dɛ tɛ mɛ	‘She’s washing dishes for me’
Ya <i>su</i> kaa la.	‘We filled the car’
Ya <i>suu</i> lɔ kaa la bini.	‘Our guinea fowl is in the car’
Tɛ mɛ o <i>tɔ</i> .	‘Give me its lid’
Tɛ mɛ o <i>tɔɔ</i> la.	‘Give me its sheath’
O <i>kɛ</i> mɛ pɛ.	‘He has given me a yam’
O <i>kɛɛ</i> o batakaare.	‘He has torn his shirt’

Sometimes in Mo, two different vowels are written together. This is illustrated in the following Mo structures.

peu ‘wind’	sɛo ‘roasted corn flour’
seo ‘death’	asau ‘fishing net’
lileo ‘shadow’	dea ‘room’
sie ‘eyes/face’	O ta leɛ ‘He didn’t go out’
bie ‘child’	safoa ‘key’
dua ‘cassava’	nomoa ‘elder’

2.4.3 Mo/Deg Vowels – Nasalisation

Some Mo vowel sounds are nasalised when they occur in words, in that they are produced by pushing air out through the nose when speaking. Words may have the same spelling as in the words **baa** ‘man’ and **baah** ‘monitor lizard’ but different pronunciation.

The sound seems to come through the nose in the case of the pronunciation of the word **baah** ‘monitor lizard’. To show this difference, an ‘h’ is placed at the end of the vowel sounds like this: **baah** ‘monitor lizard’. This is evidential in the following list of Mo words.

to ‘to cover/close’	ɔɔ ‘older brother’
tɔh ‘to deny’	ɔɔh ‘wealthy person’
to ‘to be white’	huu ‘to call to’
toh ‘to thread needle’	huuh ‘to crawl’
fe ‘to bloom’	
feh ‘to urinate’	

2.4.4 Mo/Deg Consonants

Many of the Mo consonant letters are the same as English. In other words, many of the consonant letters used to write Mo are the same as the English. For instance, each of the Mo words below begins with a consonant letter.

bie ‘child’	mo ‘to marry (woman)’
di ‘eat’	ne ‘water’
fe ‘to blossom’	paa ‘farmer’
go ‘to sing’	so ‘to sit’
ha ‘to send money etc.’	tea ‘stomach’
jaa ‘husband’	vii ‘pot’
koo ‘farm’	wee ‘sun’
lu ‘calabash’	yo ‘to fight’

The consonant letter /r/ is missed out because it does not come at the beginning of a word. In Mo, /r/ comes at the end or middle of words. Below are some words that illustrate which consonants occur at the beginning, middle or end of the words:

bɔr ‘place’	nonifikog ‘fingernail’
danan ‘pepper’	kara ‘chair’
hɔl ‘charcoal’	newɔb ‘hot water’
jem ‘bat’	saaker ‘bicycle’
kabul ‘fever’	jahal ‘chicken egg’
nomɛl ‘someone’	konfɛ ‘a light thing (not heavy)’
naara ‘uncle’	laŋ ‘forked stick’

In English, the letter /w/ may appear next to certain consonants that begin a word.

Examine these English words:

sweet	twin	dwindle
swallow	twist	dwarf
sweep	twelve	dwelling

In the same way, in Mo, the letter /w/ may appear next to certain consonants that begin a word. This is shown in the data provided below.

bwe ‘stone’	Iwe ‘funeral’
bwarabwaa ‘towel’	mwɛɛ ‘to melt’
gwa ‘to shake’	pwe ‘yam mound’
hwi ‘thigh’	swɛɛ ‘to be red’
kwa ‘things’	

2.4.5 Mo/Deg Consonants – The use of /ŋ/ and some double articulated consonants [kp, gb]

When we write the word ‘sing’ in English, the sound at the end is written by two letters ‘ng’. In Mo, there exist the same thing but it is written by a single letter /ŋ/. This letter is also used in some other languages in Ghana. Sometimes /ŋ/ is confused with /n/ in Mo writing. Below are examples that illustrate the difference in pronunciation.

/n/	/ŋ/
nɔ ‘this’	ŋɔ ‘to speak’
tɛnɛ ‘to gather (as clouds)’	tɛŋɛ ‘to follow’
bɔtɔn ‘skin of body’	kɔlɔŋ ‘a well’
danan ‘pepper’	kalaŋ ‘mat’
no ‘to hear’	ŋoo ‘to growl’ (as cat)

Other Mo consonants which are written with two letters are not found at all in English but are found in some other Ghanaian languages. The following Mo words illustrate how the two letters at the beginning of each word are realised as one sound:

/kp/	as in kpɔ	‘to take’
	kpo	‘to kill’
	kpe	‘to shell’ (peanuts)
/gb/	as in gba	‘also’
	gboo	‘to sieve’
	gbɛɛ	‘monkey’

2.5 Morphological Theory

There are three models of morphology, namely Item and Arrangement (IA), Item and Process (IP), and Word and Paradigm (WP) which can be used to analyse morphological data, particularly word formation involving prefixes and suffixes. Approaches to the analysis of complex words are classified as morpheme-based, lexeme-based or word-based depending on what scholars consider the minimal unit of grammatical analysis. I discuss these models below. Sample data, consisting of complex words or words having more than one morpheme, are analysed below using the three models to discover their strengths and shortcomings. According to Mathews, “the ‘Item and Process’ model is better, for a language like English than the ‘Item and Arrangement’ model” (Mathews, 1998, p. 145). What are the arguments for Mathews’s conclusion above and are there any counter-arguments? In the following, I will first clarify the Item and Arrangement (IA) as well as Item and Process (IP) models. I will present the arguments for IA in tackling English morphology. Next, I will also put forward some counter-arguments. I will further present the arguments for the Word and Paradigm (WP) model and summarise the discussion concerning the three models.

2.5.1 Theoretical Framework

The present study is mainly descriptive. However, Hockett’s (1954) model of morphological analysis ‘Item and Arrangement (IA)’ is employed to serve as a guide in the analysis of the data. Hockett claims that “the essence of IA is to talk simply of any thing and the arrangement in which those things occur” (Hockett, 1954, p. 387). He again asserts that “the grammar, or grammatical system, of a language is (1) the morphemes

used in the language, and (2) the arrangements in which these morphemes occur relative to each other in utterance” (Hockett, 1958, p. 129).

2.5.2 The Item and Arrangement Model

The Item and Arrangement (IA) model primarily analyses word forms as a sequence or addition of morphemes. A morpheme in this sense can be a root, a stem or an affix. For instance, an English word like “carefulness” is said to be made up of the morphemes ‘care’, ‘-ful’ and ‘-ness’; care is the root and the other morphemes are in this case class-changing derivational affixes. In a word like ‘cats’, we say that ‘cat’ is the root and ‘-s’ is a class-maintaining inflectional morpheme marking plurality. This way of analysing word forms is what Hockett (1954) refers to as ‘Item and Arrangement (IA)’. This model can be widely used to explain many complex words, especially compound words, of most Ghanaian languages. For instance, to express the concept of ‘palm wine’ in Mo, two separate morphemes **sun** ‘wine’ and **pona** ‘white’ are put together in a sequential manner to derive **sunpona** ‘palm wine (lit. wine white)’. Another example is the Akan compound word, **sikakokoo** ‘gold’ which is reported to be a combination of two separate morphemes, **sika** ‘money’ and **kokoo** ‘red’ and are arranged sequentially to derive the compound (Appah, 2009, p. 8).

According to Bauer (2004, p. 60), the Item and Arrangement (IA) model is “a grammar which presents the list of the morphs and a set of rules for arranging the morphs”. In other words, IA is viewed as consisting of “a list of components which follow certain patterns or arrangements” (Aronoff & Fudeman, 2005, p. 47). For example, these three plural nouns: buds, necks and glasses have three morphs or items namely /z/, /s/ and /ɪz/

which signify the meaning of plurality. The three morphs are variant forms of the morpheme {-s} (regular plural suffix). To account for the three plural nouns above using IA, we can arrange the morphs in sequences as follows:

1. [bʌd] + [z]
2. [nek] + [s]
3. [gla:s] + [ɪz]

As we have seen above, the morphs {bud}, {neck} and {glass}, respectively pronounced as [bʌd], [nek] and [gla:s] are combined with a certain variant of the morpheme {-s}. Notice that the morpheme is phonologically conditioned. If the final consonant sound of a stem is voiced as in [bʌd], we add /z/ to the stem. If a stem ends in a voiceless consonant sound as in [nek], we combine the stem with /s/. Next, if the final sound of a stem is a sibilant or strident such as [gla:s], we then add /ɪz/ or /əz/ to the stem. To put it another way, in IA, words are divided into separate morphs. For instance, in the word form necks, we may also say that the plural noun is made up of two morphs /nek.s/ namely /nek/ and /s/. In this context, a morph refers to “the realization of a morpheme which is an abstract component to represent ‘form and meaning’ correspondence” (Bauer, 2003, pp. 334-345).

2.5.3 Item and Process Model (Lexeme-based Morphology)

The Item and Process (IP) model may be defined as “a grammar which spells out elements or items as a fundamental form which then yields allomorphs through phonological operations” (Bauer, 2004, p. 60). For elaboration, let us refer to the plural marker {-s} in these nouns: buds, seas, necks and glasses. Suppose we all agree that the underlying form of {-s} is /z/. In the three words above, we find phonological processes

where {s} may become or be realised into /z/, /s/ or /ɪz/. If the final consonant sound of a stem is voiced as in [bʌd] and [si:], the {-s} will become /z/. Further, we can say that /s/ and /ɪz/ or /əz/ are derived from the underlying form /z/. As we observe, the {-s} becomes /s/ in the noun necks, whose stem ends in a voiceless consonant sound namely /k/. Whereas {-s} in the plural noun glasses, whose stem ends in a strident or sibilant namely /s/, the {s} will become /ɪz/ or /əz/ (weak form). We see above that the lexemes **BUD**, **SEA**, **NECK** and **GLASS** undergo the process of pluralisation and the morpheme may become /z/, /s/ or /ɪz/ or /əz/, depending on the final sound of the stem. Matthews (1998) says the Item and Process model can be used to analyse inflections, both regular and exceptional ones, in a consistent way. Below is an example taken from Matthews (1998, p. 127) to account for the regular plural noun *seas*; Here, we say *seas* is derived from the lexeme **SEA** which undergoes the process of pluralisation and the morpheme is realised into /z/. Next, to apply IP to account for irregular, exceptional plural forms such as *feet*, *teeth* and *geese*, we say that the three are derived from **FOOT**, **TOOTH** and **GOOSE** which have undergone the operation of pluralising by changing the vowel sound /u/ or /u:/ to the long one /i:/ (Matthews, 1998, p. 129). To account for Past Tense and Past Participle such as *spammed* and (have) *spammed*, we can apply a similar formula: "X → X + [d]", where X represents a verb (Matthews, 1998, p. 128). In this context, both forms of *spammed* result from the lexeme **SPAM** which goes through the processes of 'becoming past tense' and 'becoming past participle' respectively. As we can observe above, the IP formulae have so far worked consistently in dealing with regular and irregular pluralisation, the past tense and past participle.

2.5.4 IP Pro-Arguments

Now suppose we would like to analyse the italicised words in the following sentence: Last Saturday I *saw* thousands of *sheep* which will be *sold*. Which morphological model can or should we use: IA or IP? If we use IA, it turns out we will face difficulty in splitting up **saw** (past tense of see), **sheep** (plural) and **sold** (past participle) into separate morphs in order to make the items and their arrangements apparent so that we can see a direct connection between form and meaning. Unlike in *kings* and *cooked*, where we see the sequences of {king}+{-s} and {cook}+{-ed} and the correlation between the four elements, there is no similar sort of arrangement in *saw*, *sheep* and *sold*. As a result, IA turns out to be ineffective in dealing with irregular forms such as **saw**, **sheep** and **sold**. In IA or morpheme-based morphology, “a one-one correspondence between form and function” is crucial (Spencer, 1991, p. 57). The problem with the two sampled words is that they have no visible, concrete item or morph to show ‘plurality’ in **sheep** and ‘past tense’ in **saw**. If we use IP to tackle the data analysis above, we would say that the word form *saw* is derived from the lexeme **SEE** which undergoes the process of ‘becoming past tense’ and that the word form *sheep* (plural) results from the lexeme **SHEEP** which goes through the operation of pluralisation. Similarly, we say that *sold* results from **SELL** which undergoes the process of ‘becoming past participle’. As the above clarification shows, IP proves to be a better tool than IA in dealing with English morphology, particular inflectional morphology.

2.5.5 IP Counter-Arguments

As a matter of fact, IA can still be used to account for the plural *sheep*. The analysis will be: **sheep** + **zero morph**. As for *saw* and *sold*, the items and arrangements are

respectively as follows: **see** + **ed** and **sell** + **ed**. Nevertheless, this does not seem to be consistent with the basic idea of morpheme-based morphology, where a one-one correspondence between a morpheme and meaning is expected.

2.5.6 Word and Paradigm (WP)

The third model of morphology, which is called Word and Paradigm (WP), focuses on “word-forms associated with their respective lexemes and the word-forms function as the basic elements” (Bauer, 2004, p. 111). Bauer (2003, pp. 197-198) also says that “WP can be synonymous with amorphous morphology”. Haspelmath (2001, p. 47) uses the term ‘the word-based model’ to refer to WP and points out that “the word is the main component, and the word is not split up into items but is formulated using word-schemas”. Based on Haspelmath's (2001, p. 47) model, the plural nouns *doors*, *bottles*, *computers*, *mugs*, *curtains*, *roads* and *crabs*, for instance, can be presented in the word-schema below:

(a). *keys*, *bottles*, *computers*, *mugs*, *curtains*, *roads*, *crabs*

(b). /X/

N

‘plurality of xs’

The word-schema above may represent the entire set of regular plural nouns. We notice that the variable /X/ may represent a different final sound of a word-form such as /i:/ in *key*, /l/ in *bottle*, /ə/ in *computer*, /g/ in *mug*, /n/ in *curtain*, /d/ in *road* and /b/ in *crab*. All of these word-forms (singular nouns) end in a voiced sound and accordingly the plural marker -s will realise into /z/. In other contexts, it may realise into /s/ after a voiceless

sound or /ɪz/ after a strident or sibilant. WP appears to be concise. Regarding the word-based theory, Scalise (1986, p. 62) says that it “has as many supporters as opponents...” Various scholars say that WP was originally used to tackle ancient Greek and Latin, which were highly inflected (Bauer, 2004; Hockett, 1954; Matthews, 1998).

2.5.7 Summary

Firstly, we see that IA fails to display a clear sequence of the item and arrangement when dealing with a number of irregular plural nouns (eg. mice and men) and irregular past tense (eg. spoke and sang, to mention a few examples). As pointed out earlier, the main obstacle here is that we encounter difficulty in dividing the words into separate morphemes. As a result, we might want to use (an) other model(s) when trying to solve morphological problems such as the above. Secondly, we notice that IP, as Matthews (1998) also concludes, gives a better solution to the problematic, irregular words such as **mice** and **men**. For instance, the plural *mice* may be said to have derived from **MOUSE** which undergoes the process of pluralisation and the [au] becomes [ai]. Thirdly, we have thus far found WP the most efficient model when dealing with inflectional morphology. Nonetheless, I have opted for Hockett’s model, Item and Arrangement as earlier mentioned in section (2.5.1) above. With the exception of exocentric compounds and reduplication, the discussion of the rest of the Mo data shall be underpinned by the theoretical assumptions of the IA model because it appears to be the morpheme-based approach with the ability to account fully for the range of morphological data that we expect to find in the current thesis.

2.6 Conclusion

This chapter has reviewed some scholarly works related to the study, as well as some aspects of the phonology of Mo. Such works as Bauer (1983), Dolphyne (2006), Appah (2003), Bisilki (2019), Luri (2011) and Yule (1996) have been reviewed. This chapter has also discussed the IA model that is employed as a guide in the current study for the data analysis. Other morphological models have as well been discussed in this chapter.



CHAPTER THREE

METHODOLOGY

3.0 Introduction

Methodology is one of the crucial determinants of the quality of a research. It simply refers to the processes and procedures used in collecting and analysing data. This section is very central in any research. This section therefore presents a discussion of the procedures used in collecting and analysing the data for the research. The section has been divided into two parts; the part that is concerned with the data collection and the part concerned with the data analysis. The data collection part discusses the sources of data elicited, the approach and the design that were employed for the research, the sample population, the sampling procedures and the instruments that were used in collecting the data. The data analysis part discusses the procedures used to analyse and interpret the data elicited. The limitations of the study are equally captured in this chapter.

3.1 Research Approach

The current study is a qualitative research. Unlike quantitative research, the definition of qualitative research is difficult and complex. It has many approaches, making a precise definition problematic. The complexity involved in defining qualitative research is highlighted in the following comment by Creswell (1998):

I think metaphorically of qualitative research as an intricate fabric composed of minute threads, many colours, different textures, and various blends of material. This fabric is not explained easily or simply (p. 13).

In spite of the complexity characterising qualitative research, several attempts have been made to define it. Creswell (1998, p. 15), for instance, sees qualitative research as “an inquiry process of understanding based on distinct methodological traditions of inquiry that explores a social or human problem. The researcher builds a complex holistic picture, analyses words, reports detailed views of informants, and conducts the study in a natural setting”. Qualitative research takes place in the socio-cultural context of participants of a study and, therefore, it involves an interaction between the researcher and the researched. It is designed to enable researchers understand people and the socio-cultural context within which they live. In such a qualitative study, data are collected in the form of ‘words’ rather than ‘numbers’ and ‘reflect the experiences, feelings, or judgements of individuals taking part in an investigation of the problem or issue, whether as subjects or as observers of the scene’ (Verma & Mallick, 1999, p. 27). For example, this approach permits researchers to carry in depth research into how language is being used in particular speech community through symbols, rituals, social structures and social roles. This approach was suitable for this study due to the nature of data elicited and analysed. The researcher also had face-to-face interaction with his participants over a while. My main interest was to explore the morphological processes available in the language.

3.2 Research Design

The research design used is case study, a design under the umbrella term qualitative research approach. This is a form of qualitative research, which is widely used by researchers in social sciences. A case study approach has been defined in diverse ways. Gall et al. (2007) provide a definition which is based on its characteristics. To them, a

case study is “(a) the in-depth study of (b) one or more instances of a phenomenon (c) in its real-life context that (d) reflects the perspective of the participants involved in the phenomenon” (p. 447). Punch (2005) gives a prescriptive definition of the approach. He indicates that:

The case study aims to understand the case in-depth, and in its natural setting, recognizing its complexity and its context. It also has a holistic focus, aiming to preserve and understand the wholeness and unity of the case (p. 144).

Although these definitions differ, they agree that a case study explores an instance or a few instances of a phenomenon by interacting with the participants in their socio-cultural setting. Typically, case study researchers neither aim at discovering generalizable truth, nor look for cause-effect relations as quantitative researchers do; instead they focus on describing, explaining and evaluating a phenomenon. To achieve these aims requires the researchers to spend adequate time in the context of the study to collect extensive data using multiple instruments to develop in-depth understanding of the phenomenon under study (Cohen, Manion & Morrison, 2000). Available data collection instruments mostly used by qualitative researchers, especially those in the Ghanaian educational context include interviews, questionnaires, observations, documents, focus group discussions and elicitation technique (Kusi, 2012). In this research, I employed interview, elicitation techniques (SIL Comparative African Wordlist and audio recordings) as well as relying on existing literature as instruments in collecting the data.

3.3 The Study Population

Dörnyei (2007, p. 96) refers to population as “the group of people whom the study is about”. In other words, population is a group of individuals that the researcher generalizes his/her findings to. The population for the research is all the Mo speakers. The participants were selected from four traditional Mo/Dega towns namely: Busuama, Mantukwa (New Longoro), Yaara and Jama. This was to make sure that a wide area of where native Mo is spoken was captured and also to have a variety of exact and acceptable presentations of the morphological processes in the language.

3.4 Sampling and Population

Dörnyei (2007) defines a sample as “the group of participants that are actually examined in a study”. The purposive sampling selection method was employed to sample and select the population. In a qualitative research, a researcher explores a phenomenon or phenomena, implying that the chosen sampling strategy should fulfill this purpose. Creswell (2008, p. 214) indicates that in purposive sampling, “researchers intentionally select individuals and sites to learn or understand the central phenomenon. The standard used in choosing participants and sites is whether they are *information rich*”.

Therefore, the population was purposively sampled, making sure that the people selected could exhibit this morphological behaviour of the morphological processes through speech. As a result, twenty (22) participants were used for the study consisting of 12 males and 10 females aged between 18 and 60. The participants were native monolingual speakers of the Longoro dialect of Mo who have lived predominantly, in Mo speaking area. They could speak the Longoro dialect fluently without the interference of the other

dialect of Mo called Mangom and other languages owing to the fact that Longoro is dominant over the other dialect in the selected speech communities namely: Busuama, Mantukwa (New Longoro), Yaara and Jama. Of the twenty (22) participants, five people were selected from each town. This was to cover a large area where indigenous Mo is spoken and also to have possibly different but acceptable presentations of the morphological processes. In addition, two (2) people aged between 50 and 65 who could read and write fluently in both English and Mo, one being a member of the staff of Mo/Deg project of GILLBT and the other being a Lecturer in the Department of Languages Education at the University of Education, Winneba (Kumasi Campus) were decisively included as subjects. They were used as language consultants to assist in the verification of the data I elicited from the field. This was to ensure that more accurate information was obtained since they are professionals and scholars in the language.

3.5 Data Source and Data Collection Procedures

The data for this current study were elicited from two sources: the primary and the secondary sources. The primary source comprises recordings from normal speech context such as homes while the secondary source consisted of collection of some data from existing literature such as Deg Orthography by Hartell (1993), He Gel Ya Bol Borɔfo 'Let's Speak English' by GILLBT (2009), Teach Yourself To Read And Write Deg by GILLBT (2011) and the translated version of the Old and New Testaments of the Deg Bible by the Ghana Institute of Linguistics, Literacy and Bible Translation (GILLBT).

3.6 Instruments

The data for the current study was collected through three (3) data collection instruments, thus interview, elicitation techniques (SIL Comparative African Wordlist and audio recording) and documents.

The choice I made to employ more than one method in collecting the data was informed by the data collection principle which states that “inclusion of multiple sources of data collection in a research is likely to increase the reliability of the observation” (Ochieng 2013, p. 36).

3.6.1 Interview

Telephone interview is a common method used by researchers for gathering data in educational and social research. According to Creswell (2008, p. 227), “conducting a telephone interview is the process of gathering data using the telephone and asking a small number of general questions”. Whereas telephone interview is a commonly used technique for gathering data in quantitative studies, its usage in qualitative study is unpopular. Therefore, its usage in the current qualitative study was limited to only a few participants and the two language consultants occasionally. The reason is that in gathering data for a qualitative research, a researcher has to interact with the participants directly in their own socio-cultural context.

3.6.2 Elicitation Techniques

According to Cooke (1994), elicitation technique is any of a number of data collection techniques used in anthropology, cognitive science, counseling, education, knowledge engineering, linguistics, management, philosophy, psychology, or other fields to gather

knowledge or information from people. Elicitation, in which knowledge is sought directly from human beings, is usually distinguished from indirect methods such as gathering information from written sources. Elicitation techniques include interviews, observation of either naturally occurring behaviour (including as part of participant observation) or behaviour in a laboratory setting, or the analysis of assigned tasks. Ochieng (2013, p. 37) also refers to elicitation as “the process of collecting linguistic data by asking native speakers to produce words, phrases or sentences that can serve as data for analysis of a particular linguistic phenomenon”.

As this research investigates morphological processes in Mo, part of the data for the current study was elicited directly from the home as participants engaged in an interaction which resulted in some interesting morphological as well as phonological patterns. With verbal consent sought from the interlocutors, their conversation was recorded with a digital recorder. I chose to record the conversation in order to capture participants’ interaction details since I could not have captured all the discourse between the people in my field notes and also considering the fact that I am not a native speaker of Mo.

3.6.2.1 SIL Comparative African Wordlist

“Collectively, linguistic research in Africa has produced a wealth of lexical data, much of it published in dictionaries, of course, but a lot of it also unpublished in notebooks and databases. While these data serve useful purposes in their individual projects, their use to comparative linguistics is minimal, given their lack of a format. The *SIL Comparative*

African Wordlist (1700 words) is therefore an attempt to offer a format for these data that is more amenable to comparative analysis.

Given the plethora of comparative wordlists that are already in existence, there are two main reasons for the development of this wordlist. First, many of the existing African wordlists simply do not contain enough lexical items to allow one to do serious comparative analysis. Second, many existing African wordlists are specific to a particular language family, and thus, a pan-African list offers the potential of serious comparative research. The items in this wordlist appear with both English and French glosses and are arranged semantically under twelve main headings, generally moving from human domains to non-human domains, and from concrete to more abstract items” (Snider & Roberts, 2006). Accordingly, some English lexical items which fall under the sub headings of the twelve main headings of the SIL Comparative African Wordlist relating to human domains to items relating to non-human domains, and from more concrete items to more abstract items were used as written stimuli to encourage respondents to construct Mo lexical items equivalent to the English lexical items provided. For example, I gave **man** and **woman** separately and each consultant would provide a direct equivalent in Mo in writing.

3.6.2.2 Audio Recording

Another set of data was elicited through audio recordings of participants in normal Mo speech context after verbal consent. The focus of this was primarily to identify some morphological processes and their accompanying phonological processes in the conversation.

3.6.3 Documents

During the process of research, the investigator may collect qualitative documents. Creswell (2008) classified documents that can be used in a qualitative research into two: *public documents* and *private documents*. The former includes newspapers, minutes of meetings and official reports, while the latter includes personal journal and diaries. Documents used for research can be considered as secondary data and they include books and journals, institutional documents, government White Papers, company annual reports and journals (Blaxter, Hughes, & Tight, 2006).

A chunk of data for the current study was collected from existing literature. These included the Deg Orthography by Hartell (1993), He Gel Ya Bol Borfo 'Let's Speak English' by GILLBT (2009), Teach Yourself to Read and Write Deg by GILLBT (2011) and the translated version of the Old and New Testament of the Deg Bible by the Ghana Institute of Linguistics, Literacy and Bible Translation (GILLBT).

3.7 Data Analysis Procedures

After collecting the data using the data collection procedures such as interview, elicitation techniques (SIL Comparative African Wordlist and audio recording) and documents, the detailed data was transcribed and categorised into groups based on the various morphological processes, that is, compounding, affixation, reduplication and multiple formations.

The data was then analysed after the categorisation using Hockett's (1954) model of morphological analysis, Item and Arrangement. The data on compounding, affixation,

reduplication and multiple formations were analysed using Item and Arrangement model of morphological analysis.

3.8 Limitations of the Study

A number of challenges were encountered in this study. First, the difficulty in getting respondents to demonstrate this morphological behaviour through normal conversation was a challenge. The researcher had to travel to places like New Longoro, Busuama, Yaara, and Jama to meet respondents going about their routine domestic activities. A number of trips on the part of the researcher were also made to ensure proper verification of the data by the two language consultants. These trips took away the researcher's time, money and energy. By virtue of the fact that the researcher is a non-native speaker of Mo, his inability to communicate using the language was a barrier to communication and apparently became a challenge.

3.9 Conclusion

This chapter focused on the description of how the data for the current study was obtained. It expounds on the approach and the design used in this research, the target population, the sample and sample size, the instruments employed in the collection of the data as well as the analysis of the data. The limitations of the study have also been discussed in this chapter.

CHAPTER FOUR

DATA ANALYSIS

4.0 Introduction

In this chapter, an analysis of the data collected is presented. As mentioned earlier in chapter one, I analyse data on the various morphophonological processes with focus on the Longoro dialect of Mo. The data on the various morphological processes are classified into four categories, namely; compounding, affixation, reduplication and multiple formations. The data on the identified morphological processes have been analysed under the framework, Item and Arrangement by Hockett (1954). Due to the strong relationship between the morphophonological processes and their functions as well as the practical difficulty in treating them separately, the two research questions are examined together. The sectioning of the rest of the chapter is, therefore, based on the four morphological processes identified (i.e. compounding, affixation, reduplication and multiple formations) in the language. For each of the morphological processes, their specific linguistic functions as well as the phonological processes accompanying the morphological processes are adequately discussed. Some of the major phonological processes that are observed during the formation of these complex words are insertion, deletion, vowel harmony, nasalisation, vowel shortening and lengthening. The ensuing sub-sections critically examine each of the major morphophonological processes in turn.

4.1 Compounding in Mo

Compounding is the first morphological process that is discussed in the chapter. As indicated before, apart from looking at the nature of the compounds, the accompanying phonological and functional significance of the compounds are also examined.

Compounding is a very productive morphological process in Mo. Free morphemes belonging to the same or different grammatical category can be put together to form other words of different or same grammatical status (word classes). For instance, we have two nouns (Noun+Noun) put together to form nominal compounds, we have noun and adjective (Noun+Adjective) put together to form nominal compounds and we have noun and verb (Noun+Verb) put together to form nominal compounds in Mo.

It is contended that these groups of words when compounded, trigger some phonological processes like lateral elision, vowel elision and syllable truncation.

4.1.1 Noun-Noun Compounding in Mo

It is possible for two nouns to be strung together sequentially to form compound nouns which belong to the same word class of the words put together to derive them but with different meaning. When this occurs, elision of some segments such as laterals, vowels or even syllables takes place. The resultant compound nouns are endocentric (have heads). The data in Table 3 illustrate this phenomenon.

Table 3: Noun-Noun Compounds

A (Noun)	B (Noun)	C (A + B)	Translation	Type of Compound
ko:ro ‘chief’	dem ‘house’	ko:dem ‘chief house’	palace	Endocentric (right-headed)
lah ‘corpse’	dia ‘room’	laldia ‘corpse room’	mortuary/morgue	Endocentric (right-headed)
pe: ‘sheep’	bal ‘male’	pebal ‘sheep male’	ram	Endocentric (left-headed)
pe: ‘sheep’	ni: ‘female’	peni: ‘sheep female’	ewe	Endocentric (left-headed)
nav ‘cattle’	bal ‘male’	nabal ‘cattle male’	bull	Endocentric (left-headed)
nav ‘cattle’	ni: ‘female’	nani: ‘cattle female’	cow	Endocentric (left-headed)
bũ: ‘goat’	bal ‘male’	bũbal ‘goat male’	billy goat	Endocentric (left-headed)
bũ: ‘goat’	ni: ‘female’	bũni: ‘goat female’	nanny goat	Endocentric (left-headed)
dʒal ‘fowl’	bal ‘male’	dʒabal ‘fowl male’	cockerel	Endocentric (left-headed)
dʒal ‘fowl’	ni: ‘female’	dʒani: ‘fowl female’	hen	Endocentric (left-headed)
dʒa:gɔ ‘horse’	bal ‘male’	dʒagbal ‘horse male’	stallion	Endocentric (left-headed)
ɲu ‘head’	gbɛɛ ‘hat’	ɲugbɛɛ ‘head hat’	hat on the head	Endocentric (right-headed)
ɲu ‘head’	pɔna ‘hair’	ɲupɔna ‘head hair’	hair on the head	Endocentric (right-headed)
ɲu ‘head’	bã: ‘center’	ɲubã: ‘head center’	center of the head	Endocentric (left-headed)
dom ‘rain’	pio ‘wind’	dompio ‘rain wind’	storm	Endocentric (right-headed)
yar ‘salt’	bwi ‘stone’	yarbwi ‘salt stone’	stone-like salt	Endocentric (left-headed)
pi ‘yam’	bɔ: ‘hole’	piɔ: ‘yam hole’	tubers of yam	Endocentric (left-headed)
lah ‘corpse’	bɔ: ‘hole’	lahɔ: ‘corpse hole’	grave	Endocentric (right-headed)
iwe ‘funeral’	yal ‘cloth’	iweyal ‘funeral cloth’	mourning cloth	Endocentric (right-headed)
nav ‘cattle’	lg ‘kraal’	nalig ‘cattle kraal’	pen for cattle	Endocentric (right-headed)

Considering the data in Table (3) above, it is observed that when the words in column **A** and **B** were concatenated to form the compounds in column **C (A+B)**, it resulted in syllable truncation and vowel elision in some of the words in column **A** as well as insertion. This is demonstrated in example (8) below:

EXAMPLE 8

a. lah	+	dua	=	lahdua
corpse	+	room	=	mortuary/morgue
b. dʒa:ɔ	+	bal	=	dʒagbal
horse	+	male	=	stallion
c. nav	+	hɔ	=	navhɔ
cattle	+	kraal	=	pen for cattle
d. ko:ro	+	dem	=	ko:dem
chief	+	house	=	palace
e. ju	+	gbɛɛ	=	juŋgbɛɛ
head	+	hat	=	hat on the head

A careful examination of the data in example (8a) reveals an elision of the high front vowel /ɪ/ serving as the final segment of the initial noun which is a disyllabic word with CV.CV syllable structure. This ended in a resyllabification of the noun in the resultant compound word as the CV.CV word becomes CVC in the derived compound form. The resultant compound noun is an endocentric (right-headed) compound.

Also, it is observed in example (8b) above that there is the shortening of the long vowel in the first noun in the resultant compound. The mid back vowel /ɔ/ serving as the final

segment of the first noun **dʒa:ɡɔ** ‘horse’ which is a disyllabic word with a CV:CV structure has been deleted turning the CV:CV structure into a CVC structure and when the second noun **bal** ‘male’ with a CVC structure was added to it, a nominal compound **dʒagbal** ‘stallion’ with a complex CVC.CVC structure was derived. The resultant compound noun is designated a left-headed endocentric type of compound as the left-hand element of the derived compound noun determines the semantics of the resultant compound noun.

In example (8c), an observation of vowel deletion in the first noun **nav** ‘cattle’ with a CV.V syllable structure can be made. The vowel /ʊ/ is deleted in the context of the resultant nominal compound **nalɪɡ** ‘pen for cattle’ after the concatenation of the second noun **lɪɡ** ‘kraal (an enclosure for livestock)’ which has a CVC structure and the first noun. The resultant compound word in example (8c) is an endocentric compound.

From the data in (8d) above, it can be deduced that there has been a truncation of the CV syllable /-ro/ from the first noun with a CV:CV syllable structure thereby changing the structure of the word **ko:ro** ‘chief’ into a CV: syllable structure when it was concatenated with the word **dem** ‘house’ to derive a right-headed endocentric compound word **ko:dem** ‘palace’.

In (8e), it is observed that the concatenation of the word **ɲu** ‘head’ and the word **gbɛɛ** ‘hat’ to form the compound **ɲungbɛɛ** ‘hat on the head’ triggered a velar nasal insertion. The velar nasal /ŋ/ is seen to have been inserted in between the two free morphemes that have been concatenated to derive the compound word. It is worthy of note that the inserted velar nasal agrees with the place of articulation of the velar plosive /g/ that

begins the double articulated sound /**gb**/ serving as the onset of the right-hand member of compound.

4.1.2 Noun-Adjective Compounding in Mo

Nouns and adjectives are joined to form nominal compounds in Mo. This linguistic occurrence causes the noun always to function as the head of the compound while the adjective plays a modification role (modifier), as in the case of English. However, in English, the typical position for adjectives in the nominal group (NG) structure is for them to be placed usually before the headword (noun) they co-occur with, but in Mo, some lexical items like adjectives are placed after the noun head within the nominal group structure they modify. When these nouns and adjectives are concatenated together to form compounds, vowel elision is triggered in the head nouns but majority of the adjectives attached to the head nouns remain unchanged. The compound words which are realised are nominal compounds with different meaning and grammatical category.

The result compound noun may be headless (exocentric) or headed (endocentric). In the case of the latter, they are always left-headed. The data in Table (4) exemplify this linguistic phenomenon.

Table 4: Noun-Adjective Compounds

A (Noun)	B (Adjective)	C (A + B)	Gloss	Translation	Type of Compound
dom 'rain'	biɲi 'black'	dombiɲi	rain black	first rain of the year	Endocentric (left-headed)
su:ga 'money'	swɛm 'red'	su:gaswɛm	money red	gold	Endocentric (left-headed)
amani 'news'	sɔma 'sweet'	amanisɔma	news sweet	good news	Endocentric (left-headed)
dɪɲɪ 'ear'	kpeg 'hard'	dɪɲɪkpeg	ear hard	stubbornness	Exocentric (headless)
sie 'face'	swɛm 'red'	siswɛm	face red	trouble	Exocentric (headless)

Examining the data in Table (4) above, it can be deduced that there has been an elision of the final syllable of one of the nouns in column **A** after it was put together with the adjective in column **B**. This resulted in an alteration of the syllable structure of the noun in the resultant compound noun. This phenomenon is expounded in the example (9).

EXAMPLE 9

a. **sie** + **swɛm** = **siswɛm**
 face + red = trouble

An analysis of the data in example (9a) above reveals a deletion of the final V in the noun **sie** 'face' with a CV.V structure when the adjective **swɛm** 'red' was attached to it, changing the syllable type to a CV in the resultant compound noun **siswɛm** 'trouble'.

There was no deletion however observed in the adjective which is the right-hand element of the derived compound noun. The derived compound noun is an exocentric (headless) compound as the meaning of the derived compound noun cannot be derived from the meaning of the individual free morphemes put together to form the compound noun.

4.1.3 Noun-Verb Compounding in Mo

Nouns are linked together with verbs to form nominal compounds but not in large numbers. When this occurs, the noun may be placed at the left-hand side or the right-hand side of the compound word while the verb may appear at the right or left. The concatenation of the nouns and the verbs triggers elision of some segments such as a syllable. The resultant words are all nominal compounds with different meaning. Some exemplified data are presented in Table (5) below.

Table 5: Noun-Verb Compounds

A	B	C	Gloss	Translation	Type of Compound
(Noun)	(Verb)	(A+B)			
bambile 'chest'	teɲe 'cut'	bambiteɲ	chest cut	fright	Exocentric (headless)
kara 'chair'	dʒã 'jump'	dʒãŋkara	chair jump	reclining chair/seat	Exocentric (headless)

Examining the data in Table (5), it is observed that there is an elision of the last syllable of the noun in the data in column **A**. There is also a final V-deletion of the verb in column **B**. Below are some of the examples that depict this phenomenon.

EXAMPLE 10

a. bambile	+	teje	=	bambiteŋ
chest	+	cut	=	fright

A critical examination of the example (10a) data above reveals a deletion of the final CV syllable of the noun **bambile** ‘chest’ altering it into CVC.CV when the verb **teje** ‘cut’ was added to it to derive the compound word **bambiteŋ** ‘fright’. Another case that is worth noting is that the verb **teje** is observed to have lost its final vowel turning its structure into a CVC in the derived compound word. The resultant compound word is an exocentric compound owing to the fact that the meaning of the compound word is not determined by the individual words joined together to form the compound noun.

A conclusion can be drawn on the data in Table (5) that Noun + Verb compounds in Mo yielded only exocentric compounds. Gariba (2017) reports similar findings for Sisaalt, a sister language of Mo.

4.1.5 Summary

In the analysis of the data on compounding, it was revealed that various patterns such as Noun-Noun, Noun-Adjective and Noun-Verb exist in Mo. It is also important to note that compounding is used to perform derivational functions. This is seen in the fact that new words are attained in Mo by simply concatenating two free morphemes which are of different or same grammatical status to derive compounds whose meanings are different from the meaning of the words put together to derive them. In the Table below, the various patterns of compounding with their functions found in Mo have been tabulated.

Table 6: A Tabulation of Patterns and Functions of Compounding in Mo

Compounding (Pattern)	Function: Derivational or Inflectional	Specific Function
Noun + Noun	Derivational	Nominalisation
Noun + Adjective	Derivational	Nominalisation
Noun + Verb	Derivational	Nominalisation

4.2 Affixation in Mo

The second morphological process observed in Mo is affixation. It is perhaps the commonest morphological process in Mo, just as observed for in many of the world's languages. Just like other Mabia, Mo largely exhibits only cases of suffixation. This may occasion phonological processes like consonant epenthesis, vowel elision, nasalisation of vowels and compensatory lengthening. In the literature, affixes are categorised into three main types, namely, prefixes, infixes and suffixes. In Mo, suffixes are added to existing lexemes that are syntactically environmental independent to either change or maintain their core lexical meaning or grammatical category or bring about changes in meaning and category. The discussion of suffixation as a derivational operation in Mo will however be done in a circumscribed manner due to inadequate data on it and time constraint.

4.2.1 Suffixation as an Inflectional Operation in Mo

This section examines data on suffixation as an inflectional operation in Mo. Suffixation can be used to form plural nouns in Mo. This is because nouns in Mo are inflected for grammatical number, meaning that if they are of the countable type, they generally have different forms for singular and plural. In Mo, noun number marking involves the

addition of suffixes to noun stems to mark plurality. The plural suffixes **-ɪ**, **-a**, **-i**, **-nĩ**, **-la**, **-nã**, **-ra**, **-nar**, **-e** and **-rɪ** are simply attached to noun stems to form their plurals. Mo inflectional suffixes do not change the core lexical meaning of words to which they are attached. They also maintain their grammatical categories. The following sub-sections examine each one of them in turn.

4.2.1.1 The Plural Suffixes in Mo (-ɪ, -a, -i, -nĩ, -la, -nã, -ra, -nar, -e and -rɪ)

In Mo, lexical items may be discussed in terms of number marking with respect to the Animacy Hierarchy. In other words, number marking of nouns in Mo behaves in an interesting way but in accord with the Animacy Hierarchy. Number marking on the noun in Mo can allow various animates (nouns denoting humans and animals) and inanimates (nouns denoting non-living things) to obligatorily carry plural markers (suffixes). The suffix **-nar** is strictly used for human animate nouns to mark plurality on 'Kinship Names' as well as some few animate nouns denoting humans. For instance, it is correct grammatically to attach the suffix **-nar** to the nouns **dam** 'friend' and **ko:ro** 'chief' to form **da:manar** 'friends' and **ko:ranar** 'chiefs' respectively, but it is incorrect grammatically to suffix it to **marɪ** 'rat' to get ***marɪnar** or to attach it to **yal** 'cloth' to get ***yalnar**. This is due to the fact that they take the suffixes **-rɪ** and **-ɪ** to form their plurals. Therefore, **marɪ** 'rat' becomes **marɪrɪ** 'rats' and **yal** 'cloth' becomes **yalɪ** 'clothes'. Also, it is grammatical to attach the suffix **-a** to the noun **nonisɔɔ** 'ring' to form **nonisɔɔa** 'rings' but it is totally ungrammatical to attach it to **bie** 'child' to form ***bia** because **bie** 'child' is a human animate noun and attracts the suffix **-i** to form its plural **bii** 'children'. The Tables in 7, 8, 9, 10, 11 and 12 below demonstrate examples of some animate and

inanimate nouns and their respective suffixes to which they are attached to form their plurals.

Table 7: The Plural Marker for Kinship Names (-nar)

Noun Stem	Gloss	Plural Suffix	Plural Form	Gloss
mɛ:	father	-nar	mɛ:nānar	fathers
dɔ:	brother	-nar	dɔ:ranar	brothers
ɲā:nā	aunt	-nar	ɲā:nānar	aunts
na:ra	uncle	-nar	na:ranar	uncles
nāhā:	sister	-nar	nāhā:nar	sisters
nā:	grandchild	-nar	nā:nar	grandchildren
nime	younger brother/sister	-nar	nimenar	younger brothers/sisters

It is observed in Table (7) above that the attachment of the plural marker **-nar** to the human animate nouns (kinship names) to form their plural forms reveals an instance of insertion. The plural marker when suffixed to the noun stems did not change the grammatical category of their plural versions. As indicated earlier, some instances of syllable insertion can be seen in Table (7). This is demonstrated in the example (11) below.

EXAMPLE 11

- a. **dɔ:** + **ra** + **-nar** = **dɔ:ranar**
 brother + CV syllable + pl = brothers
- b. **mɛ:** + **nā** + **-nar** = **mɛ:nānar**
 father + CV syllable + pl = fathers

Scrutinising the data in example (11a) above, it is observed that before the plural suffix marker **-nar** was attached to the noun stem **ɔ:** ‘brother’, a CV syllable type (**ra**) is seen to have been inserted in the structure of the derived plural form **ɔ:ranar** ‘brothers’. The attachment of the dependent plural marker to the noun stem did not change the grammatical category of the plural form. Analysing the data in example (11b) above equally reveals the insertion of another CV syllable (**nā**) in the structure of the noun stem **mɛ:** ‘father’ before the attachment of the plural marker **-nar** to it to arrive at its plural form **mɛ:nānar** ‘fathers’.

Table 8: The Plural Markers (-la/ -nā/ -ra/ -a) for Common Nouns

Noun Stem	Gloss	Plural Suffix	Plural Form	Gloss
luba:	widower	-la	luba:la	widowers
ba:	man	-la	ba:la	men
biba:	boy	-la	biba:la	boys
bihā:	girl	-nā	bihā:nā	girls
luhā:	widow	-nā	luhā:nā	widows
hā:	woman	-nā	hā:nā	women
kpā:	hunter	-nā	kpā:nā	hunters
pe:	sheep	-ra	pe:ra	sheep
tagnĩ	mushroom	-a	tagnā	mushrooms
dignĩ	ear	-a	dignā	ears
peŋe	fish	-a	peŋā	fishes
pu	yam	-a	pia	yams

From Table (8) above, it is observed that the entire noun stems to which the plural suffixes are attached have long and short vowel endings. It can also be seen in the Table above that all stems ending with long vowels take a CV plural suffix: **-la**, **-na** or **-ra** (e.g.

biba:la, **luhã:na** and **pe:ra**). All stems ending with short vowels take a V plural suffix **-a** (e.g. **pia**), except when the last syllable of the stem is CV, where the C is nasal consonant. In such cases, the V of the CV is replaced with **-a** to mark plurality (e.g. **ɔɪgnã** and **peŋã**). The suffixing of the plural markers to the noun stems triggers some phonological processes. This is exemplified in the example (12).

EXAMPLE 12

a. luba:	+	-la	=	luba:la
widower	+	pl	=	widowers
b. hã:	+	-nã	=	hã:nã
woman	+	pl	=	women
c. tagnĩ	+	-a	=	tagnã
mushroom	+	pl	=	mushrooms

Perusing the data in example (12a) above, it is worth mentioning that the addition of the plural suffix **-la** to the noun stem **luba:** ‘widower’ to form its plural form **luba:la** ‘widowers’ did not change its grammatical category. Similar instance can be reported about the data in example (12b). The attachment of the suffix **-nã** which marks plurality on the noun stem **hã:** ‘woman’ to derive its plural version **hã:nã** ‘women’ also did not change the word class. As earlier stated above, in examples (12a-b), it can be observed that the CV plural suffixes are attached to stems with long vowels.

In example (12c), it is observed that the nasalised high front vowel /ĩ/ in the noun stem **tagnĩ** ‘mushroom’ deletes and is substituted for the V plural suffix **-a** in its plural version **tagnã** ‘mushrooms’. However, it is worth mentioning that the plural marker which was

attached to the noun stem to generate its plural form is nasalised because of the influential nature of the alveolar nasal consonant /n/ that precedes it.

Table 9: The Plural Marker (-ri) Employed for some Non-Human Animate and Inanimate

Nouns

Noun Stem	Gloss	Plural Suffix	Plural Form	Gloss
dʒa:gɔ	horse	-ri	dʒagri	horses
tɛŋkɛmã	cat	-ri	tɛŋkɛmãri	cats
maŋgɔ	mango	-ri	maŋgɔri	mangoes
ke:go	donkey	-ri	ke:gori	donkeys
kere	knife	-ri	kereri	knives
nãŋgawa	sandal	-ri	nãŋgawari	sandals
wampio	fan	-ri	wampioru	fans
kalaŋ	mat	-ri	kalaŋri	mats
hare	land	-ri	hareri	lands
wɛgrɛ	basket	-ri	wɛgrɛri	baskets

A critical examination of the data in Table (9) reveals that when the plural marker **-ri** was suffixed to the non-human animate and inanimate nouns to derive their plural forms, a number of the noun stems did not undergo any structural change. There were however some instances of final segment deletion, vowel shortening and vowel substitution. This is illustrated in the example (13) below.

EXAMPLE 13

- a. **dʒa:gɔ** + **-ri** = **dʒagri**
 horse + pl = horses
- b. **maŋgɔ** + **-ri** = **maŋgɔri**
 mango [mãŋgəʊ] + pl = mangoes

The data in example (13a) shows that addition of the plural suffix **-ru** to the noun stem **ɖʒa:gɔ** ‘horse’ resulted in the elision of the back half-open rounded vowel /ɔ/ serving as the final segment of the noun stem. In addition, the long central low vowel /a:/ is shortened, as in the plural form **ɖʒagru** ‘horses’ in (13a); a feature which is not present in the original.

As mentioned earlier, vowel substitution is one of the phonological processes triggered when the plural suffix **-ru** is attached to noun stems to form their plurals in Table (9) above. The noun stem **mangɔ** ‘mango’ in (13b) is a borrowed word from English. The Mo word **mangɔ** has undergone nativisation process. It can therefore be observed in example (13b) that when the English word **mango** [mæŋgəʊ] was borrowed into Mo, the advanced tongue root vowel /æ/ is replaced with the central low vowel /a/ in the context of the Mo version **mangɔ**. The second replacement of the diphthong /əʊ/, as found in the Mo data, is with the back half-open rounded vowel /ɔ/, before the attachment of the plural suffix **-ru** to the noun stem **mangɔ** ‘mango’ to derive its plural form **mangɔru** ‘mangoes’.

Table 10: The Plural Marker (-i) for some Human Animate, Non-Human Animate and Inanimate Nouns

Noun Stem	Gloss	Plural Suffix	Plural Form	Gloss
ko:	farm	-i	ko:nĩ	farms
dem	house	-i	deremĩ	houses
tolo	girl	-i	toli	girls
ʈfo:mã	rabbit	-i	ʈfonĩ	rabbits
dakpul	wood	-i	dakpuli	woods
dola	bar	-i	doli	bars
bilaldie	orphan	-i	bilaldii	orphans
bapĩnã	old man	-i	bapĩnĩ	old men
hãpĩnã	old woman	-i	hãpĩnĩ	old women

A look at the data in Table (10) reveals instances of the deletion of final vowels of some of the noun stems and last syllable of a noun stem, vowel shortening, syllable insertion as well as consonant insertion before the addition of the affixal segment to the noun stems to mark plurality. It is also worth stating that, specifically, one of either mid front vowels, low central vowels or mid back vowels may drop to pave way for the suffix **-i** in the plural formation. The examples in (14) illustrate these morphophonological occurrences.

EXAMPLE 14

a. bilaldie	+	-i	=	bilaldii		
orphan	+	pl	=	orphans		
b. tʃo:mã	+	-i	=	tʃonĩ		
rabbit	+	pl	=	rabbits		
c. dem	+	re	+	-i	=	deremĩ
house	+	CV syllable	+	pl	=	houses
d. ko:	+	-i	=	ko:nĩ		
farm	+	pl	=	farms		

In example (14a), the mid-front high unrounded vowel /e/ in the noun stem **bilaldie** ‘orphan’ deletes as the suffix **-i** is incorporated in its structure to derive its plural version **bilaldii** ‘orphans’. A critical look at example (14b) above also shows the deletion of the last syllable of the noun stem with a nasalised vowel **tʃo:mã** ‘rabbit’. Again, while it is true, as earlier indicated that the CV syllable (**mã**) deletes, it is observed that the alveolar nasal /n/ replaces the bilabial nasal /m/ before the suffixal part **-i** is incorporated to arrive at the plural version **tʃonĩ** ‘rabbits’. The plural marker that follows the nasal is

subsequently nasalised. It is also worth mentioning that the long vowel /o:/ in the noun stem shortens as the plural suffix is attached to it to form the plural counterpart.

Another observation about the data in example (14c) is that the noun stem **dem** ‘house’ with a CVC syllable structure incorporates a CV syllable (**re**) in its structure before the pluralising suffix **-i** is attached to it to form its plural counterpart **deremĩ** ‘houses’. Again, the plural marker following the bilabial nasal is nasalised. It is also observed that vowel harmony features in this plural formation as the vowel of the epenthetic CV syllable which is +ATR harmonises with the +ATR vowel that the noun stem contains and with the pluralising suffix which is equally a +ATR vowel by default.

As earlier indicated in the general observation given in respect of the data in Table (10) above, there is a case of consonant epenthesis in the plural formation. Therefore, it is observed in example (14d) that concatenation of the noun stem **ko:** ‘farm’ and the suffixal segment **-i** to mark plurality resulted in the insertion of the alveolar nasal /n/ in the structure of the pluralised version **ko:nĩ** ‘farms’. Like examples (14b-c), the inserted alveolar nasal nasalises the plural marker. Accordingly, the word **ko:** whose structure is originally a CV: in the singular case changes into a CV:.CV syllable structure in the plural case because it assumes a suffix in addition.

Table 11: The Plural Markers (-ɪ and -nĩ) for some Inanimate Nouns

Noun Stem	Gloss	Plural Suffix	Plural Form	Gloss
yal	cloth	-ɪ	yalɪ	clothes
papo:	leaf	-nĩ	papo:nĩ	leaves
tɔn	book	-ɪ	tɔnɪ	books
hunã	pot	-ɪ	hunɪ	pots
kara	stool/chair	-nĩ	kanĩ	stools/chairs
bɪʃala	infant	-ɪ	bɪʃalɪ	infants
ɖta	room	-nĩ	ɖt:nĩ	rooms
bɔ:	hole	-nĩ	bɔ:nĩ	holes

What can be observed from Table (11) above is that the plural suffix $-\text{ɪ}$ and the preceding plural suffix $-\text{i}$ in Table (10) are variants conditioned by the feature ATR. Accordingly, -ATR stems select $-\text{ɪ}$ while +ATR stems select $-\text{i}$ as in Table (10). It can also be observed in Table (11) that some of the singular noun stems drop their final segments in order to receive the pluralising suffix to ensure the realisation of their plural versions. Another observation worth attention is that while there is the elision of some vowels, there are also instances of syllable deletion and vowel lengthening as well as nasalisation of vowels in the pluralisation of the inanimate nouns. This is evident in the example (15) below.

EXAMPLE 15

- a. papo: + -nĩ = papo:nĩ
leaf + pl = leaves
- b. kara + -nĩ = kanĩ

stool/chair	+	pl	=	stools/chairs
c. dia	+	-nĩ	=	du:nĩ
room	+	pl	=	rooms
d. hunã	+	-ɪ	=	hunĩ
pot	+	pl	=	pots

A close examination of the data in example (15a) reveals the attachment of the CV plural suffix **-nĩ** to the stem **papo:** ‘leaf’ with the elongated half-close back rounded vowel /o:/ to realise its plural version **papo:nĩ** ‘leaves’. Again, there is a case of deletion of the last syllable of the noun stem as attested in example (15b). It is therefore observed in example (15b) that the final CV syllable /ra/ which forms an integral part of the structure of the noun stem **kara** ‘stool/chair’ deletes and it is replaced by the CV plural suffix /nĩ/ to realise its plural version **kanĩ** ‘stools/chairs’. This was done to achieve a CV.CV syllable type which is typical of the Mo language.

In (15c), there is a deletion of the final vowel of the noun stem **dia** ‘room’ before receiving the plural suffix **-nĩ** to derive its plural version **du:nĩ** ‘rooms’. It is observed that the elision of the final vowel of the stem resulted in the lengthening of the remaining vowel in the derived plural version. That is /ɪ/ in the singular form became /ɪ:/ in the plural form. Also, an analysis of the data in example (15d) reveals a deletion of the final nasalised vowel of the noun stem **hunã** ‘pot’ when the plural suffix **-ɪ** was attached to it to form its plural counterpart **hunĩ** ‘pots’. This resulted in the nasalisation of the pluralising suffix in the context of the alveolar nasal /n/ that precedes it.

It is deducible from the examples presented above that the vowel of the plural marker suffix **-nĩ** and the plural suffix **-ɪ** harmonise with the vowels of the noun stems to which they are attached as in example (15b-d). The plural suffix **-ɪ** and the vowel of the plural suffix **-nĩ** which are **-ATR** vowels are observed to have harmonised with the **-ATR** vowels in the plural versions of the noun stems **kara** ‘stool/chair’, **ɖia** ‘room’, **hunã** ‘pot’ which are **kanĩ** ‘stools/chairs’, **ɖu:nĩ** ‘rooms’ and **hunĩ** ‘pots’ in example (15b-d) because the noun stems contain unadvanced tongue root vowels (**-ATR**).

Table 12: The Plural Marker (-e) for some Non-Human Animate and Inanimate Nouns

Noun Stem	Gloss	Plural Suffix	Plural Form	Gloss
noni:	finger	-e	nonie	fingers
sidi	eye	-e	sidie	eyes
sombi	shea nut	-e	sombie	shea nuts
bi	seed	-e	bie	seeds
bambi	palm nut	-e	bambie	palm nuts
dagwi	stump	-e	dagwie	stumps
mãpãbi	puppy	-e	mãpãbie	puppies

From Table (12) above, it can be attested that the noun stems to which the pluralising suffix **-e** is attached end in the high front advanced unrounded vowel /i/. The examples in Table (12) above portray no segment deletion after the plural suffix was attached to the noun stems to realise their plurals. However, only one example was obtained for the case of vowel shortening. Consider example (16) below.

EXAMPLE 16

a. noni:	+	-e	=	nonie
finger	+	pl	=	fingers
b. sombi	+	-e	=	sombie
shea nut	+	pl	=	shea nuts

Scrutinising the data in example (16a) above, it can be deduced that the attachment of the plural suffix **-e** to the noun stem **noni**: ‘finger’ to derive its plural version **nonie** ‘fingers’ is observed to have shortened the long vowel serving as the final segment of the noun stem. Thus far, /i:/ in the singular form became /i/ in the plural form.

Another equally important observation worth mentioning is that vowel harmony features greatly in the plural formation of the noun stems. A look at example (16b) portrays that the +ATR plural suffix **-e** harmonises with the vowels of the noun stem **sombi** ‘shea nut’ when it was attached to it to form the plural counterpart **sombie** ‘shea nuts’.

4.2.2 Suffixation as a Derivational Operation in Mo

Suffixation is not only an inflectional operation in Mo but it is also a derivative process in the language. In the present study, the derivational devices are suffixes or morpheme segments. The derivational suffixes are **-yie** and **-wie** (diminutive suffixes), **-ti/-tuna** (identity and ownership suffixes) and **-i, -a, -ga -ɔ, -u, -v, -t, -lt** and **-rt** (action nominalisers). Thakur (2010, p. 12) asserts that derivational morphemes are either class changing or class maintaining. This assertion more appropriately captures the pattern found in Mo in that Mo derivational suffixes are either class-changing or class-

maintaining. The following sub-sections examine each of the derivational suffixes and their functions in Mo.

4.2.2.1 The Diminutive Suffixes –yie and –wie in Mo

Diminutive markers are mainly words or suffixes that are attached to nouns to indicate the diminutive nature (smallness) of something or name usually indicating small size. In Mo, two class-maintaining diminutive suffixes are used notably to indicate smallness either in size, age or status. The diminutive suffixes are **–yie** and **–wie**. They are used to derive new words which have different meaning from their bases. That is to say when these suffixes are attached to bases to derive the diminutive forms, the bases and the diminutive forms do not refer to the same entity or person in Mo. It is very imperative to assert that the diminutive suffix **–yie** is mostly attached to personal day-names for masculinity (males) to mark difference in terms of age. On the other hand, the diminutive suffix **–wie** is attached to kinship or common nouns to either mark smallness or difference in status or size.

Table 13: The Diminutive Suffix -yie for Personal Day-Names

Day-Name (male)	Gloss	Diminutive Suffix	Diminutive Form	Gloss
Koɔzo	personal name	-yie	Koɔzoyie	small Kwadwo
Kɔbunā	personal name	-yie	Kɔbɪɲɲie	small Kwabena
Koku	personal name	-yie	Kokuyie	small Kwaku
Yao	personal name	-yie	Yaoyie	small Yaw
Kofi	personal name	-yie	Kofiyie	small Kofi
Kɔ.ɔmɪ	personal name	-yie	Kɔmyie	small Kwame
Kosi	personal name	-yie	Kosiyie	small Kwasi

Table 14: The Diminutive Suffix -wie for Kinship or Common Nouns

Common Nouns	Gloss	Diminutive Suffix	Diminutive Form	Gloss
ɲā	mother	-wie	ɲāwie	small/junior mother
mɛ:	father	-wie	mɛwie	small/junior father

From Table (13), we observe that the examples are Akan loanwords (personal day-names) into Mo while those in Table (14) are Mo common nouns. Again, we observe that

all the examples in both Table (13) and Table (14) undergo suffixation. However, it is worthy to note that it is usually the male personal day-names that attract the diminutive suffix **-yie** while the kinship nouns attract the diminutive suffixes **-wie**. Another intriguing observation worth noting is that because Mo borrows the male personal day-names from Akan, the names (words) are not structurally constrained in Mo but may be phonetically constrained. This may be due to the similarity in the syllable structures of the two languages involved. That is to say both languages have open syllable structures and they do not permit consonant clusters as Dolphyne (2006) argues for Akan.

Looking at the examples in Table (13), it is observed that though the central low vowel /a/ is found in both Akan and Mo, some of the borrowed male personal day-names from Akan that contain the vowel /a/ still get replaced as part of the nativisation process. Again, we observe that the attachment of **-yie** to the male personal day-names in Table (13) and **-wie** to the kinship nouns in Table (14) triggered some phonological processes such as nasalisation of vowel, vowel elision, vowel shortening and vowel simplification. All these processes surface in the diminutive forms. Consider the following data in example (17) below.

EXAMPLE 17

	Akan	Mo		Diminutive Suffix		Diminutive Form
a.	[K ^w abu ⁿ ã]	[Kɔbu ⁿ ã]	+	-yie	=	Kɔbɪŋɪe
		personal name	+	small	=	small Kwabena
b.		mɛ:	+	-wie	=	mɛwie
		father	+	small	=	small/junior father

From the Mo data, it is observed that in (17a), it is only the final nasalised vowel of the base day-name that deletes when the diminutive suffix **-yie** was attached to it to generate the diminutive form **Kɔb̃ɪɲie** ‘small kwabena’. This caused the alveolar nasal /n/ ending the base day-name after the elision to assimilate to the place of articulation of the palatal glide/approximant /j/ (**y**) that begins the diminutive suffix **-yie**. As a result, the alveolar nasal became a palatal nasal /ɲ/ (**ny**). Again, we notice a nasalisation process which is triggered by the palatal nasal /ɲ/. The palatal nasal influences the high front unrounded vowel /ɪ/ with its nasal feature to become a nasalised vowel /ɪ̃/ in the context of diminutive form **Kɔb̃ɪɲie**.

While reference is made to an elision process when the diminutive suffix **-yie** and the base day-name were concatenated to derive the diminutive form in example (17a), it is observed in (17b) that the attachment of the diminutive suffix **-wie** to the kinship noun **mɛ:** ‘father’ to derive the diminutive form **mɛwie** ‘small/junior father’ triggered vowel shortening. It is therefore worth noting that the long vowel /ɛ:/ which is the final segment of the base noun shortens in the diminutive form as /ɛ/.

4.2.2.2 The Identity and Ownership Suffixes -tu and -tuna in Mo

The identity markers are suffixes that are attached to proper nouns such as countries, towns, communities or villages to refer to the people who originate from those places. For instance, in English, **Canada** is the name of a country, but when the suffix **-ian** is attached to it, it becomes **Canadian** referring to a native or an inhabitant of Canada. In the same vein, Mo has both singular and plural suffixes to which names of places are attached to refer to a native or natives of those places. The suffixes are **-tu** (singular

marker) and **-tuna** (plural marker). For example, the singular and plural identity suffixes **-ti** and **-tuna** can be attached to names of countries such as **Ghana** to derive **Ghanati** ‘a native of Ghana’ and **Ghanatuna** ‘natives of Ghana’ respectively. The data in Tables (15) and (16) support these phenomena.

Table 15: The Singular Identity Suffix –ti for Place Names

Name of Place	Singular Identity Suffix	Singular Form	Gloss
Dzugboɔ	-ti	Dzugboɔti	a native of Jugboi
Dzama	-ti	Dzamatɪ	a native of Jama
Tasirima	-ti	Tasirimati	a native of Tasirima
Nepwi:	-ti	Nepwi:ti	a native of Nepwii
Bamboɔ	-ti	Bamboɔti	a native of Bamboi

From Table (15), it can be observed that the attachment of the singular identity suffix **-ti** to the place names reveals no phonological processes. However, the meanings of all the place names are altered when the singular identity suffix was attached to them to derive the singular identity forms. Therefore, it is worth mentioning that the singular identity forms in Table (15) are no longer place names, but names of persons who come from those places.

Table 16: The Plural Identity Suffix –tuna for Place Names

Name of Place	Plural Identity Suffix	Plural Form	Gloss
Mantuka	-tuna	Mantukatuna	natives of Mantuka
Mantjala	-tuna	Mantjalatuna	natives of Manchala
Sobule	-tuna	Sobuletuna	natives of Sobule
So:ra	-tuna	So:ratuna	natives of Soora
Bohwε:ma	-tuna	Bohwε:matuna	natives of Bohwεma
Gombwε	-tuna	Gombwεtuna	natives of Gombwe

An analysis of the data in Table (16) above demonstrates that the concatenation of the plural identity suffix **-tuna** and the place names to derive the plural identity forms did not alter the structure of the base place names but their meanings are changed from place names to persons from those places. On the other hand, the suffixes **-ti** and **-tuna** are equally attached to some common nouns to mark ownership in Mo. The former suffix marks singularity on common nouns whilst the latter suffix marks plurality on common nouns. The data in Table (17) support these phenomena.

Table 17: The Singular and Plural Markers of Ownership for Common Nouns (-ti, -tuna)

Root	Gloss	Singular Form	Gloss	Plural Form	Gloss
buse	house	buseti	landlord	busetuna	landlords
dia	room	diati	owner of a room	diatuna	owners of a room
ko:	farm	ko:ti	owner of a farm	ko:tuna	owners of a farm
hare	land	hareti	landholder	haretuna	landholders

Again, the data in Table (17) illustrate that the addition of both the singular and the plural ownership suffixes **-ti** and **-tuna** to the roots to derive the singular and plural ownership forms triggered an alteration or modification of the meanings of the roots in Mo.

4.2.2.3 The Action Nominal Suffixes (-i, -a, -ga, -ɔ, -u, -v and -ɪ) in Mo

The action nominal suffixes are used by the speakers of Mo to derive action nominals from action verbs and to nominalise posture verbs. In Mo, the action nominal suffixes are **-i**, **-a**, **-ga**, **-ɔ**, **-u**, **-v** and **-ɪ**. However, among the seven action nominal suffixes covered in this analysis, only two, that is, **-a** and **-ga** were found to be used for posture verb nominalisation though the former occurs in other contexts but in a limited sense. The action nominal suffixes **-i**, **-ɪ**, **-a**, **-ɔ**, **-u** and **-v** are used to nominalise action verbs. Tables (18) and (19) below show the action verbs/non-stative verbs and their corresponding derived forms as well as the posture verbs and their analogous nominalised forms.

Table 18: The Action Nominal Suffixes *-i/-ɪ* and *-a*

Verb Stem	Gloss	Nominal Suffix	Derived Action Nominal	Gloss
ɲɔ	drink	-ɪ	ɲɔɪ	drinking
tɔ	cover	-ɪ	tɔɪ	covering
sɔ	bath	-ɪ	sɔɪ	bathing
ŋɔ	speak	-ɪ	ŋɔɪ	speaking
lɔ	play	-ɪ	lɔɪ	playing
kɔɔ	take	-ɪ	kɔɔɪ	taking
tʃa	help	-ɪ	tʃaɪ	helping
tʃwa	run	-ɪ	tʃwaɪ	running
sa	dance	-ɪ	saɪ	dancing
nu	hear	-ɪ	nuɪ	hearing
kɔv	kill	-ɪ	kɔvɪ	killing
to	snatch	-i	toi	snatching
yo	fight	-i	yoi	fighting
di	eat	-i	dii	eating
teɲe	cut	-a	teɲa	cutting
ɲine	search	-a	ɲina	searching

From Table (18) above, it is observed that the means of forming action nominals in Mo is through affixation. Here, the nominalising affixes (suffixes) **-ɪ**, **-i** and **-a** are seen to have been attached to the non-stative verb stems. Therefore, in Table (18) are examples of action nominals derived through suffixation and the root/stem from which they are derived. Following the stance of Appah (2005, p. 135) and Payne (1997), the derived nominals, in this instance, can be described as action nominals as they refer to the action designated by the verb. It is worth mentioning that vowel harmony plays a role in the

action nominalisation process. The following data in example (18) below illustrate this morphophonological scene.

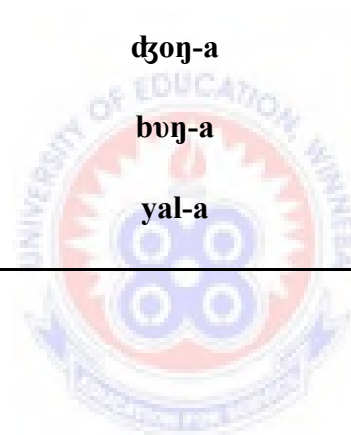
EXAMPLE 18

a.	tɔ	+	-ɪ	=	tɔɪ
	cover	+	NOM SUF	=	covering
b.	to	+	-i	=	toi
	snatch	+	NOM SUF	=	snatching

In example (18a-b), it is observed that the nominal suffixes attached to the verb stems are the two high vowels [-ɪ] and [-i]. However, the choice of the vowel nominal suffix in each case is phonologically determined. That is the choice of a +ATR or –ATR nominal suffix is determined by the ATR position of the vowel in the verb stem. Therefore, in (18a), by virtue of the fact that the vowel in the verb stem **tɔ** ‘cover’ is –ATR, the suffix is a –ATR vowel both put together to derive the action nominal **tɔɪ** ‘covering’. Notwithstanding, in (18b), the suffix is a +ATR vowel because the vowel in the verb stem **to** ‘snatch’ is +ATR both concatenated to derive the action nominal **toi** ‘snatching’.

Table 19: The Nominalising Suffixes –ga and –a for Posture Verbs in Mo

Posture Verb	Gloss	Nominalised Form	Gloss
ʈi	stand	ʈi-ga	‘the act of being in a standing posture’
so	sit	so-ga	‘the act of being in sitting posture’
guŋi	kneel	guŋ-a	‘the act of being in a kneeling posture’
ɖɔŋi	squat	ɖɔŋ-a	‘the act of being in a squatting posture’
bɔŋɛ	stoop	bɔŋ-a	‘the act of being in stooping posture’
yalɩ	lean	yal-a	‘the act of leaning against something’



It is observed in Table (19) that nominal derivation from Mo posture verbs typically follows a concatenative process. The process of posture verb nominalisation in Mo involves suffixation. Among the six posture verbs covered in this analysis, it is observed that all CV posture verb stems such as **tfi** ‘to be in a standing position’ and **so** ‘to be in a sitting position’ were found to be nominalisable through the **-ga** nominalising suffix. The nominalisation of any of the other posture verb stems which are disyllabic or multisyllabic requires **-a** nominalising suffix. It is worth mentioning that these nominalised posture verbs are also action nominals. The difference is that whereas the posture verbs are nominalised with **-ga/-a** suffix, non-posture verbs (action) are nominalised with the **-i/ɪ** and **-a** suffix as in Table (18) above. Again, the attachment of the **-a** suffix to some of the posture verb stems triggered the phonological process of vowel elision. The data in example (19) below shows a clear picture of this phenomenon.

EXAMPLE 19

a.	tfi	+	-ga	=	tfiga
	stand	+	NOM SUF	=	The act of being in a standing posture
b.	ɖɔŋi	+	-a	=	ɖɔŋa
	squat	+	NOM SUF	=	The act of being in a squatting posture

From example (19a), it can be observed that the CV posture verb stem **tfi** ‘stand’ is concatenated with the nominalising suffix **-ga** to derive the nominalised form **tfiga** ‘the act of being in a standing posture’. On the other hand, the posture verb stem **ɖɔŋi** ‘squat’ in (19b) is observed to have lost its final high front vowel /i/ when the nominalising suffix **-a** was attached to it to realise its nominalised form **ɖɔŋa** ‘the act of being in

squatting posture'. Affixation as a means of nominalising Mo posture verbs ties up with the phenomenon of posture verb nominalisation in Konkomba, except that in Konkomba, to nominalise posture verbs requires either only prefixation or the simultaneous processes of prefixation and reduplication of the verb base (Bisilki, 2019, p. 13).

4.2.2.4 Summary

The discussion of affixation has focused specifically on suffixation as an inflectional process and derivational process as well as their accompanying phonological processes in Mo. It has been established that there is a considerable number of ways by which Mo plural nouns are formed from their corresponding singular forms. One of such ways is by attaching various plural suffixes to noun stems to mark plurality. Derivational suffixes such as diminutive suffixes, identity and ownership suffixes, and action nominal suffixes were also examined. The various suffixes and their functions as found in the research are summarised in the Table below.

Table 20: A Tabulation of Suffixes and their Functions in Mo

Affixation (Suffixation)	Function: Derivational or Inflectional	Specific Function	Class-Maintaining or Class-Changing
<i>(Plural Suffixes)</i> -l, -i, -a, -e, -ri, -nã, - nĩ, -ra, -la and -nar	Inflectional	Plurality Marking	Class-maintaining
<i>(Diminutive Suffixes) - yie and -wie</i>	Derivational	Diminutive Marking	Class-maintaining
<i>(Identity and Ownership Suffixes) - tu and -tuna</i>	Derivational	Identity and Ownership Marking	Class-maintaining
<i>(Non-Posture Verb Nominalisers/Suffixes)</i> -li, ri, -i, -t, -ɔ, -u and -v	Derivational	Action Nominalisation	Class-changing
<i>(Posture Verb Nominalisers/Suffixes)</i> -a and -ga	Derivational	Posture Verb Nominalisation	Class-changing

4.3 Reduplication in Mo

Reduplication is a common pattern cross-linguistically. In Mo, reduplication may be used to form words that share the same or different grammatical category with the base word. For instance, whereas reduplication is used to form adjectives from adjectives, it may be used to derive adverbs from nouns in the language. Let us consider the various types of reduplication in the following sub-sections.

4.3.1 Reduplication of Nouns

The first reduplication pattern worth considering consists of total reduplication of nouns. Words belonging to the noun category or group rarely undergo reduplication in Mo. Some few temporal nouns such as week, month and year mostly undergo the reduplication process. It is observed that the complete reduplication involving these common nouns is used for the formation of adverbs in Mo as seen in the data in Table (21) below.

Table 21: Noun Reduplication Patterns in Mo

Base Forms	Gloss	Reduplicated Forms	Gloss
yawapũã	week	[yawapũã-yawapũã]	weekly
korobie	month	[korobie-korobie]	monthly
benapũã	year	[benapũã-benapũã]	yearly

Analysing the reduplication of nouns in Mo, it is observed that the reduplication pattern in Table (21) above involves the repetition of the entire base-forms without any change in their internal structure to obtain the reduplicated forms. For example, the derived word **benapũã-benapũã** ‘yearly’ has been achieved from the base **benapũã** ‘year’ after the doubling process. Thus the function of the reduplication here is derivational as it has caused a change in part of speech. Reduplication has converted the nouns in Table (21) to adverbs.

4.3.2 Reduplication of Adjectives

Another pattern of reduplication in Mo shows total copying of the base. In Mo, some words that belong to the adjective category undergo total reduplication. Consider the dataset in Table (22) below.

Table 22: Adjective Reduplication Patterns in Mo

Base Forms	Gloss	Reduplicated Forms	Gloss
ɖʒaŋ	long	[ɖʒaŋ-ɖʒaŋ]	very long
ɖʒeiŋ	big	[ɖʒeiŋ-ɖʒeiŋ]	very big
ɖʒɪga	small	[ɖʒɪga-ɖʒɪga]	very small
bɔra	short	[bɔra-bɔra]	very short
mwe:	weak	[mwe:-mwe:]	very weak
swɛm	red	[swɛm-swɛm]	very red

Analysing the data in (22) above, it can be seen that the base-forms of the adjectives have undergone full reduplication in that there is an evidence of a total copying of the base-forms in the reduplicant. These base-forms have been repeated in the reduplicant sequentially for the expression of grammatical degree as well as for emphasis. For instance, the base-form **ɖʒaŋ** ‘long’ with a CVC structure among others is seen to have been copied fully in the reduplicant resulting in **ɖʒaŋ-ɖʒaŋ** ‘very long’ with a complex syllable structure and without any sound change. This is similar to Sisaalɔ pattern in that adjectives undergo full reduplication. Here, it is observed that the function of the reduplication is inflectional as it is used for intensification.

4.3.3 Reduplication of Adverbs

Words that belong to the adverb group can undergo reduplication just like adjectives but not in large numbers. This pattern of reduplication in Mo also involves the doubling of either the entire or part of the base in the reduplicant. In simple terms, the entire or part of the segments of the base of the adverb undergoes the doubling process in the reduplicant. It is therefore worth noting that the adverbs just as adjectives undergo total reduplication in Mo. This is shown in Table (23) below.

Table 23: Adverb Reduplication Patterns in Mo

Base Forms	Gloss	Reduplicated Forms	Gloss
waranu	quickly	[wara-waranu]	very quickly
dʒɛ̃i	quietly	[dʒɛ̃i-dʒɛ̃i]	very quietly
bwɛ̃ɛ	slowly	[bwɛ̃ɛ-bwɛ̃ɛ]	very slowly

Analysing the data on the reduplication of adverbs in Table (23) above, it is observed that the base-forms of the adverbs undergo total reduplication in the stems. It can also be noted that the result of the doubling process did not change the grammatical status of the reduplicant as it has the same status as the original base. In other words, the derived words are adverbs just as their base-forms. For example, **waranu** ‘quickly’ which is typically an adverb reduplicates to form another adverb **wara-waranu** ‘very quickly’ to express intensity.

4.3.4 Reduplication of Verbs

This pattern involves the reduplication of verbs with various syllable structure types. It can be seen that the repetition of verbs in Mo is a very productive means of deriving other forms to express continuous action (repeated actions). Consider the examples in Tables (24), (25), (26) and (27) below.

Table 24: Reduplication of CV Syllable Structure

Base Forms	Gloss	Reduplicated Forms	Gloss
ku	to break	[ku-ku]	to break continuously
gv	to sing	[gv-gv]	to sing continuously
kwi	to dig	[kwi-kwi]	to dig continuously
dʒã	to jump	[dʒã-dʒã]	to jump continuously
di	to eat	[di-di]	to eat continuously

In Table (24) above, it can be observed that CV monosyllabic verb stems with short vowel endings can undergo a total morphological doubling in Mo. For instance, the analysis of the verb base **ku** ‘to break’ reveals a complete copying of the CV to form another verb **ku-ku** ‘to break continuously’ through the reduplication process. Again, it can be seen that in Table (24), **gv** ‘to sing’ reduplicates to form **gv-gv** ‘to sing continuously’ and **dʒã** ‘to jump’ reduplicates to derive **dʒã-dʒã** ‘to jump continuously’ to express repetition.

Table 25: Reduplication of CV: Syllable Structure

Base Forms	Gloss	Reduplicated Forms	Gloss
gɔ:	to lift	[gɔ-gɔ:]	to lift continuously
tɔ:	to pick	[tɔ-tɔ:]	to pick continuously
ʈɔ:	to transplant	[ʈɔ-ʈɔ:]	to transplant continuously
bɔ:	to ask	[bɔ-bɔ:]	to ask continuously
po:	to peel	[po-po:]	to peel continuously
da:	to cook	[da-da:]	to cook continuously
te:	to hatch	[te-te:]	to hatch continuously

Observing the data in Table (25) above, it can be argued that CV: monosyllabic base-forms with long vowel endings can undergo partial reduplication in the reduplicant with some internal modifications. It is worth mentioning that the long vowels in the CV: monosyllabic base-forms undergo shortening after the reduplication process turning the base long vowels into short vowels in the reduplicant. For example, **tɔ:** ‘to pick’ duplicates to be **tɔ-tɔ:** ‘to pick continuously/repeatedly’ and **te:** ‘to hatch’ doubles to be **te-te:** ‘to hatch continuously’.

Table 26: Reduplication of CVC Syllable Structure

Base Forms	Gloss	Reduplicated Forms	Gloss
yɪr	to call	[yɪ-yɪr]	to call continuously
yog	to sell	[yo-yog]	to sell continuously
tag	to push	[ta-tag]	to push continuously
dʒag	to shake	[dʒa-dʒag]	to shake continuously

The Table (26) above shows verbs with a CVC syllable structure. Just like (25), this type of reduplication can be said to be partial because not all the components of the CVC base form are repeated in the output. Thus, in all the examples in (26), it is only the CV component of the base that is consistently repeated in the output. For example, the verb base **yir** ‘to call’ loses its final C consonant turning it into a monosyllabic in the reduplicant **yi-yir** ‘to call continuously’. Gariba (2017) reports similar findings for Sisaalt verbal reduplication.

Table 27: Reduplication of CV.CV Word Structure

Base Forms	Gloss	Reduplicated Forms	Gloss
dʒagɛ	to touch	[dʒagɛ-dʒagɛ]	to touch continuously
dagɛ	to taste	[dagɛ-dagɛ]	to taste continuously
karɛ	to lock	[karɛ-karɛ]	to lock continuously
tɔgɛ	to inject	[tɔgɛ-tɔgɛ]	to inject continuously

Table (27) above demonstrates disyllabic verb forms with CV.CV syllable structure. The data also exhibits a total reduplication pattern of the entire verb base to derive the reduplicated verb forms in Mo. This suggests that the reduplicated forms in Table (27) have maintained their word class as their bases. For example, the verb base **dagɛ** ‘to taste’ reduplicates to form another verb **dagɛ-dagɛ** ‘to taste continuously’. Additionally, it is generally observed that heavy syllables (e.g. CV: & CVC) undergo partial reduplication as in the examples in (25, 26) whereas light syllables (e.g. CV or CV.CV) undergo total reduplication as in (24, 27).

4.3.5 Reduplication of Numerals

Numerals can also undergo either total or partial reduplication in Mo. Reduplication of numerals in Mo has dual function. Syntactically, numerals can function as both nouns and adjectives in Mo. This is dependent on their position in the sentence. However, regardless of their syntactic position, they can undergo morphological doubling. It is worth noting that because numerals can sometimes function as adjectives in Mo, they behave like the adjectives when reduplicated. Numerals are commonly reduplicated to mark the shareability of things, the countability of money as well as to indicate emphasis. For example, traders and especially hawkers of cooked eggs duplicate numerals by calling out in the market and in the street for sale. This is exemplified in (20) below.

EXAMPLE 20

- a. **Dʒahal-a** **ato-toro** **siidi** **fi-fi.**
 egg- PL SUF three-three cedis ten-ten
 ‘three eggs for ten cedis’
- b. **He** **bɔna-a** **ato-toro.**
 you share-PRES three-three
 ‘Share them in threes.’

It is observed in (20a) that the numeral **atoro** ‘three’ undergoes a partial reduplication to be **ato-toro** ‘three-three’. Syntactically, the reduplicated form is functioning as an adjective and modifier of the plural noun **dʒahala** ‘eggs’ whereas in example (20b), the same reduplicated form is functioning as a noun. Table (28) below further captures the reduplication pattern of numerals in Mo.

Table 28: Numeral Reduplication Pattern in Mo

Base Forms	Gloss	Reduplicated Forms	Gloss
beŋkpoŋ	one	[beŋkpoŋa- beŋkpoŋa]	groups of one
anɛ	two	[anɛ-nɛ]	groups of two
atoro	three	[ato-toro]	groups of three
ana:rɛ	four	[ana-na:rɛ]	groups of four
anue	five	[anu-nue]	groups of five
fi	ten	[fi-fi]	groups of ten
lafa	hundred	[lafa-lafa]	groups of hundred

4.3.6 Summary

From the discussions, it has been established that five types of reduplication are possible in Mo. They include nominal reduplication, adjectival reduplication, adverbial reduplication, verbal reduplication and numeral reduplication. Amongst the five types, verbal reduplication was found to be the most productive and dominant type used by the speakers of Mo. This is in line with what was found in Gariba (2017), which states that Sisaali verbal reduplication is the most productive of all the other types of reduplication. Again, it was found that the various types of reduplication perform certain functions in Mo. Below is a Table that gives a vivid highlight of the types and their functions.

Table 29: A Tabulation of the Types and Functions of Reduplication in Mo

Types of Reduplication	Function: Derivational or Inflectional	Specific Function	Class-Maintaining or Class-Changing
Nominal	Derivational	Adverbialisation	Class-changing
Adjectival	Inflectional	Intensity	Class-maintaining
Adverbial	Inflectional	Intensity	Class-maintaining
Verbal	Inflectional	Repetition	Class-maintaining
Numeral	Inflectional/Derivational	Emphasis/Adjectivisation	Class-maintaining/Class-changing

4.4 Multiple Formations in Mo

Apart from using a single morphological process, there are cases where more than one morphological process is employed to form a new word in Mo. The first morphological processes that may be applied simultaneously to form new words in Mo are reduplication and suffixation. The second morphological processes that may be equally applied simultaneously to arrive at the desired words are reduplication, compounding and suffixation. This may also trigger some phonological processes. The ensuing sub-sections are devoted to examining these morphophonological occurrences.

4.4.1 Multiple Formations (Reduplication + Suffixation) in Agentive Nominalisation

Reduplication and suffixation can be used to derive a new word in Mo. This is particularly observed in agentive nominalisation, where both reduplication and suffixation are required to achieve the desired word. The suffixal elements that characterise the derivational process are **-a**, **-ɔ**, **-i**, and **-v**. Let us consider some examples in Table (30).

Table 30: Multiple Processes: Reduplication + Suffixation

Base	Gloss	Suffix	Output	Gloss
a. tʃwa	run	-a	tʃwatʃwa-a	runner
b. sa	dance	-a	sasa-a	dancer
c. tʃa	help	-a	tʃatʃa-a	helper
d. ɔ	play	-ɔ	ɔɔ-ɔ	player
e. tʃɔ	sleep	-ɔ	tʃɔtʃɔ-ɔ	sleeper
f. di	eat	-i	didi-i	eater
g. kwi	dig	-i	kwikwi-i	digger
h. gv	sing	-v	gvgv-v	singer

From Table (30), it can be observed that the derived agentive nouns (outputs) show evidence of total reduplication and suffixation. Thus, it is not possible to derive agentive nominals in Mo if the two morphological processes, reduplication and suffixation, are not applied to the verb base. It appears that the application of the two processes is ordered such that reduplication must first apply before suffixation, and not vice versa. And this is supported by the fact that, as (30) shows, the actual quality of the suffix is dependent on the final vowel of the reduplicant. For instance, if the reduplicant ends with the low

vowel /a/, the suffix comes out as -a, and if it ends with /ɔ/, the suffix comes out as -ɔ, as examples (a-c) and (d-e) respectively illustrate in Table (30).

4.4.2 Multiple Formation (Compounding + Suffixation) in Nominal Derivation

Compounding and suffixation may also be employed to form a new word in Mo. This is observed in nominal derivation, where both compounding and suffixation are required to achieve the desired word. The suffixes that are involved in this derivational operation are -lɪ, -rɪ, -u, -i and -v. Let us consider some examples in Table (31).

Table 31: Multiple Processes: Compounding + Suffixation

A (Noun)	B (Verb)	C (Nominal Suffix)	D (A+B+C)	Gloss	Translation
ni ‘water’	ɲɔ ‘drink’	-lɪ	niɲɔ:lɪ	water + drink + suffix	drinking water
ɖia ‘room’	ʈɔ ‘sleep’	-lɪ	ɖiʈɔ:lɪ	room + sleep + suffix	sleeping room
hā: ‘woman’	ɲīna ‘search’	-u	hāɲīnu	woman + search + suffix	womanizer/casanova
ba: ‘man’	ɲīna ‘search’	-u	baɲīnu	man + search + suffix	seductress/femme fatale
ɖia ‘room’	vɔɣɛ ‘consult’	-rɪ	vɔɣrɪɖia	room + consult + suffix	consulting room
buna ‘business’	di ‘eat’	-i	bunadidii	business + eat + suffix	business person
yɛl ‘song’	ɣv ‘sing’	-v	yɛlɣvɔv	song + sing + suffix	singer

From Table (31), it can be observed that the derived nominals in column **D** show evidence of total reduplication, compounding and suffixation in two instances. In other instances however, it is observed that the derived nominals show evidence of compounding and suffixation. It also appears that the application of the three processes in the two instances is ordered such that reduplication must first apply before compounding and suffixation but in the other instances, compounding is first applied before suffixation. This is exemplified in (21) below.

EXAMPLE 21

a. dia	+	ɸɔ	+	-li	=	diɸɔ:li
room	+	sleep	+	suffix	=	sleeping room
b. yɛl	+	ɡv	+	-v	=	yɛlɡvɡv
song	+	sing	+	suffix	=	singer

The data in example (21a) above is observed to have undergone some changes after the compounding, thus, elision and suffixation. It is noticed that when the verb **ɸɔ** ‘sleep’ was attached to the noun **dia** ‘room’, it triggered the deletion of the final segment which is an open front vowel /a/ of the noun **dia**. The derived word **diɸɔ:li** ‘sleeping room’ is then observed to have attracted a nominal suffix **-li** into its structure turning the resultant word into a nominal. Another scrutiny of the data in (21a) shows that the open-mid back vowel /ɔ/ serving as the final segment of the verb **ɸɔ** lengthens as /ɔ:/ in the environment of the lateral /l/ in the nominalising suffix. On the contrary, in (21b), it can be observed that the verb **ɡv** ‘sing’ undergoes a total reduplication before the noun **yɛl** ‘song’ was

compounded with it. There is also the evidence of suffixation of the nominaliser **-v** after the compounding process to derive the nominal **yɛlgvɔvɔ** ‘singer’.

4.4.3 Summary

It has been noted in the discussion that multiple formation is commonly found as part of the complex morphological constructions in Mo. It has been discussed that the derivation of agentive nouns from verb bases is marked simultaneously by total reduplication and the nominalising suffixes **-a**, **-ɔ**, **-i** and **-v**. It has also been established that the derivation of nominals is signalled simultaneously by total reduplication, compounding and suffixation or compounding and suffixation respectively. In the Table below, the multiple processes as well as their functions are summarised.

Table 32: A Tabulation of Multiple Processes and their Functions in Mo

Multiple Formations	Function: Derivational or Inflectional	Specific Function	Class-Maintaining or Class-Changing
Reduplication + Suffixation	Derivational	Agentive Nominalisation	Class-changing
Compounding + Suffixation	Derivational	Nominal Derivation	Class-changing

4.5 Conclusion

In this chapter, the four morphological processes identified in Mo were examined. The morphological processes include compounding, affixation, reduplication and multiple formations. The discussion of the four morphological processes identified in the language was done in connection with some phonological processes that are triggered in the

formation of complex words in Mo. Table 32 below highlights the morphological processes and their major functions in Mo.

Table 33: A Tabulation of Morphological Processes and their Functions in Mo

Morphological processes	Functions:	
	Inflectional	Derivational
Compounding	-	Derivational
Affixation	Inflectional	Derivational
Reduplication	Inflectional	Derivational
Nominal Reduplication	-	Derivational
Adjectival Reduplication	Inflectional	-
Adverbial Reduplication	Inflectional	-
Verbal Reduplication	Inflectional	-
Numeral Reduplication	Inflectional	Derivational
Multiple Formations	-	Derivational

CHAPTER FIVE

CONCLUSION: SUMMARY, FINDINGS AND RECOMMENDATIONS

5.0 Introduction

This chapter is the concluding part of the study. It gives a synopsis of all the other preceding chapters discussed and seeks to highlight specific findings of the study as well as suggest recommendations for future research.

5.1 Summary of Findings

The study identified four morphological processes, namely, compounding, affixation, reduplication and multiple formations.

It was revealed in the analysis of the data on Mo compounding that, words from the same class or from different word classes could be concatenated to form compound words in Mo. Noun + Noun, Noun + Adjective and Noun + Verb were identified as the various patterns of compounds in Mo. Word final elision, syllable deletion, vowel lengthening and shortening were found as prominent phonological occurrences in Noun + Noun, Noun + Adjective and Noun + Verb compounding.

The elision that occurs during compound words formation in Mo is predominantly leftward. That is to say it is always the left-hand member of the compound that undergoes the elision process. The segments that are mostly affected by the elision process are laterals, vowels and last syllables. Refer to Tables (3), (4) and (5) for better understanding.

It was demonstrated in section (4.2.1.1) that Mo employs the plural suffixes **-i**, **-a**, **-i**, **-nĩ**, **-la**, **-nã**, **-ra**, **-nar**, **-e** and **-ru** to derive the plural versions of noun stems. The suffix **-nar**

is directly added to human animate noun stems (Kinship Names) to derive their plural forms with few instances of CV syllable insertion, the CV suffixes **-la**, **-nĩ**, **-nã**, **-ra** are directly attached to noun stems that mostly end in long vowels. For instance, the noun stem **luba:** ‘widower’ in example (12a) is concatenated with the suffix **-la** to derive **luba:la** ‘widowers’. The suffixes **-ru**, **-i**, **-u** and **-e** are attached to noun stems with vowel and consonant endings. Elision of some segments, vowel compensatory shortening and nasalisation of some vowels occur. See Tables (7), (8), (9), (10), (11) and (12) for a clearer picture of these morphophonological occurrences.

The study also revealed that **-yie** and **-wie** are class-maintaining derivational diminutive suffixes which are attached to Mo personal day-names and some kinship nouns to derive their diminutive forms with some phonological processes such as assimilation, nasalisation and vowel elision taking place. The datasets in Tables (13) and (14) demonstrate this morphophonological phenomenon. It was demonstrated in section (4.2.2.2) that the class-maintaining derivational suffixes **-tu** (singular marker) and **-tuna** (plural marker) are directly attached to both place names and some common nouns in Mo to mark identity and ownership. Refer to Tables (15), (16), and (17) for a better comprehension of these phenomena.

In section (4.2.2.3), it was revealed that Mo also employs the action nominal suffixes **-i**, **-a**, **-ga**, **-ɔ**, **-u**, **-v** and **-u** to derive action nominals from action verbs as well as to nominalise posture verbs. For instance, the verb stem **to** ‘snatch’ in example (18b) of section (4.2.2.3) is put together with the nominal suffix **-i** to derive the action nominal **toi** ‘snatching’. Vowel harmony was revealed to be a prominent phonological process that

accompanies action nominalisation process in Mo. For posture verb nominalisation in Mo, it was found that only the nominal suffixes **-a** and **-ga** are attached directly to posture verb bases to derive their nominalised forms with some phonological occurrences of segment elision.

An analysis of the data on reduplication also revealed that nouns and adjectives undergo total reduplication in Mo as the entire segments of the base-forms are repeated in the reduplicant. For example, the adjective **bɔra** ‘short’ when reduplicated is realised as **[bɔra-bɔra]** ‘very short’ to express intensity, the noun **korobie** ‘month’ is realised as an adverb **[korobie-korobie]** ‘monthly’. For adverbs, it was revealed that they may or may not undergo complete reduplication.

However, with verbal reduplication, some verbs were discovered to have undergone a full reduplication while others also underwent a partial reduplication with some instances of vowel shortening and consonant elision. Again, it was revealed that numerals undergo both partial and total reduplication in Mo. See Tables (24), (25), (26), (27) and (28) for a clearer picture of these phenomena.

It was clearly illustrated in Table (30) of section (4.4.1) that the formation of agentive nouns in Mo requires a simultaneous involvement of two morphological mechanisms; reduplication and suffixation. For instance, the reduplicated stem **ɸwatɸwa** ‘run run’ of the verb base **ɸwa** ‘run’ in example (a) is concatenated with the class-changing derivational suffix **-a** to derive the agentive noun **ɸwatɸwaa** ‘runner’. It was revealed that vowel harmony plays a critical role in the formation of agentive nouns in Mo.

Again, it was demonstrated in Table (31) of section (4.4.2) that the derivation of nominals in Mo requires the application of reduplication, compounding and suffixation as well as compounding and suffixation respectively. It was revealed that vowel lengthening and vowel shortening as well as vowel elision are the prominent phonological processes observed in the formation of nominals through these multiple processes.

Throughout the analysis of the data in chapter four, there is a proof of a strong relationship between morphology and phonology as morphology which deals with the study of how words are formed in a language cannot be analysed in isolation without the knowledge of the study of the speech sounds used in the language which is phonology.

5.2 Summary

The study discussed morphological processes in Mo. Chapter one gives a general introduction to the study by briefly capturing the discussions of the background of the language under study, with focus on the Longoro dialect of Mo, the geographical location of the people who speak the language and the map of Mo/Dega traditional area. The statement of the problem, the objectives of the study, the research questions, the significance of the study, delimitations of the study as well as the organisation of the thesis were equally discussed in chapter one.

Chapter two reviewed literature on the generally perspectives of morphological processes. Some related studies to the current study by other scholars under the sub-headings compounding, affixation, reduplication, nominalisation and some aspects of the phonology of Mo were also discussed in this chapter. The theoretical framework used to analyse the data was also discussed in chapter two.

Chapter three of the research discussed the methodology employed to collect the data, the type of data collected, the sources of data, the research approach and design employed in collecting the data, the study population, the sample and sampling procedures as well as the instruments used in the collection of the data. It was noted that most of the data collected was through documents, interview, and elicitation techniques (audio recordings) from the natural environment. The limitations of the study were equally discussed.

Chapter four of the study captured the analysis of the data on the various morphological processes in Mo. It revealed that the major morphological processes in Mo are compounding, affixation, reduplication, multiple formation and their accompanying phonological processes such as vowel and lateral elision, vowel lengthening, vowel shortening, vowel harmony and homorganic nasal assimilation. Some major linguistic functions of the morphological processes are the following: compounding was identified as a derivative mechanism, affixation as pluralisation (inflectional) and nominalisation (derivational) mechanisms, reduplication as adverbialisation (derivational) mechanism and multiple formations as agentive nominalisation and nominal derivation mechanisms.

Chapter five gives a summary of chapter one to four and discusses the major findings of the study.

5.3 Recommendations for Future Research

This study can be regarded as one of the major scholarly works on morphological processes in the language. However, the data was sourced from only one dialect of Mo out of two dialects, this I think is not appropriate. To improve on the current study therefore, it will be appropriate to feature data from the other dialect of Mo.

It is not all the morphological processes in Mo that have been explored and captured in this study. There may be other morphological processes that have not been explored. Hence, it is recommended that future researches consider the other equally important morphological processes that may be possible in the language which have not received attention in the current study.

In the course of the study, tone was identified to be a distinguishing feature of some words in the language. It brings about contrast in meaning and it performs other grammatical functions such as indicating tense but these areas have not been comprehensively dealt with in this study. I therefore urge future researchers to research into the role that tone plays in the morphology of the language.

All the affixes identified in the current study are suffixes. This I think is quite unique and intriguing. Future studies may therefore investigate into prefixes and circumfixes if there are any in the language. The researcher in the course of the study came across some exceptional cases of Mo nouns which do not form their plurals by attaching visible affixes to them but these cases have not been discussed in the study. Future studies may thus focus on giving detailed discussion on these exceptional cases in the language. The data which support this are provided in Appendix B. Other cases such as serial verb constructions and postpositional phrases were also discovered in the course of the research but have not been examined in the analysis. Future researchers are therefore called upon to critically look at these phenomena. The data in support of this have been captured under the Appendix A.

Other theoretical frameworks may as well be employed to discuss some of the morphological processes to ascertain the significant difference between their findings and findings of the current study. Future studies may also have to look at the issue of vowel harmony again to either confirm or report otherwise on the claims made thus far about vowel harmony in Mo in the current study.



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APPENDIXES

APPENDIX A

TRANSCRIPT OF SOME DATA

DATASET A

ko:ro ‘chief/king’	+	gbɛɛ ‘hat’	=	ko:gbɛɛ ‘crown’
ko:ro ‘chief/king’	+	kara ‘chair’	=	ko:kara ‘throne’
nɛn ‘human being’	+	nɔn ‘hand’	=	nɛnnɔn ‘human hand’
Dɛg ‘Mo language’	+	yal ‘cloth’	=	Dɛgyal ‘Mo cloth’
daa ‘sticks’	+	lɪg ‘kraal’	=	dalɪg ‘a heap of firewood’

DATASET B

pu ‘yam’	+	kpule ‘short’	=	pukpule ‘small yam’
dia ‘house’	+	dʒãŋ ‘tall’	=	diadʒãŋ ‘tall house’
da ‘tree’	+	dʒãŋ ‘tall’	=	dadʒãŋ ‘tall tree’
ka: ‘car’	+	falu ‘new’	=	kafalu ‘new car’
dʒumbie ‘bird’	+	dʒeiŋ ‘big’	=	dʒumbidʒeiŋ ‘big bird’
yal ‘cloth’	+	swɛm ‘red’	=	yaswɛm ‘red cloth’
gbagla ‘shirt’	+	biŋi ‘black’	=	gbaglabiŋi ‘black shirt’
ko: ‘farm’	+	bene ‘old’	=	kobene ‘old farm’
mkpã ‘life’	+	dʒãŋ ‘long’	=	mkpãdʒãŋ ‘long life’
harɛ ‘land’	+	dɛ:gu ‘good’	=	harɛdɛ:gu ‘good land’
ta: ‘voice’	+	kpɛg ‘hard’	=	takpɛg ‘loud voice’

DATASET C

Kojo ‘personal name’	+	dʒɪga ‘small’	=	Kojodʒɪga ‘small Kwadwo’
Kɔbina ‘personal name’	+	dʒɪga ‘small’	=	Kɔbidʒɪga ‘small Kwabena’
Koku ‘personal name’	+	dʒɪga ‘small’	=	Kokudʒɪga ‘small Kwaku’
Yao ‘personal name’	+	dʒɪga ‘small’	=	Yaodʒɪga ‘small Yaw’
Kofi ‘personal name’	+	dʒɪga ‘small’	=	Kofidʒɪga ‘small Kofi’
Kɔ.ɔmu ‘personal name’	+	dʒɪga ‘small’	=	Kɔmdʒɪga ‘small Kwame’
Kosi ‘personal name’	+	dʒɪga ‘small’	=	Kosidʒɪga ‘small Kwasi’

DATASET D

A (Verb)	B (Verb)	C (A+B)	Gloss	Translation
so ‘sit’	di ‘eat’	sodi	sit eat	sit and eat
ɸwa ‘run’	ba ‘come’	ɸwaba	run come	run and come
lɛ ‘collect’	ba ‘come’	lɛba	collect come	collect and come
lɛ ‘collect’	di ‘eat’	lɛdi	collect eat	collect and eat
ka: ‘go’	ɸɔ ‘sleep’	katɸɔ	go sleep	go and sleep
ɸaŋe ‘chew’	ɸɔ ‘sleep’	ɸaŋeɸɔ	chew sleep	chew and sleep

DATASET E

A (Noun)	B (Postposition)	C (A+B)	Gloss	Translation
ɖa ‘house’	ɖa ‘top’	ɖaɖa	house top	on top of the house
ɖa ‘house’	bini ‘inside’	ɖabini	house inside	inside the house
ɖa ‘house’	habɔ: ‘behind’	ɖahabɔ:	house behind	behind the house
da: ‘tree’	mun ‘under’	dā:mun	tree under	under the tree
gbɛra ‘door’	lɔga ‘under’	gbɛralɔga	door under	under the door
gbɛra ‘door’	habɔ: ‘behind’	gbɛrahabɔ:	door behind	behind the door
bwe ‘mountain’	ɖa ‘top’	bweɖa	mountain top	on top of the mountain
mũ: ‘river’	ɲũã ‘mouth’	mũɲũã	river mouth	bank of the river
pol ‘stream’	baŋ ‘behind’	polbaŋ	stream behind	behind the stream

DATASET F

A (Verb)	B (Verb)	C (Verb)	D (A+B+C)	Gloss	Translation
ʈɪ 'carry'	ka: 'go'	di 'eat'	ʈɪkadi	carry go eat	carry and go and eat
ʈwa 'run'	ba 'come'	ʈɔ 'sleep'	ʈwabatʈɔ	run come sleep	run and come and sleep
lɛ 'collect'	ka: 'go'	ta 'throw away'	lɛkata	collect go throw away	collect and go and throw away
ka: 'go'	kpɔ 'take'	ba 'come'	kakpɔba	go take come	go and take and come
ʈwa 'run'	ka: 'go'	ʈoli 'fall'	ʈwakatʈoli	run go fall	run and go and fall

DATASET G

Pattern	Input	Gloss	Output	Translation
N + V	sie-lɛɛ	face-to get	silɛɛ	happiness
N + V	loo-ku	intestine-to break	loku-a(suf)	sorrow
N + V	pi-di	yam-to eat	pidi-a(suf)	yam festival
N + V	sie-tɔɔ	face-to lead	sitɔɔ	leader
V + V	dom-ʈɔɔ	to sleep-to lie	domʈɔɔ	sleeper
N + N	nɛn-gwɛɛ	human being- weakness	nɛngwɛɛ	sober
N + N	nii-da	fire-stick	ninda	firewood

APPENDIX B

DATASET A

Noun Stem	Gloss	Plural Suffix	Plural Form	Gloss
ɲudʒentu	lion	-nã	ɲudʒentunã	lions
dɔm	enemy	-a	dɔma	enemies
sɔn	name	-a	sɔna	names
dadɛ:ɡɪ	tree	-a	dadɛ:ɡa	trees
tɔpɪr	day	-a	tɔpɪra	days
ɡbɛ:	monkey	-nɪ	ɡbɛ:nɪ	monkeys
dʒa:	husband	-nar	dʒaranar	husbands
ɲã	mother	-rɪ	ɲãrɪ	mothers
pɛn	pen	-rɪ	pɛnrɪ	pens
suku:	school	-rɪ	suku:rɪ	schools
te:bur	table	-rɪ	te:burɪ	tables
buku	book	-rɪ	bukurɪ	books
kɔmputa	computer	-rɪ	kɔmputarɪ	computers
ka:	car	-rɪ	ka:rɪ	cars
ʃi:pɔ	ship	-rɪ	ʃi:pɔrɪ	ships
sasa:	dancer	-la	sasa:la	dancers
mama:	porter	-la	mama:la	porters

DATASET B

Singular	Gloss	Plural (no change)	Gloss
la:la	cloth	la:la	clothes
ba:mar	cloud	ba:mar	clouds
ma:lo/mũ:	rice	ma:lo/mũ:	rice
mũ:	river	mũ:	rivers
te:ra	sand	te:ra	sands

DATASET C

Kuntampo ‘place name’ + **-tu** ‘singular identity suffix’ = **Kuntampotu** ‘a native of Kuntampo’

Nānbwɛ ‘place name’ + **-tu** ‘singular identity suffix’ = **Nānbwɛtu** ‘a native of Nyabwɛ’

Santukwa ‘place name’ + **-tu** ‘singular identity suffix’ = **Santukwati** ‘a native of Santekwa’

Tarabaŋ ‘place name’ + **-tu** ‘singular identity suffix’ = **Tarabaŋtu** ‘a native of Tarabaŋ’

Tja:ra ‘place name’ + **-tu** ‘singular identity suffix’ = **Tja:ratu** ‘a native of Chaara’

DATASET D

Babatokuma ‘place name’ + **-tuna** ‘plural identity suffix’ = **Babatokumatuna** ‘natives of Babatokuma’

Ayɔ:ya ‘place name’ + **-tuna** ‘plural identity suffix’ = **Ayɔ:yatuna** ‘natives of Ayɔɔya’

Dzabraso ‘place name’ + **-tuna** ‘plural identity suffix’ = **Dzabrasotuna** ‘natives of Jabraso’

Ya:ra ‘place name’ + **-tuna** ‘plural identity suffix’ = **Ya:ratuna** ‘natives of Yaara’

Kandige ‘place name’ + **-tuna** ‘plural identity suffix’ = **Kandigetuna** ‘natives of Kandige’

DATASET E

sakasaka ‘to do something in a careless manner’

gimgim ‘to take a very bold step’

kpɔgrɔkpɔgrɔ ‘misunderstanding’

ʃagbagbaa ‘uninterrupted nonsense’

gboŋlɔɔ ‘a very good drummer’

kiŋkiŋ ‘to hold something well/firmly’

pelepele ‘inquisitiveness’

fografogra ‘doing things in a hurry’