An analysis of Swahili verbal inflection and derivational morphemes: An item and arrangement approach

Maina Wahome1, Agus Subiyanto2, Oktiva Harry Chandra3

1,2,3Department of Linguistics, Universitas Diponegoro, Indonesia. wahomejohn790@gmail.com1*, subaling@gmail.com2, herrychandra67@gmail.com3

*Corresponding author

Received: 04 August 2023 | Accepted: 30 August 2023 | Published: 15 September 2023

Abstract: This research paper investigates the affixation and derivation processes in Swahili, a highly inflective and agglutinative language spoken in East Africa. Swahili defaults to SVO but allows for VSO or SOV word orders. The study's primary objective is to understand how Swahili words are inflected or derived, and the function of affixation. The research aims to enhance our understanding of the language's morphology and contribute to language learning and teaching methodologies. The study uses a descriptive-qualitative approach, collecting data from the Swahili dictionary, native Swahili speakers, and other relevant resources. Eight knowledgeable informants, native speakers of Swahili from Tanzania and Kenya, provide valuable insights. The researcher, who is also a native Swahili speaker, guides the data collection process. The research findings reveal that Swahili words exhibit affixation in the form of prefixes, infixes, suffixes, and circumfixes. The study also discovered that the key to successful Swahili derivation lies in utilizing stem words to create new words with distinct meanings or contexts from the same word class. Additionally, derivative morphemes were discovered as a result of the affixation process. In conclusion, the research contributes to our understanding of Swahili's morphology, particularly its affixation and derivation processes. The use of inflectional and derivational morphemes allows Swahili speakers to express complex thoughts and convey subtle nuances, making the language a rich and versatile means of communication and cultural expression. This research has implications for language learning and teaching, particularly for those interested in exploring Swahili word morphology.

Keywords: Affixation, Derivation, Item and Arrangement Approach, Morphemes, Morphology, Swahili verbs


1. Introduction

Swahili is a Bantu language that is indigenous to or widely spoken in the East African region, especially in Kenya, and Tanzania. Gichohi and Nirmala (2021) note that identities are manifested in various forms just like the way people of East Africa identify themselves with Swahili. It is agglutinating, has a subject-verb-object structure, and has significant inflections in the mood, aspect, and person tenses (both subject and object). The structure in the Swahili language is subject +verb +object at the sentence level. The affixes play a very important role in the sentences marking various grammatical relations like tense, mood, subject, and object. Prefixes are always attached in a specific order; the subject

Research Article: This article is published by Jozac Publishers in the Journal of Languages, Linguistics and Literary Studies (JLLLS). This article is distributed under a Creative Common Attribution (CC BY-SA 4.0) International License.

Conflict of Interest: The author/s declared no conflict of interest.
prefix comes before the object prefix and always comes last, right before the verb stem. Verbs, specifically Swahili verbs, undergo morphological changes when they acquire affixes that can be placed either horizontally or vertically. During extensions, or more precisely, during their inflections, they pick up affixes horizontally. For instance (Kiango 2000: 104) lists eight verbal affixes in Kiswahili. Inflectional morphology creates different forms of the same word but derivational morphology creates different words out of the same root. This study will show affixation and derivation processes in the Swahili languages and use an Item and Arrangement Process for analysis. In their study on Gĩkũyũ clause complexes, Wakarindí, Mwangi and Njoroge (2022) investigate various elaboration strategies employed in the language, highlighting the significance of these strategies in promoting communicative competence and cohesion in Gĩkũyũ texts.

Swahili, also known as Kiswahili, is a rich and diverse Bantu language spoken across East Africa, with a wide array of dialects that reflect the linguistic diversity of the region. These Swahili dialects exhibit variations in pronunciation, vocabulary, and occasionally, grammatical structures. Among the prominent Swahili dialects, Kiunguja, known as Zanzibari Swahili, holds a special place. It is spoken in Zanzibar, a semi-autonomous region of Tanzania, and is considered the standard or prestige dialect of Swahili. Kiunguja has played a pivotal role in shaping and influencing the overall development of the Swahili language. Lamu Swahili, referred to as KiNguu, is spoken in Lamu Island and other coastal areas of Kenya. It boasts distinct linguistic features and vocabulary, setting it apart from other Swahili dialects. Similarly, Mombasa Swahili, or Kiamu, found in and around Mombasa, Kenya, features unique vocabulary and pronunciation patterns that distinguish it within the Swahili linguistic landscape. Pemba Swahili, known as Kipemba, is native to Pemba Island, part of the Zanzibar Archipelago, and is characterized by its localized variations in vocabulary and pronunciation.

Beyond the East African coastline, Swahili has also developed regional variations. For instance, Eastern Congo Swahili, or Kingwana, is spoken in the eastern part of the Democratic Republic of Congo, particularly in cities like Goma and Bukavu. It reflects influences from local languages and incorporates unique linguistic elements. Comorian Swahili, or Kikisi, is spoken in the Comoros Islands, reflecting the influence of Comorian languages in its vocabulary and pronunciation. Northwestern Swahili, or Kingazija, is spoken in parts of Tanzania's northwest region, including Tabora and Kigoma, exhibiting variations from the standard Swahili. Southern Swahili, or Kingozi, is found in southern Tanzania, encompassing regions like Lindi and Mtwara, and possesses its own regional linguistic characteristics. While these represent some of the major Swahili dialects, it's crucial to acknowledge the existence of numerous sub-dialects and localized variations within these broader categories. Swahili speakers from diverse regions can often communicate with each other to varying degrees, primarily relying on the standard Swahili rooted in Kiunguja. The choice of dialect or variation a speaker uses often depends on their background, geographic location, and cultural affiliations, showcasing the dynamic and evolving nature of the Swahili language across East Africa.

There are previous studies conducted on derivation and inflectional morphology. An examination of the development of Swahili verbal derivative patterns was done by Mdee (Mdee, 2016). In order to identify the formative suffixes that Swahili verbs can take and attempt to establish their pattern, the researcher in this study studies the derived forms in Swahili verbs. According to the study, it is possible to forecast which verb types can accept all formative suffixes or just those that can accept some. Destriami and Dumaris (2021) conducted research on the use of derivational suffixes in analytical exposition texts. In producing analytical exposition texts, derivational affix analysis is examined in this work. The study's findings showed that analytical exposition texts frequently used derivational affixes. There were prefixes, circumfixes, and suffixes but were absent.

Van Der Spuy (2017) studied the morphology of construction. The study looks into how construction morphology can encompass all possible inflectional types. The study's findings demonstrated that the morphological inflectional kinds may be explained by the Construction Grammar framework. In the building Grammar framework, stem truncation, ablaut, affixation, metathesis, and affix substitution could be taken into account. The research was conducted on a morphological examination of the derivational suffixes in the Crazy Rich Asians novel (Narasuari and Rahayuni, 2020). The roles of derivative suffixes and their various classification kinds are examined in this essay. According to the findings, there are four different kinds of suffixes, and their two primary functions are class-changing and class-maintaining suffixes. There were adjectival, nominal, verbal, and adverbial suffixes among them. A study was done on the Nyakyusa inflection and derivation, which was explained in terms of word formation (Robinson, 2016). The study gives an explanation of Nyakyusa. It examines the degree of affixation's attestability. Derivation and inflection are distinguished as well. The results of the study revealed that some post-root affixes and pre-root affixes are inflectional because they mark aspect/tense and polarity. Also, the study showed that most post-roots are derivational. However, these studies have not looked into the infixation, and suffixation of Swahili verbs exhaustively focusing on their roles discretely and how different word classes can be formed through the derivational morphemes. Having found that research gap, the researcher decided to address the following research questions:

a) How are words formed in the Swahili language using derivational morphemes?
b) Can prefixes, infixes, and suffixes, manifest on the same lexeme?
c) What function do derivational and inflectional morphemes serve in Swahili?

2. Literature review

In this section, I will foreground the literature on derivation and affixation. Additionally, I will shed light on morphemes, and the theory used for the study, the Item and Arrangement Approach.
2.1. Affixation and derivation

Adding affixes, such as prefixes, suffixes, and infixes, to the stem of the provided word or words is known as affixation (Bauer & Katamba, 2009). Due to the possibility of bound morphemes being roots or affixes, affixation falls under the purview of morphology. Affixes serve as indicators for derivational and inflectional changes. Affixation is widely used in the emergence of new words and word structures. According to Katamba (2009), affixation is frequently represented by bound morphemes combined with other morphemes, such as roots. Ishaku's (2020) study on syntactic errors in essays of HND1 students at Federal Polytechnic, Mubi, Adamawa State, highlights the various factors contributing to these errors, such as language mastery, interference from the student's first language, and negligence, ultimately affecting students' academic performance. Robert (1993) defined an affix as a bound morpheme that is frequently attached to the word stem. A morphological process called affixation occurs when a bound morpheme, or affix, is joined to a morphological foundation. The most frequent affixes across languages are prefixes that precede (come before the root) and suffixes that follow (come after the root). The majority of the affix kinds are defined by Yule's (1949) introduction of a very user-friendly morpheme analysis (morphological theory).

A set of affixes are known as bound morphemes (Bayer, 1983: 17). Free morphemes, according to Yule (2010:68), are a group of common nouns, adjectives, and verbs that express the meaning of our sentences. Inflectional morphemes are used to convey features of a word's grammatical function (number, tense, comparative, and possessive), and bound morphemes, which are divided into two categories (Bauer, 1983:13). Derivational morphemes, on the other hand, are morphemes that are utilized to create new words in the language, according to Yule (2010: 69). They modify the word class, or what is sometimes referred to as the parts of speech (Aronoff, 2011). Derivation has the effect of changing the lexical meaning of a certain word.

2.2. Morphemes

The smallest, indivisible elements of semantic or grammatical function that makeup words are called morphemes. Morphemes cannot be broken down into smaller components that either represent grammatical features like the singular or plural number in a word or stand-alone in meaning. Occasionally, a morpheme can be found in a single word. According to Lightener (1975: 633), the word “bishopric” is the only place you can find the morpheme -ric, which stands for “diocese”. Syllables are clusters of sounds used for articulation, not morphemes. There are bound and free morphemes. It's vital to remember that while they are not needed to do so, free morphemes can have other bound morphemes related to them. While some morphemes are affixes, some are roots. Free morphemes, according to Yule (2010:68), are a group of common nouns, adjectives, and verbs that carry the message we are trying to express. According to Bauer (1983:13), bound morphemes fall into two categories: inflectional morphemes, which are employed to express a word's grammatical function (number, tense, comparative, and possessive), and derivational morphemes. These are morphemes, according to Yule (2010: 69), which are combined to form new words in the language. The word ‘class’ is modified. According to Hocket (1947: 1954), every utterance in a language is made up of a specific minimum number of morphemes, or grammatically significant parts.

Linguistic forms that can be broken down into morphemes through morphemic analysis serve as representations of languages. Different inflectional characteristics, such as tense, can be specified in Swahili, and subject agreement is marked individually on distinct morphological heads. A morpheme is an intelligible morphological unit that cannot be further subdivided. Isolating morphs is the first step in the thorough breakdown of words into morphemes. A morph is a morpheme's phonetic realization or method of formation. Bound morphemes and free morphemes are the two main divisions of morphemes. Lexical morphemes and grammatical/functional morphemes are subsets of free morphemes. Bound morphemes, on the other hand, are separated into bound roots and bound affixes. The prefix, infix, suffixes, derivational, and inflectional are examples of affixes. The word class of the derivational affixes might remain the same or vary. In the English language, there are eight inflectional affixes. Third-person singular (-s), past participle (-en), past tense (-ed), progressive (-ing), possessive (-'s), comparative (-er), superlative (-est), and multiple (-s) are some of these endings. They are only able to modify the grammar of the words; they are unable to coin new words.

Lexical morphemes, also known as content words, are morphemes that may stand alone, even in isolation, and convey meaning. These consist of verbs, adjectives, adverbs, and nouns. As articles, conjunctions, and prepositions are grammatically significant but semantically unimportant morphemes, they are referred to as grammatical morphemes. The examples below demonstrate lexical morphemes, but the grammatical morphemes are absent, resulting in incorrect sentence structures because the functional categories are absent.

(a) teacher told James go
(b) John cut tree use axe

The lexical morphemes in construction (a) above are teacher, told, James, and go. They are John, cut, tree, use, and axe in construction (b). Both of these sentences lack the necessary morphemes for grammar. In example (a) above, both the preposition to and the article the or a preceding the teacher are absent. Construction (b) omits the article either before the noun tree or the article before the noun axe, the ending -ing in the verb use, and the article a before the noun axe.

Functional words or grammatical morphemes are the names given to the above-omitted words and particles. Free morphemes occur independently and have meanings. In particular, lexical morphemes are free morphemes that can function both on their own and in combination with other morphemes. Bound morphemes can’t make grammatical meanings on their own and they can’t also occur independently in isolation. However, when they are joined with free morphemes, they have meanings. Cut+ing+--->cutting; pass+ed+--->passed; chase+ed+--->chased; toy+s+--->toys. A null affix/zero affix is present in words but it’s invisible and cannot be seen with the “naked eye”. Some English nouns don’t
change their forms in plural or singular like deer, sheep, baggage, bedding, luggage, etc. In this case, the ‘-s’ suffix is invisible in these words hence the reason it is called zero affix/null affix, and the process is termed as zero affixation.

2.3. Item and arrangement theory
Bauer (2004: 6a) states that the IA model is a language that gives a list of morphs and a set of rules for organizing the morphs. The term "IA analysis" was first used by Hockett (1954), and in Item and Arrangement, each item of morphosyntactic input is associated with a particular morph or exponent. A morpheme-based model is called the Item and Arrangement model. It is the most appropriate morphological analysis for isolative and agglutinating languages. It is applied to see the affixation process within internal changes that occur in isolative and agglutinative languages (Halle & Marantz, 1993). The IA view of morphology has been argued and developed in theories like Distributed Morphology. An Item and Arrangement model of inflection morphemes is an association of form and meaning stored in the mental lexicon.

There are different steps which are involved in the Item and Arrangement theory used in the analysis of the internal structures of languages:
(a) A list of roots is made
(b) A list of affixes is made and their functions
(c) Roots and affixes position is determined
(d) The base Principle of word forming is formulated

3. Research methodology
The primary objective of this research is to delve into the intricacies of inflections and derivations within the Swahili language, adopting a descriptive-qualitative approach. To achieve this, the study involved 8 knowledgeable informants who were all native speakers of Swahili. These informants were carefully selected from two distinct regions: Dar es Salaam, Tanzania, and Mombasa, Kenya. The selection criteria took into account several factors, including age, linguistic proficiency, availability, oratory skills, and fluency in the language. To create a comprehensive and authentic portrayal of Swahili language intricacies, the research was conducted in Dar es Salaam, Tanzania, and Mombasa, Kenya. These locations were strategically chosen due to their reputation for frequent and widespread usage of Swahili in everyday communication, providing a rich linguistic context ideal for data collection.

The data collection process was carried out under the guidance of the researcher, who also happens to be a native Swahili speaker. Drawing on self-reflection and intuition, the researcher skillfully led the collection efforts. The invaluable contributions of the 8 carefully selected informants were fundamental in shedding light on various aspects of the language. For the analysis of the collected data, the research adopted a qualitative approach, following the well-defined three-step technique outlined by Silverman (Silverman, 2009: 2345). In the first step, the data underwent meticulous reduction, sifting out any irrelevant or unnecessary information, and retaining only the most pertinent data essential for the study.

Next, the researcher thoughtfully organized and presented the collected data in a tabulated form. This presentation style aimed to enhance the accessibility and comprehensibility of the information, enabling a deeper understanding of the linguistic intricacies. In the final step of data analysis, the researcher synthesized the findings, drawing meaningful and detailed conclusions. The descriptive nature of the results enriched the understanding of inflections and derivations in the Swahili language. By adopting this rigorous research methodology, the researcher gained comprehensive insights into the multifaceted world of inflections and derivations within Swahili. Including native speakers from diverse regions further enriched the data, contributing significantly to the overall findings and conclusions presented in the research paper.

4. Findings and discussions
In this section, I will discuss:
(a) How are words formed in the Swahili language using derivational morphemes?
Swahili uses derivational morphemes, which are affixes added to base words to create new words with different meanings. For instance, "-li" denotes a passive voice, "-isha" indicates causation, and "-kaa" indicates a continuous state.

(b) Can prefixes, infixes, and suffixes, manifest on the same lexeme?
Prefixes, infixes, and suffixes can all be used on the same Swahili lexeme. For instance, "soma" (read) can become "nasomewa" (I am being read to) by adding the prefix "na-", the suffix "-ewa", and the passive morpheme "-li-". Similarly, "kula" (eat) can become "tukikulisha" (if we feed you) by adding the infix "-ki-", the suffix "-lisha", and the causative morpheme "-sha".

(c) What function do derivational and inflectional morphemes serve in Swahili?
Derivational morphemes in Swahili create new words with different meanings from base words, while inflectional morphemes indicate grammatical information such as tense, aspect, and agreement. For example, "-me-" indicates present tense, "-li-" indicates past tense, "-tu-" indicates first-person plural agreement. Just like in the English language, derivational morphemes in the Swahili language are added to an existing meaningful word referred to as the root word. This is
realized through the addition of an affix. This suggests that a new term has developed that is a member of a different word category than the original word. As a result, the newly formed word may take on the new word class's inflectional affixes. The Swahili language's derivational morphemes typically alter a word's semantics and syntactic categories. The grammatical class of words is altered by derivational morphemes (Guzzetti, 2007: 81).

4.1. Swahili Verbs Inflection: Prefixes, infixes, suffixes, and circumfixes

<table>
<thead>
<tr>
<th>Swahili Verbs</th>
<th>Inflectional Morphemes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nakula</td>
<td>na- (present tense), -ku- (infinitive), -la (verb stem)</td>
</tr>
<tr>
<td>Nisomea</td>
<td>ni- (future tense), -ta- (future marker), -ku- (infinitive), -la (verb stem)</td>
</tr>
<tr>
<td>Nitakula</td>
<td>ni- (present tense), -na- (continuus aspect), -ku- (infinitive), -la (verb stem)</td>
</tr>
<tr>
<td>Natodosomea</td>
<td>ni- (future tense), -ta- (future marker), -so- (infinitive), -me- (verb stem), -a (subject agreement)</td>
</tr>
<tr>
<td>Unakula</td>
<td>-a- (present tense), -na- (continuus aspect), -ku- (infinitive), -la (verb stem)</td>
</tr>
<tr>
<td>Inasomeka</td>
<td>i- (present tense), -na- (continuus aspect), -so- (infinitive), -me- (verb stem), -ka (passive suffix)</td>
</tr>
<tr>
<td>Mnakula</td>
<td>m- (present tense), -na- (continuus aspect), -ku- (infinitive), -la (verb stem), -a (subject agreement)</td>
</tr>
<tr>
<td>Mnasomeana</td>
<td>m- (present tense), -na- (continuus aspect), -so- (infinitive), -me- (verb stem), -a (subject agreement)</td>
</tr>
<tr>
<td>Anakula</td>
<td>a- (present tense), -na- (continuus aspect), -ku- (infinitive), -la (verb stem)</td>
</tr>
<tr>
<td>Anasoma</td>
<td>a- (present tense), -na- (continuus aspect), -so- (infinitive), -ma- (verb stem)</td>
</tr>
<tr>
<td>Tunakula</td>
<td>ta- (present tense), -na- (continuus aspect), -ku- (infinitive), -la (verb stem)</td>
</tr>
<tr>
<td>Tunasoma</td>
<td>tu- (present tense), -na- (continuus aspect), -so- (infinitive), -me- (verb stem), -a (subject agreement)</td>
</tr>
<tr>
<td>Wanakula</td>
<td>wa- (present tense), -na- (continuus aspect), -ku- (infinitive), -la (verb stem), -a (subject agreement)</td>
</tr>
<tr>
<td>Wanazomea</td>
<td>wa- (present tense), -na- (continuus aspect), -so- (infinitive), -me- (verb stem), -a (subject agreement)</td>
</tr>
<tr>
<td>Alikula</td>
<td>al- (past tense), -ku- (infinitive), -la (verb stem)</td>
</tr>
<tr>
<td>Satakula</td>
<td>si- (negative particle), -ta- (future marker), -ku- (infinitive), -la (verb stem)</td>
</tr>
<tr>
<td>Sisomi</td>
<td>si- (negative particle), -so- (infinitive), -mi (verb stem)</td>
</tr>
<tr>
<td>Hatakula</td>
<td>ha- (negative particle), -ta- (future marker), -ku- (infinitive), -la (verb stem)</td>
</tr>
<tr>
<td>Hakasoma</td>
<td>ha- (negative particle), -ku- (infinitive), -so- (verb stem), -m (past tense suffix)</td>
</tr>
<tr>
<td>Hawatakula</td>
<td>ha- (negative particle), -ta- (future marker), -ku- (infinitive), -la (verb stem)</td>
</tr>
<tr>
<td>Hawajasoma</td>
<td>ha- (negative particle), -ja- (perfect tense), -ku- (infinitive), -so- (verb stem), -m (past tense suffix), -a (subject agreement)</td>
</tr>
<tr>
<td>Ningsakula</td>
<td>ningal- (conditional tense), -ku- (infinitive), -la (verb stem)</td>
</tr>
<tr>
<td>Ningsakoma</td>
<td>ningal- (conditional tense), -so- (infinitive), -me- (verb stem), -a (subject agreement)</td>
</tr>
<tr>
<td>Ningelikula</td>
<td>ningel- (conditional tense), -ku- (infinitive), -la (verb stem), -a (subject agreement)</td>
</tr>
<tr>
<td>Singelikula</td>
<td>singel- (conditional tense + negative particle), -ku- (infinitive), -la (verb stem), -a (subject agreement)</td>
</tr>
<tr>
<td>Singelisoma</td>
<td>singel- (conditional tense + negative particle), -so- (infinitive), -me- (verb stem), -a (subject agreement)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Verb Roots</th>
<th>Affixes</th>
</tr>
</thead>
<tbody>
<tr>
<td>kula ‘eat’</td>
<td>na- (I) Present -nakula</td>
</tr>
<tr>
<td>somi ‘read’</td>
<td>ni- (I/me) Future -nisome, nitaleta, nitasomea, ningelisoma</td>
</tr>
<tr>
<td></td>
<td>si- (I) opposite -sisomi, singelisoma, singelikula</td>
</tr>
<tr>
<td></td>
<td>Tu- (we/us)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>First Person</th>
<th>Second Person</th>
</tr>
</thead>
<tbody>
<tr>
<td>na- (You) Pl. mnakula</td>
<td>- (You) Pl. mnakula</td>
</tr>
</tbody>
</table>

Table 2: Inflectional morphemes in the Swahili Language using Table 1 above

Table 3: Verb roots, affixes and their functions
The fundamental word order in Swahili is SVO (subject-verb-object). The object is normally denoted by a noun or pronoun that comes after the verb, whereas the subject is typically denoted by a subject prefix added to the verb. For example, the subject prefix “ni-” denotes the first person singular, while the noun “chakula” (food) is the object in the sentence “Ninakula chakula” (I am eating food).
Swahili verbs, according to item theory, are made up of a root morpheme and a number of inflectional morphemes that are added to the root to denote tense, aspect, mood, and other grammatical categories. The verb's core meaning is carried by the root morpheme, and it is modified by the inflectional morphemes. Based on how they are used, Swahili's inflectional morphemes can be categorized into a variety of groups. For instance, voice is expressed by suffixes or circumfixes, which come after the root, whereas tense is indicated by prefixes, which come before the root. Different infixes that are added inside the root of the word convey aspect and mood. Swahili verb inflection is interesting because it employs infixes to denote causative, applicative, and reciprocal meanings. As in the verb "nafundisha" (I am teaching), which uses the infix "-ish-" to denote causative. As in the verb "nasomea" (I am reading for someone), the infix "-som-" is used to denote the applicative. As in the verb "tunapigana" (We are fighting), the infix "-an-" is used to denote reciprocity. The positioning of these inflectional morphemes in a phrase affects their meaning, according to arrangement theory. Even though SVO is the preferred word order in Swahili, other arrangements could be more suitable for artistic or pragmatic purposes. Swahili employs pronouns in addition to subject and object nouns as subject and object identifiers for verbs. For instance, the subject prefix "na-" denotes the first person singular, and the object "kitabu" (book) comes after the verb in the sentence "Nasoma kitabu" (I am reading a book). The phrase "Kitabu ninakisisa" (The book I'm reading) is another possible translation. In this version, the pronoun "ni-" is used to denote the object of the statement.

The prefixes are used in Swahili to denote tense and subject agreement. For instance, "na-" denotes the present tense and the first person singular, while "li-" denotes the past tense. The grammatical meanings of the infixes, such as causative, applicative, and reciprocal, are indicated. As an illustration, the infix "-isha-" denotes causative, as in the word "nafundisha" (I am teaching), while the infix "-ana-" denotes reciprocal, as in the verb "tunapigana" (We are fighting). To denote voice, tense, and mood, suffixes are utilised. In the verb "nasomewa" (I am being read), for instance, the suffix "-e" denotes passive voice, but the suffix "-e" denotes subjunctive mood as in the verb "nifanye" (Let me do). According to arrangement theory, the position of these inflectional morphemes in a sentence determines its meaning. Although SVO is the standard word order in Swahili, different orders can be appropriate for artistic or practical considerations. Pronouns, which can be used to mark the subject or object of a verb in Swahili, are also used.

For instance, the subject prefix "ni-" denotes the first person singular, while the noun "chakula" (food) is the object in the sentence "Ninakula chakula" (I am eating food). The phrase "Nakula chakula mimi" (I am eating food) could potentially be used instead, with the pronoun "mimi" designating the subject. When the inflectional morphemes are added to the root, Swahili verbs also display a variety of morphophonemic alterations in addition to these inflectional and syntactic characteristics. For instance, a verb's tense or aspect may affect the last vowel of the root. The phonological structure of the language governs these changes, which are methodical and adhere to a set of principles. In this case, a verb's tense or aspect may affect the last vowal of the root. The phonological structure of the language governs these changes, which are methodical and adhere to a set of principles. For instance, a verb's tense or aspect may affect the last vowal of the root. Consonant alterations could also happen occasionally.

The Swahili data language's verb "nakula" serves as an illustration of inflectional morphology because the marker na- is being added to the lexeme, changing both its meaning and its grammatical function. "Kula" is the word's root. As we can see, the prefix na- identifies the present continuous tense as well as the first person singular by coming before the verb's root. Additionally, it is clear that the prefix ni- is combined with the infix -ta- to create the first person singular and the future tense because -ta denotes the future tense in the verb "nitakula". We add the prefix u- to the verb "unakula" to denote the second-person singular form and the infix -na- to denote the present progressive tense. The second person plural form of the verb "makula" is denoted by the prefix "M." which is combined with the infix "-na-" to denote the present continuous tense. The word "anakula"'s prefix a- denotes the third person singular pronoun, which can be either he or she. It forms the present progressive tense in the verb "anakula" when coupled with the infix -na-. When the infix -na- is used with the prefix tu-, the first-person plural form of the verb "tunakula" is expressed in the present continuous tense.

Contrarily, the prefix wa-designates the third person plural form, while the infix -na- that follows it creates the present continuous tense structure found in the verb "wanakula". The prefix a- designates a third person singular pronoun (woman), and when it is combined with the infix -li-, it creates a structure for the present progressive tense, as in the word "alikula". The prefix si- displays the first person singular negative form in the Swahili language. The phrase "I won't..." is created when the verb "sitakula" is combined with the infix -ta-. Additionally, the prefix ha-, which denotes the opposite and negation, joins forces with the infix -ta to make the phrase "she won't," as in the word "hatakula." Additionally, the prefix ha- joins with the third person plural prefix wa- and the future tense infix -ta- to create the construction "they won't eat" which is the negative form of the verb "hawatakula." On the other hand, the verb "ningelikula" has the prefix ni-, which denotes the first person singular form, and the infix -gh-, which denotes the third conditional. The verb "nlingelikula" realizes the same manifestation. Additionally, the third conditional is denoted by the addition of the prefix si- to the infix -nga-, and the word "singselikula" is expressed in negative form. Tense, aspect, mood, voice, person, and polarity are the inflectional aspects of the verbs from the Swahili data mentioned above. The tenses of the verbs in the aforementioned data are present-continuous, past, past-participle form, and future.

Inflectional morphology is seen by the verb "nisome" from the Swahili data language mentioned above. It has a prefix, "som" is the word's root. The prefix ni-, which denotes first person singular and the present tense, comes before the verb stem. Additionally, it is noteworthy that the future tense of the verb "nasomea," whose root is som, is formed by adding the prefix ni-, which denotes the first person singular, to the infix -ta, which makes the future tense. The prefix i-designates the singular personal pronoun it, the infix -na- designates the present tense, and the suffix -ka which denotes ability are all added to the verb "inasomea," whose base word is "som." M- is a prefix representing the second person plural form and it combines with infix -na- which indicate the present tense, and the suffix -ana- in the verb "mnasomeana" whose root is som". Prefix a- in the word "anasoma" indicates the third-person singular pronoun. When
it is combined with the infix -na- the construction is in the present progressive tense in the verb “anasoma”. Tu- is a prefix indicating the first person plural form and when it is used with infix -na- the construction is in the present progressive tense in the verb “tunasaoma” just like tunakula in the data discussed before.

On the other hand, the prefix wa- indicates third person plural form, and the infix -na- follows it and a suffix -ea, therefore, we realize the present progressive tense construction like in the verb “wanasoma”. Prefix a- stands for third person singular pronoun (she/he) and when it is added to infix -na- it forms a present tense continuous construction like in the word “anasoma”. In the Swahili language, prefix si- shows negation form. The verb “sisomi” combines with suffix -i to form the construction “I won’t…” Moreover, the prefix ha- combines with infix -ku- to form the construction “she won’t…” like in the word “hakusoma”. Also, ha- combines with prefix wa- which stands for third person plural and infix -ja- to form the construction “they haven’t…” which is in the negation form in the verb “hawajasoma”. On the other hand, prefix ni- indicates first person singular form combines with infix -ngeli- which indicates the third conditional in the verb “ningelisoma”. The same manifestation is realized in the verb “singelisoma”. Also, si- is added to infix -ngeli- which indicates third conditional and the construction “singelisoma” is realized in the negation form. The aspects of inflectional from the Swahili data above related to the verbs are: tense, aspect, mood, voice, person and polarity. The verbs tenses in the data above are present-continuous, past tense, past-participle form and future tense. Regarding polarity, Swahili verbs can be negated by adding the negative particle “si-” before the verb stem. For example, “Sitakula” means “I won't eat,” where “si-” indicates the negative polarity of the sentence. Similarly, “Hakusoma” means “He didn't read,” where “ha-” indicates the negative polarity.

Swahili verbs also have inflectional morphemes that indicate mood and voice. Indicative mood: the indicative mood is used to make straightforward statements or ask questions. It is the most common mood in Swahili and is not marked by any specific inflectional morphemes. Most of the verbs in the table above are in the indicative mood. When expressing doubt, uncertainty, or desire, the subjunctive mood is utilized. The infix -ngi- in the present tense and -nali- in the past tense designate it. As an illustration, "Ningalikula" means "If I had eaten," while "Ringelikula" means "If I had eaten." Imperative mood: Commands and requests are made in the imperative mood. The prefix a- in the singular and -e in the plural designates it. For instance, "Kula" and "Kuleni" both mean "Eat!" or "Eat (you all)!" Swahili verbs also exhibit voice. Active voice: the active voice is used to describe actions that the subject performs. Most of the verbs in the table above are in the active voice. For example, "Anakula" means "He is eating," and "Tunasoma" means "We are reading." When something is done to the subject, the passive voice is employed to describe the action. The infix -w- in the present tense and -li- in the past tense designate it. As an illustration, "Inasomeka" denotes "It is readable," and "Wanasomea" denotes "They are being read to."
w- shows that the subject is not the doer. "-wa," often indicates the passive voice or the state resulting from the action (as in "pendwa," meaning "be loved"). The verb pendeka has -ka as the suffix and describes liking in which there is no agent. In the verb pendzea, the suffix is -za which shows liking. "-za," often indicates the ability or capacity to undergo the action (as in "pendeza," meaning "look nice"). Conclusively in this data, in the verb pendezwa the suffix is –a, and a passive -w- is used which shows the subject is not the causer/doer.

5.2. Derivative Morphemes in Swahili

There exists nominalization in the Swahili language as illustrated in the data below. Nouns are derived from different parts of speech. One of the lexical categories is the noun which can play the role of a noun phrase and can be formed using derivational affixes. The illustrations shown below show that nouns can be formed from nouns, verbs, or descriptive words (adjectives).

5.3. Nouns derived from verbs

<table>
<thead>
<tr>
<th>Swahili Verb</th>
<th>Gloss</th>
<th>Noun derivation</th>
<th>Gloss</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cheka</td>
<td>Laugh</td>
<td>Mcheshi</td>
<td>Humorist</td>
</tr>
<tr>
<td>Imba</td>
<td>Sing</td>
<td>Mwimbaji</td>
<td>Singer</td>
</tr>
<tr>
<td>Pika</td>
<td>Cook</td>
<td>Mpishi</td>
<td>a cook</td>
</tr>
<tr>
<td>Soma</td>
<td>Read</td>
<td>Msomi</td>
<td>a scholar</td>
</tr>
<tr>
<td>Pigana</td>
<td>Fight</td>
<td>Mpiganaji</td>
<td>a fighter</td>
</tr>
<tr>
<td>Uongo</td>
<td>Lie</td>
<td>Mwongo</td>
<td>Liar</td>
</tr>
<tr>
<td>Linda</td>
<td>Protect</td>
<td>Mlinzi</td>
<td>a guard</td>
</tr>
<tr>
<td>tengeneza</td>
<td>Make</td>
<td>mtengenezaji</td>
<td>Maker</td>
</tr>
</tbody>
</table>

When creating agentive nouns from verbs, the prefix "m-" is frequently employed. In other words, the prefix "m-" adds a noun that designates a person or thing that carries out the action described by the verb. For instance, the words "mpishi" (cook) and "mtengenezaji" (maker) are derivations of the words "pika" (cook) and "tengeneza" (made), respectively.

When u and i follow each other in the Swahili Language, “u” automatically changes to “w” like in the word “muimbaji” it changes to mwimbaji.

The study of morphology is concerned with the composition and structure of words in natural language processing and computational linguistics. The process through which words are created by combining affixes, such as prefixes and suffixes, with base words is known as morphology.

Swahili, in this case, has a rich system of noun derivation from verbs that enables speakers to produce new words by affixing prefixes or suffixes to a base verb. These derived nouns frequently carry a specific meaning connected to the action or process that the verb expresses.

For instance, the Swahili word "cheka" means "laugh". The root verb "m-" becomes "mcheshi," which means "humorist," when the prefix is added. Similar to how "imba" is a verb that means "sing," "mwimbaji" is a derivative noun that also means "singer."

A further illustration is the verb "pika," which means "cook." We obtain the word "mpishi," which means "a cook," by adding the suffix "-i" to the underlying verb. The derived noun "msomi" means "a scholar," and the verb "soma" means "read."

In the same way, "pigana" is a verb that means "fight," and "mpiganaji" is a derivative noun that means "a fighter." "Uongo" is a verb that means "lie," and "mwongo" is a derivative noun that means "liar." Last but not least, "linda" is a verb that means "protect," and the derived noun "mlinzi" means "a guard."

5.4. Noun derivation from the noun

<table>
<thead>
<tr>
<th>Noun</th>
<th>Gloss</th>
<th>Noun derivation</th>
<th>Gloss</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ushirika</td>
<td>Union</td>
<td>Mshirika</td>
<td>Participant</td>
</tr>
<tr>
<td>Shamba</td>
<td>Land</td>
<td>Mshamba</td>
<td>a rustic person</td>
</tr>
<tr>
<td>Mloko</td>
<td>A child</td>
<td>Uloto</td>
<td>Childlessness</td>
</tr>
<tr>
<td>Mlevi</td>
<td>A drunkard</td>
<td>Ulevi</td>
<td>Drunkenness</td>
</tr>
<tr>
<td>Muwerevu</td>
<td>A brilliant person</td>
<td>Uwerevu</td>
<td>Brilliance</td>
</tr>
</tbody>
</table>

Item and arrangement theory is a linguistic approach that examines how words are formed and combined to create meaning. In the context of noun derivation from nouns, this theory suggests that new words are created by adding affixes to existing words and rearranging their sounds and syllables.

We can see from the examples provided that new words are created by prefixing base nouns with "M-" or "U-" and modifying the ending vowel sound to "-i" or "-u." Nominal derivation is the procedure involved in this.
For instance, the base noun "Ushirika" meaning "Union" is transformed into "Mshirika" meaning "Participant" by adding the prefix "M-" and changing the final vowel sound to "-i". Similarly, the base noun "Shamba" meaning "Land" is transformed into "Mshamba" meaning "a rustic person" through the same process.

In the case of "Mito" meaning "A child", the prefix "U-" is added to form "Utoto" which means "Childishness". Similarly, "Mlevi" meaning "A drunkard" is transformed into "Ulevi" meaning "Drunkenness" and "Mwerevu" meaning "A brilliant person" is transformed into "Uwerevu" meaning "Brilliance".

In item and arrangement theory, words are seen as composed of smaller sound units, or phonemes, that are arranged in a specific order to create meaning. This order is known as the word's phonological structure, and changes to this structure can alter the word's meaning.

Affixes are applied to the underlying noun in the case of noun derivation from a noun to produce a new term with a distinct meaning. A person who possesses the attribute or characteristic of the base noun is referred to by the prefix "M-" in the new word. For instance, the word "Mshirika" means "Participant," a member of a union. Similarly, to this, "Mlevi" means "Drunkard," designating someone who exhibits drunkenness.

On the other hand, the prefix "U-" is used to indicate an abstract concept or quality related to the base noun. For example, "Utoto" means "Childishness", an abstract concept related to childhood. Similarly, "Uwerevu" means "Brilliance", an abstract quality related to intelligence or cleverness.

Changes to the sound structure of the word also occur during the process of nominal derivation. The final vowel sound of the base noun is often changed to "-i" or "-u" to match the prefix being added. This change in sound structure can also affect the word's stress pattern and pronunciation.

5.5. Derived adjectives from nouns

Table 8: Noun-derived adjectives

<table>
<thead>
<tr>
<th>Nouns</th>
<th>Gloss</th>
<th>Adjectives</th>
<th>Gloss</th>
</tr>
</thead>
<tbody>
<tr>
<td>Umaskini</td>
<td>Poverty</td>
<td>Maskini</td>
<td>Poor</td>
</tr>
<tr>
<td>Utari</td>
<td>Richness</td>
<td>Tajiri</td>
<td>Rich</td>
</tr>
<tr>
<td>Uhai</td>
<td>Life</td>
<td>Hau</td>
<td>Alive</td>
</tr>
<tr>
<td>Ugumu</td>
<td>Difficulty</td>
<td>Gumu</td>
<td>Difficult</td>
</tr>
<tr>
<td>Ujasiri</td>
<td>Bravery</td>
<td>Jasiri</td>
<td>Brave</td>
</tr>
<tr>
<td>Ukalii</td>
<td>Fierce</td>
<td>Kali</td>
<td>Fierce</td>
</tr>
<tr>
<td>Ugumu</td>
<td>Difficulty</td>
<td>Gumu</td>
<td>Difficult</td>
</tr>
</tbody>
</table>

Using item and arrangement theory, we can see how the words are related to each other. In each pair, the adjective is derived from the noun by adding a prefix or suffix to modify its meaning. For example, the suffix "-ni" is added to "Umaskini" to get "Maskini," which conveys the quality of being poor. Similarly, the prefix "Ta-" is added to "Utajiri" to get "Tajiri," which conveys the quality of being rich.

The data above demonstrates how the Swahili language uses noun-adjective derivations to express abstract concepts and related qualities, while also showing how words can be modified using prefixes and suffixes to convey subtle variations in meaning. We can observe that affixes like prefixes and suffixes are frequently used to derive adjectives from nouns. This enables speakers to succinctly and effectively convey attributes associated with a specific term.

In the data provided, we see several examples of these noun-adjective derivations. For instance, "Ujasiri" means bravery or courage, while "Jasiri" means brave. The prefix "U-" is used to indicate an abstract concept, while the adjective "Jasiri" is derived by removing the prefix and adding the suffix "-i," which is a common way of forming adjectives in Swahili.

Another interesting aspect of Swahili is the use of noun classes, which are essentially categories of nouns that share certain grammatical features. Swahili has over a dozen noun classes, each of which has its own set of prefixes and suffixes for forming adjectives and other related words. For example, the noun class for people includes the prefix "M-" for singular nouns and "Wa-" for plural nouns. So, "Mjasiri" would mean "a brave person," while "Wajasiri" would mean "brave people."

Another interesting aspect of Swahili's noun-adjective pairs is that they often involve the use of a prefix or suffix to indicate negation. For example, the noun "Ugumu" means "difficult," while the related adjective "Gumu" means "difficult." However, if you add the prefix "Si-" to "Gumu," you get "Sigumu," which means "not difficult" or "easy." Similarly, the noun "Ukalii" means "fierceness," while the related adjective "Kali" means "fierce." But if you add the prefix "Si-" to "Kali," you get "Sikali," which means "not fierce" or "gentle."

6. Contributions, implications, and recommendations of the study

The research study provides valuable insights into Swahili verb morphology, with a focus on affixation and derivation procedures. By examining inflectional and derivational morphemes, the study offers a deeper understanding of the formation of Swahili words, which can be beneficial for educators and language learners alike.

For language educators, the study's conclusions have important implications for teaching and learning Swahili, as it can help them create more effective language learning materials and approaches. Moreover, the study's findings can help language learners gain a better grasp of Swahili's morphology, thus improving their language understanding.

Furthermore, the research has implications for language documentation and preservation. By examining the subtleties of Swahili's affixation and derivation, the study contributes to the documentation of this important East African language.
The preservation of linguistic diversity and cultural history is crucial, and language recording is an essential tool for achieving this.

The knowledge gathered from this research on the morphological operations in Swahili can also be applied to cross-linguistic studies. By comparing different languages, researchers can gain a better understanding of language universals and language-specific traits.

To further advance our understanding of Swahili verb morphology, future studies could focus on associativity, particularly the role and function of infixes in Swahili verbs. Sociolinguistic studies could also investigate how the use of specific inflectional and derivational morphemes varies in different sociolinguistic and dialectal contexts. Such studies can provide valuable information on language variations and changes.

7. Conclusion
This study uses the Item and Arrangement theory to investigate Swahili affixation and derivation. With an elaborate framework of inflectional and derivational morphemes, Swahili is a fascinating inflective, and agglutinating language. As we've seen, inflectional morphemes are vital for identifying grammatical functions but they don't combine with other lexemes to form new words. In order to convey tense, aspect, mood, person, and number, they alter the word's form. Derivational morphemes, in contrast, create new words with distinct meanings and functions by altering the old lexeme's meaning and, in certain cases, its word class.

The affixation-based derivation is frequently utilized in Swahili to generate new terms and broaden the language's lexicon. Nouns can be formed from verbs, adjectives, and other nouns. In the derivation processes, passive, causative, stative, and applied suffixes are used, resulting in a diverse range of meanings and functions. Swahili speakers can express challenging thoughts, convey finer details of meaning, and produce texts that are rich and varied by adding these derivational morphemes.

It is possible to learn more about the subtle inner workings of this interesting language by studying Swahili affixation and derivation from an item and arrangement perspective. Understanding the two types of morphemes, inflectional and derivational, is fundamental for effective communication in Swahili. Affixation, which can be used to create new words or change existing ones, gives Swahili speakers a strong instrument for precise and eloquent expression, transforming the language into a rich and lively medium of communication and culture.

8. Funding
This research paper received no internal or external funding.

9. Acknowledgments
I would like to express my heartfelt gratitude to three incredible individuals who have played a significant role in shaping my academic journey and providing unwavering support throughout my high school and undergraduate studies.

First and foremost, I want to acknowledge my sister, Eunice Wahome. Eunice, you have been a constant pillar of strength and encouragement in my life. Your unwavering belief in my abilities and your continuous support, both emotionally and academically, have been instrumental in helping me reach this point in my education. Your dedication to my success has been nothing short of remarkable, and I am truly fortunate to have you as my sister.

Next, I extend my deepest gratitude to my paternal uncle, Francis Mwangi Macharia, affectionately known as Wamacharia. Uncle Wamacharia, your guidance, wisdom, and financial assistance have played a pivotal role in my educational journey. Your belief in the importance of education and your generosity has eased the financial burden on my family and allowed me to focus on my studies with determination and enthusiasm. I am grateful for your unwavering support and the valuable life lessons you've imparted along the way.

Last but certainly not least, I want to thank my mother, Margaret Wahome. Mom, your love and sacrifices have been the foundation upon which I've built my dreams. Your sacrifices to ensure I had the best possible education have not gone unnoticed. Your unwavering belief in my potential and your constant encouragement have been my driving force, and I am forever grateful for your love and support.

Together, Eunice, Uncle Wamacharia, and Mom, you have been my steadfast champions. Your support has not only helped me achieve my educational goals but has also shaped me into the person I am today. I cherish the love and encouragement you have provided throughout my high school and undergraduate years. Your belief in me has been a source of motivation, and I am excited to continue making you proud as I embark on the next chapter of my life.

Thank you for being there for me always, for your unwavering support, and for believing in my potential. I look forward to making the most of the opportunities that lie ahead, carrying with me the values and lessons you have instilled in me.

References