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

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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.

Biographical notes: Maina Wahome is a Kenyan-born linguist, educator, author, playwright, and poet. He holds a Bachelor of Education (B.Ed. Arts) degree in English and Literature from Laikipia University in Kenya and is currently pursuing his M.A. in Applied Linguistics at Universitas Diponegoro (UNDIP) in Semarang, Indonesia. His research interests in linguistics include Phonology, Morpho-Syntax, Cognitive linguistics, and Natural Semantic Metalanguage. Maina is an accomplished author and playwright. He has authored a play entitled "Trouble for Sale," published by Ukiyoto Publishers, as well as three novels: "Trials and Tribulations," "The Double-Edged Princess" (published by Academy Press-California), Crowned Butcher published by Ukiyoto Publishers, and an academic writing book titled "The Illuminator." He has also co-authored anthologies of poems, including "Of Poets, Passions, Places and Paradoxes- Thou Shall Not Judge" with Zimbabwean writer Ndaba Sibanda and "Musings: Values, Virtues, and Vices of Africa and Beyond: An Anthology of African Poetry" with a Kenyan poetess and a Nigerian poet, published by Ukiyoto Publishers-India. Maina has written a linguistic paper titled "The Phonological Processes of the Kikuyu Dialectical Words: A Distinctive Features Approach," published by the International Journal of Innovative Research and Development in its March 2023 issue (Volume 12:1-12) and a book review on Ndaba's novella, The Immigrant with a difference, published by Journal of Artistic Creation and Literary Research, Universidad Complutense de Madrid, Spain, Volume 11 Issue 1 (June 2023).

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 identifies 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
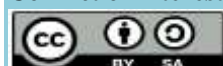
prefix comes before the object prefix and always comes last, right before the verb stem. Verbs, specifically Swahili verbs, undergo morphological changes when they acquire affixes that can be placed either horizontally or vertically. During extensions, or more precisely, during their inflections, they 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, Wakarindi, 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 Nida'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 morpho-syntactic 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, "-na-" indicates present tense, "-li-" indicates past tense, "-me-" indicates perfect aspect, and "-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 1: Swahili verbs and their gloss

Swahili verbs	Gloss	Swahili verbs	Gloss
Nakula	'I am eating'	Nisome	'I read'
Nitakula	'I will eat'	Nitasomea	'I will read'
Unakula	'You are eating' (sing.)	Inasomeka	'It is readable' (sing.)
Mnakula	'You are eating' (Pl.)	Mnasomeana	'You study for each other' (pl.)
Anakula	'He is eating'	Anasoma	'He is reading'
Tunakula	'We are eating'	Tunasoma	'We are reading'
Wanakula	'They are eating'	Wanasoma	'They are reading…'
Alikula	'She ate'	Anasoma	'She is reading'
Sitakula	'I won't eat'	Sisomi	'I won't read'
Hatakula	'She won't eat'	Hakusoma	'He didn't read'
Hawatakula	'They won't believe'	Hawajasoma	'They haven't read'
Ningalikula	'If I had eaten'	Ningalisoma	'If I had read'
Ningelikula	'If I had eaten'	Ningelisoma	'If I had read'
Singelikula	If I hadn't eaten	Singelisoma	'If I hadn't read'

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

Swahili Verbs	Inflectional Morphemes
Nakula	na- (present tense), -ku- (infinitive), -la (verb stem)
Nisome	ni- (present tense), -so- (infinitive), -me (verb stem)
Nitakula	ni- (future tense), -ta- (future marker), -ku- (infinitive), -la (verb stem)
Nitasomea	ni- (future tense), -ta- (future marker), -so- (infinitive), -me- (verb stem), -a (subject agreement)
Unakula	u- (present tense), -na- (continuous aspect), -ku- (infinitive), -la (verb stem)
Inasomeka	i- (present tense), -na- (continuous aspect), -so- (infinitive), -me- (verb stem), -ka (passive suffix)
Mnakula	m- (present tense), -na- (continuous aspect), -ku- (infinitive), -la (verb stem), -a (subject agreement)
Mnasomeana	m- (present tense), -na- (continuous aspect), -so- (infinitive), -me- (verb stem), -ana (reciprocal suffix), -a (subject agreement)
Anakula	a- (present tense), -na- (continuous aspect), -ku- (infinitive), -la (verb stem)
Anasoma	a- (present tense), -na- (continuous aspect), -so- (infinitive), -ma- (verb stem)
Tunakula	tu- (present tense), -na- (continuous aspect), -ku- (infinitive), -la (verb stem), -a (subject agreement)
Tunasoma	tu- (present tense), -na- (continuous aspect), -so- (infinitive), -me- (verb stem), -a (subject agreement)
Wanakula	wa- (present tense), -na- (continuous aspect), -ku- (infinitive), -la (verb stem), -a (subject agreement)
Wanasomea	wa- (present tense), -na- (continuous aspect), -so- (infinitive), -me- (verb stem), -a (subject agreement)
Alikula	ali- (past tense), -ku- (infinitive), -la (verb stem)
Sitakula	si- (negative particle), -ta- (future marker), -ku- (infinitive), -la (verb stem)
Sisomi	si- (negative particle), -so- (infinitive), -mi (verb stem)
Hatakula	ha- (negative particle), -ta- (future marker), -ku- (infinitive), -la (verb stem)
Hakusoma	ha- (negative particle), -ku- (infinitive), -so- (verb stem), -m (past tense suffix)
Hawatakula	ha- (negative particle), -ta- (future marker), -ku- (infinitive), -la (verb stem), -wa (subject agreement)
Hawajasoma	ha- (negative particle), -ja- (perfect tense), -ku- (infinitive), -so- (verb stem), -m (past tense suffix), -a (subject agreement)
Ningalikula	ningali- (conditional tense), -ku- (infinitive), -la (verb stem)
Ningalisoma	ningali- (conditional tense), -so- (infinitive), -me- (verb stem), -a (subject agreement)
Ningelikula	ningeli- (conditional tense), -ku- (infinitive), -la (verb stem), -a (subject agreement)
Singelikula	singeli- (conditional tense + negative particle), -ku- (infinitive), -la (verb stem), -a (subject agreement)
Singelisoma	singeli- (conditional tense + negative particle), -so- (infinitive), -me- (verb stem), -a (subject agreement)

Table 3: Verb roots, affixes and their functions

Verb Roots	Affixes

kula 'eat'
soma 'read'
	Prefixes
	First Person na- (I) Present -nakula
	    ni-,(I/me) Future- nisome, nitaleta, nitasomea, ningelisoma
	    si- (I) opposite- sisomi, singelisoma, singelikula
	    Tu- (we/us)
	Second Person m- (You) pl. mnakula

	u- (You) sg. –Unacheza
	Third Person a- (He/she)
	Wa- (they/them)
	Infixes
	-na- which represents the present tense
	-ta- which stands for future tense
	-ngeli-; -ngali- which represent the third and second conditional
	Suffixes
	-la (e.g., Nakula, Mnakula, etc.): Denotes present tense.
	-ta- (e.g., Nitaleta): Denotes future tense.
	-me- (e.g., Inasomeka): Denotes a passive voice form (is readable).
	-ana (e.g., Mnasomeana): Denotes a reciprocal action (study for each other).

Table 4: Roots and affixes position

Prefix	Infix	Verb Root	Suffix	Gloss
na-		soma		Nasoma
ni-		Som	-e	Nisome
ni-	-ta-	Leta		Nitaleta
ni-	-ta-	Som	-ea	Nitasomea
Ni-	-ngali-	Soma		Ningalisoma
Si-	-ngeli-	Kula		Singelikula
Si-		Som	-i	Sisomi
m-	-na-	Kula		Mnakula
u-	-na-	Cheza		Unacheza
a-	-na-	Teta		Anateta
Tu-	-na-	Soma		Tunasoma
Wa-	-na-	Som	-ea	Wanasomea
Ha-	-ta-	Kula		Hatakula
Ha-	-ku-	Soma		Hakusoma
Hawa-	-ta-	Kula		Hawatakula
Hawa-	-ja-	Soma		Hawajasoma
A-	-li-	Kula		Alikula
A-	-na-	Soma		Anasoma
Tu-	-na-	Soma		Tunasoma
Wa-	-na-	som-	-ea	Wanasomea
Ni-	-ngali-	Soma		Ningalisoma
Ni-	-ngali-	Kula		Ningalikula

Verb Formation Rule
(1ˢᵗ, 2ⁿᵈ, 3ʳᵈ person) (tense/conditional) V root (final vowels-indicative, subjunctive, negative):
(1st, 2nd, 3rd person): This refers to the subject of the verb, whether it's in the first person (I/we), second person (you), or third person (he/she/it/they).
(tense/conditional): This part indicates the tense or conditional mood of the verb. It may involve prefixes or infixes to show different tenses or conditions.
Verb Root: This is the core meaning of the verb without any prefixes or suffixes. It's the basic form of the verb.
(final vowels - indicative, subjunctive, negative): This part includes suffixes that indicate the mood of the verb. It may contain indicative, subjunctive, or negative markers.

5. Discussion
Swahili verbs, according to item theory, are intricate words made up of a root morpheme and several inflectional morphemes. The essential meaning of the verb is conveyed by the root morpheme, which is modified by the inflectional morphemes to reflect tense, aspect, mood, and other grammatical categories. There are four categories of inflectional morphemes in Swahili: prefixes, infixes, suffixes, and circumfixes. Prefixes are added to the root's beginning to denote the verb's tense and subject. For instance, the prefix "ni-" designates the first person singular and the perfect tense in the verb "nimekula" (I have eaten). To denote other grammatical categories, such as causative, applicative, or reciprocal, infixes are added to the root. For instance, the infix "-e-" denotes the applicative meaning "for someone" in the verb "nasomea" (I am reading for someone). To specify the verb's voice, tense, or mood, suffixes are affixed to the end of the root. For instance, the ending "-ewa" designates the passive voice in the verb "nasomewa" (I am being read to). Finally, circumfixes are used to denote the passive voice in various tenses. They are made up of a prefix and a suffix. For instance, the circumfix "ume-ewa" designates the perfect tense and passive voice in the verb "Umesomewa" (You have been read to). According to arrangement theory, the placement of these inflectional morphemes in a sentence determines its meaning. 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 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).

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 ninakisoma" (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 to), for instance, the suffix "-wa" 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 may 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 vowel 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 vowel 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 "mnakula" 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 -ngeli-, which denotes the third conditional. The verb "ningelikula" realizes the same manifestation. Additionally, the third conditional is denoted by the addition of the prefix si- to the infix –ngeli-, and the word "singelikula" 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 "nitasomea," 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 "inasomeka," 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 -eana- 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 "tunasoma" 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 "wanasomea". 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 "ningalisoma". 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 -ng- in the present tense and -ngal- in the past tense designate it. As an illustration, "Ningalikula" means "If I had eaten," while "Ningelikula" 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."

5.1. Suffixation in Swahili

Suffixation is the process of changing a word's meaning or function by appending a morpheme (a meaningful linguistic unit) called a suffix to the end of the word. Suffixation is a dynamic and frequent process in Swahili that enables the emergence of new words and the alteration of preexisting ones. Adjectives, nouns, and verbs can all have suffixes to alter their meaning or grammatical category.

Suffixes for verbs
"-ka": It frequently denotes the potential or possibility of the activity denoted by the root verb, as in "andikika" (writeable).
"-sha": It frequently denotes causation or causative action, as in "andikisha" (register).
"-ia": It frequently denotes the person who received the action described by the base verb, as in   "andikia" (write to/for)
"-ana": This suffix frequently denotes joint participation or reciprocal action, as in "pendana" (Love one another).

Table 5: Suffixation in Swahili

Swahili verb	Gloss	Swahili verb	Gloss
Andika	Write	Penda	Love
Andikisha	Register	Pendea	Like for
Andikika	Writeable	Pendwa	Be loved
Andikia	Write for	Pendeka	Loveable
Andikiwa	Written	Pendeza	Look nice
Andikishwa	Be registered	Pendezwa	Be interested

The data above shows that the root word is andik- and the final vowel -a is the suffix. The suffix -a indicates a declarative mood. In the second verb "andikisha" the suffix is -isha which is a causative suffix showing that someone X made someone Y do something and in this case is register. Thus, to create the derived verb "andikisha," meaning "register," the suffix "-isha" has been added to the base verb. This suffix often indicates causation or causative action, meaning that the derived verb implies that the action of the base verb is being caused or induced. In the word "andikika", the suffix is -ika showing that the action has no causer role. In the verb "andikia", the suffix is -ia which is an applied suffix that demands an event to have a recipient or in simple terms, the person the action is done. To add to this, in the verb, "andikiwa", insert the passive –w- which means the subject is not the causer and the suffix -a which shows a declarative mood. This applies also to the Swahili verb "andikishwa".

The stem word in the data above is pend- and the final –a is the suffix. In the word pendea the suffix is -ea which shows flexibility in describing events. "-ea," often indicates the direction or target of the action (as in "pendea," meaning "like for"). It also shows a beneficiary role played. To add to this, in the verb pendwa the suffix is -a, and the passive -

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 pendeza, 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. Derivational 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 6: Nouns derived from verbs

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

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 7: Nouns derived from nouns

Noun	Gloss	Noun derivation	Gloss
Ushirika	Union	Mshirika	Participant
Shamba	Land	Mshamba	a rustic person"
Mtoto	A child	Utoto	Childishness
Mlevi	A drunkard	Ulevi	Drunkenness
Mwerevu	A brilliant person	Uwerevu	Brilliance

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 "Mtoto" 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

Nouns	Gloss	Adjectives	Gloss
Umaskini	Poverty	Maskini	Poor
Utajiri	Richness	Tajiri	Rich
Uhai	Life	Hai	Alive
Ugumu	Difficulty	Gumu	Difficult
Ujasiri	Bravery	Jasiri	Brave
Ukali	Fierce	Kali	Fierce
Ugumu	Difficulty	Gumu	Difficult

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 "difficulty," 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 "Ukali" 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.

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