ПРОГЛАС

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LEXICAL SEMANTIC ACCOUNT OF THE PRODUCTIVITY OF THE DEVERBALIZING SUFFIXES IN SWAHILI

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ПРОДУКТИВНОСТТА НА НАСТАВКИТЕ В ОТГЛАГОЛНИТЕ СЪЩЕСТВИТЕЛНИ В СУАХИЛИ В ЛЕКСИКАЛНО-СЕМАНТИЧНА ПЕРСПЕКТИВА

This paper investigates the productivity of deverbalizing suffixes in Bantu Swahili, focusing on semantic verb types and semantic content. The paper addresses two questions: Which deverbalizational suffixes can be assigned to the activity, inchoative, and stative verbs in Swahili? Does the semantic content of the source verb remain silent (mute) in the process of assigning suffixes to the resultant deverbative in Swahili? The investigation has been incited by lack of linguistic knowledge of the mentioned aspect in many Bantu languages. The study analyzes 500 verbs from the Swahili-English dictionary (TUKI 2014). The productivity has been measured through the number of actual words formed and the type-frequency parameters as per individual deverbal suffixes. The conclusion has been drawn that the deverbal suffix *-o* is productive in activity and stative verb clusters, while the deverbal suffix *-u* is productive in inchoative and stative verb clusters. The deverbal suffix *-e* is productive in stative and activity verb clusters. The deverbal suffix *-i* is productive in all three verb clusters. However, the resultant deverbative nouns in Swahili retain their original semantic content.
Keywords: *Bantu languuages*; *deverbalization; suffixes*; *productivity*

В статията се разглеждат наставките в отглаголните съществителни в банту-езика суахили. Вниманието е съсредоточено върху семантичния аспект на изследвания въпрос. Анализират се следните два въпроса. Кои наставки се използват с активните, инхоативните и стативните глаголи на суахили? Остава ли семантичното съдържание на изходния глагол безучастно в процесите на девербизацията в суахили? Изследването е проведено поради отсъствието на лингвистични познания относно споменатия аспект в много от банту-езиците. Анализирани са 500 глагола от Суахили-английския речник (TUKI 2014). Продуктивността на наставките е измерена чрез броя на реално формираните думи, отнесен към броя и типа на използваните наставки. Направен е извод, че суфиксът -o е продуктивен относно активни и стативни глаголи, докато суфикс -u е продуктивен относно инхоативни и стативни глаголи. Суфиксът -e е продуктивен относно стативни и активни глаголи, суфиксът -i – относно трите групи глаголи. Образуваните съществителни запазват изходната семантика на глаголите.
Ключови думи: *банту езици*; *отглаголни съществителни; наставки*; *продуктивност*

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Introduction

The various research-based publications on the Swahili deverbalizing suffixes (Mpiranya 2015: 1–50; Polomè 1967: 1–19; Schadeberg 1992) provide five morphological analyses of these morphemes. It is clear that suffixation is the main nominal-formation technique used in Swahili and other Bantu languages for verb-to-noun derivation (Schadeberg & Bostoen 2019). The list of suffixes in Swahili is included in Table 1:

Table 1: Morphological Analysis of Deverbal Suffixes in Swahili

Suffixes	Derived nouns	Gloss	Source verb	Gloss
-(a)ji	*msomaji*	"reader"	*soma*	"read"
-e	*mtume*	"Messenger"	*tuma*	"send"
-i (-shi/-si/-vi/-zi)	*msomi*	"intellectual"	*soma*	"study"
-o	*masomo*	"lessons"	*soma*	"study"
-u (-fu/-vu)	*maumivu*	"pain"	*umia*	"suffer"

Agent nouns in Bantu languages are derived from verbs by adding the final suffix *-*i* to the base (Schadeberg & Bostoen 2019: 188). Deverbative stems with the final *-*o* refer to the action itself, the result of the action, the place, or the instrument (Schadeberg & Bostoen 2019: 189). Deverbative nouns in Swahili are classified semantically based on their noun classes (Batibo 1988: 57-60; Khamisi 1989; Malangwa 2011: 28; Mpiranya 2015: 19). Deverbatives for professional names and the state of the phenomenon are assigned to noun classes 1/2 and 5/6, respectively; e.g., *mvuvi* "fisherman" [<*vua* "to fish"] and *makuzi* "growth" [< *kua* "grow"]. The deverbalizing suffix *-i*, with nominal prefixes like *mwandishi* "writer" and *mwamuzi* "judge", is related to agentive nouns and other implications. One deverbalizing suffix, *-u*, has been reported to be rarely found in Swahili (Mgullu 1999: 123; Polomè 1967: 77). Scholars have pointed out in numerous works of literature (Batibo 1988; Schadeberg 1992) that noun formation by the suffixes -(*a*)*ji* is very productive in the language. Schadeberg (1992) emphasizes that the deverbalizing suffix -(*a*)*ji* is a recent innovation and a highly successful one. It is yet unknown what types of verbs this deverbalizing suffix was tested on. It becomes informative to investigate the use of each of the deverbal suffixes across different semantic verb types in Swahili. In a series of Swahili noun expressions, such as *mfuga nyuki* "beekeeper" [< *fuga* "rear"] and *mpiga kafi* "paddler" [< *piga* "hit"], the deverbalizing suffix *-a*, for instance, is described by Batibo (1988: 63) as appearing relatively infrequently. Deverbatives like *masaza* (literally, "leftovers") and *mchinja* (literally, "to butcher") are provided (Khamisi 1989: 114) as examples.

Therefore, the semantic classification of these deverbatives raises an essential question: to which Swahili semantic verb types can the deverbalizing suffixes be assigned? This article answers that question by looking at how the five deverbalizing suffixes are assigned to different semantic verb categories in the Swahili language. Identifying which deverbalizing suffixes are attached to various semantic verb types is the intention. I will eventually be able to definitively determine if each Swahili deverbalizing suffix is productive or not. The other question addressed in light of the aforementioned claim is: Does the semantic content of the source verb remain silent (mute) in the process of assigning the semantic content of the resultant deverbative in Swahili? Although we ignore the role of the default vowel *-a* in this paper, the contribution of the semantic verb types is given an upper hand in the analysis of the data.

1. Overview of the Literature on Productivity in Derivational Morphology

Derivation morphology involves applying morphological rules to bases to create new words (Bauer 2003; Beard 1998; Booij 2005; Haspelmath & Sims 2010; Katamba & Stonham,2006; Plag 2002;

Štekauer & Lieber 2005), with the purpose of creating new words for new concepts (Haspelmath and Sims 2010: 87). This article focuses on creating new nouns from various verb types to suit semantic concepts in Swahili society. Furthermore, affixation is the primary word-formation process in deriving new nouns, with scholars examining its productivity in natural languages (Bauer 2003; Booij 2005; Haspelmath & Sims 2010; Katamba & Stonham 2006; Plag 2002). Productivity is a feature of morphological invention, allowing new coinages and being repetitive in the speech community (Plag 2002; Bauer 2003). This research aims to investigate the productivity of deverbalizing suffixes in Swahili by using the parameters used to measure productivity from nouns derived from a sample of 500 verbs.

Deverbative nouns in Bantu languages are based on the combination of nominal prefixes and deverbalizing suffixes (Batibo 1988: 60; Kahigi 2005: 118-119; Katamba 2003; Mletsche 2017; Krüger 2006; Rugemalira 2014). Deverbalizing suffixes are highly productive for noun classes 1/2 and 7/8 and less prolific in classes 3/4, 11, and 14 (Batibo 1988; Lodhi 2001; Mletshe 2017). Agentive nouns are relatively productive in Bantu languages, unlike patients and instruments (Schadeberg & Bostoen 2019). This paper investigates the application of five (*-aji*, *-e*, *-i*, *-o*, *-u*) deverbalizing suffixes in Swahili semantic verb types. Deverbalizing suffixes in Bantu languages include vowels -i, -e, -o, and -u for various verb types (Kahigi 2005; Katamba 2003; Khamisi 1989; Krüger 2006; Rugemalira 2014; Schadeberg & Bostoen 2019). It appears that each of these deverbalizing suffixes derives nouns with specific semantic content (Batibo 1988; Mletshe 2017; Mpiranya 2015; Poulos & Msimang 1998). For instance, the identification of specific uses of particular deverbalizing suffixes in Zulu [Guthrie's group S42] are *umufundi* "student" – *funda* "learn" as Personal noun; *isililo* "crying" – *lila* "cry" as Impersonal noun (Poulos and Msimang 1998).

Additionally, the productivity of these deverbalizing suffixes is mentioned in the literature, with the suffix *-i* being the most productive in deriving nouns describing humans as ordinary performers of the process (Kahigi 2005; Krüger 2006). However, the boundary between productive and non-productive suffixes depends on the number of nouns derived from each suffix. Bantu languages have agentive nouns as the most prolifically derived nouns globally (Beard 1998; Haspelmath & Sims 2010). However, the investigation of deverbative nouns derived by deverbalizing suffixes is not yet complete, partly due to the lack of complete research on semantic verb types in Bantu languages. There are exceptions in a few studies (Botne 2006; Fleish 2000; Kershner 2002; Mreta 1998; Lusekelo 2016; Persohn 2017; Seidel 2008) which suggest that each verb bears some properties that allow it to be slotted into a given verbal semantic category (Botne 2006; Lusekelo 2016; Persohn 2017). This in turn contributes to the formation of specific deverbatives (Levin & Rappaport-Hovav 2005; Rappaport-Hovav et al. 2010). With regard to Kiswahili, the semantic verb types have been provided in Table 2. These semantic verb types have been provided by Lusekelo (2016) though this paper uses more than them. What remains to be investigated is the number of deverbative nouns that could be derived from each of these semantic verb types or a study about the assignment of each of the deverbalizing suffixes to specific categories of verbs. This paper therefore, aims to fill the gap.

Table 2: The Established Semantic Verb-types in Kiswahili (Lusekelo 2016)

Stative verbs	"Onset and coda punctuated as one"	*jua*	"know"
Achievement verbs	"Inceptive verbs punctuate onset"	*pona*	"heal"
	"Punctive verbs underscore nucleus"	*lemaa*	"lame"
	"Resultive verbs underscore coda"	*choka*	"tire"
	"Transitional verbs punctuate none"	*iva*	"ripen"
Durative verbs	"Onset and coda take same time"	*la*	"eat"

2. Parameters of measuring the productivity of deverbalizing suffixes

This section clarifies the parameters used to determine productivity as proposed in various publications (see Bauer 2003; Baayen 1993; Baayen & Lieber 1991; Haspelmath & Sims 2010; Plag 2002). The first guiding parameter for the productivity of the suffixes relies solely on the native speakers' intuition. The speakers' implicit knowledge of a language is the key of understanding productivity since it comprises words, rules and probability of a given applied rule to create new words (Baayen 1993; Haspelmath and Sims 2010). The morphological rule is considered to be productive if it creates new words within the rule's domain. This means all bases which are out of the domain are considered irrelevant. In this rule, the unrestricted domain causes the productivity of a rule. A very restricted rule on its domain is not highly productive because it keeps from contributing a large number of words formed to the language.

Similarly, type-frequency is another parameter used to measure productivity (Bauer 2003). It describes the number of different words in a class, and each word is counted once. Type-frequency is always determined in relation to the defined corpus. This means that there must be a defined corpus of the derived words in which different affixes are attached. The repetition of words derived by a certain derivational suffix signifies the frequency of such a suffix. The large the number of the repetitions of the word derived from a certain affix leads to a higher frequency of such an affix. Therefore, the higher frequency of an affix in the corpus signifies the higher productivity and vice versa. Two parameters are used to measure the productivity of deverbalizational suffixes in semantic verb clusters in Kiswahili.

3. Semantic Classification of Verbs in Swahili

The semantic classification described by (Mreta 1998; Lusekelo 2016; Persohn 2017) is used in this paper. The paper divides five hundred (500) verbs into three semantic verb clusters, including activity, inchoative, and stative.

3.1. Activity Verbs

These verbs are referred to as durative verbs at times. These verbs typically refer to ongoing actions in Kiswahili that have no clear beginning. They have stems with an onset, a nucleus, and a coda, e.g., *fyatua* "make blocks"; *pika* "cook". Activity verbs in this language denote varying lengths of the action that the verb performs. Hence, it is divided into three distinct sub-clusters, including Extended verbs: These require a very long time to accomplish the action, Instantaneous verbs: These just require a brief amount of time to complete an action, and Periodic verbs: These describe recurring, circular events or circumstances, *koroga* "stir"; *twanga* "pound".

3.2. Inchoative Verbs

These words are sometimes referred to as accomplishment words. They usually indicate a change in state or a stage in an action that the verb denotes. Three distinct sub-clusters have been created from this cluster. The first sub-cluster is Inception. This contains verbs that describe how an activity begins. They always have a continuous beginning (onset) and no coda, e.g., *fumua* for "undo"; *kunja* for "bend". Durative verbs which encode the continuation of the action, represent the second sub-cluster. They indicate the start (onset) and end (coda) of the activity that the verb denotes, e.g., *chemka* for "boil"; *oza* for "rotten". Depending on how long an action continues, the durative verbs have been separated into three sub-groups: (a) Extended - Durative Verbs: These verbs require a significant amount of time to complete an action. (b) Instantaneous - Durative Verbs, and (c) Periodic - Durative Verbs. The third sub-cluster is Terminative verbs. They indicate a verb's durative ending (coda) when the action performed has no beginning (onset), e.g., *vunjika* "broken".

3.3. Stative Verbs

Stative verbs are a type of verb in language that characterizes a way of being that explains an action. Throughout their whole duration, they convey conditions that are constant or unchangeable. They

have a beginning (onset), a middle (nucleus), and an end (coda), e.g., *kataa* "refuse", *kubali* "agree", *thibitisha* "affirm", *kujua* "know/understand", which cannot be analyzed. They connect the categorization to the predicted results.

4. Morphology of the deverbalizing suffixes

The study found that deverbal suffixes in Swahili are more easily applied to trisyllabic than to disyllabic and monosyllabic verb stems to derive nouns. The data shows that 314 are trisyllabic verb stems, e.g. *-achana* "separate", *-ajabia* "wonder", *-binua* "protrude", *-burudisha* 'entertain', *-tetemeka* "tremble/shake". One hundred eighty-four (184) are disyllabic verb stems, e.g. *-tenga* "isolate", *-pamba* 'adorn/decorate', *-onya* "warn", *-oza* "rot", *-vunja* "break", *-tweta* "gasp/pant for breath". Two (2) are monosyllabic verb stems, e.g. *-fa* "die", *-la* "eat".

There are four deverbal suffixes with distinct morphological shapes, including *-e*, e.g., *tuma* 'send something' – *tume* 'commission'; *-i*, [which may appear as *-ni*, *-shi*, *-vi*, *-ji*, *-zi*], e.g., *bisha* 'defy' – *ubishi* 'defying', *Chunga* 'herd or graze animals – *machungani* 'pasture', *lalamika* 'complain' – *mlalamishi* 'person who complains', *gomba* 'quarrel (with)' – *ugomvi* 'quarrelling', *babaisha* 'confuse' – *mbabaishaji* 'person who confuses', *fafanua* 'explain' – *ufafanuzi* 'explanation'; *-o*, [which could appear as *-ko*, *-zo*, *-no*, *-sho*], e.g., *foka* 'boil over' – *foko* 'plenty', *Pamba* 'adorn; decorate' – *Pambizo* 'margin'(cl. 5) 'regards/special note', *vuruga* 'mix/stir' – *mvurugano* 'chaos/mess', *hakiki* 'review/ascertain' – *hakikisho* 'confirmation/proof'; and *-u*, [which could appear as *-fu, -vu*], e.g., *Tanda* 'extend' – *Tandu* 'centipede'(cl.5), *tulia* 'be calm' – *mtulivu* 'calm person', *bainisha* 'identify' – *ubainifu* 'identification'.

In comparison with other deverbal suffixes, the suffix *-o* gives rise to a large number of derived nouns which is 51% e.g., *-agana*, "make an agreement", *-agano* "promise/agreement", *-eleza* "describe/explain", *-elezo* "explation", and *-lenga* "aim/focus", *lengo* "target/objective", *Ona* "see/feel" – *Ono* "vision", *tanda* "extend/spread" – *tando* "fish trap"; *-zonga* "overwhelm/overpower" *-zongo* "stomach swelling"; and *anguka* "fall down" – *anguko* "the state of falling down".

The deverbal suffix *-i* realized as *-ni*, *-shi*, *-vi*, *-(a)ji*, or *-zi* creates nouns with three different thematic roles: agentive and theme roles. It produces more agentive nouns than theme nouns. Likewise, more nouns with theme roles than patient and agentive roles are derived from all three verb categories. Deverbal suffix *-o*, which takes forms *-ko*, *-zo*, *-no*, or *-sho* derives more nouns with theme and instrumental roles than any other suffix, unlike deverbal suffix *-i*. The suffix *-u*, which is realized as *-fu* or *-vu*, results in more nouns with theme roles than those with patient roles. More nouns with theme roles are derived by the derivational suffix *-e* than from other roles. The list of suffixes for words derived from bases with different semantic roles includes Tables 3, 4, 5, 6, & 7:

Table 3: Nouns Derived by Deverbal Suffix *-i* with Theme Role

Verb	Gloss	Derived noun	Gloss	Deverbal suffix
Bisha	"Defy"	*Ubishi*	"Defying"	*-i*
Kaa	"Sit/stay"	*Makazi*	"Settlement"	*-zi*
Tuma	"Send something"	*Utumishi*	"Service"	*-shi*
Kiuka	"Leap over"	*Ukiukaji*	"Evading"	*-(a)ji*
Chunga	"Graze"	*Machungani*	"Pasture"	*-ni*

Table 4: Nouns Derived by Deverbal Suffix *-i* with Agentive Role

Verb	Gloss	Derived noun	Gloss	Deverbal suffix
Chonga	"Carve"	*Mchongaji*	"Person who carves"	*-(a)ji*
Ongoza	"Lead"	*Kiongozi*	"Leader"	*-i*
Andika	"Write"	*Mwandishi*	"Writer"	*-shi*
Ongea	"Speak/Chat"	Maongezi	"conversation"	*-zi*

Table 5: Nouns Derived by Deverbal Suffix *-o* with Theme Role

Verb	Gloss	Derived noun	Gloss	Deverbal suffix
Adhirika	"Be ashamed"	*Adhiriko*	"Shame"	*-o*
Chukia	"Hate"	*Chukizo*	"Abomination"	*-zo*
Chimbua	"Find out"	*Chimbuko*	"Origin/source"	*-ko*
Vuruga	"Mix/stir"	*Mvurugano*	"Chaos"	*-no*
Kumbuka	"Remember"	*Ukumbusho*	"Remembrance"	*-sho*

Table 6: Nouns Derived by Deverbal Suffix *-u* with Theme Role

Verb	Gloss	Derived noun	Gloss	Deverbal suffix
Dakiza	"Interrupt speech"	*Udaku*	"New raised point"	*-u*
Choka	"Be tired"	*Uchovu*	"Tiredness"	*-vu*
Danganya	"Lie"	*Udanganyifu*	"Cheating"	*-fu*

Table 7: Nouns Derived by Deverbal Suffix *-e* with Theme Role

Verb	Gloss	Derived noun	Gloss	Deverbal suffix
Kama	"Squeeze out"	*Kame*	"Dry/barren"	*-e*
Lisha	"Feed"	*Lishe*	"Nutrition"	*-e*
Peta	"Winnow"	*Pete*	"Ring"	*-e*
Teka	"Scoop up/kidnap"	*Teke*	"Kick"	*-e*

5. Parameters and Productivity of Deverbal Suffixes

This sub-section demonstrates the productivity of each deverbal suffix in Kiswahili by testing its application to three different semantic verb clusters: activity, inchoative, and stative verbs.

5.1. Application of Deverbal Suffixes to Activity Verbs

Data shows that agentive and theme nouns are derived almost equally from the deverbal suffix *-i*. Theme and instrumental nouns are derived by the deverbal suffix *-o*. Similarly, the deverbal suffix *-e* derives more theme nouns than instrumental and patient nouns. Agentive and theme nouns are more productively derived by the deverbal suffix *-i* than patient nouns.

The deverbal suffix *-i* with its morphological realization takes 88 verbs e.g., *fagia* "sweep" – *mfagiaji* "sweeper", *endesha* "set in motion" – *uendeshaji* "operating", while suffix *-o* with its morphological realization takes 110 verbs, e.g., *piga* "hit/beat" – pigo "beating", *puliza* "blow/pump" – *pulizo* "ballon". However, the deverbal suffix *-e* with no morphological realizations takes 20 verbs e.g., *teua* "appoint" – *mteule* "nominee", *teka* "capture" – *mteke* "young person". The deverbal suffix *-u* with its morphological realization takes 15 verbs e.g., *buni* "invent" – *mbunifu* "inventor"; *ubunifu* "state of inventing", *funga* "fasten" – *fungu* "heap/pile". Two observations have been found. Based on morphological realizations, the derivational suffix *-i* is more productive than other suffixes. Based on the number of verbs taken by an individual suffix, deverbal suffixes *-i* and *-o* are more productive than other suffixes.

There are four (4) cases where two different deverbal suffixes are used on the same verb stem to derive different nouns, namely *-i/-o*, *-e/-i*, *-e/-u*, and *-i/-u*. The case with deverbal suffixes *-i/-o* takes 72% of 29 verbs, e.g., *imba* "sing" - *muimbaji* "singer", *uimbaji* "singing", *wimbo* "song"; *kimbia* "run" – *mkimbiaji* "runner" – *kimbilio* "asylum". The case is more productive in disyllabic verbs than in trisyllabic as well as monosyllabic verbs. The other observation shows that three different deverbal suffixes take one

verb stem to derive three different nouns, e.g., *umba* "create" – *muumbaji* "creator"; umbo "shape" – *umbu* "sister/brother". However, the case is not productive.

Based on the number of actual words formed according to a certain pattern parameter, the observation shows that deverbal suffixes *-i* and *-o* derive 85% of 234 nouns, e.g., *piga* "beat" – *pigi* "small piece of medicinal stick", *pwaga* "polish grains" – *pwaguzi* "skilled cheat", *umba* "create" – *muumbaji* "creator". Following a large number of actual verbs to be formed, these suffixes are hence more productive than other suffixes.

However, the type-frequency parameter shows that the deverbal suffix *-o* has been repeated in 65% of 149 verb stems, e.g., *tikisa* "shake" – *mtikiso* "shaking", *nyonga* "strangle" – *nyongo* "bile", *pekecha* "drill" – *pekecho* "drilling", *rekebisha* "adjust" – *marekebisho* "adjustment". This is a higher frequency due to its presence in a large number of verb stems, making it more productive than other deverbal suffixes in this verb cluster.

5.2. Application of Deverbal Suffixes to Inchoative Verbs

The data shows that the deverbal suffix *-i* derives more theme than patient nouns. Deverbal suffixes *-o* and *-e* derive only theme nouns. Likewise, the deverbal suffix *-u* derives more theme nouns than patient nouns. therefore, deverbal suffixes *-i*, *-e*, *-o* are more productive in deriving theme nouns than patient nouns, and the deverbal suffix -i is more productive in deriving patient nouns than the deverbal suffix *-u*.

Moreover, the observation shows that deverbal suffix *-i* with its realizations takes 65 (42%) verbs, e.g. *amka* "wake up" – *maamkizi* "greetings", *amua* "decide" – *mwamuzi* "judge". Deverbal suffixes suffix -e with no realizations takes 6 (4%) verbs, e.g. ganga "cure" – *gange* "limestone", *komba* "wipe sth clean" – *kombe* "shellfish". Deverbal suffix *-o* with its realizations takes 123 (79%) verbs, e.g. *amka* "wake up" – *mwamko* "awakening", *apa* "take an oath" – *kiapo* "oath". Derivational suffix *-u* with its realizations takes 22 (14%) verbs, e.g., *choka* "be tired" – *mchovu* "person who is tired", *ajabia* "wonder" – *maajabu* "wonder", *amini* "believe" – *uaminifu* "trustworthy", *angaza* "give light" – *uangavu* "state of being transparent". From the above observations, two conclusions have been reached: Based on the morphological realizations, the deverbal suffixes *-i* and *-o*, are more productive than deverbal suffixes *-e* and *-u*. Based on the number of verbs taken by a single suffix, deverbal suffix *-o* takes a large number of verbs, hence it is more productive than derivational suffixes *-e*, *-i*, and *-u*.

Similarly, there are five (5) cases where two derivational suffixes are used on the same verb stem to derive different nouns, namely *-i/-o*, *-e/-i*, *-e/-o*, *-o/-u*, and *-i/-u*. These cases differ from one another in terms of the number of verbs each one takes. The case with deverbal suffixes *-i/-o* takes 65% of 31 verbs, e.g., *ambukiza* "infect" – *maambukizi* "state of being infected" – *maambukizo* "infections"; *amka* "wake up" – maamkizi "greetings" – *mwamko* "awakening"; *chuma* "pluck" – *uchumi* "economy" – *mchumo* "plucking". This reveals higher productivity in deriving nouns. Hence, this case is more productive than other cases. In addition, this case takes more polysyllabic verb stems than disyllabic and monosyllabic verb stems.

Based on the number of actual words formed according to a certain pattern parameter; deverbal suffixes *-i* and *-o* derive 88% of 216 nouns, e.g., *amka* "wake up" – *maamkizi* "greetings"; *mwamko* "awakening", *amua* "decide" – *mwamuzi* "judge", *apa* "take an oath" – *kiapo* "oath", *babaika* "be confused" – *mbabaiko* "confusion". These suffixes derive a large number of actual words, making them more productive than other deverbal suffixes. Likewise, the deverbal suffix *-o* has been repeated in 79% of 156 verb stems, e.g., *badili* "substitute" – *mabadiliko* "alteration", beza "scorn" – bezo "scorn", bomoka "collapse" – *mbomoko* "remains of building ruins", chemka "boil" – mchemko "boiling" indicating its higher frequency and productivity than other suffixes. This reveals its higher frequency as it is repeated in a large number of words in a corpus. Therefore, it is more productive than other deverbal suffixes.

5.3. Application of Deverbal Suffixes to Stative Verbs

The data shows that the deverbal suffix *-i* derives both patient and theme nouns. This means that the deverbal suffix *-i* is very productive in deriving both patient and theme nouns. Deverbal suffixes *-o*

and *-e* are primarily deriving theme nouns. The deverbal suffixes *-i*, *-e*, *-o*, *-u* are more productive in deriving theme nouns than patient nouns, indicating that the deverbal suffix *-i* is more productive in both cases.

Deverbal suffixes *-i* with 6 realizations take 32% of 197 verb stems, e.g., *adidisha* "cause to count" mwadidishaji "person who causes to count" and the suffix *-o* with 5 realizations take 72% of 197 verb stems, e.g., *kumbuka* "recall/remember" – *makumbusho* "memorial". Deverbal suffixes *-e* takes 9% of 197 verb stems, e.g. *zuga* "dupe deceive" – *zuge* "puppet" (cl.5); *pemba* "deceive", "outwit" – *pembe* "horn"; "corner" (cl.5) and *-u* with 3 realizations taking 11% of 197 verb stems, e.g., *kosesha* "make someone miss something" – *mkosefu* "person who does wrong". There are two observations here: Based on the morphological realizations, the deverbal suffix *-i* is more productive than others. Based on the number of verbs taken by a single suffix, the deverbal suffix *-o* is more productive than others.

There are six (6) cases where two derivational suffixes are used on the same verb stem, resulting in different nouns, namely *-i/-o, -e/-i, -e/-u, e/o, o/u*, and *-i/-u*. The case with deverbal suffixes *-i/-o* takes 76% of 42 verb stems, e. g., *foka* "boil over" – *mfokaji* "person who spurts out"; *foko* "plenty", *anza* "start/begin" – *mwanzilishi* "founder"; *mwanzo* "beginning", *alika* "invite" – *mwalishi* "person who invites"; *mwaliko* "invitation" which makes it more productive in deriving nouns. This case is more productive in disyllabic verbs than in polysyllabic verb stems.

Based on the number of actual words formed according to a certain pattern parameter, deverbal suffixes *-i* derive 54% of 264 nouns, e.g., *adidisha* "cause to count" – *mwadidishaji* "person who causes to count", *anza* "start" – *mwanzilishi* "founder". This is a large number of nouns to be formed by it. Hence, it is more productive than other suffixes. The deverbal suffix *-o* is repeated in 53% of 197 verb stems, e.g., *kadiria* "estimate" – *kadilio* "estimation", *kaga* "protect by charm" – *kago* "charm", indicating higher frequency and productivity. This suffix is more productive than other deverbal suffixes due to its large number of repetitions in different verb stems.

6. Conclusions

It is observed that deverbal suffixes take more trisyllabic verb stems than disyllabic and monosyllabic verb stems to derive nouns. Similarly, there are new morphological shapes which have not been identified in previous works. These shapes are *-ko, -zo, -no, -sho* for a deverbal suffix, *-o* and *-ni* for a deverbal suffix *-i*. Additionally, the deverbal suffix *-i* derives nouns for three thematic roles which are agentive, patient, and theme roles while deverbal suffixes *-e* and *-o* derive nouns with two thematic roles: theme and patient.

Derivational suffixes have different productivity levels depending on the type of verb cluster used. Based on the morphological shapes of an individual suffix, the deverbal suffix *-i* is more productive than other suffixes in all verb clusters. The deverbal suffix *-o* is highly productive in activity and stative verb clusters, while the suffix *-u* is productive in inchoative and stative verb clusters. The deverbal suffix *-e* is productive in stative and activity verb clusters based on the number of actual words formed by an individual suffix and the repetends of an individual suffix to the verb stems. Based on cases where two different deverbal suffixes are used in a single verb stem to derive different nouns, the case comprising deverbal suffixes *-i/-o* is productive in all verb clusters. However, the resultant deverbative verbs in Kiswahili retain their original semantic content.

REFERENCES

Baayen 1993: Baayen, H. On frequency, transparency and productivity. In *Yearbook of morphology*, Boston, MA: Kluwer, 181– 208.

Baayen & Lieber 1991: Baayen, H. & Lieber, R. Productivity and English derivation: A corpus-based study. *Linguistics*, 29: 801– 844.

Batibo 1998: Batibo, H. M. Root affixation rules in Zairean Swahili as evidence for earlier Bantu rules. *Kiswahili*, 55: 58–70.

Beard 1998: Beard, R. Derivation. In *The handbook of morphology*, Oxford: Blackwell, 44–65.

Bauer 2003: Bauer, L. *Morphological productivity*. Cambridge: Cambridge University Press.
Booij 2005: Booij, G. *The grammar of words: An introduction to linguistic morphology*. Oxford: Oxford Univesity Press.
Botne 2006: Botne, R. *A grammatical skecth of the Lusaamia verb*. Cologne: Ruediger Koeppe Verlag.
Fleisch 2000: Fleisch, A. *Lucazi grammar: A morphosemantic approach*. Cologne: Ruediger Koeppe Verlag.
Haspelmath & Sims 2010: Haspelmath, M. & Sims A. D. *Understanding morphology*. New York: Routledge.
Kahigi 2005: Kahigi, K. The Sisumbwa noun: Its classes and derivation. *Occasional Papers in Linguistics*, 1:117–151.
Katamba 2003: Katamba, F. Bantu nominal morphology. In *The Bantu languages*, London: Routledge, 103–120.
Katamba & Stonham 2006: Katamba, F. & Stonham, J. *Morphology*. London: Palgrave Macmillan.
Kershner 2002: Kershner, T. L. *The verb in Chisukwa: Aspect, tense and time*. Doctoral dissertation, Indiana University.
Khamis 1989: Khamis, A. M. Unominishaji katika Kamusi ya Kiswahili Sanifu. *Mulika* 21, 111–125.
Levin & Rappaport-Hovav 2005: Levin, B. & Rappaport-Hovav, M. *Argument realization*. Cambridge: Cabridge University Press.
Lodhi 2001: Lodhi, A. Y. *The suffixes -fu and -vu in Swahili: A preliminary analysis*. Africa & Asia 1, 35–39.
Krüger 2006: Krüger, C. J. *Introduction to the morphology of Setswana*. Berlin: Lincom Europa.
Lusekelo 2016: Lusekelo, A. Lexical semantics and selection of TAM in Bantu languages: A case of semantic classification of Kiswahili verbs. *International Journal of Society, Culture &Language* 4: 90–102.
Malangwa 2011: Malangwa, P. Athari na dhima ya vijenzi nominal katika vijenzi vya Kiswahili. Kiswahili 74: 28–39.
Mgullu 1999: Mgullu, R. S. *Mtalaa wa isimu: Fonetiki, fonologia na mofologia ya Kiswahili*. Nairobi: Longhorn Publishers.
Mletshe 2017: Mletshe, L. Deverbal nominals derived from intransitive state verbs in isiXhosa: A Generative Lexicon approach. *South African Journal of African Languages*, 37(1): 29–39.
Mpiranya 2015: Mpiranya, F. *Swahili grammar and workbook*. New York: Routledge.
Mreta 1998: Mreta, A. *An analysis of tense and aspect in Chasu: Their forms and meaning in the affirmative constructions*. Hamburg: LIT.
Persohn 2017: Persohn B. *The verb in Nyakyusa: A focus on Tense, Aspect and Modality*. Berlin: Language Science Press.
Poulos 1990: Poulos, G. *A Linguistic Analysis of Venda*. Pretoria: Via Afrika.
Plag 2002: Plag, I. *Word-formation in English. Cambridge*: Cambridge University Press.
Polomè 1967: Polomè, E. C. *Swahili language handbook*. Washington: Center for Applied Linguistics.
Poulos & Msimang 1998: Poulos, G. & Msimang, C. T. *A linguistic analysis of Zulu*. Cape Town: Via Afrika.
Rappaport-Hovav, Doron & Sichel 2010: Rappaport-Hovav, M., Doron, E. & Sichel, I. *Introduction. In Lexical semantics, syntax and event structure.* Oxford: Oxford University Press, 1-18.
Rugemalira 2014: Rugemalira, J. Noun formation in Mashami. *Journal of Linguistics and Language in Education*, 8: 1–23.
Schadeberg 1992: Schadeberg, T. C. *A sketch of Swahili morphology*. Cologne: Rüdiger Köppe Verlag.
Schadeberg 2001: Schadeberg, T. C. Number in Swahili grammar. *Swahili Forum*, 9: 7-16.
Schadeberg & Bostoen 2019: Schadeberg, T. C. & Bostoen, K. Word formation. In *The Bantu languages*. New York: Routledge, 172–203.
Štekauer & Rochelle 2005: Štekauer, P. & Rochelle L. *Handbook of word-formation*. Dordrecht: Springer.
TUKI 2014: TUKI. *Swahili-English dictionary*. Dar es Salaam: Taasisi ya Taaluma za Kiswahili.