

Phonological Processes Governing Borrowing from English to Lungu, Mambwe, and Namwanga Languages

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Abstract

This article accounts for the phonological processes which govern borrowing from English to Lungu, Mambwe, and Namwanga (LuMaNa) languages. Guthrie (1948) classifies Lungu as M14, Mambwe as M15, and Namwanga as M22. Data were collected using elicitation, comparative, and document analysis methods. The paper employed Lexical Phonology and Morphology, and the comparative Bantu morphophonology theories. The study shows that LuMaNa languages use four major phonological processes to borrow from the English language, namely, epenthesis, sound substitution, metathesis or permutation, and vowel lengthening. Vowel epenthesis is used to create open syllables and break up consonant clusters during borrowing into LuMaNa. Consonant sound substitution is used to modify loanwords through devoicing. LuMaNa languages obey the following general devoicing rules; $\theta/\delta \rightarrow t$, $\theta/\delta \rightarrow f$, $z \rightarrow s$ and defy the rest of the rules. Vowel sound substitution is achieved in LuMaNa through adaptation and nativisation of phonetic approximation. LuMaNa also borrow words through metathesis where two adjacent sounds reshuffle their positions to facilitate ease of articulation. Vowel length is used to borrow words from English to enable words to adjust and fit in the phonology of the target language. The study concludes that LuMaNa have similarities in the application of phonological processes during borrowing.

Keywords: Adaptation; borrowing; epenthesis; nativisation; sound substitution.

1. Introduction

The paper aims to outline the phonological processes that govern borrowing from English to Lungu, Mambwe, and Namwanga languages (henceforth, LuMaNa). This aim is achieved by identifying the phonological processes and discussing the similarities and variations that manifest during borrowing into the three languages. The LuMaNa are Bantu languages that are spoken along the corridors of the Northern and Muchinga Provinces in Zambia. Guthrie (1948) classifies Lungu as M14, Mambwe as M15, and Namwanga as M22. Despite being coded, the LuMaNa languages are less documented, and to the best of our knowledge, no study has been conducted to account for the phonological processes governing borrowing from any source language, a gap that this study intends to bridge. The three languages are said to be genetically related (cf. Greenberg, 2001). Nurse & Philipson (1999) record that the LuMaNa languages originated from Southern Tanzania, whose populace uses Fipa as their mother language.

Borrowing, as evident in the literature is synonymous with loanwords and many scholars agree that loanwords or borrowed words are words that are taken from one language and used by another language (cf. Thomason & Kaufman, 1988; Myers-Scotton, 2006). Borrowings or loanwords are described as words that are borrowed, more like stolen or a kind of copying since borrowed words are never returned to the donor language (cf. Trask, 1996). However, prominent linguists have distinguished between borrowings and loanwords. Haugen (1950:212) defines borrowing as, “the attempted reproduction in one language of patterns previously found in another”, while loanwords “are only one type of borrowing.” Heath in Mesthrie (2001) believes that the two terms express different notions and suggests that a borrowed word is a stem and not a complete lexical item or in other cases, it can be more than that. That is, a borrowed word can even constitute a full phrase, whereas loanwords are always single words. Nonetheless, Myers-Scotton (2006) states that both loanwords and borrowings describe the same linguistic function. In other

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words, loanwords and borrowings are words that are loaned by one language, which is the donor language to another which acts as the recipient language.

On the other hand, Bloomfield (1933) posits that the process by which a foreign word becomes a loanword is gradual. From the point of view of Bloomfield (1933) and Sankoff et al (1990), proper loanwords are typically regarded as being phonologically, morphologically, and grammatically integrated into the host language. Fantini (1985) identifies two levels of borrowing, namely, pure and adjusted borrowing. Pure borrowing is the process in which the word retains all its native features while adjusted borrowing is a situation where the word adapts to the structural criteria of the host language (Fantini, 1985). Due to phonological variations between English and the LuMaNa languages, it can be argued that most of the borrowed words fall under adjusted borrowing. According to Bloomfield (1933) and Olmsted (1986), there are three levels of linguistic integration during borrowing, namely, words used but retaining foreign phonology, words partially integrated into the borrowing language, and words fully integrated and indistinguishable.

2. Literature Review

Boen (2014) posits that various phonological processes govern borrowing and these phonological processes can be grouped into two broad categories, namely, the vowel and consonant processes. This implies that when a word is borrowed from a source language, it undergoes certain changes to fit into the phonological system of the recipient language. These changes may result in either the phonological composition of the loanword being modified or the loanwords getting assimilated into the recipient language while preserving the original form and pronunciation of the source language. Adaptation of loanwords involves the resolution of conflicting demands to preserve as much information from the source word as possible while still satisfying the constraints that make the lexical item sound like a word of the target language (cf. Davidson & Noyer, 1996; Kenstowicz, 2006; Adler, 2006).

The source of language borrowing is also called the native language while the target language is also referred to as the recipient language. Therefore, the sources of language borrowing in LuMaNa languages include English language, Swahili, and part of Fipa in Tanzania. However, the biggest proportion of borrowing in LuMaNa languages is from the English language because Zambia was once a colony of Britain. After independence in 1964, Zambia adopted English as the medium of instruction from Grade One to tertiary education and this is the main reason that makes the local Zambian languages such as LuMaNa borrow from the English Language. The English language subsequently became the national official language for use in schools, business, politics, and administration (cf. Banda & Bellononjengele, 2010; Siame et al, 2023). The LuMaNa languages are also likely to borrow nominal structures from Swahili and Fipa because these two languages are at the periphery of the Northern part of Zambia along the corridor of Tanzania (Nurse & Philippson, 1999). As stressed by Nurse and Philippson (1999), LuMaNa is also likely to borrow from Fipa since it is their ancestral language in Southern Tanzania. The paper distinguishes two major ways of borrowing in languages, namely, direct and indirect ways.

According to Katamba (1994), direct borrowing is when the borrowing is transferred directly from the source language to the target or recipient language. Words that are borrowed directly from the source language undergo fewer phonological changes from one transliteration as opposed to multiple transliterations in indirect borrowing. Consider the illustrations below which express direct borrowing:

- (1) English: clinic /klinik/ → LuMaNa: [kiliniki]
- (2) Swahili: baba /baba/ → Namwanga: [baba]

In the above demonstrations, the first entry is the source language while the second is the target language. Based on examples (1-2), we can infer that direct borrowing either captures the exact source word or sound into the target language as it is phonetically presented. Direct borrowing occurs when a word introduced in the target language maintains most of its morphological and semantic properties as it appears in the source language. This is confirmed by Fromkin et al, (2003) who argue that a language may borrow a word directly and this implies that the borrowed item is a native word in the donor language. Therefore, during direct borrowing, the morphology and semantics are maintained.

On the other hand, indirect borrowing of a target language receives a loanword from a source language through another language or languages. Hock (1986) observes that indirect borrowing from the source or native language requires an intermediary language before it reaches the target language as illustrated in the example below:

(3) Arabic/Spanish: [algebra] → English [algebra] → LuMaNa [aujebula]

Example 3 projects that indirect borrowing requires an intermediary language before it reaches the target language. This means that in indirect borrowing, the word is borrowed via another language. In example (3), Arabic or Spanish is the source language from which the word algebra is indirectly borrowed through the English language to LuMaNa languages. Therefore, the English language acts as a conveyor belt of indirect borrowing from the source language.

3. Aim and objectives

The purpose of this article is to contribute to descriptive and documentary linguistics by conducting a comparative analysis of phonological processes that govern borrowing from English language to Lungu, Mambwe and Namwanga languages. The above aim is achieved by accounting for the following objectives:

- a) To identify the phonological processes that govern borrowing from English language to Lungu, Mambwe and Namwanga languages; and
- b) To establish the effects of phonological processes during borrowing from English language to Lungu, Mambwe and Namwanga languages.

4. Theoretical Framing

The paper is informed by Lexical Phonology and Morphology (LPM), and the comparative Bantu morphophonology frameworks. The paper adopts the LPM framing as attested by scholars such as (Chomsky & Halle, 1968; Kiparsky, 1973; and Katamba, 1989). Chomsky & Halle (1968) claim that LPM grew out of the Sound Pattern of English (SPE) as a refinement of the structure of the phonological and morphological components of grammar. The roots of Lexical Phonology go back to Kiparsky (1973), Mascaró (1976), Halle (1978), and Rubach (1981). Lexical Phonology is a theory of rules and derivations. It is a theory of rules because it claims that rules are universally of three types, namely, cyclic rules, post-cyclic rules, and post-lexical rules. It is a theory of derivations because it claims that how the derivation is organized is crucial to the phonological analysis. In particular, some derivations proceed in steps called cycles while others do not. Non-cyclic derivations are of two types: word-level derivations and post-syntactic derivations.

Lexical Phonology is an extreme embodiment of Chomsky's (1970) lexicalist hypothesis because it claims that all word formation, including inflection, takes place in the lexicon. Furthermore, word formation rules (WFR) interact with a subset of phonological rules called cyclic rules. This interaction is possible, because cyclic rules, like WFRs, are placed in the lexicon, so they are called lexical rules. An important feature of this theory is that other than the morpheme where phonological processes such as substitution, adaption, and vowel length occur, it is the word that is regarded as the key unit of morphological analysis. Proponents of the LPM theory claim that there is a symbiotic relationship between the rules that build the morphological structure of a word and the phonological rules responsible for the way a word is pronounced. This is the centre of the present study which requires the identification of phonological processes, rules, or principles that govern borrowing from English to LuMaNa languages. Katamba (1989) shows that the phonological and morphological rules are found in the lexicon where they are organized in blocks (also known as strata) which are arranged hierarchically.

The paper also adopts the comparative Bantu morphophonology framing to account for similarities and variations in the application of phonological processes during borrowing from English to LuMaNa languages as attested by scholars such as Hyman & Mtenje (1999), Bickmore (2004), Mkochi (2017), Mtenje-Mkochi & Mtenje (2019). The absolute expectation is that the three genetically related Bantu languages analysed in this paper are likely to manifest similarities in the phonological processes governing borrowing as well as some variations due to different language-specific morphophonological processes coming into play. This shows that there could be some peculiar variations in LuMaNa languages during borrowing. These variations may occur as a result of the effects of the morphophonological processes acting on the morphological structure of LuMaNa languages. The variations in the LuMaNa languages may also be linked to time and space as the languages are not spoken within the same geographical positions. Nonetheless, Bantu languages such as LuMaNa have morphophonological variations even within the same language cluster. The similarities and variations of phonological processes governing borrowing from English to LuMaNa languages have been discussed in this paper.

5. Methods and Approaches

The study used the qualitative approach which is non-numerical and subjective (Brink and Wood, 1998). The comparative method was also used to account for the phonological processes which govern borrowing from the English language to LuMaNa languages (cf. Fox, 1995). In addition, elicitation and document analysis methods were employed to collect substantial data.

Data were collected from the Northern Province in the Mpulungu district where the Lungu language is spoken as well as Mbala and Senga districts where native speakers of the Mambwe language are located. The study also targeted the Isoka and Nakonde districts in Muchinga Province where the native speakers of the Namwanga language are found. Each language had three informants for data collection as well as verification.

Being a descriptive study, the collected data were analysed thematically using descriptive and analytical skills to justify the phonological processes governing borrowing from English to LuMaNa languages. Data analysis went hand in hand with data collection (cf. Mugenda & Mugenda, 1999). Being a speaker of the LuMaNa languages, the lead author applied intuitive knowledge of linguistics to determine similarities and variations in the application of phonological processes during borrowing. Furthermore, the analysis of the application of phonological processes during borrowing was subjected to meaning based on the researchers' perceptions, intuitions, and research objectives (cf. Merriam, 1998).

6. Results and Discussion

The loanword is usually completely nativised so that the speakers of the target language are aware that the word is borrowed from the source language. To achieve the above notion, all the applicable phonological rules are applied in almost all environments. The phonological rules are represented as if all the loanwords have been taken straight-forward from the source language. Some of the phonological processes that have been discussed here as far as borrowing is concerned include epenthesis, sound substitution, metathesis, and vowel length.

6.1. Epenthesis in LuMaNa Languages

Epenthesis is a broad term that is used when any vowel or consonant is inserted into the consonant clusters. According to Fleischhacker (2001:1), 'Vowel epenthesis is a widespread and well-known means of resolving consonant clusters'. This is supported by Chikanza (1986), Katamba (1989), Zivenge (2005), and Kadenge (2007) who argue that vowel epenthesis is a very common phonological process in loanword adaptation. Therefore, epenthesis is the insertion of a phoneme which can either be a vowel or a consonant to meet the phonotactic constraints of the target language.

According to Kadenge (2007), vowels are epenthesised either to satisfy syllable structure requirements or to break up impermissible consonant clusters in the recipient language. This is in tandem with Repetti (2012) who posits that an epenthetic phoneme is a vowel that is inserted into a phonological environment to repair either a marked or impermissible structure. Kangwa (2020) adds that an epenthetic vowel in a given language is usually assumed to be a default vowel, defined as the unmarked or perceptually least salient vowel. Unlike vowel epenthesis, consonant epenthesis is usually inserted between a vowel and a consonant and forms a consonant cluster.

It is, therefore, vital to state that the phonotactic patterning of LuMaNa languages differs from the source or native languages such as English, Swahili, and Fipa languages. Since the source language and the target language are likely to have different syllable structures, the loanwords that contain sequences of sounds that are not otherwise attested in a recipient language are modified to fit the phonotactic patterning of the recipient language. Subsequent headings present how vowel and consonant epenthesis is applied in LuMaNa languages.

6.1.1. Vowel Epenthesis to Create Open Syllables in LuMaNa Languages

The study shows that vowels that are epenthesised words finally when English words are borrowed into LuMaNa languages are inserted to convert the closed English syllables into open LuMaNa syllables. The above is meant to modify the borrowed English words to fit into the canonical CV structure of LuMaNa varieties. The above expression implies that a vowel is introduced to a word that ends in a consonant during borrowing to create an open syllable. Hock (1991) describes this kind of process as paragogic vowel epenthesis as illustrated below:

(4) English: /nʌt/ 'nut' → LuMaNa: [naati]

(5) English: /steɪk/ 'steak' → LuMaNa: [siteeki]

Examples (4-5) demonstrate that when English words with closed syllables are borrowed into LuMaNa languages, the final vowel epenthesis occurs to avoid syllable codas which are considered stray consonants in the LuMaNa phonological structure. It can be argued that vowel epenthesis helps in fitting the borrowed English words with closed syllables into the canonical syllable structure of LuMaNa as the target language to maintain the CV structure.

Based on examples (4-5), the study also reveals that monosyllabic English words become disyllabic when borrowed into LuMaNa varieties because of the word-final vowel epenthesis. The analysis correlates with Doke (1931) and Kadenge (2007) who posit that the above process satisfies the disyllabic word requirement which demands that all words in Bantu languages except for locative prefixes and conjunctions should have at least two syllables.

6.1.2. Vowel Epenthesis to Break up Consonant Clusters in LuMaNa Languages

This is the process where the source words, such as English that have consonant clusters are borrowed into a target language and receive a vowel to break up the clusters. Kangwa (2020) opines that the word medial vowel epenthesis is motivated by the fact that Bantu native phonology does not allow consonantal clusters. The illustrations below show the phonological environments where vowels are epenthesised to resolve consonantal clusters in the English language during borrowing into LuMaNa:

(6) English: /klə:k/ 'clerk' → LuMaNa: [kalaaliki]

(7) English: /klnɪk/ 'clinic' → LuMaNa: [kiliniki]

Based on examples (6-7), the study establishes that LuMaNa languages allow a maximum of a single consonant to function as an onset in their syllable structure. The study also reveals that English words with consonantal clusters such as /kl/, /br/, and /fl/ are not permissible in LuMaNa languages. The above analysis implies that when words with the above consonant clusters are adapted into LuMaNa languages such as in (6), the English clusters are broken up through vowel epenthesis to violate the phonotactics requirements of LuMaNa native phonology which does not allow consonantal clusters. Therefore, the number of syllables in borrowed words such as in LuMaNa languages increases due to vowel epenthesis. This can be observed in the English word /klə:k/ in example (6) which is monosyllabic but becomes quadrisyllabic in the LuMaNa word [ka-laa-li-ki] to meet the phonological requirements in Bantu languages of syllable formation.

6.2. Sound Substitution in LuMaNa Languages

When words are borrowed from one language to another, certain sounds may be substituted by others. Different factors lead to the substitution of sound segments in borrowed words. Among these factors is substitution which occurs because of the lack of the equivalent sound segments in the recipient language. The sounds and forms which are incompatible with the sound segments of the recipient language are replaced by native ones. This type of substitution seems to be triggered by the native segment inventory constraint (Madiba, 1994). In terms of this constraint, foreign sounds which do not occur in the recipient language sound inventory are barred from occurring and are, therefore, substituted by native ones. Substitution during borrowing occurs using both consonants and vowels as discussed below.

6.2.1. Consonant Substitution in LuMaNa Languages

Substitution is a process that takes place during borrowing and involves substituting consonants in the source language with others in the target language. The substitutions of consonants during borrowing are influenced by phonetic factors. In most cases, there are close similarities between the source language, such as the English sounds, and the target language. The replacement of consonants which are part of the sound inventory of the source language with different ones may be explained regarding the environment in which that sound occurs. Based on the collected data, it is vital to state that most of the stop cluster sounds remain unchanged during borrowing in LuMaNa languages.

Hussain et al, (2011) posit that substitution is a general tendency to preserve sounds from deletion and it tries to reshape the word closer to the input form. Hussain et al, (2011) add that some sound combinations are not allowed in the recipient language hence, they undergo certain adaptations. During the substitution of a consonant, an item is replaced with the phonetically-close phoneme in the recipient language which is usually associated with the absence of equivalents in the target language (Hock, 1991). Antila (1972) argues that accounting for the absent segments or phonemes requires the assignment of the closest bundle in the first or recipient language. The above expression

implies that when a particular segment is not present in the recipient language, such as in LuMaNa, then a bundle that is close to the phoneme should be used to substitute it during borrowing. Since target and source languages most often do not have the same inventory of sounds, the phonetically closest sound is substituted.

Therefore, the sounds in the loanwords are modified by consonant sound substitutions through devoicing. Collins English Dictionary (2016) states that devoicing is the process by which a consonant that is usually voiced becomes devoiced. The table 1 shows devoicing rules during borrowing concerning LuMaNa languages.

Table 1. Consonant sound substitution by devoicing in LuMaNa varieties

S/N	Source language	Source word	Target language	Target word	Devoicing rule
a	English	deacon	LuMaNa	[diikoni]	*d→t
b	English	doctor	LuMaNa	[ndokotala]	*d→t
c	English	gate	LuMaNa	[geeti]	*g→k
d	English	vest	LuMaNa	[vesiti]	*v→f
e	English	junior/ dʒu:niə(r)	LuMaNa	[njuunya]	*dʒ → tʃ
f	English	catholic /ˈkæθlɪk/	LuMaNa	[kaaʔolika]	θ / ð → t
g	English	three /ˈθri:/	LuMaNa	[fili]	θ / ð → f
h	English	size	LuMaNa	saiʒi	z → s

The above general devoicing rules are adapted from Hock (1991). Based on Table 1, the asterisk (*) shows that the general rule of devoicing is not applicable in LuMaNa languages when borrowing from the English language. In example (a), the rule for /d/ devoicing during borrowing states that /d/ which is not preceded by a nasal should be realised as /t/ in the target language thereby substituting the consonant [d] with [t]. The rule is phonetically presented as d→t. However, LuMaNa languages defy the above rule by maintaining the consonant in the source word. In addition, example (b) shows that in situations where /d/ is preceded by a nasal in LuMaNa, the target language, the above devoicing rule is not applicable.

Example (c) illustrates the /g/ devoicing rule which projects that when English is the source language, /g/ should be realised as /k/ in LuMaNa languages. However, the study shows that LuMaNa varieties do not substitute /g/ with /k/ during borrowing but maintain /g/ which is used in the native language. The study also shows in example (d) that LuMaNa languages do not obey the /v/ devoicing rule which states that when English is a source language, /v/ should be realised as /f/ in the target language. Therefore, LuMaNa languages maintain /v/ sound instead of /f/.

Example (e) illustrates /dʒ/ devoicing rule which suggests that in English as a source language, /dʒ/ should be realised as /c/ in the target language. However, during borrowing, LuMaNa languages maintain the sound /dʒ/ and introduce a nasal [n] before it and this defies the devoicing rule. As evident in example (f), LuMaNa languages obey the /θ/ and /ð/ devoicing rule where the English sounds are realised as either /t/, /f/, or /s/ in the target language. The findings further show that LuMaNa languages obey the /z/ devoicing rule in which the source language (English Language) sound /z/ is substituted with /s/ in the target language

6.2.2. Vowel Substitution in LuMaNa Languages

Studies of other languages such as Holden (1976), Yavas (1982), Steinbergs (1984), and Silverman (1992) have identified different constraints which operate in different languages. Therefore, the native segment inventory constraint prevents the occurrence of any vowel which does not belong to the sound inventory of LuMaNa languages. The substitution of segments appears to be mainly due to phonetic approximation. Hussain et al, (2011) add that substitution is an unmarked process of sound change which is a characteristic of the majority of the languages of the world.

During borrowing from English to LuMaNa languages, there is an adaptation of the central vowel /ʌ/ to /a/. Giegerich (1992) describes this vowel as being unrounded and slightly more back than front as shown in the following examples:

(8) English: upper /ˈʌpə(r)/ → LuMaNa: [aapa]

(9) English: umbrella /ˈʌmˌbrɛlə/ → LuMaNa: [ambulela]

Examples (8-9) show that the English vowel /ʌ/ is realised as /a/ in LuMaNa languages. It can be argued that during the articulation of /ʌ/ and /a/ vowels in LuMaNa languages, there is no rounding of lips. Although the English vowel is produced at a slightly higher level, the study reveals that both are low vowels. Therefore, we can infer that the

choice of the vowel /a/ in the LuMaNa language as a substitute for the English vowel /ʌ/ is determined by phonetic approximation.

The second illustration of the substitution of vowels concerns the back centralised high vowel /ʊ/. The English vowel /ʊ/ is substituted by the high back vowel /u/ during borrowing into LuMaNa languages. As evident in the literature, the English vowel /ʊ/ and the Bantu languages vowel /u/ share all phonetic features (Giegerich, 1992), except that /ʊ/ is more centralised and this makes the derivation process plausible as shown in the following examples:

(10) English: book /bʊk/ → LuMaNa: [buuku]

(11) English: full /fʊl/ → LuMaNa: [fuulu]

In examples (10-11), the substitution of the English vowel /ʊ/ by /u/ in LuMaNa varieties can be explained with special reference to phonetic similarities between the two vowels. It can be argued that both /ʊ/ and /u/ vowels are produced with the back part of the tongue and they also share the features [high] and [round], though to varying degrees (cf. Giegerich, 1992). It should be noted that in most cases when /ʊ/ is integrated in LuMaNa languages, it is lengthened as can be seen in examples (10-11).

The study also reveals that in many of the loanwords, the English vowel /e/ is fully adapted in LuMaNa languages as /e/ as shown below:

(12) English: section /ˈsekʃn/ → LuMaNa: [sekisheni]

(13) English: cheque /tʃek/ → LuMaNa: [ceki]

The analysis in examples (12-13) shows that there is full nativisation of the vowel /e/ from the source language to the target language which is in tandem with Giegerich (1992). This shows that both the form and sound of the middle front vowel /e/ are maintained in the source and target languages.

The study further shows that the English central vowel /ɜ:/ is usually adapted as /e/ in LuMaNa loanwords as shown in the example below:

(14) English: skirt /skɜ:t/ → LuMaNa: [sikeeti]

The example above shows that the English vowel /ɜ:/ is substituted by /e/ in LuMaNa loanwords. The substitution in example (14) is due to two sounds that are phonetically close to each other. In addition, the findings reveal that the two sounds are both mid-vowels and are produced without lip-rounding.

The high front English vowel /i/ is mostly realised in LuMaNa loanwords as /i/. LuMaNa varieties undergo some cases of partial nativisation for this vowel as shown below:

(15) English: battery /ˈbætri/ → LuMaNa: [batili]

(16) English: army /ˈɑ:mi/ → LuMaNa: [aame]

The above examples demonstrate that the high front vowel /i/ in English which is realised as [y] is adapted as either /i/ in example (15) or /e/ in (16) during borrowing in LuMaNa languages.

6.3. Metathesis of Segments in LuMaNa Varieties

Batibo (2000) shows that metathesis which is also known as permutation is the process in which two adjacent sounds exchange positions. This phonological process usually occurs to facilitate ease of articulation. The findings confirm that the order of English sounds is changed when the word is borrowed into LuMaNa languages as shown in the example below:

(17) English: shovel → LuMaNa: [fosholo]

Example (17) shows that the syllable /sho/ which is in the first position in the noun *shovel* (an English word) takes the second position when it is borrowed into LuMaNa languages. Similarly, /fo/ which is in the second syllable of that same English word reshuffles to the first position in LuMaNa languages. This feature is not common to bilingual speakers who have the knowledge of English phonology and do not rely on just the perception of English words, but it is common in monolingual speakers (for example LuMaNa) who misperceive consonant combinations which are not identical to their mother tongue (L1) (cf. Batibo, 2000). Due to the above phonological challenge, metathesis makes LuMaNa speakers find it easy to pronounce nouns using the reversal of sounds.

6.4. Vowel Lengthening

Vowel lengthening can be described as a phonological process that demands an expression of the number of vowels in a particular word in the target language (Siame and Banda, 2021). Based on the above principle, we observed that LuMaNa languages use long vowels during borrowing. Below are instances where the doubling of vowels takes place:

(18) English: mirror /'mirə(r)/ → LuMaNa: [miila]

(19) English: window → LuMaNa: [iwiindo]

When loanwords from English are borrowed into LuMaNa languages, they adjust to fit in the phonology of the target language. The analysis reveals that example (18) expresses the influence of primary stress on the source word concerning long vowels. The implication of this is that when English words with primary stress are borrowed into LuMaNa languages, the stressed syllables in the source language are realised by long vowels in the target language.

On the other hand, example (19) reveals that vowel length is expressed on vowels after the semi-vowel [w] in the target language. The above analysis shows that LuMaNa languages conform to MoE (1977) which states that the vowel after the semi-vowel [w] is always long. The same principle applies to an instance where the glide /w/, during borrowing, comes into existence due to coalescence.

7. Conclusion

The researchers have presented and analysed the phonological processes which govern borrowing from English to LuMaNa languages. LuMaNa languages undergo both direct and indirect borrowing. The paper has outlined the four major phonological processes which the LuMaNa languages adopt when borrowing from the English language, namely, epenthesis, sound substitution, metathesis or permutation, and vowel lengthening. Vowel epenthesis is used to create open syllables and break up consonant clusters during borrowing into LuMaNa languages. Consonant sound substitution is used to modify loanwords through devoicing whilst LuMaNa languages obey the following general devoicing rules; $\theta / \delta \rightarrow t$, $\theta / \delta \rightarrow f$, $z \rightarrow s$ and defies the following rules; $*d \rightarrow t$, $*g \rightarrow k$ and $*dʒ \rightarrow tʃ$.

On the other hand, vowel sound substitution is achieved in the three Bantu languages through adaptation and nativisation of phonetic approximation. LuMaNa languages also borrow words from English through metathesis where two adjacent sounds reshuffle their positions to facilitate ease of articulation. Furthermore, the three languages use vowel length to borrow words from English, a situation that enables words to adjust and fit in the phonology of the target language. Therefore, the study concludes that LuMaNa languages have similarities in the application of phonological processes during borrowing from English.

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