A Phonological Analysis of Borrowed Nouns from Luganda to Kupsabiny

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ABSTRACT

This paper aims at discussing the phonological patterns exhibited by nouns borrowed from Luganda to Kupsabiny languages spoken in Uganda. Hence the study focuses on answering the research question: how do the phonological patterns of borrowed nouns from Luganda manifest in Kupsabiny? The analysis is cast within the tenets of Optimality Theory (OT) by Prince and Smolensky (1993). Data for analysis was drawn from different sources including elicitation through interviews, focus group discussions and recording of speeches. Findings indicates that borrowed nouns undergo phonological modifications to conform to Kupsabiny's phonetic inventory. First, Luganda's syllable structures are either simplified or altered to fit Kupsabiny's permissible syllable patterns through alteration of consonant clusters, vowel harmony, reduplication, lengthening of vowels, vowel substitution, consonant modification and syllable structure adjustment. Moreover, there is a notable difference in the phonological systems of these two languages as the nouns transform from Luganda to Kupsabiny. Notably, OT's Faithfulness Constraints preserve the original structure of the borrowed word by minimizing alterations in syllable structure, and segmental composition. However, due to phonotactic differences between Luganda and Kupsabiny, modifications occur to align borrowed words with Kupsabiny's phonological system. Therefore, there is a need to maintain detailed records of all borrowed nouns and their integration processes by Kupsabiny specialists. This documentation can serve as a reference for linguists and educators, ensuring consistency in usage and teaching.

Keywords: Alteration, Borrowed, faithfulness constraint, processes, modification

INTRODUCTION

Borrowing is the process of adapting a word from one language for use in another [7]. According to [6], the phenomenon of lexical borrowing significantly impacts and enriches languages. [1] postulate that lexical borrowing normally occurs through various mechanisms such as direct borrowing, adaptation, and calquing. From a historical perspective, the study of lexical borrowing can be traced back to historical linguistics, which aims to understand the origins and development of languages over time [5]. So far, Linguists have developed interest on how languages change and evolve through contact with other languages.

LITERATURE REVIEW

Recent studies on lexical borrowing have dealt with the factors that influence borrowing process. To begin with, [18] investigated language borrowing among Syrians speaking Arabic in the United States by focusing on the Arabization of English Words. He explored how Syrians who speak Arabic in the United States borrow and adapt words borrowed from English, particularly focusing on the phonological patterns exhibited by borrowed nouns. The findings revealed that borrowed English nouns undergo significant phonological changes to conform to Arabic phonological rules. This analysis contributes to our understanding of the phonological adaptation of borrowed nouns and enhances our comprehension of the overall process of linguistic borrowing. However, the study does not examine the phonological changes on borrowed nouns in these languages, particularly concerning stress patterns and intonation. We can gain a deeper understanding of how these borrowed nouns are integrated

into the phonological system of Kupsabiny. The present study therefore addresses the gap in knowledge regarding the role of stress and intonation patterns in the phonological adaptation of borrowed nouns from Luganda to Kupsabiny.

Secondly, [17] examined the phonological processes involved when English words are borrowed into Lungu, Mambwe, and Namwanga (collectively referred to as LuMaNa) languages, which provide parameters under which we make our discussions. These Bantu languages, spoken in Zambia, adapt English loanwords through specific phonological modifications to align with their native phonotactic constraints. The findings show that certain English sounds that do not exist in LuMaNa phonemic inventories are replaced with phonetically similar sounds. For example, the English voiced dental fricatives /ð/ and /θ/ may be substituted with /t/ or /f/, and /z/ may be replaced with /s/. The study employs Lexical Phonology and Morphology (LPM) Theory, which posits that morphological and phonological rules interact within the lexicon during word formation whereas the current study uses Optimality Theory.

Next, [20] examined Swahili words borrowed in Meru language of the North Eastern Tanzania. The study analyzes the phonological characteristics of borrowed nouns which supports the current study in its discussion. The findings reveal that there is a tendency for consonant clusters to be simplified or adjusted in the phonological constraints of the Meru language. This includes the removal of consonant clusters, especially those that are uncommon or difficult to pronounce in Meru. For example, the Swahili word "mkono" (meaning hand) may be simplified to "kono" in Meru. Additionally, there is evidence of vowel deletion or reduction in borrowed nouns. Vowels in certain positions may be deleted or altered to conform to the phonology of the Meru language. This is particularly evident in unstressed syllables, where vowels may be reduced or omitted. For instance, the Swahili word "madawa" (meaning medicine) may be simplified to "mdawa" in Meru. Even though the study analyzes the phonological patterns exhibited by borrowed nouns in the Meru language, it does not provide a broader perspective by comparing these patterns with Kiswahili language, a gap the current study addresses in the contact between Luganda and Kupsabiny Language.

Similarly, [13] focused on the phonological processes observed in borrowed nouns in the Ekegusii language. The focus was on how loanwords from English, Swahili, and other Bantu languages are phonologically adapted and incorporated into Ekegusii. The findings reveal a tendency for loanwords to undergo segmental adaptation, where the phonetic segments of the loanwords are modified or substituted to conform to the phonological inventory and phonotactic constraints of Ekegusii. Examples of segmental adaptations include alterations to consonants and vowels in loanwords. However, it would be beneficial to also examine other phonological phenomena that may arise during borrowing, such as vowel harmony, assimilation, or tonal adjustments, which lacks the exploration in Mose's study. This additional investigation provides a more comprehensive understanding of how loanwords are phonologically integrated into the Ekegusii language, which the current study examines specifically with regards to nouns borrowed from Luganda to Kupsabiny.

Furthermore, study by [14] examined the borrowing of lexical items between English and Gikuyu, focusing on the characteristics of both languages. The emphasis was on borrowing patterns and processes. From the analysis of this study, the nature of the lending language, in this case, English, plays a significant role in determining words that have been borrowed into Gikuyu. This finding is in support of [10], claim that lending languages, which often have extensive vocabularies, have influence over the languages they come into contact with.

OPTIMALITY THEORY (OT)

The study adopts Optimality Theory (OT) as propounded by Prince and Smolensky (1993). This theory was introduced as a framework to assist in Linguistic analysis. This theory was developed by [8] at an introductory level and later advanced by [12]. In OT, constraints are rules or principles that govern linguistic structures and interactions. They can be phonological constraints, morphological constraints, syntactic constraints, or any other type of linguistic constraint.

Each constraint has a set of violable and ranked candidates, and the optimal candidate is the one that violates the fewest constraints. It assumes that languages have a set of competing constraints, and the optimal surface form

is determined by the ranking of these constraints. OT also operates on the principles of Markedness and aithfulness. Markedness constraints indicate what is considered less preferable or less natural in a language, while faithfulness constraints ensure that there is a correspondence between the input and output forms. In order to determine the optimal surface form in OT, a grammarian assigns rankings to constraints based on the data from a particular language or linguistic phenomenon. The analysis involves evaluating various candidate forms and determining which one satisfies the constraints and minimizes violations.

METHODOLOGY

Data collection

There were four interview sessions conducted to collect data. The interviews consisted of a set of open-ended questions that focused on the participants' knowledge, usage, and perception of borrowed nouns from Luganda in Kupsabiny. Probing questions were used to elicit detailed responses and ensure a comprehensive analysis.

Additionally, the study engaged the use of focus group discussion in order to observe the group dynamics and interaction, capturing different perspectives. A predetermined set of topics related to borrowed nouns from Luganda were used as a guide for the discussions. All individual interviews and focus group sessions were audio-recorded to ensure accurate data transcription and analysis. The audio recordings were transcribed verbatim and translated. During the data analysis phase, relevant phonological features and patterns in the borrowed nouns were identified and coded. This coding process assisted in the identification of commonalities and differences in the adaptation of borrowed nouns from Luganda to Kupsabiny.

Research design

In this qualitative study, a descriptive research design was employed to gather information on the phonological status of borrowed nouns from Luganda to Kupsabiny. This design involves investigating the structure of a language through the collection of firsthand data [3]. The design also facilitates discovery in a natural environment, allowing the researcher to gain a detailed understanding by actively engaging with the experiences. By utilizing this design, the study examined the borrowing of Luganda nouns as they naturally exist in Kupsabiny. The researcher interacted with adult proficient speakers of both Luganda and Kupsabiny to collect data through interviews and focus group discussions. The qualitative approach was used to analyze the phonological patterns and processes exhibited by borrowed nouns in Kupsabiny from Luganda in the Kapchorwa District.

Research Site

The study was conducted in Kapchorwa District, located in the Eastern Region of Uganda. This district is known for its linguistic diversity, with the Kupsabiny community being the primary speakers of the language. Specifically, the study focused on the Sabiny people within the Kupsabiny community, who have had extensive contact with Luganda-speaking communities. This interaction is particularly notable in Kapchorwa municipality, where there is a significant presence of Luganda speakers. Over time, this interaction has resulted in the adoption of some Luganda nouns into the day-to-day conversations of the Kupsabiny speakers. The choice of Kapchorwa District as the research site is based on the availability of Kupsabiny-speaking communities with significant exposure to Luganda.

Sampling Technique

Purposive Sampling procedure was used in the selection of the informants who meet the criteria relevant to the research objectives. The researcher selected participants using purposive sampling, guided by the idea that this approach allows them to choose individuals they believe are suitable for the study [4]. The informants consisted of adults aged 18-50 years who have a good understanding of the use of Luganda borrowings in Kupsabiny. Their proficiency in both languages were considered for accurate data collection regarding borrowed nouns. The

decision to focus on adults between 18-50 years assumes that speech is fully developed by adulthood, and older individuals may have less control over their articulators. It is important to note that the upper age limit for the study was set at 50 to minimize potential articulation issues. A sample size of 50 informants were considered, as this is manageable and sufficient to gather qualitative data. Selected individuals were approached and provided with a clear explanation of the study's purpose, ensuring their voluntary participation and informed consent. It should be noted that according to [19], a sample size as low as 24 can still allow for generalization in a study.

Data Analysis

The qualitative approach was used to examine the phonological processes involved in the nativization of the borrowed nouns. It also explored how the selection of the most appropriate form of the borrowed noun occurs, using Optimality Theory. The study analyzed vowel and consonant substitutions, changes in syllable structures, stress patterns, and any other notable phonological adaptations that take place during the borrowing process. Additionally, a comparison was made between the borrowed nouns in Kupsabiny and their original forms in Luganda to identify any similarities or differences in their phonological patterns. This comparison provided insights into the specific adaptations or modifications that occur during the borrowing process.

Phonological Patterns of Borrowed Nouns

Phonological patterns are systematic sound changes that simplify speech. The Faithfulness Tenet of Optimality Theory (OT) is used to analyze the phonological patterns exhibited by adapting borrowed nouns from Luganda into Kupsabiny. The Faithfulness Tenet prioritizes the preservation of input features in the output, but due to the ranking of constraints, some features may change to conform to Kupsabiny's phonological system.

Key Constraints used in the Faithfulness Tenet:

MAX: No deletion of input segments.

DEP: No insertion of new segments.

IDENT[F]: Preserve phonological features of consonants and vowels (e.g., voicing, place of articulation, nasality).

NOCODA: Avoid consonants in syllable codas.

ALIGN-MORPH: Adapt borrowed nouns to fit the Kupsabiny morphological structure.

The integration of Luganda nouns into Kupsabiny involves adaptations that align with Kupsabiny's phonological structures. The provided data reveals key patterns in this borrowing process.

Alteration of Consonant Clusters, and Vowel Harmony

There are phonological changes that occur on the borrowed nouns from Luganda as they tend to conform to Kupsabiny's sound system. This is represented as shown below:

Luganda	Kupsabiny	Gloss
Olupapula	Papureet	Paper

From the data above, when borrowing from Luganda into Kupsabiny, there is an alteration of consonant clusters, and vowel harmony is applied to ensure the borrowed word fits the phonological system of Kupsabiny. Table 7 illustrates a comparative phonological transformation that showcases how these processes take place in Kupsabiny.

Table 7: Comparative phonological transformation on consonant cluster and vowel harmony

Luganda	Phonemic Breakdown	Kupsabiny	Phonemic Breakdown	Gloss	Phonological Process
Olupapula	/o-lu-pa-pu-la/	papureet	/pa-pu-reet/	paper	Prefix deletion, consonant cluster simplification, vowel harmony, suffix modification
/o-lu-/ (noun prefix)	[o-lu]		/o-lu-/ deleted		Prefix deletion
/pa-pu-la/	[pa-pu-la]	/pa-pu-reet/	[pa-pu-reet]	paper	Vowel harmony (-la → -reet), consonant modification

The transformation of borrowed words from Luganda into Kupsabiny can be analyzed using Faithfulness Constraints within the framework of Optimality Theory (OT). These constraints ensure that the adapted words retain key phonological elements of the original Luganda words while conforming to Kupsabiny' phonological structure. Faithfulness Constraints preserve the original structure of the borrowed word by minimizing alterations in syllable structure, and segmental composition. Table 8 illustrates these transformations.

Table 8: Analysis of alteration of consonant cluster and vowel harmony

Changes	Constraint Violation	Satisfied constraints
Omission of /Olu-/.	**MAX** (prefix deletion)	**ALIGN-MORPH** (suffix addition) and **NOCODA** (simplified syllables).
Addition of /-reet/		

Table 7 and 8 reveal that borrowed nouns undergo phonological modifications to conform to Kupsabiny's phonetic inventory, where the initial and final vowel sound is dropped, and the consonant sounds are adjusted to fit Kupsabiny's phonological system. This agrees with [18] who investigates language borrowing among Syrians speaking Arabic in the United States. The findings reveal that borrowed English nouns undergo significant phonological changes to conform to Arabic phonological rules. In our study, we find that the Luganda noun "olupapula" (paper) becomes "papureet" in Kupsabiny, simplifying the initial vowel and adjusting the consonant sounds to fit Kupsabiny phonotactics. The initial prefix olu- is omitted and the suffix -reet is added, changing the pronunciation of the borrowed noun.

The borrowed nouns sometimes undergo consonant simplification and vowel substitution for easy pronunciation as shown in the provided data.

Luganda   Kupsabiny   Gloss

Omubiira   Mpiireet   Ball

Prefix omu- is replaced with /mp-/ as the suffix -reet is added. The transformation from "Omubiira" to "Mpiireet" involves changing the consonant [b] to [p]. These substitutions reflect phonological differences between the two languages, possibly due to variations in phonemic inventories or phonotactic constraints. Such consonant changes can be attributed to the distinct phonological systems inherent to each language. The Luganda noun "omubiira" contains long vowels, which are shortened in the Kupsabiny equivalent "mpiireet." This alteration suggests differing phonological rules regarding vowel length in the two languages. There is also consonant substitution and vowel shortening as shown in the given data.

Luganda   Kupsabiny   Gloss

Etaala   Taarit   Light

The transformation of the Luganda noun "etaala" to the Kupsabiny equivalent "taarit" illustrates notable differences in the phonological system of these two languages, particularly due to their use of prefixes and

suffixes. The prefix e- is dropped in the above data, whereas the suffix -rit is added. The Luganda noun "etaala" loses its initial vowel prefix e- when transformed into Kupsabiny's "taarit." This suggests that Kupsabiny may not utilize the same prefix system as Luganda, or it applies different rules for prefix usage. The noun "etaala" (light) comprises the prefix e- and the root "taala." This prefix is integral to the noun's meaning and grammatical function.

The noun class system influences not only nouns but also their modifiers, ensuring agreement across adjectives, numbers, and demonstratives. In contrast, Kupsabiny exhibits a different phonological pattern. Kupsabiny is an agglutinating language that utilizes both prefixes and suffixes, with some morphemes serving as portmanteaux. This means that while prefixes and suffixes are present, their application and function differ from those in Luganda.

Reduplication and Lengthening of the vowel

Section 4.4.3 presents data indicating how some borrowed nouns undergo reduplication or lengthening of the vowels, which may be a strategy to fit the prosodic patterns of Kupsabiny or to distinguish the loanword from native words.

Luganda   Kupsabiny   Gloss

Essowaani   Saaniit   Plate

Example (11) is presented in table 9 indicating the phonological process borrowed nouns undergo in Kupsabiny to adopt to its phonological system.

Table 9: Comparative phonological process on reduplication and lengthening of the vowel.

Luganda	Phonemic Break down	Kupsabiny	Phonemic break down	Phonological Process	Faithfulness Constraint Affected
Essowaani	/e.sɔ.wá:.ni/	**Saaniit**	/sá:.ni:t/	Reduplication Reduction + Vowel Lengthening	MAX-IO violated (loss of /e.sɔ/) + IDENT-IO(V) (lengthening of /á:/ and /i:/)

In Optimality Theory (OT), Faithfulness Constraints ensure that borrowed words retain phonological similarities to their source forms. These constraints, such as MAX-IO (Maximal Input-Output Correspondence) and IDENT-IO (Identity between Input and Output Features), preserve segmental structure and phonemic identity during borrowing. However, due to phonotactic differences between Luganda and Kupsabiny, modifications occur to align borrowed words with Kupsabiny's phonological system, as illustrated in Table 10.

Table 10: Analysis of reduplication and lengthening of the vowel

Changes	Constraint Violation	Satisfied constraints
Omission of /Esso-/.	**MAX** (prefix deletion)	**NOCODA** (simplified syllables).
Simplification of syllable structure.		

When Kupsabiny incorporates nouns from Luganda, several phonological adjustments occur to align the borrowed terms with its native sound system. This agrees with [20] who examines Swahili words borrowed and adopted by Meru language of Northeastern Tanzania. The findings reveal that there is a tendency for consonant clusters to be simplified or adjusted in the phonological constraints of the Meru language such as the Kiswahili word mkono to Meru kono. In our study, the Luganda noun "essowaani" (plate) is adapted as "saaniit" in Kupsabiny, where vowel lengthening and consonant adaptation occur. This happens through the omission of the prefix esso- and the simplification of syllable structure. Further, there is prefix removal and vowel shortening as indicated in the given data.

Luganda	Kupsabiny	Gloss
Olwokutaano	Rukutano	Friday

Prefix olwo- is replaced with ru- making the final word have a simplified structure. This process involves substituting the initial vowel of a prefix to align with phonological rules or to simplify pronunciation. For instance, the prefix olwo- is replaced with ru-, resulting in a more streamlined noun form. This substitution is evident in the transformation of "olwokutaano" to "rukutano," both meaning Friday. Such changes are not arbitrary; they adhere to the phonotactic constraints of Kupsabiny, ensuring that vowel sequences are harmonious and conform to the language's syllable structure. This process also reflects the language's tendency towards vowel harmony and ease of articulation.

When Kupsabiny incorporates borrowed nouns, it often modifies these words to fit its own phonotactic rules. A prevalent adjustment is the shortening of long vowels, particularly in final positions. This final vowel shortening is a means to conform borrowed nouns to Kupsabiny's prosodic patterns, ensuring that they align with native word structures. For example, a borrowed noun with a long final vowel may undergo shortening to match the typical Kupsabiny noun endings, which often feature short vowels. This adaptation facilitates smoother integration of foreign terms into the language, maintaining phonological coherence and ease of pronunciation. Borrowed nouns also undergo prefix removal and vowel length adjustment as shown in the given data.

Luganda	Kupsabiny	Gloss
Olwokuna	Rukunaa	Thursday

In Luganda, Thursday is "Olwokuna," where Olw- is a noun class prefix, and "-okuna" is derived from the word four, indicating the fourth day of the week. In Kupsabiny, Thursday is "Rukunaa," which also reflects the numeral four. The Luganda form includes the noun class prefix Olw-, while the Kupsabiny form does not, highlighting the prefix removal process during borrowing. Additionally, vowel length [aa] adjustment occurs to ensure the borrowed noun fits the phonotactic constraints of Kupsabiny. Kupsabiny exhibits sensitivity to vowel length in its phonological system. When borrowing nouns, vowel length is adjusted to fit the language's prosodic patterns, ensuring that the borrowed term is phonologically harmonious with native vocabulary. This adjustment aids in maintaining the rhythmic and melodic aspects of the language, which is essential for intelligibility and naturalness in speech.

Vowel Substitution

Section 4.4.4 Provides data to illustrate how borrowed nouns from Luganda undergo vowel substitution in Kupsabiny.

Luganda	Kupsabiny	Gloss
Eddúuka	Tukaniit	Shop

The transformation of Eddúuka (Luganda) into Tukaniit (Kupsabiny) demonstrates significant phonological modifications, particularly vowel substitution and syllable restructuring. In this case, vowels from Luganda are replaced with phonetically or articulatorily similar vowels in Kupsabiny to maintain phonemic harmony and ease of articulation as illustrated in table 11.

Table 11. A comparative phonological process on vowel substitution

Luganda Input	Phonemic Breakdown	Kupsabiny Output	Phonemic Breakdown	Phonological Process	Faithfulness Constraint Affected
Eddúuka	/e.dú:.ka/	**Tukaniit**	/tu.ká.ni:t/	Vowel Substitution + Epenthesis + Lengthening	IDENT-IO(V) (replacement of /ú:/ → /u/), DEP-IO (insertion of /ni:t/), MAX-IO (deletion of /e.d/)

Faithfulness constraints of Optimality Theory ensure that borrowed words retain phonological similarities to the source language while conforming to the phonotactic requirements of the borrowing language. However, due to phonotactic constraints in the Kupsabiny language, vowel substitution occurs as an adaptation strategy.

This process involves replacing vowels from Luganda (the source language) in Kupsabiny (the borrowing language) to achieve phonemic harmony and maintain ease of articulation. The comparative analysis highlights how vowel substitution systematically modifies borrowed words to fit the phonological framework of the Kupsabiny language.

Table 12. Analysis of vowel substitution

Changes	Constraint Violation	Satisfied constraints
Replacement of initial /Eddu-/ with /Tu-/.	**IDENT[F]** (prefix modification).	**ALIGN-MORPH**.
Addition of suffix /-niit/.		

In the given data, there is the replacement of the initial /eddu-/ with /tu-/ and the addition of the suffix -niit. This is in line with [13] who focuses on the phonological processes observed in borrowed nouns in the Ekegusii language. The findings reveal a tendency for loanwords to undergo segmental adaptation, where the phonetic segments of the loanwords are modified or substituted to conform to the phonological inventory and phonotactic constraints of Ekegusii. In our study, Kupsabiny replaces Luganda vowels with phonetically similar ones from its inventory to maintain phonemic harmony.

In Luganda, the noun "eddúuka" begins with the prefix edd-, which is characteristic of its noun class system. Kupsabiny replaces this with the prefix tu-, aligning the word with its morphological structures. The Luganda vowel [u] in "Eddúuka" is replaced by the Kupsabiny vowel [a] resulting in "tukaniit." This change illustrates vowel substitution, a process where vowels from the source language are replaced with phonetically similar vowels from the borrowing language to maintain phonemic harmony. The addition of the suffix -niit in Kupsabiny serves to integrate the borrowed noun into its morphological framework. Suffixation is a common morphological process that languages employ to adapt loanwords, ensuring they adhere to native grammatical and syntactic rules.

Consonant Modification

Section 4.4.5 provides data on consonant modification of the borrowed Luganda nouns.

Luganda   Kupsabiny   Gloss

Esabiiti   Supiiti   Sunday

Example (15) illustrates how certain consonants from the source language (Luganda) are replaced or altered to fit the phonemic inventory of the borrowing language (Kupsabiny). In Optimality Theory (OT), faithfulness constraints require that borrowed words retain phonological properties of the source language (Luganda) while adapting to the phonotactic constraints of the borrowing language (Kupsabiny) as shown in table 13.

Table 13. A comparative phonological process on consonant modification

Luganda Input	Phonemic Breakdown	Kupsabiny Output	Phonemic Breakdown	Phonological Process	Faithfulness Constraint Affected
Esabiiti	/e.sa.bíː.ti/	**Supiiti**	/su.píː.ti/	Consonant Modification b →p + Vowel Change + Syllable Structure Adaptation	IDENT-IO(C) modification of /s/ to /ʃ/ and /b/ to /p/), DEP-IO (insertion of /u/), MAX-IO (loss of /e/).

The adaptation of Esabiiti → Supiiti in Kupsabiny demonstrates consonant modification, vowel insertion, and syllable restructuring as key processes in phonological borrowing. The consonantal changes (/s/ → /ʃ/, /b/ → /p/) illustrate how Kupsabiny accommodates Luganda words while ensuring they fit its phonotactic rules. These modifications highlight the interaction between faithfulness and markedness constraints, where the need for linguistic adaptation overrides the preservation of original phonemes as illustrated in table 14.

Table 14. Analysis of consonant modification

Changes	Constraint Violation	Satisfied constraints
Omission of /e-/	**IDENT[F]** (Consonant modification).	**ALIGN-MORPH**.
Retention of /ti-/		

The data provided indicates that certain Luganda consonants that are absent in Kupsabiny are substituted with the closest available consonants. E.g. [b] is replaced with [p]. When Luganda nouns containing the consonant [b] are borrowed into Kupsabiny, the [b] is often replaced with [p]. This substitution occurs because Kupsabiny lacks the voiced bilabial plosive /b/ present in Luganda. For example, the Luganda word "Esabiiti" (Sunday) is adapted into Kupsabiny as "Supiiti," where /b/ is replaced by /p/. The adaptation process is influenced by phonological constraints that govern permissible sound patterns in the borrowing language.

In Optimality Theory, constraints such as IDENT[F] (which requires feature identity between input and output) and ALIGN-MORPH (which ensures morphological alignment) play a role. In the given example, the omission of the Luganda prefix e- in Kupsabiny can be seen as a violation of IDENT[F] but satisfies ALIGN-MORPH by aligning the borrowed noun with Kupsabiny's morphological structure for phonological agreement. Additionally, vowel insertion and consonant cluster adaptation are strategies employed to accommodate borrowed nouns into the phonotactic constraints of the recipient language. This is in agreement with [14] who examines the borrowing of lexical items between English and Gikuyu, focusing on the characteristics of both languages. In our study, we find that borrowed nouns can undergo consonant cluster adaptation and vowel insertion as indicated in the given data.

Luganda	Kupsabiny	Gloss
Endagano	Ntaakaneet	Agreement

In this instance, the Luganda word "endagano" is adapted into Kupsabiny as "ntaakaneet." The initial vowel [e] in Luganda is omitted in Kupsabiny, aligning with Kupsabiny's phonotactic preference for consonant-initial words. Additionally, the Luganda voiced alveolar nasal [n] is retained, while the following consonants are modified to fit Kupsabiny's phonological rules. The final consonant cluster in "endagano" is simplified to [t] in "ntaakaneet," adhering to Kupsabiny's permissible consonant endings. This results in consonant substitution which involves replacing consonants from Luganda with those in Kupsabiny to accommodate differences in phonemic inventories.

Consonant substitution is a linguistic phenomenon where sounds from a source language are replaced with those from a recipient language during processes like borrowing. This occurs when the recipient language lacks certain phonemes present in the source language, leading to the substitution of these sounds with the closest available equivalents. In the context of Kupsabiny, a Southern Nilotic language spoken in Uganda, consonant substitution plays a significant role in the adaptation of loanwords and the evolution of native vocabulary as illustrated in the given data.

Luganda	Kupsabiny	Gloss
Ebendera	Peenteeret	Flag

Here, the Luganda voiced bilabial plosive [b] is replaced with the voiceless bilabial plosive [p] in Kupsabiny. This substitution reflects Kupsabiny's preference for voiceless plosives in certain phonological environments. The process of consonant substitution between Luganda and Kupsabiny exemplifies the dynamic nature of language interaction and adaptation. By modifying borrowed words to fit their phonemic inventories and

phonotactic rules, languages like Kupsabiny maintain phonological coherence while expanding their lexicon. This linguistic flexibility highlights the intricate mechanisms languages employ to accommodate external influences while preserving their unique sound patterns. The vowel structure is also adjusted to match Kupsabiny's phonotactic patterns. This substitution is not evident in the Luganda voiceless bilabials and interdentals as indicated in the given data.

Luganda	Kupsabiny	Gloss
Emmotoka	Matakeet	Car

The Luganda consonant [m] is retained and the following [t] is adapted to fit Kupsabiny's phonotactic rules. Phonotactics refers to the allowable combinations of sounds in a particular language. When borrowing words, Kupsabiny modifies the phonological structure of the source nouns to conform to its own phonotactic rules, ensuring that the adapted nouns are pronounceable and fit seamlessly into the language's sound system. These substitutions reflect the need to align with Kupsabiny's consonant system and phonological rules. In this case, the retention of Luganda consonant [m] is in Kupsabiny, indicating a shared phoneme between the two languages. The vowel harmony and syllable structure are also modified to align with Kupsabiny's linguistic patterns.

Syllable Structure Adjustment

Luganda's syllable patterns may be altered to fit Kupsabiny's preferred structures, often by adding or removing vowels to achieve consonant-vowel harmony as shown in the given data.

Luganda	Kupsabiny	Gloss
Emmééza	Meseet	Table

Example (19) indicates that borrowed nouns maintain phonological similarities to the source language (Luganda) while adapting to the phonotactic constraints of the borrowing language (Kupsabiny). One common adaptation process is syllable structure adjustment, where the syllable patterns of the borrowed words are modified to conform to the permissible syllable structures of the borrowing language as illustrated in table 15.

Table 15. A comparative phonological process on syllable structure adjustment

Luganda Input	Phonemic Breakdown	Kupsabiny Output	Phonemic Breakdown	Phonological Process	Faithfulness Constraint Affected
Emmééz	/e.mé:z/	**Meseet**	/me.sé:t/	Syllable Structure Adjustment (Deletion of Initial Vowel + Vowel Insertion + Final Consonant Modification)	MAX-IO (loss of /e/), DEP-IO (insertion of vowel), NOCODA (adjustment of final /z/ to /t/).

The transformation of Emmééz → Meseet in Kupsabiny highlights how syllable structure constraints affect borrowed words. The deletion of the initial vowel, insertion of a vowel for ease of pronunciation, and modification of the final consonant demonstrate how markedness constraints interact with faithfulness constraints in OT. While the borrowing process aims to retain the original structure, language-specific phonotactic rules dictate necessary adjustments to fit Kupsabiny's preferred syllable structure. The changes are illustrated in table,

Table 16: Analysis of syllable structure adjustment

Changes	Constraint Violation	Satisfied constraints
Shortening of vowels	**IDENT[F]** (vowel length modification).	**ALIGN-MORPH**.
Addition of suffix /-teet/.		

In Kupsabiny, borrowed nouns from Luganda undergo vowel shortening and may acquire the suffix /-teet/. For instance, the Luganda noun "emmééza (table) becomes "meseet" in Kupsabiny. This transformation involves the shortening of vowels and the addition of the suffix -teet, which is a common phonological adjustment in Kupsabiny to fit the phonotactic constraints of the language. Such adaptations ensure that borrowed nouns conform to the syllable structure and phonological patterns of Kupsabiny. The process involves modifications to consonant and vowel structures to align with Kupsabiny's phonological rules. This discussion examines such adaptations, focusing on vowel shortening and the addition of the suffix -teet, as well as consonant adjustments.

Beyond vowel shortening and suffix addition, borrowed nouns in Kupsabiny may undergo consonant and vowel adjustments to fit the language's phonological rules. These adjustments can include consonant substitution, vowel length modification, and other phonotactic changes that align the borrowed nouns with Kupsabiny's phonological system. For example, consonant sounds in borrowed nouns may be substituted with those more common in Kupsabiny, and vowel lengths may be adjusted to fit the language's syllable structure. In line with [11] on the analysis of lexical borrowing in Africa, we additionally find that borrowed nouns can undergo consonant and vowel adjustments to fit Kupsabiny phonological rules as illustrated with the given data below.

Luganda	Kupsabiny	Gloss
Omugaati	Mukatyaanteet	Bread

The Luganda prefix omu- is replaced with mu- in Kupsabiny. Additionally, Kupsabiny appends the suffix -yaanteet to the borrowed noun, as seen in the transformation of Luganda's "omugaati" (bread) to Kupsabiny's "mukatyaanteet." The interaction between Kupsabiny and Luganda in Uganda's Kapchorwa District has led to notable phonological adaptations in borrowed nouns.

FINDINGS

The findings reveal that:

Luganda's borrowed nouns' syllable structures and phonemes are modified to align with Kupsabiny's phonotactic constraints. For instance, Luganda's syllable structures may be simplified or altered to fit Kupsabiny's permissible syllable patterns through alteration of consonant clusters and vowel harmony, reduplication and lengthening of the vowel, vowel substitution, consonant modification, and syllable structure adjustment.

In order to comply with Kupsabiny's phonotactic constraints, the syllable structures and phonemes of Luganda borrowed nouns are modified.

There is simplification of syllable structures which alters complex syllable patterns from Luganda to fit the permissible syllable structures in Kupsabiny. This adjusts consonant clusters that are not native to Kupsabiny's phonological system.

Simplification also ensures vowels in borrowed nouns harmonize with Kupsabiny's vowel system, which may involve substituting certain vowels to match native patterns.

CONCLUSION

In conclusion, it is clear from the analysis of data presented that the integration of Luganda borrowed nouns into Kupsabiny maintains linguistic coherence and intelligibility. This is exhibited by the phonological patterns such as simplification, reduplication, vowel lengthening, vowel harmony, substitution and syllable structure rules that the nouns had to undergo to conform to Kupsabiny. Lastly, the borrowed nouns adjusted to the tonal system Kupsabiny.

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