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Phonological Adaptation of English Loanwords in Khowar: An Optimality Analysis

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Abstract

This study deals with the phonological adaptation of English loanwords into Khowar. It aims to find out the English loanwords in Khowar language, investigate the processes involved, and document the phonological changes that occur during the adjustment. The data for this research study is collected from different semantic domains using the technique of participant observation. A qualitative approach is used for the analysis of data. A total of 10 English loanwords are collected and analyzed using the Optimality Theory framework. As for sampling, this study uses a purposive sampling technique. The findings show that Khowar has extensively borrowed many English words. Secondly, three repairing techniques i.e., deletion, substitution, and epenthesis are found to be used to adjust the illicit structure of English loanwords. Among these techniques, substitution is the dominant one.Furthermore, the studyreveals that complex consonants and vowels are not allowed in Khowar, and the coda consonant is often voiceless.

Keywords: Phonological Adaptation, English Loanwords, Khowar, Optimality Theory, Repairing Techniques

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1. Introduction

Language is a fundamental aspect that distinguishes humans from all other creatures, enabling them to interact, exchange ideas, and express their emotions. However, languages are not static; they undergo constant change over time, as linguistic experts affirm that change is inherent to all languages (Barry, 2002).Linguistic change is an inevitable phenomenon driven by various factors, with linguistic contact being the prominent one. Thomason (2001) states that contact situations give rise to linguistic changes that are less likely to happen in the absence of such interactions. Language contact consequently breeds lexical borrowing as revealed by Kachru (1986) that language contact results in the transfer of linguistic elements from one language to another. The lexical items that enter a new language have been named loanwords (Crystal, 2008). A word qualifies to be a loanword only if it is acquired and altered phonologically to conform to the system of the recipient language (Haspelmath & Tadmor, 2009). Rose (1999) says that these loanwords often fail to adhere to the phonological well-formedness constraints of the borrowing language. Therefore, when words are borrowed from a donor language, they rarely remain the same and mostly undergo some modifications in their structures. These modifications occur at different levels with the phonological level being the most prevalent one.The primary focus of this research study is to find out the English loanwords that are borrowed in Khowar and examine the phonological changes in the structure of these loanwords. The loanwords must be subjected to repair options in order to match the phonotactics of the recipient language therefore the study also describes the processes involve in the adaptation of the English loanwords.

1.1 Background of the Study

English has a greater impact on the indigenous languages of Pakistan and according to Rehman (2004), Urdu is used as lingua franca across the country, but English is used in higher, more privileged, and elite institutions like military and bureaucracy, etc. Khowar is one of the indigenous languages of Pakistan. It is an Indo-Aryan language and apart

from Chitral, it is spoken in some parts of Gilgit Baltistan like Ghizer, Yasin, Phandar, and some parts of Tajikistan and Afghanistan as well (Sloan, 2006).

Khowar language is subjected to the phenomenon of linguistic change. Many languages have influenced Khowar in the past, like Urdu, Persian, Pashto, and Shina, but the impact of English on Khowar is rapidly increasing. The lexical changes in Khowar show a noticeable influence of English on the language as there are plenty of English words that have entered Khowar in the past few years. The abundance of English loanwords in Khowar needs a detailed analysis, therefore,this study focuses on the phonological adaptation of English loanwords into Khowar.

1.2 Statement of Problem

The coexistence of Khowar and English in linguistic contact has resulted in a pervasive integration of English loanwords into the Khowar vocabulary. However, the phonological dissimilarities between English and Khowar raise questions about the potential challenges and treatments that English loanwords undergo upon integration into the Khowar language.The English words often have structures that do not conform to the phonological constraints of Khowar. Therefore, there exists a need to comprehensively investigate the treatment that English loanwords receive upon entering Khowar language. This research study aims to investigate the intricate processes by which Khowar accommodates English loanwords. The focus will then be on scrutinizing how Khowar receives loanwords and the manner in which it handles them according to its phonological constraints.

1.3 Significance of Study

The amount of research on lexical borrowing in Khowar has been quite limited therefore, this current research study holds significant importance as it addresses the scarcity of literature on this topic and aims to contribute valuable insights into Khowar's phonological system. This research study is significant also because it reveals how the English loanwords undergo certain variations during their adjustment in Khowar

and which repairing techniques are involved in the process of adjustment.

1.4 Delimitation

Loanwords show differences on many levels, like phonological level, morphological level, and syntactic level. This present study is delimited to only phonological adjustment of English loanwords into Khowar. Although a significant number of loanwords have been taken from other languages into Khowar, this study is restricted to the loanwords taken only from English. Matiki (2016) claims that usually nouns are more frequently borrowed than all other lexical items therefore this study is further delimited to English nouns that are borrowed in Khowar.

1.5 Research Questions

1. What are the loanwords that Khowar has taken from English?
2. What are the phonological processes that are involved in the adaptation of English loanwords into Khowar?
3. In what ways are loanwords modified once they enter Khowar?

1.6 Research Objectives

1. To find out the loanwords that have been taken from English into Khowar.
2. To identify the processes that are used in the adjustment of English loanwords.
3. To figure out the degree of modification of English loanwords once they are adjusted in Khowar.

2. Literature Review

Khowar is the native language of the inhabitants of the Chitral district. Sloan (1981) explains "Khowar" as a blend of "Kho" (Chitral natives) and "war" (language).So Khowar collectively means the language of the Chitrali people. According to Rahman (2002), Khowar is the second most spoken language in the district of Khyber Pakhtunkhwa and the third most spoken language in Gilgit Baltistan.Liljegren and Khan (2017) conducted a detailed study on the phonemic inventory of the Khowar language and accordingly, Khowar has a total of seven manners of articulation, and out of these seven, five play a contrastive role within the

manner of articulation subsets. There are 41 consonant sounds in total in the Khowar language. Similarly, according to Sloan (2006), there are only five vowels in Khowar. Throughout history, the region's boundaries were surrounded by languages like Persian, Pashto, and Shina, which had an impact on the lexicon of Khowar (Sloan, 2006). However, in more recent times, English has significantly influenced the language.

English has gained supremacy and penetrated practically every aspect of society, including popular entertainment and music, sports, fashion, commerce, marketing, and business. When it comes to languages, English dominates in Pakistan, so much so that the national language of Pakistan,'Urdu' comes in second position and then regional languages are listed in terms of popularity and usage (Hussain et al., 2011). Indeed, the regional languages of Pakistan have not received the same respect and educational importance as the English language (Siddique, 2011).English has enjoyed widespread acceptance as a donor language (Crystal, 1997). It has donated lexical items to the indigenous languages of Pakistan and Khowar is one of those languages that has taken words from English.

The lexical item retrieved is referred to as a loanword(Hudson, 1996). These loanwords are considered foreign therefore languages would need to repair or adjust these words in some way to ensure that they comply with the necessities of the acquiring language (Kang, 2010).Loanwords when entering a language (L1), have structures that are ill-formed from the perspective of the borrowing language. According to Paradis and LaCharité (1997), such structures are repaired minimally.This study examines how English loanwords having illicit structures are adjusted in accordance with Khowar's phonotactic constraints.

2.1 Related Studies

Atta, Abbass and Khan (2020) conducted a research study to investigate the adaptation of loanwords by Saraiki speakers. The research delves into the process of how Saraiki speakers adapt loanwords, providing a fundamental analysis. It scrutinizes loanwords originating from three distinct languages, revealing that Saraiki speakers employ various

strategies within their native grammar for different languages. For instance, while adapting loanwords from one language, Saraiki speakers modify the onset or initial consonant cluster, whereas for another language, they alter the final consonant cluster. The study also discloses that Saraiki speakers used fixed vowels to break the cluster of English loanwords.

Farooq and Mahmood (2021) tried to explore the phenomenon of epenthesis in Urdu. The primary aim of this study is to discern the phonological causes behind epenthesis within Urdu vocabulary, which can result in various pronunciations of words. To achieve this, recordings spanning 10 hours of Urdu speech from a single female speaker have been meticulously analyzed as a preliminary test to identify words exhibiting multiple pronunciations. The speech data was captured at an 8 KHz frequency in an echoic chamber using PRAAT software. The findings of this investigation reveal several key points. Firstly, epenthesis, the insertion of sounds, is primarily observed in open-class words such as nouns, adjectives, verbs, etc., within the Urdu language. Secondly, epenthesis occurs specifically in consonant clusters positioned at the end (coda) of words in Urdu vocabulary. Thirdly, epenthesis is also noted at the beginning (onset) of words, but exclusively in English loanwords incorporated into Urdu.

Another researcher, Khan (2016), conducted a study to ascertain the effect of linguistic contact between English and Urdu. The data analysis reveals that the pronunciation of English terms that have been borrowed into the Urdu language has changed. The author claims that the natives feel more prestigious when using English words. As a result, English lexicons have been incorporated into Urdu to a very considerable level. Similarly, Hussain et al. (2011) studied English loanwords in Punjabi via Urdu. They compared bilingual and monolingual speakers, using two corpora. Results show differences in loanword features between these groups and identified adaptation strategies like consonant replacement, metathesis, and aphaeresis in the loanword incorporation process.

Harb (2016) uses Optimality Theory (OT) in his study of English loanwords in Hawaiian. He has given preference to constrained-based analysis over rule-based analysis. For this, he randomly selected English loanwords in Hawaiian and analyzed the phonological changes in these loanwords through the lens of Optimality Theory. Numerous phonological modifications, mostly those of the syllable structure of Hawaiian, are analyzed along with supplementary phonological processes (e.g., epenthesis, degemination, etc.) where appropriate. He concludes various phonological processes are involved in the modification of English loanwords in Hawaiian. Likewise, Muriira (2017) studied the morphophonological adaptation of English loanwords in Kitigania, a Kiimeru dialect in Kenya. Using Optimality Theory and purposive sampling, the research found that Kitigania borrows many English words, modifying them through processes like deletion, substitution, prefixation, and epenthesis. This study highlights the suitability of Optimality Theory for analyzing loanword adaptation.

Guba (2016) conducted a detailed study to investigate the phonological adaptation of English loanwords in Ammani Arabic. He focuses not only on the segmental level of adaptation of loanwords but also focuses on the suprasegmental/prosodic level, by using moraic theory within Optimality Theory (OT) framework. For this study, he has built a corpus of 407 loanwords from English and how they are pronounced by monolingual AA native speakers. The study unveils that the adaption of loanwords is mainly phonological, and the English loanwords undergo various modifications due to AA phonology.Al Motairi (2015) investigated the syllable structure of Qassimi Arabic, a Saudi Arabian dialect, using optimality theory. The study explored how superheavy syllables and high vowel deletion impact syllable structure, finding that in Qassimi Arabic trimoraic syllables are prohibited, as well as the onset consonant clusters.

Al-Saidat's (2010) study entitled “Phonological Analysis of English Phonotactics: A Case Study of Arab Learners” aimed to analyze the English phonotactics in English of Arab learners of English as a foreign language. Its focus lies in identifying the particular pronunciation

challenges they face. It delves into the declusterization processes within their interlanguage and investigates the origins of these processes. The findings reveal that Arab learners of English tend to inadvertently introduce an additional vowel sound both at the beginning (onset) and at the end (coda) of particular English syllables. Moreover, the study highlights that the primary cause behind these declusterization processes is the influence of the learners' native language.

3.Research Methodology

3.1 Research Design

The research design for this study is descriptive, as it was helpful in the analysis of the phonological changes in the structure of English loanwords during their adjustment into Khowar. A qualitative approach was used for the collection of data.The qualitative research methodology offered an in-depth exploration of the phonological adjustment of English loanwords into the target language. The rationale for employing a qualitative approach was driven by its effectiveness in gaining profound insights into both data collection and analysis, facilitating a comprehensive understanding of the phenomenon. The qualitative method facilitated the examination of how loanwords are modified and integrated according to the phonotactics of the recipient language. Moreover, a qualitative approach has been employed by researchers to analyze loanwords adaptation into different languages(Iqbal & Ullah, 2023; Nkieny, 2021; Jika, 2017; Indrayani & Nugraha,2020;Imamah, 2016).

3.2 Data Collection

The data for this study comprise English loanwords that have entered Khowar. The researcher used the method of participant observation for data collection. As a resident of Chitral district and a native speaker of Khowar, the researcher visited places of different semantic domains to obtain speech samples. The researcher extracted loanwords from conversations of Khowar speakers and transcribed them using IPA.A total of 10 loanwords were collected and analyzed. Furthermore, two Khowar dictionaries that include, "*Khowar English Dictionary: A*

Dictionary of the Predominant Language of Chitral" and "*A Khowar-English Lexicon*" were used to validate the collected loanwords. The former is written by Muhammad Ismail Sloan and published in 1981. The second edition of this dictionary which was published in 2006 utilized in this study. The latter on the other hand is written byElena Bashir and was published in 2023. Those English loanwords were considered for analysis that have already become part of the Khowar dictionaries. This means that the word must be in regular use among speakers of the recipient language and not be limited to specific contexts or specialized fields.

3.3 Sample

As the population of district Chitral is massive, the researcher could not include each and everyone in his study. Therefore, the researcher adopted a purposive sampling technique to identify three semantic domains to collect loanwords. The researcher sampled three participants for observation. Thus, one participant was selected from each domain.

3.4 Theoretical Framework

To analyze the phonological adaptation of the English loanwords in Khowar, Optimality Theory has been used as the theoretical framework. Optimality Theory was given by Prince and Smolensky in 1993 and later modified by Kager in 1999.OT claims that any language in any part of the world can tackle any borrowed word in its phonological system (Nkieny, 2021).It has been used as a theoretical framework because according to Kang (2011), OT best suites to investigate the adaptation of loanwords in a language.There are four main components of Optimality Theory (Prince and Smolensky 1993; Kager, 1999). They are:

a) LEX: That is a word in the form of input
b) GEN: It is the operational component of Optimality Theory (OT). It takes input and creates output that is different from the input. It generates several candidates.
c) CON: It is the component of a constraint that is universal and contains the constraints known as "markedness" and "faithful". It

provides guidelines for choosing between candidates produced by GEN.

d) EVAL: It evaluates the output candidates and points out the optimal candidate that least violates the constraints.

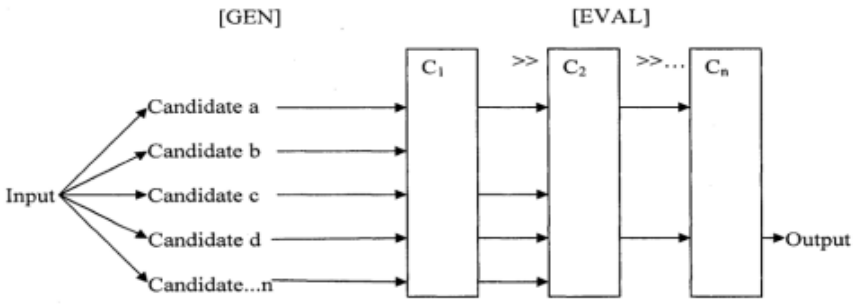


Figure: IO Mapping in OT Grammar (Kager, 1999: p. 8)

Thus, GEN first receives input and generates several candidates. Eval then evaluates these candidates against language-specific constraints. The candidate with the fewest violations of the limitations is ultimately determined to be the best or optimal candidate. The two sorts of constraints that make up CON are markedness constraints and faithfulness constraints. These two are in opposition to each other. Markedness constraints impose conditions on the well-formedness of the output structure. They ensure that the output forms meet specific criteria of structural well-formedness, as described by McCarthy (2007).While faithfulness constraints claim that the output should show the sameness to the input. However, this opposition creates tension, but to settle this tension, the constraints are ranked into higher-ranked constrain and lower-ranked constrain based on the level of violation. These constraints are prioritized on a language-specific basis, for example, if constraint Y is given importance over constraint Z, we write Y >> Z. Tableau is used for data analysis in OT.

Tableau of Optimality Theory

CANDIDATE SET	CONSTRAINT 1	CONSTRAINT 2	CONSTRAINT 3
☞ a CANDIDATE A		*	
b. CANDIDATE B	*!		
c. CANDIDATE C		*!	*

Note. Taken from Kager,1999

This is the tableau that is used in OT for data analysis. Candidates are given in columns while constraints are given in rows. When any violation occurs, it is denoted by an asterisk*, and if there is no violation the constraint is left blank. Fatal violation is shown by "!" while the optimal candidate is indicated by finger-pointing ☞.Optimal candidate selection is dependent on the interaction of markedness and faithfulness constraints.

4.Data Analysis and Discussion

In the analysis of data, the researcher has applied a qualitative approach to analyze the phonological processes that are used to nativize an English loanword in Khowar language. The gathered data is examined in accordance with the theoretical framework chosen for the study, i.e., the Optimality Theory (OT).This data analysis describes how the two constraints, faithfulness and markedness interact to choose the best candidate for the output. Furthermore, phonemic transcription was utilized to explain the phonological structure of English words in both their original phonology and their realizations after being adjusted into Khowar. The study has used tableaus to investigate the phonological derivation of English loanwords using the guidelines of the Optimality Theory.

Table 1

English loanwords collected through participant observation

S.no	IPA Transcription	Khowar Transcription	Deviation	Gloss	Phonemic Variations
1	skuːl	ɪs.kuːl	1	School	Ø →[ɪ]
2	klɪnɪk	kɪlɪnɪk	1	Clinic	Ø →[ɪ]
3	fɪlm	fɪliːm	1	Film	Ø →[iː]
4	bʌtn	bɑtèn	1	Button	Ø →[è]
5	mʌg	mɑk	1	Mug	/g/→[k], /ʌ/→[ɑ]
6	rəʊd	rɔt	2	Road	/əʊ/→[ɔ], /d/→[t]
7	taɪm	tèm	1	Time	/aɪ/→[è]
8	kəʊt	kɔt	1	Coat	/əʊ/→[ɒ]
9	səˈluːt	sʊ.lʊt	2	Salute	/ə/→[ʊ], /uː/→[ʊ]
10	sɪˈment	sɪˈmet	1	Cement	n →[Ø]

4.1 Epenthesis

Epenthesis is a process in which sound segments are added or inserted within a word. Inserted sound can be a vowel or a consonant, but in Khowar usually, vowels are added in between words as it will become obvious after the analysis of data. A vowel segment can be inserted at the word's initial position known as prosthesis (Campbell, 2004).It can also be inserted between two consonants, known as anaptyxis. Below are some English words where epenthesis has occurred to adjust them into Khowar.

(1) School

Tableau 1: Ø →[ɪ]

[skuːl]	NUC/V	*COMPLEXcc	DEP-IO
a. ☞/ɪs.kuːl /			*

b. / skuː.l /	*!	!	
c. / skuːl /		*!	

Epenthesis is a linguistic process involving the addition of a sound segment, usually vowels, to repair word-initial or middle clusters. The lexical item given as input is the English loanword /skuːl/. The candidates are generated and given in the columns. These candidates will compete with each other for optimality against the set of constraints that are given in rows in the OT tableau. Fleischhacker (2005) claims that 'st' and 'sk' clusters may be repaired by inserting the vowel either before the clusters or inside it. Persian speakers according to Cardoso (2008) employ the phenomenon of edge-epenthesis at the initial position when articulating words that begin with consonant clusters like fricative + stop. Examining the provided data will offer a more comprehensive understanding of how the English loanword starting with the consonant clusters /sk/ is adjusted in Khowar.

In the provided data, candidate 'b' fatally violates the markedness constraints NUC/V, which claims that all syllables must have a nucleus. The voiced alveolar fricative /l/ stands alone trying to make a syllable without a nucleus. It cannot be the optimal one. Candidate 'c' is a faithful non-epenthetic candidate but is violating the highly ranked markedness constraint *COMPLEXcc (no complex consonants), as there is a cluster of two consonants at the onset position that are the voiceless fricative /s/ and the voiceless velar /k/. Therefore, both these candidates are rejected for an optimal candidate.

Khowar does not allow the [sk] consonant cluster at the onset position.In the English loanword "school," adding a vowel [ɪ] at the beginning is preferred as it adheres to the markedness constraints and separates the cluster [sk], making candidate 'a' the optimal choice.The syllable weight has been augmented, as the word 'school' in English is a monosyllabic term, whereas when adapted into Khowar, it has transformed into a disyllabic word, for instance, /skuːl/ becomes /is.kuːl/.Punjabi language as well as Saraiki likewise does not allow this [sk] consonant cluster at

the onset position (Habib & Khan,2019;Atta et al., 2020). However, the insertion of vowels occurs at different positions in both languages. Accordingly, the English loanword /skuːl/ is adjusted using an epenthetic vowel in between the consonant clusters. The word /skuːl/ is pronounced /səkuːl/ in Saraiki and Punjabi. But Khowar uses the technique of edge epenthesis also known as prothesis in the adjustment of the English loanword.A similar pattern is seen in the pronunciation of English words by the native Hindi speakers as described by Bharati (1994). For these speakers, initial clusters, like /st/, /sm/, or /sk/ clusters, are resolved through prothesis: e.g. [ismaail] 'smile' (Fleischhacker, 2005). This same loanword is adjusted in Bengali with the help of edge epenthesis. For example the English loanword /skuːl/ is pronounced as /ɪs.kuːl/(Karim, 2010). Therefore, Bengali, Hindi and Khowar adjust the English loanword using the technique of edge epenthesis.It is thus concluded that the voiceless alveolar fricative /s/ when followed by obstruent at the syllable initial position often takes the /ɪ/ vowel to separate the consonant cluster. In simple words when there is an s+obstruent sequence in the initial position of a loanword syllable, it is adjusted in Khowar by using vowel epenthesis in the word's initial position. This phenomenon is also referred to as edge epenthesis.

(2) Clinic

Tableau 2:Ø →[ɪ]

[klɪn.ɪk]	*COMPLEXcc	ONSET	MAX-IO	DEP-IO	*Coda
a. klɪn.ɪk	*!	*			**
b. klɪ.nk	**!		*		**
☞c. kɪ.lɪ.nɪk				*	*

There are open syllables in a language if it has closed ones. Languages are divided into two main groups based on whether they permit or prohibit codas. For instance, codas are allowed in Arabic and English

while Fijian disallows codas (Aljutaily & Alhoody, 2020). Most importantly, no known language requires that syllables must always contain codas. In Khowar, the phonotactic rule permits the presence of both open and closed syllables. A closed syllable ends with a consonant most importantly known as coda. Thus, Khowar allows consonants at the coda position, but it should not be a complex one. Lee (2005) claims that numerous consonant clusters in English are not commonly present in many languages, whether positioned at the beginning (onset) or at the end (coda) of a word. Therefore, an insertion strategy is employed when handling these foreign words to align them with the phonotactic rules of the recipient language. In simpler terms, although Khowar permits the use of onset and coda, it is highly unusual for a complex onset or coda to be permitted. Therefore, *CC]σ (no complex onset) is ranked higher in Khowar but *C]σ (no coda) is ranked lowest.

According to Farooq and Mahmood (2021), the process of phonemic insertion alters a monosyllabic word to become a disyllabic one, a disyllabic word to become a trisyllabic word, and vice versa. The input given is disyllabic however after the insertion of /ɪ/ during adjustment in Khowar it has become trisyllabic. There is an addition of a new constraint ONSET, also represented as *[σ V. It claims that syllables should have onsets. Only syllables with an initial consonant, often known as the "onset," may satisfy it. Languages can also be divided into two broad categories: those that permit onset-less syllables, like Japanese, and English, and those that do not. The most important thing to remember is that no known language disallows onsets. In Khowar syllables usually begin with an onset. Consequently, the ONSET constraint holds a position of higher priority as a markedness constraint. Words in Khowar may begin without an onset, therefore the constraint is ranked higher but not that much as compared to NUC/V or *COMPLEXCC.

Against the given input above the generated candidate ‘a’ cannot be chosen as the optimal one because there is a cluster of voiceless velar plosive /k/ and voiced lateral /l/. It violates the highly ranked constraint

*COMPLEX CC henceforth *[σ CC and *CC]σ. The next constraint ONSET is also violated by candidate ‘a’ because the second syllable begins without an onset. It cannot be an ideal one since it violates the highly ranked markedness constraints. Multiple times, candidate 'b' fatally breaches the highly ranked markedness restrictions. It is likewise disqualified as the optimal one as a result. It additionally violates the lower-ranked constraint MAX-IO. The vowel /ɪ/ is deleted allowing it to form a cluster at the syllable-final position.

Ultimately, candidate "c" emerges as the overall optimal choice since it adheres to the most prioritized markedness constraints without any violations. Its syllables are uncomplicated, and each one of them begins with an onset. It however violates the faithfulness constraint DEP-IO, but this is a violation of the lower-ranked constraint, therefore, it does not impede candidate 'c' from being considered optimal. Moreover, a breach of a lower-ranking constraint occurs to satisfy a higher-ranking constraint.

The final constraint is violated once or twice by all the selected candidates. The ONSET constraint is ranked higher than the NoCoda constraint. The onset-less final syllable is adjusted through a re-syllabification process to avoid violation of the ONSET constraint. But the coda remains closed even after adjustment of the input in Khowar. Hence it is generalized that ONSET>>NoCoda, specifically in the adaptation of loanwords in Khowar. Khowar prefers vowel epenthesis to deletion therefore MAX-IO is ranked higher than DEP-IO.

In many languages, while adjusting foreign words, the short vowel /ɪ/ is mostly utilized to simplify complex clusters. According to Saidat (2010), certain English syllable structures present challenges for Arab English learners. To resolve this, they simplify the consonant clusters by inserting a high front short vowel /ɪ/, such as in the case of /sɪblʃ/ for "splash." Farooq and Mahmood (2021) in their research study entitled “Epenthesis in Urdu” aimed to find out the reasons behind different pronunciations of a single lexical item. They found that epenthesis was one of the key factors. The study further claims that in Urdu if a consonant comes

before a liquid sound /r/ or /l/, epenthesis occurs to break the consonant cluster. The same is the case with Khowar as analyzed above. The English loanword has a consonant before liquid /l/ therefore epenthesis has occurred to break the consonant cluster.

(3) ***fɪlm***

Tableau 3*: Ø →[ĩ:]*

[fɪlm]	*COMPLEXcc	ONSET	*VORALN	DEP-V	*C]σ
a. fɪ.lɪm			*!	*	*
☞b. fɪ.lĩ:m				*	
c. fɪlm	*!				

In the data provided above the technique of vowel epenthesis has been utilized to adjust the English loanword in Khowar.Since Khowar does not permit clusters at either position, it seems reasonable to consider this as a potential explanation for the occurrence of epenthesis. It has increased the syllable weight from mono to disyllable. Jabbari and Pourmajnoun (2016) examined various approaches employed by Persian learners when encountering English consonant clusters. Their findings indicated that the predominant strategy utilized by learners is vowel epenthesis. The analysis will further elucidate how vowel epenthesis has been utilized to adjust the English loanword into Khowar.

The lexical item given as input is the monosyllabic English word /fɪlm/. The GEN component of OT has generated three different candidates that will fight with each other against the set of given constraints.It is worth highlighting that, similar to Khowar, coda clusters are frequently discouraged in other languages spoken in Pakistan, such as Saraiki (Atta et al., 2020) and Sindhi (Abbasi&Hussain,2012). Therefore, loanwords having complex coda undergo certain modifications to be indigenized.

In Khowar when a vowel follows a nasal it becomes nasalized automatically. Therefore, the new constraint *VORALN (before a nasal, vowels must not be oral) is ranked higher in Khowar.The lexical input

[film] is mono as well as tautosyllabic. The analysis begins with candidate 'a'. It has a simple coda, and the syllables begin with an onset. Thus the *COMPLEXcc and ONSET henceforth (*[σ V) are obeyed. However, it has an epenthetic oral vowel /ɪ/ that does not get nasalized when followed by a nasal stop 'm'. Therefore, it is seriously violating the new *VORALN constraint. It is thus rejected to be an optimal candidate. Candidate 'c' is the most faithful non-epenthetic candidate, because it incurs no violation of the faithfulness constraint DEP-V. However, it has a cluster of consonants at the coda position. The sequence of the voiced approximant /l/ and the nasal /m/ clearly violates the *COMPLEXcc constraint, which demands the coda to be simple. To remain faithful to the DEP-V constraint is the main cause of the rejection of this candidate.
The analysis shows that 'b' is the optimal candidate. It has an epenthetic vowel /ĩː/ that is nasalized as well as breaks the CC at the coda position. Therefore, it incurs no serious violation to any of the highly ranked constraints. The least ranked constraint DEP-V(do not insert a vowel) is violated but the violation is minimal. The DEP-V constraint must, nevertheless, be ranked low to allow maximum adjustment in the borrowed entities. The optimal candidate takes two syllables, and both have onset consonants, but the second syllable is closed i.e., it has a coda in the form of a consonant. It is the reason why*[σ V is ranked higher than C]σ in Khowar. Abbasi and Hussain (2012) show the adjustment of this particular English loanword. It is adapted in a different way in Sindhi with the usage of double epenthesis. Thus, with the usage of epenthetic /ɪ/ and /ə/, film is pronounced as /fɪlɪmə/. The combination of liquid + nasal is adapted in Pahari with the insertion of the /ə/ sound, for example, film /film/ is pronounced as /filəm/ (Abbasi et al., 2022). Therefore, it is noted that likewise Khowar, other Pakistani languages do not allow complex consonant clusters, and the liquid + nasal combination in loanwords is adjusted using epenthesis.

(4) ***Button***

Tableau 4:Ø →[è]

[bʌtn]	NUC/V	*COMPLEXcc	*[σ V	DEP-IO	IDENT-IO	*C]σ
a. bʌtn	*!	*				*
☞b. bɑ.tèn				*	*	*
c. bɑt.èn			*!		*	*

The constraint NUC/V claims that the head of the syllable must be a vowel. The phonotactic constraints of Khowar require syllables to consistently place a vowel as the nucleus or core element of the syllable structure. Therefore, the syllabic consonants are odd in Khowar, resulting in the higher ranking of the NUC/V constraint within its phonotactic rules. Jabeen et al. (2012) claim that Punjabi does not have a syllabic consonant as it must have a vowel at the peak of a syllable. Likewise Punjabi, each syllable in Khowar is accompanied by an integral vowel. Therefore, the syllabic consonant in the English loanwords is adjusted by inserting a short vowel as the analysis will further explain.

The faithful un-epenthetic candidate 'a' violates two highly ranked constraints. First, it contains a syllabic consonant. In linguistics, a syllabic consonant is a consonant sound that functions as the nucleus of a syllable. Unlike most consonants, which require a vowel sound to create a syllable, syllabic consonants are pronounced with enough sonority and length to form a syllable on their own. In English, the most common syllabic consonants are /l/, /m/, and /n/. Therefore, it violates the NUC/V constraint and Khowar requires all nuclei to be filled by a vowel. Secondly, it has a complex consonant cluster at the coda position, again violating the *CC]σ constraint. It does not satisfy the top two higher-ranked constraints. Therefore, it cannot be an optimal one. Candidate 'c' satisfies the two highly ranked constraints that candidate 'a' violated. But it fatally violates another constraint *[σ V, because the second syllable begins without a consonant. It cannot be an optimal candidate either.

Candidate 'b' is considered as the harmonic, hence, the optimal candidate. Its harmony is due to its satisfaction with the top three high-ranked constraints; its syllables contain nuclei in the form of vowels. Moreover, the syllables take onset, and the onsets are not even complex. Therefore, NUC/V. *CC]σ and *[σ V are all satisfied. The DEP-V constraint is violated at the cost of satisfaction of *CC]σ.

It is worth noticing that although Khowar does not always require a coda it does not ban it. In OT terms, this indicates that other markedness and faithfulness constraints like MAX-IO and DEP-IO outweigh *CODA, which has a low ranking in Khowar. That is, if a coda is present in the source word, it is preserved, violating *CODA or *C]σ, and no phonological processes are involved to eliminate a coda. The *C]σ is violated by all the possible candidates as all contain a coda at the end specifically the second syllable of the optimal candidate ends with a coda.

Pahari and Khowar share some similarities in the adjustment of the consonant clusters. Pahari speakers encounter challenges with the pronunciation of stop + nasal clusters since these combinations are not commonly found in the Pahari language (Abbasi et al., 2022). As an illustration, the same English loanword /bʌtn/ is pronounced in Pahari as /betən/. Thus, it is observed that stop + nasal clusters do not occur at the coda position in most Pakistani languages. However, in Lasi this loanword is adjusted in a very different manner. According to Aliani (2022), the /n/ sound in Lasi is very rare. Therefore, when it occurs at the end of a loanword, it is often substituted with a retroflex /ɳ/. The loanword /bʌtn/ is adjusted as /bʌ.təɳə/ with the substitution of /n/ with /ɳ/ and epenthesis of vowel /ə/. In Khowar, only the process of epenthesis is used to adjust this particular loanword. Zaigham et al. (2022) claim that Urdu lacks consonant clusters, therefore, Urdu speakers find it really difficult to pronounce English words having syllabic consonants. The loanword /bʌtn/ is adjusted in Urdu as /bʌtən/. It is worth observing that Pakistani languages follow a similar pattern. Like Khowar, in Urdu, a vowel is only allowed to be the obligatory sound within a syllable.

Khowar as well as Urdu speakers position a vowel before the syllabic consonant.

4.2 Substitution

Another step in the loanword adaptation is substitution. Substitution is the process of replacing a sound segment of a word of a particular language with an alternate sound segment(Hock, 1986).In this procedure, a phoneme from a foreign language is replaced with a phonetically or phonologically comparable native phoneme. Most languages throughout the globe use this procedure to simplify loanwords according to their nativephonology. In Khowar, the substitution of phonemes includes both vowel and consonant substitution.

(1) Mug

Tableau 5:/ g / → [k], / ʌ / → [ɑ]

[mʌg]	NUC/V	*[σ V	*OBS VOI	IDENT-IO (Voice)
a./ mʌg /			*!	
☞**b. /mɑk /**				**
c. m.ʌk	*!	*!		*

According to Sipra (2013) when a language borrows words from another language, it makes an effort to incorporate them by using the sounds closest to the original sounds of the word it possesses. The monosyllabic word [mʌg] serves as the input lexical item. The distinct candidates are generated and given in the column of the OT tableau. The competition of constraints will pick the best candidate. Continuing with the examination of candidate 'a', deemed the most faithful contender. Candidate ‘a’ fatally violates the strictly ranked new markedness constraint *OBS VOI (no voiced obstruent in syllable coda) as it contains the voiced velar /g/.The voiced velar /g/ is actually a voiced obstruent. Candidate ‘c’ violates the NUC/V constraint as the nasal /m/ stands alone to make a syllable. Though /m/ is a syllabic consonant and capable of making syllables without a vowel as a nucleus. While syllabic consonants can be part of a syllable, they cannot form the opening syllable of a word.In addition to

that as already explored syllabic consonants do not exist in Khowar. Therefore, the nasal /m/ is violating the NUC/V. It has a second syllable that begins without an onset violating the *[σ V constraint.

In the provided data, candidate 'b' is chosen as the winning one since it aligns harmoniously with all the prominently ranked markedness constraints, NUC/V, *[σ V, and *OBS VOI. It has a vowel as its nucleus, which satisfies NUC/V. It ends with a sound segment /k/ that is voiceless velar, thus satisfying *OBS VOI. The optimal candidate ‘b’ has an onset, and the constraint *[σ V is satisfied. However, the lower-ranked faithfulness constraint, IDENT-IO (Voice)was breached on two occasions, but this violation is minimal. Thus candidate ‘b’ is the optimal one and the process used is substitution.

Devoicing sound segments through substitution is a phenomenon observed in languages such as Russian and German as well. In these languages, obstruents undergo devoicing at the final position within words (Spencer, 2008). Similarly in the adaptation of loanwords, Lasi prefers the devoicing rule over the deletion of sound segments. If there is a voiced coda in the loanword, Lasi adjusts it by converting the voiced coda consonant to a voiceless one (Aliani, 2022). The word /pəˈreɪd/ for example is adjusted as /pəre.t/ in Lasi. Likewise these languages, the voiced velar /g/ in the loanword is converted into voiceless velar /k/ in Khowar. The analysis further indicates that Khowar's phonotactic rules prefer a monosyllabic word to end with a voiceless consonant in its coda position.

(2) Road

Tableau 6:/əʊ/ → [ɔ], / d / → [t]

[rəʊd]	NUC/V	*VV	*[σ V	*Voiced-Coda	IDENT-IO	*C]σ
a. rəʊd		*!		*!		*
b. rəʊt		*!			**	*
c. ☞rɔt					**	*

According to Liljegren and Khan (2017), there are 41 consonants and five vowels in Khowar. However, Khowar does not take any diphthongs and triphthongs within its syllables. The phonotactic constraints of Khowar do not allow it to take complex vowels within its syllables. Therefore, Khowar simplifies the diphthongs present in English loanwords. Other Pakistani languages also do not have diphthongs in their inventory as well. As noted by Khan (1997) and Khurshid et al. (2003), in contrast to English, Urdu does not possess diphthongs and triphthongs. Certain sources on Punjabi phonology, such as Bhatia (2009) and Gill & Gleason (1969), assert the existence of diphthongs in Punjabi, while others, like Karamat (2001), do not include diphthongs in the inventory of Punjabi vowels. Consequently, Hussain et al. (2011) indicate that the phoneme /oː/ is frequently employed as a substitution for the English diphthong /əʊ/.Like these languages, Khowar replaces diphthongs found in loanwords with a single vowel. The analysis will provide a more comprehensive explanation of the adaptation of the English loanword and will alsoelucidate the operational dynamics of the newly added *VV constraint.

Candidates have been derived based on the monosyllabic input [rəʊd]. The constraints are given in the row of the OT tableau. The evaluation begins with candidate ‘a’. Its syllable structure encompasses a nucleus and an onset, effectively meeting the criteria of the top two constraints. Furthermore, the voice feature remains unaltered, signifying satisfaction of the IDENT-IO constraint. But it goes against the constraint *Voiced-Coda which is somehow a new version of the previously used constraint *OBS VOI. If there is an obstruent in coda position it must not be voiced. Most of the monosyllabic words in Khowar often end with voiceless obstruent e.g., qɑf (paw), tɑt (father), tɪp (enormous). It cannot be generalized that Khowar always takes voiceless obstruent atthe coda position, but it is noticeable that voiceless obstruents are commonly favored, particularly when it is a monosyllabic word. Therefore, the constraint *Voiced-Coda is violated. The newly added constraint *VV (that disfavors the occurrence of complex vowel sounds)is likewise

violated as there is a sequence of vowels in between the two consonants of the syllable. The violations of *VV and *Voiced coda led to the dismissal of candidate 'a'.

The second candidate is likewise discarded for an optimal one. It disobeys the *VV constraint. The IDENT-IO-Voice is violated as the voiceless obstruent /t/ replaces the voiced obstruent /d/. Therefore, further deliberation on the optimality of this candidate becomes unnecessary. The analysis solidifies candidate 'c' as the most optimal choice. It incorporates a nucleus featuring a vowel and commences with an onset. The diphthong in the underlying input /əʊ/ is replaced with the short, open mid vowel /ɔ/. The final obstruent is devoiced. This comprehensive alteration ensures the fulfillment of the NUC/V, *VV, *[σ V, and *Voiced-Coda constraints. Kager's concept of the "Fallacy of perfection" suggests that an output form cannot satisfy all constraints. In this case, the winning candidate violates IDENT-IO because it replaces some sounds, but these violations are minor since IDENT-IO is a lower-ranked constraint. It was necessary to avoid IDENT-IO just to satisfy *VV and *Voiced Coda. Therefore, these violations have a lesser impact on the assessment of harmony.

Furthermore, in other Pakistani languages, the voiced /d/ in the loanwords is substituted with the voiceless /t/. In Lasi, a similar pattern emerges where speakers tend to favor /t/ over /d/. While the /d/ sound exists within the native inventory, it is not the preferred choice in pronunciation (Aliani, 2022).Lasi does not allow voiced stops at the coda position. It does not delete but rather devoice it. Hence, Khowar and Lassi share similarities in the adjustment of the English loanwords having voiced coda. Just like Khowar, the diphthong /əʊ/ is repaired with a singleton phoneme in Punjabi. According to Karamat (2001), Punjabi lacks diphthongs. In Qassimi Arabic, the closing diphthong /əʊ/ is not present. However, like many other Arabic dialects, it features the mid-back rounded vowel /oː/.This suggests an expectation that English vowels such as /əʊ/ would typically correspond to [oː] in Qassimi Arabic, as seen in the adjustment of the word /gəʊl/ to [goːl] by replacing a

diphthong with a monophthong (Alhoody, 2019). Khowar shows similarity with these languages in the adjustment of the English loanwords.

(3) Time

Tableau 7: / aɪ / → [è]

[taɪm]	NUC/V	*VV	*[σ V	IDENT-IO	*C]σ
a. / ta.ɪm/			*!		*
b. / taɪm /		*!			*
☞**c. / tèm /**				*	*

According to Zivenge (2009), syllables are categorized into two types: complex peaks and simple peaks. Complex peaks occur when the central sound in a syllable is a diphthong or triphthong, which involves multiple vowel sounds. In contrast, simple peaks have only one vowel sound at their core. In English, syllables can have both simple and complex peaks, whereas in Khowar, simple peaks (CVC) are more common, especially in closed syllables. Therefore, the English loanwords having complex vowels as peak such as diphthongs or triphthongs in a closed syllable are modified when integrated into Khowar. In many Pakistani languages for example in Punjabi glide epenthesis is used to avoid complex vowels in a syllable (Habib, et al., 2021). While in Khowar substitution is used to avoid complex vowels VV. The analysis will further solidify this claim.

The lexical item given as an input is the monosyllabic word [taɪm]. It contains a VV structure as the syllable peak. The candidates generated are the best possible candidates that have entered the tableau. Within this tableau, a contest ensues among these candidates to determine their optimality. The scrutiny of these candidates against the constraints will ultimately reveal the optimal candidate. The analysis is initiated with the NUC/V constraint. Both onset and coda are optional parts of a syllable, but nucleus is compulsory therefore NUC/V is fulfilled by all candidates as all have syllables that take vowels as their head component. The *VV constraint comes into focus, which inherently discourages the occurrence

of consecutive vowel sequences. The candidate that violates this constraint is ‘b’, as there is a sequence of the vowels between the onset and coda.

Furthermore, the *[σ V constraint demands a syllable not to begin with a vowel. However, this constraint suffers a severe breach in the case of candidate 'a', while it remains fulfilled by all other candidates. Drawing from the analysis of these three top-ranked constraints, candidate 'c' emerges as the optimal choice. It remains free from any significant violation of the highly prioritized constraints. It features a vowel as the nucleus, boasts an onset, and avoids consecutive vowel sequences between consonants. Thus, the constraints NUC/V, *VV, and *[σV are all agreed by this candidate. It however incurs minimal violation of the IDENT-IO constraint as the sequence of vowels VV in input is adjusted through the replacement of /aɪ/with the close vowel /è/.As usual, the constraint *C]σ is violated by all candidates as all of these have consonants at the coda position and have closed syllables. Consequently, it is determined that candidate 'b' is the optimal candidate, and that candidate 'c' is the obedient or faithful one. The process involved in adjustment is substitution.The similar loanword /taɪm/ is adjusted using glide /j/ as /taː.jam/ in Qassimi Arabic (Alhoody, 2019). Likewise, Khowar’s phonotactics does not permit the occurrence of vowels in between syllables, therefore, substitute the complex vowels in a loanword into a simple one.

(4) Coat

Tableau 8: / əʊ / → [ɔ]

[kəʊt]	*VV	*OBS VOI	IDENT-IO	IDENT-IO-Voice
a. / kəd /		*!	*	*
b. / kəʊt /	*!			
☞c. / kɔt /			*	

In English, intricate vowel combinations can be found within syllables, whereas Khowar exhibits no observable instances of diphthongs and

lacks any relevant triphthongs.Such complex vowels in English loanwords are simplified using certain adaptation techniques.According to Atta et al., (2020), the Saraiki speakers substitute diphthongs in English loanwords like /əʊ/,and /ei/with long vowels like /ɔ:/ and /e:/. For example, the term [keik] is altered by substituting the diphthong with the elongated vowel [ke:k]. In Khowar, oftenshort vowels are employed to replace diphthongs from English loanwords. In some cases, long vowels can also be utilized. A more in-depth analysis of the data will provide further clarity on how intricate vowels are streamlined in the Khowar language.

The lexical item that is given as input is [kəʊt]. It is a monosyllabic word. Following this, the generator has produced a collection of candidates that have been presented in the OT tableau. Subsequently, the task falls upon the EVAL component to assess these candidates in light of the constraints and identify the most optimal choice. By assessing the candidates against the established constraints, the winning candidate will be chosen. As usual, the analysis begins with the first candidate ‘a. It meets the *VV requirement, yet the following *OBS VOI constraint is breached. The syllable ends with a voiced stop /d/. This clear violation is the reason for discarding the first candidate. The second candidate proves to be the faithful one. It satisfies almost all the constraints except *VV. There is a sequence of vowels in between two voiceless plosives /k/ and /t/ that show a clear violation of *VV. As a result, this candidate is also eliminated.

With candidate 'c' now being the sole candidate, let us thoroughly evaluate it in relation to the two top-rated markedness constraints. There is no sequence of vowels in between consonants, thus *VV is satisfied. The syllable is closed, which means that there exists a coda at the end. The coda takes a voiceless obstruent therefore the constraint *OBS VOI is also satisfied. Thus candidate 'c' is selected as the optimal one since it does not violate these highly ranked limitations. The faithfulness constraint IDENT-IO is violated because the diphthong in the input /əʊ/ is substituted with a short, back, rounded vowel /ɔ/. However, this is a

violation of the lower-ranked constraint and does not affect the optimality of candidate ‘c’. Urdu speakers also substitute the /əʊ/ diphthong with a single short vowel /ɔ/, for example [təʊst] is pronounced as [tɔst] (Zaigham et al., 2022; Kalsoom et al., 2019). The same is the case with Khowar where diphthongs are often adjusted using simple short vowels while Saraiki as mentioned above often uses long vowels as a substitution for diphthongs.

(5) Salute

Tableau 9:/ ə / → [ʊ], / u: / → [ʊ]

[sə.lu:t]	*[σ CC	*ə	*OBS VOI	IDENT-Central	IDENT-Length	IDENT-Voi	*C]σ
☞**a. / sʊ.lʊt** /				*	*		*
b. / sə.lu:t /		*!					*
c. / slu:t /	*!						*
d.sʊ.lu:d			*!	*		*	*

The most crucial function of the generator, which is a key component of OT, is to produce an unlimited number of possible candidates. Possible means that should not be illicit. Let us consider the input provided in the tableau above to illustrate this point. There are many possible candidates like [sʊl], [sʊlʊ], [lʊt], [ʊlʊt] and so on. GEN avoids creating any illicit candidates like [sltlʊ] or [slttʊ] etc. In OT the candidates that make their way into the tableau are the best possible candidates for any given input. Subsequently, these candidates within the tableau engage in a competition, vying to be chosen as the optimal candidate.

Through a systematic analysis of the candidates in relation to the provided constraints, the optimal candidate can be identified. The constraint *[σ CC requires that the onset be simple. Candidates 'a', 'b', and ‘d’ adhere to this constraint, each commencing with a simple

consonant (onset). In contrast, candidate 'c' violates it due to the presence of a cluster consisting of the voiceless fricative /s/ and the voiced lateral /l/. Consequently, candidate 'c' is eliminated from contention for the role of an optimal candidate. Moving on to the next constraint, *ə, it becomes evident that all potential candidates align with this constraint, with the exception of the most faithful candidate 'b'. Despite its close resemblance to the input, candidate 'b' is not considered an optimal candidate due to its breach of the *ə constraint, which disallows the presence of the schwa /ə/ between consonants. While /ə/ is rarely found in Khowar words, the *ə constraint remains highly prioritized. Any transgression of this constraint leads to the dismissal of a candidate, as is the case with candidate 'b'. In Turkish as well this particular sound does not exist, thus they replace it according to their phonotactics. Beel and Felder (2013) conducted a research study where they worked on the phonological adaptation of English loanwords in Turkish. They found that in Turkish this particular sound /ə/ does not exist, thus they replace it accordingly.

Subsequently, we come to the contextually bound *OBS VOI constraint, which enforces that the obstruent in the coda must be voiceless. In Khowar, mostly the syllables in the coda take voiceless consonants however, it cannot be the highest ranked constraint as NUC/V or *[σ CC, etc. Nevertheless, all candidates, except candidate 'd', conform to this constraint. In the case of candidate 'd', the second syllable ends with a voiced coda obstruent, resulting in its exclusion from contention based on this violation. The only candidate that incurs no violation of any of these highly ranked markedness constraints is ‘a’. Consequently, it is the best choice.

Additionally, both the preferred candidate and the rejected candidates violate the low-ranked faithful and markedness constraints. The central /ə/ vowel is replaced with the back, close (high) vowel /ʊ/ in candidate ‘a’ and ‘d’. The long vowel u: is replaced by the short vowel /ʊ/ in candidate ‘a’. The voiceless plosive /t/ is replaced by the voiced plosive /d/ in candidate /d/. Then, *C] σ (No Coda) is violated by all the candidates. It is important to note that these violations are relatively

minor and do not significantly impact the candidate's optimality. It is concluded that the optimal candidate is ‘a’ and the process used for adjustment of loanword is double substitution. Just like Khowar, in the Turkish adaptation of English loanwords [kəltʃər], the /ə/ is replaced with /ʊ/. For example, the word [kəltʃəɪ] is pronounced as [kʊltür] (Beel & Felder, 2013). In their study, Zaigham et al. (2022) noted that Urdu does not contain the vowel /ə/, therefore it is substituted with /ʊ/ in word-final syllables.

4.3 Deletion

During the adaptation of English loanwords in Khowar, certain sound segments might undergo omission. This process is known as elision or deletion. The phonological process of deletion entails eliminating one or more sound segments from a word. It is worth noting that the deletion of sound segments is not as commonly employed as other repairing strategies like epenthesis and substitution in the case of Khowar loanword adaptation.

(1) Cement

Tableau*10:* n →[Ø]

[sɪ.ment]	*CC]σ	*[σ V	*NC0	MAX-IO	*C]σ
☞a.sɪ.met				*	*
b.sɪ.ment	*!		*		*
c. sɪm.et		*!		*	*

The lexical item given as input is the disyllabic word cement. The tableau shows that the process of deletion has affected the coda consonant rather than the onset consonant. To avoid the cluster at the coda the velar /n/ sound has been deleted. In the Korean language just like in Khowar, complex clusters are not allowed especially at the coda position (Boersma & Hamann, 2009). Therefore, to satisfy the Korean structural restrictions a sound segment is deleted. The same is the case

with Khowar as it will be obvious after analyzing this data through the lens of OT.

The nasal /n/ and the voiceless obstruent /t/ are present in candidate 'b'. Both of the top-ranked markedness constraints, *CC]σ and *NC0, are evidently breached. The *NC0 constraint demands that a nasal sound should not be followed by a voiceless obstruent. As a result of this violation, the candidate is rejected. Candidate 'c' conforms to the two constraints that were violated by candidate 'b'. Nonetheless, candidate 'c' encounters a breach of the *[σ V constraint, which asserts that "a syllable should initiate with an onset." This violation is attributed to the candidate 'c' second syllable, which starts with the vowel /e/. Because candidate 'a' remains free from violations of the highest-ranked constraints, we may thus infer that it is the best candidate. Its second syllable takes a simple coda, there is no sequence of the velar /n/ and the plosive /t/, and the syllables begin with a consonant. Therefore, all the constraints are satisfied.

The violation is on the faithfulness constraint MAX-IO that claims, “Input segments must have output correspondents” (Kager, 1999, p. 102). The nasal /n/ sound is deleted to adjust the loanword. The result shows that when nasal and obstruent are involved either obstruent or the nasal is deleted. It is determined that candidate "b" is the most faithful while candidate "a" is the optimal one. The process involved in the adjustment of the loanword is deletion.

Native Turkish speakers encounter difficulty in pronouncing words that end with /nt/ cluster. The nasal + stop combination is not allowed in Turkish therefore the process of deletion is applied to adjust such loanwords that have the /nt/ combination (Beel & Felder, 2013). The study of Beel and Felder (2013) reports that Turkish speakers modify the loanword "apartment" from its original pronunciation [əpɑɹtmɛnt] to [ɑpɹtmɑn] by entirely omitting the final [t]. The coda clusters in Khowar and Turkish are either epenthesized or deleted. The phonotactic constraints of Khowar do not allow the nasal+stop sequence to make a cluster in a syllable.

5. Findings and Conclusions

5.1 Major Findings

The first objective of this research study was to determine whether Khowar has borrowed any English loanword. The researcher collected data from different domains and the findings show that Khowar did, in fact, borrow English loans.

The second objective was related to the processes involved in the adaptation of English loanwords. It also endeavoured to show the structural changes in an adjusted loanword which was the third and final objective of this research study.Three major repair strategies were found for the adjustment of English loanwords into Khowar. These are substitution, deletion, and epenthesis. Among these techniques, substitution was the dominant one. The English loanwords have changed their structure in order to be adjusted according to the phonotactics of the Khowar language. For example, the monosyllabic words have been transformed into disyllabic words.

Furthermore, the findings of the study show that substitution was used to avoid voiced obstruent at the coda position. For example, the voiced velar obstruent /g/ of the loanwords [mʌg] and the voiced stop /d/ at the end of loanwords like /rəʊd/ are substituted with voiceless velar /k/ and voiceless stop /t/. In the same way substitution of vowels was also dominant in the adjustment of diphthongs. The diphthongs were substituted with a single vowel /ɔ/ as in the case of [kəʊt] and [rəʊd] and with /è/ in /taim/.The findings show that English phonemes that are foreign to Khowar are substituted by their closest Khowar equivalents.

As far as epenthesis is concerned it did not involve consonant insertion rather the insertion of a vowel segment was influential. The main aim of epenthesis in the case of Khowar was to break consonant clusters at different syllable positions of the loanword. For example, in the adaptation of loanwords [skuːl] the short vowel /ɪ/ was inserted at the start of the syllable because it was analyzed that the loanword that begins with s+obstruent was adjusted by insertion of /ɪ/ at the beginning of the word's syllable just before the onset consonant. However, in the

loanwords like /klɪn.ɪk/,/fɪlm/, and /bʌtn/, the vowel was inserted in between consonants at the onset position as well as the coda position to break the consonant clusters.

The least used repairing technique was deletion. There was only one instance where deletion was used to adjust the loanword. In the loanword [sɪˈment], the deletion of a sound segment happened at the coda position. In Khowar nasal does not usually follow any voiceless obstruent therefore loanword like [sɪˈment] is adjusted by deletion of the nasal sound itself.

More so, it is analyzed that Khowar does not have a complex cluster at either position. Therefore, the English loanwords having complex clusters were adjusted using the highly dominant *COMPLEX cc (*[σ CC and *CC] σ) constraints. Similarly, Khowar does not have a sequence of vowels or diphthongs as mentioned earlier therefore they are adjusted through the process of substitution. The constraint used to adjust loanwords with the sequence of vowels was the *VV constraint, which disallowed syllables having a VV sequence of vowels. Khowar like others takes vowel as the head of the syllable. It does not have any syllabic consonant therefore the universal constraint (NUC/V) is ranked the highest of all. Likewise, Khowar frequently allows syllables to take voiceless obstruent at the coda position. Those English loanwords that had voiced obstruent at coda were adjusted through substitution. The constraints that played a role in devoicing the voiced obstruent were *OBS VOI and *Voiced Coda.

Finally, the findings show that syllables in Khowar often begin with an onset, especially the monosyllabic words that take the onset consonant. Therefore, the constraint ONSET (*[σ V) is ranked higher. It is also observed that Khowar has both open and closed syllables, but closed syllables are often preferred.

5.2 Conclusion

Based on the findings of this research study, it can be concluded that Khowar lacks local lexical items for referring to specific foreign entities such as activities and objects. Thus, to fill the lexical gap Khowar has

borrowed words from English. Moreover, the English loanwords provided an additional lexical item for which there was already a native lexical item. The structure of English loanwords that were illicit to Khowar's phonotactics was adjusted accordingly. For example, the [s]+ [k] sequence in the English loanwords school was adjusted with the epenthesis of a sound segment. Optimality Theory has been instrumental in explaining why recipient languages tend to favor insertion, deletion, and feature change during loanword adaptation. This demonstrates that Optimality Theory outperforms other theories when it comes to accounting for the process of loanword adaptation. Furthermore, the study revealed that phoneme substitution, vowel epenthesis, and segment deletion are important processes in Khowar's adaptation of English loanwords. The loanwords change their structure to match the phonotactic of the Khowar language.

5.3 Recommendations

This study is the first attempt to use optimality theory (OT) to analyze language interaction and adjustment of English loanwords in Khowar. The study has used English; however, English is not the only language with which Khowar came in contact. Some other languages like Pashto, Persian, and Urdu have deeply influenced Khowar as it has taken many words from these languages as well. It is recommended that another study be conducted on the interaction of Khowar and one of the above-mentioned languages.

This research solely looked at nouns that were seen to be borrowed from the source language into Khowar. Nouns are chosen because they are the most commonly borrowed words across languages. It is recommended that another account of loanwords in other content word classes of Khowar (verbs, adjectives, and adverbs) be undertaken. Moreover, this research is related to only phonological changes in the structure of loanwords after adjustment, however, it could be extended to morphological and semantic changes in loanwords' structure. Moreover, a separate study can be conducted on the adaptation of foreign vowel sounds in Khowar.

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