

Phonetic and Phonological Adaptations of English Loanwords into Iraqi Arabic: A Generative Study

Dr. Mohammed A. Abdul Sattar As-Sammer (Asst.Prof.)

Dept. of English- College of Arts- University of Basra

Abstract

This paper explores the underlying adaptation transformations that apply to English loanwords into Iraqi Arabic. Iraqi Arabic dealt with in this study refers to the variety of Arabic spoken in the city centre of Basra and nearby districts (henceforth IA). It is the mother tongue of the researcher. The building block of this work is (150) English loanwords representing both integrated and on-line loans. These transformations are subjected to phonological rules to allocate the context and patterns of adaptation and the resultant output. The rating of the adaptation strategies shows that multi-adaptation scores the highest rating (56.66%), while consonant substitution and pronouncing silent /r/ occupies the lowest rank (3.33% each). It is concluded that the main motive behind adaptation is a psycholinguistic motive where all the adapted forms are in full agreement with IA phonology. No default patterns result from these transformations. This evidence falls within the framework of constraint-based phonology (output-oriented framework), in which the transformations in loanwords are driven by constraints that are already part of the grammar of the borrowing language. Almost both integrated and on-line loans reveal the same patterns of adaptation. The prominent phonological rules that operate in these transformations are: vocalic lengthening, vocalic quality alteration, consonant substitution, vowel insertion, modification of syllabic phonotactics, and a combination of these rules.

المهاياة الصوتية والفونولوجية للكلمات الإنجليزية المستعارة في اللهجة العراقية : دراسة توليدية

الأستاذ المساعد الدكتور

محمد أحمد عبد الستار السامر

كلية الآداب / جامعة البصرة

المستخلص

تبحث هذه الدراسة في التحويلات الصوتية العميقة الخاصة في الكلمات الإنجليزية المستعارة في اللهجة العراقية. اعتمد الباحث في هذه الدراسة على عينة تضمنت (١٥٠) كلمة مستعارة من اللغة الإنجليزية تمثل الكلمات المستعارة الثابتة والحديثة الاستخدام التي دخلت اللهجة العراقية عبر وسائل الاتصال الحديث. تم إخضاع هذه العينة الى قواعد صوتية لتحديد سياق **المهاياة** الصوتية الناتجة وأنماطها.

سجلت استراتيجيات **المهاياة** الصوتية المتعددة الأنماط أعلى معدل (٥٦,٦٦%)، في حين سجلت الاستراتيجيات الخاصة بإبدال الصوامت ونطق صوت الراء الصامتة أدنى مستوى (٣,٣٣%) لكل منها. أثبت الباحث من خلال هذه الدراسة بأن الدافع الأساس وراء عملية **المهاياة** الصوتية لغوي نفسي حيث أن جميع الأنماط المعدلة تتطابق تماما مع النظام الصوتي في اللهجة العراقية. كما أنه لم يسجل أية أنماط مغايرة للنظام الصوتي في اللهجة العراقية. يدخل هذا الاستنتاج ضمن اطار النظام الصوتي المحدد بقواعد (نظرية المخرجة المحددة بقواعد)، حيث أن التحويلات الصوتية التحتية تحددها قواعد اللغة المستعيرة.

وقد تبين أن متحدثي اللهجة العراقية استخدموا تقريبا أنماط **المهاياة** الصوتية ذاتها في الكلمات المستعارة القديمة والحديثة. أما القواعد الصوتية المستخدمة في هذه **المهاياة** فيمكن تلخيصها بالآتي: ااطالة صوت العلة القصير وتغيير نوعية صوت العلة وإبدال الأصوات الصامتة واقحام صوت العلة وتعديل الانماط المقطعية للكلمات الأصلية والمزج بين هذه العمليات.

1- Introduction

Speakers of different languages interact with each other for a variety of reasons: commercial, cultural, educational, political, and so on. Due to this interaction, foreign words are borrowed undergoing different types of modifications such as orthographical, phonological, phonetic and semantic. Iraqi Arabic (IA) has borrowed many English words through different stages. Some of these loans are the result of the direct communication with English speakers during the occupation period, via contact with oil companies foreign experts and staff, as a result of technology and the deployment of mechanical and technical register in different domains of life, and due to the teaching of English in Iraq as a foreign language at different academic levels. Many of these loans have become an integrated part of IA lexicon, and the others are on-line (here and now) loans. The latter have been introduced recently as a result of using information technology (IT) and internet, among other factors.

In terms of phonetics and phonology, scholars argue that words of foreign origin mostly do not preserve their original shape but " get adapted to the sound system of the borrowing language. The driving force behind the adaptations is the aim to make non-native words conform to the surface phonological structure of the native language" (Peperkamp and Vendelin, 2004: 129). This view is supported by Paradis and Lacharite (1997) and Yip (1993) who confirm that loanword adaptations are transformations that apply to foreign forms that would be ill-formed if they are borrowed without modification. The same view is upheld by Peperkamp (2005: 2) who states that " loanword adaptations are typically transformations that, although absent from the native phonology, do not conflict with it".

The findings of the present paper are mainly drawn form the strategies implemented by (IA) speakers in adapting these loans. The paper is built on exploring the following research questions: (i) Is the input to English loanwords adaptation phonetic or phonological?,(ii) What are the potential motives behind this adaptation?, (iii) Are there some default patterns of adaptation?, (iv) What are the prominent categories of adaptations?, (v) Do

on-line adaptations conform with the phonology of IA?, and (iv) What are the ratings of adaptation strategies?

2- Previous Studies on Loanwords Adaptation

The adaptation of loanwords has been a rich topic of research in linguistics for a long period of time. It has been approached from grammatical, phonological, and semantic perspectives. The basis and the motives behind this sort of adaptation have been the core of many studies. In terms of phonetics and phonology, a number of researchers focused on the basis of adaptation and the strategies deployed by speakers of different languages when they borrow foreign words. The psychological.

parameters behind adaptation have also been approached via linguistic evidence taken from different borrowing languages. Works fall within the trends of phonetics and phonology, where a variety of methodologies are routed, will be surveyed in this section.

A number of scholars (e.g. Shinohara, 2000; Kenstowicz and Sohn, 2001) examine cases of "unnecessary adaptations" which they call "generalizations". Such cases, they argue, apply to foreign forms that are well-formed in the borrowing language but do not comply with some default patterns. The examples given are the regularizations of pitch accent patterns in loanwords in Japanese and Korean.

Peperkamp and Vendelin (2004) conduct an acoustic study to investigate the treatment of word-final sonorant /n/ from French and English into Japanese. He has found that while word-final /n/ is adapted as a moraic nasal consonant in loanwords from English, it is adapted as a geminate nasal followed by an epenthetic vowel in loanwords from French. He provides evidence that this asymmetry originates in the way Japanese speakers perceive word-final /n/ in French and English.

Kenstowicz (2005) reviews some of the recent research on Koran loanword adaptation, placing it in a larger theoretical context (phonetically

vs. phonologically based models). The paper then reviews the adaptation of English liquids and stops in terms of these models.

Kenstowicz (2006) studies the tonal adaptation of English loanwords into Yoruba. The study is built on a corpus of (800) words. He hypothesizes that since lexical items in Yoruba are composed of open-syllables that belong to one of three contrasting tonal categories (High, Mid, and Low), any loanword must conform to the cv syllable template and be assigned a tonal specification. He states that since English lacks lexical tones, a word's F0 contour is determined by its position in an intonational phrase. He outlines the gross strategies which characterize the Yoruba tonal adaptations as follows: (i) stressed syllable in English source adapted with H tone, (ii) final syllable of English source adapted with L tone, (iii) pretonic syllables adapted with M tone, and (iv) Yoruba MHL tonal pattern corresponds to the English rise + fall citation contour (HL %).

Ito et al. (2006) carry out a generative study on the adaptation of loans from Japanese into Korean. The corpus they analyze is (1300) loanwords most of which are transmitted to Korean during a period of massive borrowing that spans the late 19th century until the end of World War II. The data are approached in view of the systematic phonetic level of representation of the donor language, taking into account the phonetic cues to the phonological categories in addition to the relative position of segments in a system of surface phonetic contrasts.

Heffernan (2007) tackles the phonetic and phonemic of English loanword adaptation in Polynesian languages (Chinese, Japanese, Korean). He concludes that the input to loanword phonology is either phonetic or phonemic, and the actual choice depends on the social relationship between native and non-native language. If the input is phonetic, then "the phonetic similarity" is stressed. If the input is phonemic, then " phonemic contrast" is stressed. This was demonstrated by comparing the strategies used in the adaptation of Chinese velar nasals into Japanese at various stages. Another finding is that the social role between languages is crucial in deciding the adaptation strategies. The evidence provided is that Chinese place names

adapted into Modern Japanese via English use the strategy for the adaptation of Chinese and not English, even though the names were clearly adapted via English.

Hsieh, et al. (2008) analyze the ways in which English loanwords into Mandarin are adapted to conform to the Rhyme Harmony Constraint that requires the front vs. back quality of a non-high vowel to agree with the coronal vs. dorsal character of a nasal coda. The prominent finding of this work is that the backness of the English vowel determines the outcome and can force a change in the place of articulation of the nasal coda. He attributes this outcome to the phonetic salience of the vowel feature in comparison to the relative weakness of the nasal place feature. It is concluded that phonetic salience is a critical factor in loanword adaptation that can override a phonologically contrastive feature.

3- Models of Adaptation

The phonetics and phonology of loanword adaptation has been interpreted by different schools of thought. In the recent literature on loanword phonology, two basic models have appeared in the scene; rule-based phonology and constraint-based phonology. The first, championed by Paradis and LaCharite (1997) and LaCharite and Paradis (2005), proposes that loanword adaptation is primarily executed by bilinguals who draw on their phonological competences in both the donor (L2) and recipient (L1) languages to make out segmental equivalences at an abstract phonological level. In case when an exact phonemic match is not found, the closest available phoneme is chosen. This is usually measured in terms of the distinctive features operative in the native, L1 grammar. According to this model, loanword adaptations present one oddity: foreign words often contain illegal structures which are absent from the underlying forms in the native phonology. Thus, novel rules should be added to the native grammar to deal with these adaptations (cf. Peperkamp, 2005).

A constraint-based model (output-oriented framework) couched within the Optimality Theory (OT) trends sees that adaptations of loanwords are

driven by constraints that are part of the grammar of the native language (cf. Broselow 2000; Golston and Yang 2001; Jacobs and Gussenhoven 2000; Kenstowicz, 2001; Ulrich, 1997). Accordingly, it is assumed that the input to loanword adaptations is constituted by the surface form of the source language, and that the adaptations are computed by the phonological rules of the borrowing language (Hyman, 1970). The adapter takes a variety of parameters into account in order to make the loan looks like a word of the native language while still remaining as faithful as possible to the source of the loan. These imply orthography as well as phonetic properties that are salient to an L1 speaker, regardless of their contrastive status in the L1 or L2 grammars (See Kenstowicz and Suchato 2006, and Yip, 2004).

Other scholars (e.g. Silverman 1992, Kang, 2003) argue that adaptations should not only be interpreted as phonologically minimal transformations that yield a legal surface form in the borrowing language. For several cases, more than one transformation is available for a given source word. As such, they admit that phonetic distance between L1 and L2 plays a vital role. Evidence given includes the choice between deletion and epenthesis in languages with a simple syllable structure (Silverman, 1992), and the absence versus presence of epenthesis (Kang, 2003), the quality of epenthetic vowels and the choice between two or more segmental adaptations to repair ill-formed segments (Shinohara, 1997; and Kenstowicz, 2001).

The third approach represents a compromise view regarding the motive behind loanword adaptations. It is assumed that loanword adaptations are the outcome of a phonetic and/ or a perceptual variables and thus they differ from the native phonological alternations. These alternations need transformations that are computed during the introduction of the loanword. Once they have made their way to the borrowing language, there is no reason to keep the corresponding forms in the source language as the underlying forms in the lexicon of the borrowing language (Peperkamp, 2005). In a similar vein, Kang (op.cit.) differentiates between speech perception and the role of phonetics. He focuses on the phonetic distance

and considers it as auditory distance. In his view, adaptations result from perception variable depend on phonetic minimality. Based on this , he differentiates between phonetic and phonological adaptations; the former takes place during perception while the latter occurs during production.

4- Loanword Adaptations as Perceptual Assimilations

It has long been held that the way in which speech is perceived depends upon the phonological properties of the native language (see, for instance, Polivanov, 1931). Based on this, it has been proposed that certain loanword adaptations take place during perception, due to the difficulties that listeners have in perceiving non-native patterns (Rose, 1999; Gbetto, 2000; and Kenstowicz, 2001). These authors presume that adaptations taking place during perception precede the remaining adaptations, and are either pre-grammatical (see, for instance, Yip, 1993), or part of perception of grammar (see, for instance, Kenstowicz, op.cit.).

A slightly different stance is advocated by Kang (2003) who distinguishes only a single grammar. This grammar, which is responsible for all loanword adaptations as well as all native alternations, contains correspondence constraints that require perceptual similarity between input and output forms (Steriade, 2001).

Based on the overall similarity between speech perception data and loanword adaptations , Peperkamp and Dupoux (2003) propose that all loanword adaptations are phonetically minimal transformations that apply during perception. According to the psychological models of perceptual assimilation, non-native segments are assimilated to the closest available phonetic category by a phonetic decoding module that is part of the speech perception system(Best, 1994).

Peperkamp and Dupoux (op.cit.) propose that the input to the phonetic decoder is constituted by complete word forms rather than individual sounds. This is applicable to the perceptual assimilation of non-native suprasegmental and syllabic structures. Thus complete word forms are

mapped onto the phonetically closest ones that are well-formed in the native phonology. Cross-linguistic differences, then, are the outcome of differences in the surface phonetic structure of individual languages. Researchers support the above mentioned views via linguistic evidence from different languages. For instance, Korean listeners find it difficult to distinguish the approximants [r] and [l] in CV-stimuli (Ingram et al., 1998), and in loanwords from English, word-initial [l] is adapted as [r]. Similarly, French listeners face difficulties to perceive stress contrasts (Dupoux et al., 1997). Japanese listeners perceive an illusory vowel within consonant clusters (Dupoux et al. 1999), and in loanwords, such clusters are simplified via epenthetic vowel (Lovins, 1975).

4- The Corpus

The building block of the current study is (150) loanwords which represent both integrated and on-line loans in IA. They have been collected by the author over a considerable period of time as a result of everyday communication. They are transcribed phonemically to be compared with the original forms to elicit the pattern and context of adaptation. These loans are approached systematically: we start with the adaptation of integrated loanwords, then we move to the adaptation of on-line loanwords, since the latter have recently come into use in IA. The whole corpus is listed alphabetically in Appendix (1).

5- The Phonology of English and Iraqi Arabic

The variety of English used in this study to which adapted forms in IA are compared to is B.B.C. English (henceforth English) which is the standard norm. English has (44) phonemes: (20 vowels) and (24) consonants. Vowels are classified into monophthongs (12) and diphthongs (8). They are respectively /ɪ, e, æ, ə, ʌ, ɔ, u, i:, ɜ:, a:, ɔ:, u:/ and /eɪ, aɪ, ɔɪ, əu, au, ɪə, eə, uə/. Consonantal phonemes in English are (24): (15 voiced and 9 voiceless). They are /p, b, t, d, k, g, f, v, θ, ð, s, z, ʃ, ʒ, h, tʃ, dʒ, m, n, ŋ, l, r, w, j/. The maximum number of consonants occurring syllable- initially is three while the maximum number of consonants occurring syllable-finally

is four. Accordingly, syllabic licensing in English can be schematized in the formula $C_{0-3} V C_{0-4}$ (Roach,2009). In terms of phonotactics, Singh and Singh (1976) realize (16) syllable patterns in English, 4 of them are simple and the other are complex. They are respectively /v, cv, vc, cvc, ccv, vcc, ccvc, cccvc, cccvcc, cccvccc, cvcc, ccvcc, cvccc, cccv, vccc, cvcccc/.

IA has (39) phonemes (8 vowels and 31 consonants). Vowels are divided into 3 short vowels and 5 long vowels. They are / ɪ, a, u, ii, ee, aa, ɔɔ, uu/. Voiceless consonants in IA are 12 while the voiced ones are 19. They are / b, t, t̥, d, d̥, k, g, q, ʔ, f, θ, ð, s, s̥, z, ʃ, x, ɣ, ħ, ʕ, h, tʃ, dʒ, m, n, l, ʎ, r, w, y/. IA exhibits ten syllabic patterns (open, closed, and double closed): /cv, cvv,ccvv, cvc, ccvc, cvcc, cvvc, cvvcc, ccvvc, ccvcc/. The maximum number of consonants licensed within the onset and coda in IA is two. The following formula illustrates this phonemic distribution: $C_{0-2} V C_{0-2}$ (Abdul Sattar, 1997).

6- Iraqi Arabic Major Adaptation Strategies

For consistency and simplicity of presentation, and to place due emphasis to on-line loanwords adaptation, we will first start with the adaptation of integrated loanwords followed by the adaptation of on-line loanwords.

6.1 Adaptation of Integrated Loanwords

6.1.1 The Vowels

In the previous section it is stated that vowel inventories for English and IA are different. IA has only 8 monophthongal vowels (short and long) with no diphthongal vowels. In what follows is a survey of the major adaptation strategies to English vocalic segments. It entails both the qualitative and quantitative properties of these segments.

6.1.1.1 Vowel quantity

Adaptation of English loanwords affects the quantity (length) of vowels where short vowels of the original forms are adapted as long ones. This lengthening process involves front, central and back vowels alike. The short front vowel /ɪ/ is adapted as /ii/ or /ee/ when it appears between a sonorant and an obstruent or between two obstruents or two sonorants

| (1) English | IA | English | IA | |
|-------------|------|----------|----------|----------|
| /ɪ/ | /ii/ | /swɪtʃ/ | /swiitʃ/ | "switch" |
| /ɪ/ | /ii/ | /vɪdɪəʊ/ | /viidjɔ/ | "video" |
| /ɪ/ | /ee/ | /drɪl/ | /dreel/ | "drill" |

Lengthening militates the short front vowel /e/ when it appears between two obstruents or between a sonorant and an obstruent.

| (2) English | IA | English | IA | |
|-------------|------|---------|-------------------|----------|
| /e/ | /ee/ | /set/ | /seet/ | "set" |
| /e/ | /ee/ | /bred/ | /breed/ | "bread" |
| /e/ | /ee/ | /tʃek/ | /tʃeek/ or /ʃeek/ | "cheque" |

The short front vowel /æ/ is realized as a long one between a sonorant and an obstruent or between two obstruents. The following examples are a good case in point.

| (3) English | IA | English | IA | |
|-------------|------|--------------|--------------|-------------|
| /æ/ | /aa/ | /dʒækɪt/ | /tʃaaheet/ | "jacket" |
| /æ/ | /aa/ | /kæfɪtɪəriə/ | /kaaftiirya/ | "cafeteria" |
| /æ/ | /aa/ | /bætɪrɪ/ | /baatrɪ/ | "battery" |

| | | | | |
|-----|------|--------------|--------------|--------------|
| /æ/ | /aa/ | /ʃæmpu:/ | /ʃaambɔ/ | "shampoo" |
| /æ/ | /aa/ | /deməkrætɪk/ | /diimuqraʔɪ/ | "democratic" |

The short central vowels, the schwa /ə/ and /ʌ/, are lengthened in a variety of contexts. The context of adaptation of the former is when it appears between two sonorants, between an obstruent and a sonorant, and in syllable-final

position preceded by an obstruent. The latter changes its quality when it occurs between two obstruents.

| (4) English | IA | English | IA | |
|-------------|------|----------|-----------|----------|
| /ə/ | /ee/ | /kɔləɾə/ | /kuleerə/ | cholera" |
| /ə/ | /uu/ | /ælbəm/ | /albuum/ | "album" |
| /ə/ | /ɔɔ/ | /dɔktə/ | /dɪktɔɔr/ | "doctor" |
| /ʌ/ | /aa/ | /bʌs/ | /baas/ | "bus" |
| /ʌ/ | /uu/ | /kʌp/ | /kuub/ | "cup" |

The corpus of data reveals that the English short back vowel /ɔ/ also undergoes a process of lengthening. It is adapted as a long one between two obstruents, between a sonorant and an obstruent, and between an obstruent and a sonorant.

| (5) English | IA | English | IA | |
|-------------|------|----------|-----------|----------|
| /ɔ/ | /ɔɔ/ | /tɔp/ | /tɔɔb/ | "top" |
| /ɔ/ | /ɔɔ/ | /lɔʃən/ | /lɔɔʃɪm/ | "lotion" |
| /ɔ/ | /ɔɔ/ | /ku:pən/ | /kɔɔbɔɔn/ | "coupon" |

The reverse strategy (shortening) is deployed by the adapters when they deal with English loans. This is elicited in the shortening of the long back vowel /u:/ in word- final position.

| (6) English | IA | English | IA | |
|-------------|-----|----------|-----------|------------|
| / u: / | /u/ | / skru:/ | / sɪkru/ | " screw" |
| / u: / | /u/ | /ʃæmpu:/ | / ʃaambu/ | " shampoo" |

6.1.1.2 Vowel Quality

The vowel quality (tongue height, tongue part, tongue glide, and lip position) of loanwords is affected due to adaptation. Short vowels of the loanwords are modified into different short vowels, while some diphthongs are transformed into long monophthongs.

The short front close-mid vowel /ɪ/ becomes a short central vowel /a/ between two sonorants.

| (7) English | IA | English | IA | |
|-------------|-----|----------|-------------|------------|
| /ɪ/ | /a/ | /mɪljən/ | / malyɔɔn / | " million" |

The adaptation of the quality of the short front vowel /e/ appears in various contexts. It is altered into the short front vowel /ɪ/ between two obstruents and between an obstruent and a sonorant, and into the short central vowel /a/ between an obstruent and a sonorant.

| (8) English | IA | English | IA | |
|-------------|-----|-------------|-------------|--------------|
| /e/ | /ɪ/ | / sekɪnd/ | / sɪkɪn/ | " second" |
| / e/ | /ɪ/ | / teləfəun/ | / tɪlɪfɔɔn/ | " telephone" |
| /e / | /a/ | / dʒeli / | /dʒali / | "jelly" |

The short back vowel /ɔ / undergoes adaptation between two obstruents, and between an obstruent and a sonorant. In the former position, it is adapted as /ɪ/ while in the second as /u/.

| (9) English | IA | English | IA | |
|-------------|------|-----------|------------|------------|
| /ɔ / | /ɪ / | / dɔktə/ | /dɪktɔr/ | " doctor" |
| /ɔ / | /u/ | / kɔləɾə/ | / kuleera/ | " cholera" |

Diphthongs of the English loanwords are produced as long monophthongs. Both closing and centering diphthongs are influenced by the adaptation process. The closing diphthong / eɪ/ is changed into either the long vowel /ee/ or the vowel / aa/.

Diphthongs (closing and centring) are adapted into either a short monophthong or along monophthong. The change channels towards the closer vowel in IA. This adaptation appears between two obstruents, two sonorants, an obstruent and a sonorant.

| (10) English | IA | English | IA | |
|--------------|--------|-----------|------------|-----------|
| / eɪ / | /a / | /reɪʒi:m/ | / radʒiim/ | " regime" |
| / eɪ / | /ee/ | / breɪk/ | / breek/ | " brake" |
| / eɪ / | /ee / | / geɪdʒ/ | / geetʃ/ | " gage " |
| / eɪ / | / ee / | / kreɪn / | / kreen/ | "crane" |

| (11) English | IA | English | IA | |
|--------------|--------|-----------|------------|-----------|
| /əʊ/ | / ɔɔ/ | / həʊz / | / hɔɔz/ | "hose" |
| / əʊ/ | / ɔɔ / | / pəʊstə/ | /bɔɔstar/ | " poster" |
| / əʊ / | / ɔɔ / | / həʊldə/ | / hɔɔldar/ | "holder" |

6.1.2. The Consonants

Consonantal adaptations are mainly represented by two strategies, consonant substitution and vowel epenthia. The former is elicited in the change of the voiceless labial /p/ into the voiced labial /b /, the voiceless velar obstruent /k/ into the voiced velar obstruent /g/, the voiced alveolar obstruent /d/ into the voiceless alveolar obstruent /t/, the voiced velar obstruent /g/ into the voiceless velar obstruent /k/, the voiced post-alveolar obstruent /ʒ/ into the voiced post-alveolar obstruent /dʒ/. The contexts of adaptation are between two obstruents, between obstruent and sonorant, between sonorant and obstruent, and in syllable-final position following a sonorant or a vowel. The second type of adaptation is utilized to simplify initial two and three- element consonant clusters comprising two obstruent consonants followed by a sonorant, or an obstruent followed by a sonorant.

| (12) | English | IA | English | IA | |
|------|---------|-------|-----------|-------------|------------|
| | / p / | / b/ | / pɪpsɪ / | / bɪbsɪ / | "pepsi" |
| | / P / | / b / | /paɪp/ | /baayib/ | " pipe" |
| | / p / | / b/ | /pɔliʃ/ | / bɔliiʃ/ | " polish" |
| | /p / | / b / | /plæstɪk/ | / blaastɪk/ | " plastic" |
| | /p / | / b/ | / læmp/ | /lamba / | " lamp" |
| | / p/ | / b/ | / su:p / | / suub / | " soup" |
| | / k / | / g / | / bæ k / | / bagg / | " back" |
| | / k / | / g / | / bæŋk/ | / bang / | " bank" |
| | / d / | / t / | / ka:d / | / kaart / | " card" |
| | / g / | / k/ | / plʌg / | / blak/ | " plug" |
| | / ʒ / | / dʒ/ | / gæra:ʒ/ | / garaadʒ/ | " garage" |

| | | | | | |
|------|---------|---------|--------------|---------------|-----------------------------|
| | / ʒ/ | / dʒ/ | / rɛrʒi:m / | / radʒiim/ | " regime" |
| (13) | English | IA | English | IA | |
| | / skr / | /sɪkr/ | /skru:/ | /sɪkru/ | " screw" |
| | /spl/ | / sɪbl/ | / split/ | / sɪblɪt/ | " split" |
| | / gr/ | / gir/ | /gri:n lænd/ | / gɪrɪd laan/ | "Greenland, a village name" |

In certain utterances, more than one consonant is modified in a variety of situations. This implies the change of the voiceless labial /p/ into the voiced labial /b/ when it occurs initially together with the adaptation of the voiced alveolar obstruent /d/ into the voiceless denti-alveolar /t̪/ in pre-final position, the modification of the voiceless labial /p/ into the voiced labial /b/ syllable-intially together with the alteration of the voiceless alveolar obstruent /s/ into the voiced denti-alveolar obstruent /d/ and the change of the voiceless alveolar obstruent /t/ into the voiced denti-alveolar obstruent /z/, the alteration of the voiceless alveolar obstruent /s/ into the voiceless denti- alveolar emphatic obstruent /ʃ/ together with the adaption of the voiceless alveolar /t/ into the voiceless denti-alveolar emphatic /t̪ / when they occur subsequently within initial two-element consonant cluster. In a trisyllabic word, the voiceless alveolar obstruent / t/ surfaces as voiceless a denti-alveolar emphatic obstruent /t̪ / together with the adaptation of the voiced alveolar sonorant /l/ into the voiced post-alveolar sonorant /r/.

| | | | | | |
|------|-----------|------------|----------|------------|-----------|
| (14) | English | IA | English | IA | |
| | /p, t/ | /b, d/ | / paudə/ | /bɔɔʃtra/ | " powder" |
| | /p, s, t/ | / b, d, z/ | /pi:tsə/ | / biidza / | " pizza" |
| | /st / | /ʃt / | /stɔp/ | /ʃʃaab/ | " stop" |
| | /st / | /ʃt / | /stæmp / | / ʃʃamba/ | " stamp" |

/t, l/ / ʈ, r/ / pæntəlu:n/ /banʈiruun/ " pantaloon"

Due to the fact that IA is rhotic language, final /r/ in the borrowed English words is pronounced (which violates the pronunciation rule of the /r/ in Standard English since it is a non-rhotic accent).

| | | | | | |
|------|---------|-------|------------|-------------|-------------|
| (15) | English | IA | English | IA | |
| | / Ø r / | / r / | / gɪə / | / geer / | " gear" |
| | / Ø r / | / r / | / pʌŋtʃə / | / bantʃar / | " puncture" |
| | / Ø r / | / r / | / taɪə / | / taayar / | " tire" |
| | / Ø r / | / r / | / kɔ: s / | / kɔrs / | " course" |

Final heavy [ɫ] of the source word is changed into a clear [l] in IA. This is applied to some English loans while other loans preserve the dark [ɫ].

| | | | | | |
|------|---------|-------|-----------|------------|----------|
| (16) | English | IA | English | IA | |
| | [ɫ] | [l] | [drɪɫ] | [dreel] | " drill" |
| | [ɫ] | [l] | [mɒdɪɫ] | [mudeel] | " model" |
| | [ɫ] | [ɫ] | [faʊɫ] | [faawaɫ] | " foul" |
| | [ɫ] | [ɫ] | [keɪbɫ] | [keebɫ] | " cable" |

The corpus of data shows one example of metathesis where the voiced alveolar sonorant /l/ precedes the voiced alveolar sonorant /n/. This points in the direction of the strategy of ease of articulation and simplification.

| | | | | | |
|------|----------|----------|------------|-------------|------------|
| (17) | English | IA | English | IA | |
| | / n, l / | / l, n / | / penəɫɪ / | / balanti / | " penalty" |

A number of English loans pertain their consonantal and vocalic elements; viz, they preserve their original forms.

| | | | |
|--------|------------|------------|------------|
| (18) | English | IA | |
| | / klɪps / | / klɪps / | " clips" |
| | / li:k / | / liik / | " leak" |
| | / bɪskɪt / | / bɪskɪt / | " biscuit" |
| | / kri:m / | / kriim / | " cream" |
| | / bɒks / | / bɒks / | " box" |

6.1.3. Various Adaptation Strategies

Loanwords are also computed via a variety of adaptation transformations to comply with the native phonology. The adapters utilize a combination of two or three methods of modification. The most prominent of these modifications are: vowel quantity together with vowel quality, vowel quantity plus consonantal change, vowel quantity and vowel quality plus consonant substitution, vowel quality plus pronouncing final /r/, vowel quality and vowel quantity plus pronouncing final /r/, vowel insertion plus vowel quantity, vowel insertion plus double change in vowel quality, vowel quality plus consonantal substitution, vowel quantity and consonant substitution accompanied by consonantal elision, consonantal change plus vowel quantity, consonant substitution and vowel quality plus the addition of extra syllable, and consonantal elision plus vowel quality.

In disyllabic words, a short vowel of the loan may be prolonged accompanied by a change of a vowel quality. While lengthening entails front vowels, central vowels and back vowels after changing or pertaining their quality, the change of vowel quality encompasses front vowels, central vowels, back vowels and diphthongs. A front vowel is adapted as a central one, a central vowel as a front one, a back vowel as a front one, a long back vowel into another back vowel, and a closing diphthong into a long vowel.

| (19) English | IA | English | IA | |
|--------------|-----------|------------|-------------|-------------|
| /ɔ, ɪ / | /ɪ, ee / | /tʃɒklɪt / | / tʃɪkleet/ | " chocklet" |
| / æ, ə/ | /aa,ɪ/ | /kæməɾə/ | / kaamɪra/ | " camera" |
| / ə, u: / | / aa, ɔɔ/ | / bəlu:n / | / baalɔɔn/ | " balloon" |
| / ɔ, eɪ / | / ɔɔ, ee/ | / kɒkteɪl/ | /kɔɔkteel/ | "cocktail" |
| / ɪ, ə / | /a, ɔɔ / | / mɪljən/ | / malyɔɔn/ | " million" |

The quantity of the vowel of the source word is adapted as long as with a consonantal substitution. The accommodated vowels are front vowels, central vowels, and back vowels. The consonants that undergo change are the obstruent plosives /p,t/, and the obstruent affricate /dʒ/.

| (20) English | IA | English | IA | |
|--------------|--------------|-----------|-------------|-----------|
| /dʒ, æ, ɪ / | /tʃ, aa, ee/ | /dʒækɪt / | /tʃaakeet/ | " jacket" |
| /p, æ/ | /b, aa / | /plæstɪk/ | /blaastɪk / | "plastic" |
| /ɔ,t, ə / | /aa, t, ɔɔ / | / məutə / | / maatɔɔr / | " motor" |

Both quantity and quality of the loan are altered together with consonantal substitution. The respective strategy involves the change of the quality of the short back vowel /ɔ /, the quantity of the short front vowel /ɪ / together with the substitution of the obstruent plosive /t/ by the obstruent plosive /d/, the quantity of the schwa /ə/ together with the change of its quality, the quantity of the short back vowel /ɔ / which pertains its quality, and the quality of the short front vowel /e / which surfaces as a short front vowel /ɪ/. The consonants that exhibit adaptation are the obstruent plosives /t, p/, and the obstruent fricatives /v,ʒ /. They become /d, b, f, and z/ in the order mentioned.

| (21) English | IA | English | IA | |
|--------------|---------------|-------------|--------------|--------------|
| /ɒ, ɪ, t/ | /a,ii,d/ | /bɒnɪt/ | /baniid/ | "bonnet" |
| /u:, p, ɔ / | / ɔɔ,b, ɔɔ/ | / ku:pɒn/ | / kɔɔbɔɔn / | "coupon" |
| /e,v,ʒ, ə/ | / ɪ,f, z, ɔɔ/ | /telɪvɪʒən/ | /tilfizyɔɔn/ | "television" |

Due to the fact that IA is a rhotic language, final /r/ and the /r/ preceding a consonant of the English borrowed words are pronounced. This strategy goes hand in hand with the adaptation of the quantity and the quality of the vowel of the loans. A combination of vowel quantity together with pronouncing silent /r/ is very common. The alteration of vowel quantity affects short front vowels, central vowels and back vowels.

| (22) English | IA | English | IA | |
|--------------|-----------|----------|-------------|----------|
| /æ, ə / | /aar, ɔɔ/ | / kæbən/ | / kaarbɔɔn/ | "carbon" |
| / ɔ,ə / | /uu,aar / | / dɔlə / | /duulaar / | "dollar" |

The pronunciation of silent /r/ accompanies a change in the quality of the vowel of the loan. A closing diphthong surfaces either a long vowel or a short vowel.

| (23) English | IA | English | IA | |
|--------------|-----------|-------------|-----------------|------------|
| /əu, ə/ | /ɔɔ, ar/ | /əʊvə taɪm/ | / ɔɔvar taayɪm/ | "overtime" |
| / eɪ, a: / | / a, aar/ | / reɪdɑ: / | / radaar/ | "radar" |

In certain cases, the adapter accommodates both the quantity and quality of the original vowel in addition to the pronunciation of the silent /r/.

| (24) English | IA | English | IA | |
|--------------|------------|-----------|-------------|----------|
| / ɔ, ə / | / ɪ, ɔɔr / | / dɔktə / | / dɪktɔɔr / | "doctor" |

For ease of articulation, IA speakers adapt the loanword via inserting an additional vowel together with a change of the quality of the vowel. The inserted vowel follows a sonorant consonant or an obstruent. The vowels which are lengthened in this process are the front and the central ones.

| | | | | | |
|------|---------|-----------|--------------|---------------|--------------|
| (25) | English | IA | English | IA | |
| | /l, ə / | / la, ə / | / bælkəni / | / balakəna / | " balcony " |
| | /d, ɪ / | / da, ɪ / | / sændwɪtʃ / | / sandawɪtʃ / | " sandwich " |

Another multi- adaptation strategy is embodied by the change of the vowel quality and quantity which goes with consonantal substitution and the addition of an extra syllable of CV pattern. Consonants that undergo change are obstruent plosives and obstruent fricatives. Vocalic elements changing their

quality are closing diphthongs and the short back vowel /ɔ/. Quantity adaptation entails the schwa /ə / which is prolonged into /aa/.

| | | | | | |
|-------|------------|-------------|----------------|------------------|---------------|
| (26) | English | IA | English | IA | |
| | /p,əu, ə / | /b,u, aa / | / dɪpləʊməsi / | /dɪblumaasiyya / | "diplomacy" |
| | /ɔ,k,ə,s / | /u,q,aa,t / | /dɪmɔkrəsi / | /dɪmuqraaʔiyya / | " democracy " |

6.2 Adaptation of on-line loanwords

As a result of using mobile phones, computer, internet, and other means of information technology (IT) and on-line communication, a new generation of English loanwords has recently been introduced to IA vocabulary. As it is the case with integrated loanwords, on-line loanwords are subjected to various types of grammatical, phonetic and phonological adaptations. These modifications affect the original vowels and consonants. The grammatical category of some words also undergoes transformation process. The main objective of all these adaptations is to make these loans comply with the native phonology. It is worth noting here that most of the

new loans are borrowed into IA by half-educated and educated speakers of IA. Among these speakers are the young generations who are always willing to have different sorts of modernization and to altering modes of life including their accent and language.

6.2.1 The Vowels

6.2.1.1. Vowel Quantity

The most common types of vowel quantity adaptations of the on-line loans emerge in the lengthening of the short front vowel /e/ into /ee/, and the short front vowel /æ/ into /aa/. The former case is elicited when the short front vowel /e/ occurs between an obstruent plosive and a sonorant nasal. The latter case entails the front short vowel /æ/ when it comes between two obstruent consonants.

| (27) | English | IA | English | IA | |
|------|---------|--------|--------------|-----------------|-------------|
| | / e / | / ee/ | /æntenə/ | / ?anteena/ | " antenna |
| | / e / | / ee / | / web saɪt / | / weeb saayit / | " web site" |
| | /æ/ | / aa / | / tʃætɪŋ/ | /tʃaatɪŋ / | " chatting" |

6.2.1.2 Vowel Quality

Vowel quality modification falls into different forms: a short vowel alters into another short one, a long vowel is replaced by another long one, and a diphthong becomes a long monophthong. Short vowel adaptations occur between two sonorants and between a sonorant and an obstruent. A long vowel is adapted into another long vowel between a sonorant and an obstruent, and diphthongs transformation appear between two obstruents, and between a sonorant and an obstruent.

| (28) | English | IA | English | IA | |
|-------|---------|--------|--------------|-------------|-------------|
| | / e / | /ɔ/ | / meməri/ | / mɔmari/ | " memory" |
| | /e / | /a / | / mesɪdʒ / | / masɪdʒ/ | " message" |
| | / u: / | / ɔɔ / | / rɪməʊt / | / rɪmɔɔt / | " remote" |
| | / eɪ/ | / ee / | / feɪs buk / | / fees buk/ | " face bok" |
| | / əu/ | / ɔɔ / | / məʊdəm/ | / mɔɔdam / | " modem " |

6.2.1.3. Adapting the Syllabic Patterning of the Loanword

Few of the on-line loanwords are computed via changing the original phonotactic structure. An English verb is transliterated into Arabic where the syllable pattern is adapted. In few cases, this process goes hand in hand with changing the grammatical category of the borrowed word. The nouns " format" and " message" for example, are changed into verbal forms after modifying their phonotactic structure.

| (29) | English | IA | English | IA | |
|-------|------------|--------------|------------|-------------|------------|
| | /cv-cvcc/ | / ccvc-cvc/ | / kənekt/ | / ykannɪk/ | " connect" |
| | /cv-cvc/ | / ccvc- cvc/ | / fɔ:mæt / | / yfarmɪt / | " format " |
| | / cvc-cvc/ | / ccvc- cvc/ | / kænsəl/ | / ykansɪl / | " cancel" |
| | / cv-cvc/ | / ccvc- cvc/ | / mesɪdʒ / | / ymassɪdʒ/ | " message" |

6.2.2 The Consonants

Consonantal transformations are represented via pronouncing final silent /r/ which might be accompanied by a transformation of the vowel quantity or quality, or quantity and quality together. In few instances, the dark [ɪ] is replaced by a clear [ɪ] together with a modification of the vowel quantity. Most instances of these transformations fall within the pattern of multi-

adaptation strategies. Some of the on-line loans preserve their native forms, viz, they keep their original pronunciation.

- (30) English IA English IA
 / ə / / ar / / rautə/ / rawtar/ " rauter"
- (31) / ə, ɪ / / ar, a/ / waɪəɪɪs / / waayarlas/ " wireless"
- (32) [ɪ] [ɪ] / faɪɪ] [faayɪɪ] " file "
- (33) English IA
 / mɪskə:l / / mɪskəəl/ " miscall"
 / klɪk / / klɪk / " click "
 / dɪsk / / dɪsk/ " disk"

7. Results and Analysis

This section is devoted to present a general overview of the results of the current research, a summary of the patterns of adaptation, and a generative analysis of these patterns.

7.1. General Overview

This section outlines the ratings of the adaptation strategies which militate the source form of the English loanwords listed in appendix (1), the corpus.

Table (1): A Summary of the Adaptation Strategies

| Adaptation Typology | Frequency of the Adapted Words | Percentage |
|------------------------|--------------------------------|------------|
| Vowel Quantity | 19 | 12.66% |
| Vowel Quality | 21 | 14% |
| Consonant Substitution | 5 | 3.33% |
| Pronouncing Silent /r/ | 5 | 3.33% |
| Multi-Adaptation | 85 | 56.66 |
| Zero Adaptation | 15 | 10% |
| Total | 150 | 100% |

Table (1) is a percentage analysis of the categories of adaptation that underlie the deep structure of the source loans. The highest rating is scored by the multi-adaptation transformation (56.66%). Vowel quality mechanism occupies the second rank (14%), while vowel quantity mechanism registers the third rank (12.66%). The fourth rating of adaptation is scored by zero adaptation (10%). The lowest ratings are registered by consonant substitution and pronouncing silent /r/ transformations. They are both equally weighted (3.33% each). The line graph below provides a comprehensive view for these ratings.

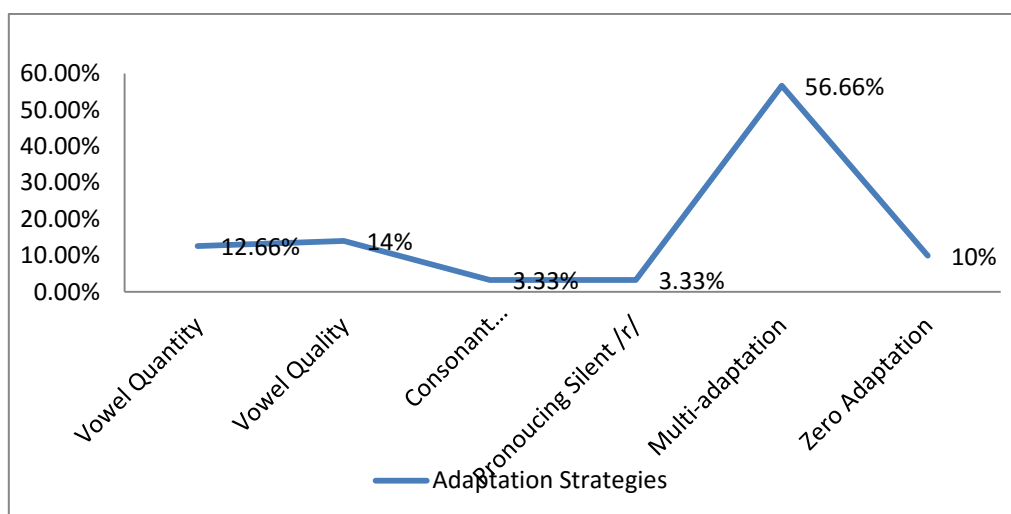


Figure (1): Line Graph for Adaptation Strategies

7.2. Analysis of the Adaptation Patterns

7.2.1 Adaptation Forms of the Integrated Loanwords

Section (6) is an outline of the transformations of both vocalic and consonantal elements of both integrated and on-line English loanwords. Vowels of the source forms of the integrated loans undergo different processes of adaptation. These processes mainly affect vowel quantity and

vowel quality. Front, central, and back short vowels are prolonged in different contexts. The short front vowel /ɪ/ either surfaces as /ii/ or /ee/ after modifying its quality, and the short front vowel /e/ is changed into /ee/. The short front vowel /æ/ is lengthened into the long central vowel /aa/. This lengthening strategy is interpreted in terms of the impact of L1 sound system where the tendency of the adapters moves towards replacing the short vowels by long ones. The short front vowel /e/ is replaced by the long vowel /ee/ due to its non-existence in L1 phonology.

The short central vowel /ə/ either changes its quality into the long front vowel /ee/ or into the long back vowel /ɔɔ/. The short central vowel /ʌ/ either surfaces as the long central vowel /aa/ or as the long back vowel /uu/.

The short back vowel /ɔ/ becomes a long back vowel /ɔɔ/, and the short back vowel /u/ becomes a long vowel /uu/. All these adaptations point in the direction of ease of articulation to avoid cases of markedness and optimality. These surface long vowels are all existent in the mother tongue.

The reverse vowel quality process (shortening) is elicited in the shortening of the long back vowel /u:/ when it occurs word-finally. IA word does not terminate with such a long vowel. The adapters tend to use the short vowel counterpart to replace the long one (see groups 1-6).

The transformations of the vowel quality of loanwords reveal that the front vowels /ɪ, e/ and the short back vowel /ɔ/ surface as other short vowels. While the short front vowel /ɪ/ is adapted as the short central vowel /a/, the short front vowel /e/ is altered into either the short front vowel /ɪ/ or into the short central vowel /a/. The short back vowel /ɔ/ becomes either a short front vowel /ɪ/ or a short back vowel /u/. These transformations show the tendency towards the most common and frequent vowels of the borrowing language (groups 7-9).

The corpus provides an evidence that the source diphthongs are either adapted into a short vowel or a long vowel. The closing diphthong /ei/ is transformed either into the short central vowel /a/, or into the long front

vowel /ee/. The closing diphthong /əu / is adapted as the long back vowel /oo/. These strategies are interpreted simply in terms of the efficacy of the borrowing language sound system. Specifically, IA does not license a diphthongal vowel (groups 10 and 11).

Consonantal elements of the source forms are generally computed via consonantal substitution, vowel epenthia, pronouncing silent /r/, and few cases of metathesis. Substitution entails the obstruent plosives / p, k,d,g/ and the obstruent fricative /ʒ /. The voiceless bilabial plosive is computed as the voiced bilabial plosive /b/ since the former is not used in IA. The voiceless velar plosive /k/ is computed as the voiced velar plosive /g/ due to the high frequency of the occurrence of the latter plosive in IA. IA is characterized as the dialect of the /g/ sound because this sound replaces the standard sound /q/. The classical /qaala/, for instance, " he said" becomes /gaal/ in spoken Iraqi Arabic. The incidental phenomenon is that a loan ends with /g/ is pronounced with /k/ as in /plak/ for /plag/. This is attributed to the way such a word was first perceived in IA. That is, a process like this is psychologically motivated. The voiced post-alveolar fricative /ʒ/ surfaces as the voiced post-alveolar affricate /dʒ/, because the former consonant is not found in IA.

Vowel epenthia adaptation is elicited in the simplification of the source initial three-element consonant clusters. IA only licenses initial two-element consonant clusters. Once again a strategy like this is understood in terms of optimality and the tendency towards the economy of effort on the part of the adapters.

In certain loans, consonantal substitution involves two or three consonants within the same loan. The consonants in point are the obstruent plosives / p,t/, the obstruent fricative /s/ and the sonorant /l/. The plosive voiceless /p / is computed into the plosive voiced /b/, and into the denti-alveolar emphatic /t̤ /. The voiceless fricative /s/ is transformed into the voiceless denti-alveolar /s̤/. This is justified by the interference of the native phonology. Heavy [t̤] of the source form is adapted as light [l] in word

final position. Although light and dark /l/ are two distinct phonemes in IA, the dark one is very rarely used. It is found in few words in IA (group 16).

Since IA is a rhotic dialect, silent /r/ of the loanword is uttered, whether in final position or before another consonant. The corpus provides one instance of metathesis where the /n,l/ sequence is realized as /l,n/ together with the replacement of /p/ by /b/. Ease of articulation, and expenditure of energy are the two motives behind this strategy. (groups 11-17).

Few instances of the loans preserve their original forms. Pronunciation of these loans is in conformity with the native one. Some of these loans terminate with final two-element clusters, while others are monosyllabic and bisyllabic words (group 18). The remaining strategies are combination of the above stated ones. The drives behind such integration are the conformity to the native phonology patterns, and ease of articulation (see groups 19-26).

7.2.2 Adaptation Forms of On-line Loanwords

The gross transformations that are applied to the input of the on-line loans clearly provide a concrete evidence that the new generation of the English loanwords is in total conformity with the native phonology. Both vowels and consonants are subjected to underlying processing. The only new mode of adaptation is represented via transliterating the original form of word where the syllabic patterns is modified accompanied in few cases with the change of the grammatical category of the source word (see groups 29-33). Few of these loans preserve their native form.

Vowel adaptation affects both quality and quantity as it is the case of the integrated loans. The short front vowel /e/ is either modified into the short back vowel /ɔ / or the short central vowel /a/. The long back vowel /u: / is transformed into the long back vowel /ɔɔ . The closing diphthong /eɪ / surfaces as the long front vowel /ee/, while the closing diphthong /au/ is computed into the long back vowel /ɔɔ/.

Consonantal adaptation takes the form of pronouncing silent /r/, consonant substitution, and modifying the phonotactics of the original syllable patterning. The output of syllable structure modification is represented by changing the syllable patterns /cv/ and /cvc/ into /ccvc/ concatenation. The syllable of the pattern /cvc/ of the same adapted loan is not affected. Syllabic computation processes are in total agreement with the licensed syllable patterns in IA (see group 29). Words that preserve their source form are also compatible with the native pronunciation.

7.3. A Generative Analysis of the English Loanwords Adaptation Patterns

To route the underlying transformational processes that are applied to the input of the loanword, phonological rules will be applied.* The main objective behind this generative treatment is to identify the vocalic and consonantal elements that undergo transformation and in which contexts. Due to the great number of contexts where adaptation takes place, this work is confined to the most frequent ones.

7.3.1 Vowel Quantity

Short vowels change their quantity when they appear between two obstruents, two sonorants, a sonorant and an obstruent, and an obstruent and a sonorant.

(1) [- long v] → [+ long v] / [+ obstruent] _____ [+ obstruent]

The short front vowel /ɪ / is lengthened into /ii/ between the fricative obstruent /v/ and the plosive obstruent /d/. The short front vowel /e/ becomes long /ee/ between the fricative obstruent /s/ and the plosive obstruent /t/, and between the affricate obstruent /tʃ/ and the plosive obstruent /k/. The short front vowel /æ/ is lengthened into /aa/ between the affricate obstruent /dʒ/ and the plosive obstruent /k/, between the plosive obstruent /k/ and the fricative obstruent /s/, between the plosive obstruent /k/ and the obstruent plosive /b/, and between the plosive obstruent /k/ and the fricative obstruent /f/. The central vowel /ʌ/ becomes long /aa/ between

the plosive obstruent /b/ and the fricative obstruent /s/, and between the plosive obstruent /k/ and the plosive obstruent /b/. The short back vowel /ɔ/ is altered into /ɔɔ/ between the plosive obstruent /t/ and the plosive obstruent /b/, and between the plosive obstruent /k/ and the plosive obstruent /b/.

(2) [- long v] → [+ long v] / [+ sonorant] _____ [+ sonorant]

The rule clearly reads that a short vowel is lengthened between two sonorants. The short front vowel /ɪ / alters into /ee/ before the alveolar sonorant /l/ and after the post-alveolar sonorant /r/. The schwa /ə/ surfaces as /ee/ before the post-alveolar sonorant /r/ and after the alveolar sonorant /l/.

(3) [- long v] → [+ long v] / [+ sonorant] _____ [+ obstruent]

Within the framework of this phonological rule, the short front vowels /ɪ/ is prolonged after the voiced sonorant /w/ and before the voiceless obstruent /tʃ/. The short front vowel /e/ is adapted as /ee/ before the voiced plosive obstruent /d/ and after the voiced approximant sonorant /r/, and the short front vowel /æ / is lengthened as /aa/ before

* The phonological rules deployed in this study are those of Hyman (1975) with modification.

the denti-alveolar obstruent /tʃ/ and after the post-alveolar sonorant /r/.

(4) [- long v] → [+ long v] / [+ obstruent] _____ [+ sonorant]

According to this rule, a short vowel surfaces as a long one after an obstruent and before a sonorant. The central short vowel /æ/ is adapted as /aa/ after the voiced obstruent /b/ and before the voiced sonorant /n/, after the voiceless obstruent /t/ and the voiced sonorant /r/, and after the voiced obstruent /d/ and before the voiced sonorant /m/. The schwa /ə / after the voiceless obstruent /t/ and before the voiced sonorant /r/. The short back

vowel /ɔ / is transformed into long /ɔɔ/ after the voiced obstruent /b/ and before the voiced sonorants /n/ and /m/.

7.3.2 Vowel Quality

The phonological rules which are concerned with the adaptation of vowel quality can be schematized as follows:

(1) $\text{ɪ} \rightarrow \text{a} / [+ \text{sonorant}] \text{ ______ } [+ \text{sonorant}]$

The only context revealed by the data shows that the short front vowel /ɪ/ is changed into the central vowel /a/ after the voiced sonorant /m/ and before the voiced sonorant /l/. That is, it is centralized in this position.

(2) $\text{e} \rightarrow \text{ɪ} / [+ \text{obstruent}] \text{ ______ } [+ \text{obstruent}]$

The short front vowel /e/ becomes a short high vowel /ɪ/ after the voiceless obstruent /s/ and before the voiceless obstruent /k/.

(3) $\text{e} \rightarrow \text{ɪ} / [+ \text{obstruent}] \text{ ______ } [+ \text{sonorant}]$

In a different context, the short front vowel /e/ is replaced by the short high front vowel /ɪ/ after the voiceless obstruent /t/ and before the voiced sonorant /l/.

(4) $\text{e} \rightarrow \text{a} / [+ \text{obstruent}] \text{ ______ } [+ \text{sonorant}]$

The short front vowel /e/ is centralized into /a/ after the voiced affricate /dʒ/ and before the voiced sonorant /l/.

(5) $\text{ɔ} \rightarrow \text{ɪ} / [+ \text{obstruent}] \text{ ______ } [+ \text{obstruent}]$

The short back vowel /ɔ/ surfaces as the short high front vowel /ɪ/ after the voiced obstruent /d/ and before the voiceless obstruent /k/.

(5) $\text{ɔ} \rightarrow \text{u} / [+ \text{obstruent}] \text{ ______ } [+ \text{sonorant}]$

After the voiceless obstruent /k/ and before the voiced sonorant /l/, the short back vowel /ɔ/ is substituted by the short high back vowel /u/.

(6) eɪ → a / [+ sonorant] _____ [+ obstruent]

Rule (6) reads that the closing diphthong /eɪ/ is transformed into the short central vowel /a/ after a sonorant and before an obstruent. The context elicited in the data is after the voiced sonorant /r/ and before the voiced obstruent /dʒ/.

(7) eɪ → a / [+ sonorant] _____ [obstruent]

According to this rule, the closing diphthong /eɪ/ is altered into the short central vowel /a/ after a sonorant and before an obstruent. The preceding sonorant is the voiced approximant /r/, while the following obstruent is the voiced affricate /dʒ/.

(8) eɪ → ee / [+ sonorant] _____ [+ obstruent]

The centering diphthong /eɪ/ is transformed into the long vowel /ee/ after the voiced sonorant /r/ and before the voiceless obstruent /k/.

(9) eɪ → ee / [+ obstruent] _____ [+ obstruent]

In a different context, the closing diphthong /eɪ/ becomes a long vowel /ee/ after the voiced obstruent /g/ and before the voiced obstruent /dʒ/.

(10) eɪ → ee / [+ sonorant] _____ [+ sonorant]

The other context of adapting the closing diphthong /eɪ/ is after the voiced sonorant /r/ and before the voiced sonorant /n/.

(11) əu → ɔɔ / [+obstruent] _____ [+ obstruent]

In a similar transformation process, the closing diphthong /əu/ turns into the long back vowel /ɔɔ/ after the voiceless obstruents /h/ and /p/, and before the obstruents /z/ and /s/.

(12) əu →ɔɔ / [+obstruent] _____ [+ sonorant]

The closing diphthong /əu/ is also replaced by the long back vowel /ɔɔ/ after an obstruent and before a sonorant. The preceding obstruent this time is the voiceless obstruent, /h/ while the following sonorant is the voiced sonorant /l/.

7.3.3 Consonantal Substitution

The most notable substitution of consonants is that of the plosives / p, k, d, g/ and the affricate /ʒ/. The following phonological rules outline the contexts of these substitutions.

(1) p →b / ## _____ ɪ, ʌ, ɔ, aɪ

The voiceless bilabial obstruent plosive /p/ surfaces as /b/ word-initially before the front vowel /ɪ/, the central vowel /ʌ/, the back vowel /ɔ/, and before the closing diphthong /aɪ/.

(2) p→b / aɪ, ou,m _____ ##

In word-final position, the voiceless bilabial obstruent plosive /p/ is replaced by /b/. This adaptation appears when the /p/ is preceded by the closing diphthongs /aɪ/, and /əu/, and after the voiced nasal sonorant /m/.

(3) k → g / æ, ɨ _____ ##

This phonological rule reads that the voiceless velar obstruent plosive /g/ is modified into /k/ in word-final position when it is preceded by the front vowel /æ/ and the voiced velar nasal sonorant /ŋ/.

(4) d →t / r _____ ##

Another context of plosives substitution is that of the voiced alveolar plosive obstruent /d/ which is altered into /t/ in word-final position after the voiced post-alveolar approximant sonorant /r/.

(5) g →k / ʌ _____ g

Rule (5) shows that the voiced velar plosive obstruent /g/ is adapted as /k/ in word-final position when it is preceded by the central vowel /ʌ/.

(6) ʒ → dʒ / eɪ _____ i:

In intervocalic position, the voiced post-alveolar fricative obstruent /ʒ/ is computed into the voiced post-alveolar affricate obstruent /dʒ/.

(7) ʒ → dʒ / a: _____ ##

When it occurs in final position and preceded by the long back vowel /a:/, the voiced post-alveolar fricative obstruent /ʒ/ surfaces as /dʒ/.

7.3.4. Consonant Cluster Simplification

To simplify initial two and three-element consonant clusters, IA speakers adopt the vowel insertion rule where the epenthetic vowel /ɪ/ is inserted. The following vowel insertion rules are proposed:

(1) Ø → ɪ / s _____ k

According to this insertion rule, the epenthetic vowel /ɪ/ is inserted between the pre-initial voiceless alveolar fricative obstruent /s/ and the initial voiceless velar plosive obstruent /k/.

(2) Ø → ɪ / s _____ p

/ɪ/ insertion is also elicited between the pre-initial voiceless alveolar fricative obstruent /s/ and the initial voiceless bilabial plosive obstruent /p/.

(3) Ø → ɪ / g _____ r

Vowel epenthia also militates initial two-element clusters. The epenthetic vowel /ɪ/ is inserted between the initial voiced velar plosive obstruent /g/ and the post-initial voiced post-alveolar approximant sonorant /r/.

7.3.5 Pronouncing Silent /r/

The /r/ is pronounced in post-vocalic and word-final positions. The following phonological rules are good case in point:

(1) $\emptyset \rightarrow r / \text{ɔ} : \text{ ______ } s$

Silent /r/ is pronounced after the back vowel /ɔ:/ and before the final /s/.

(2) $\emptyset \rightarrow r / \text{ə, } \text{ɪə, } \text{aɪə} \text{ ______ } \#\#$

In word-final position, the silent /r/ of the loanwords is pronounced. The preceding vowels are the schwa /ə/, the centering diphthong /ɪə/, and the triphthong /aɪə/.

All other types of adaptation mechanism are a combination of the so far illustrated adaptation processing.

8. Discussion

The analysis of the corpus adaptation shows that both integrated loans and on-line loans are due to a variety of transformational processes. These processes greatly militate the source form (the loan input) of the loanword to make it compatible with the native phonology. As stated in (7.1), the highest rating of adaptation is scored by the multi-adaptation strategy (56.66%). This points in the direction of the tendency toward ease of articulation, and the big efficacy of the native phonology. The weight of other types of processes ranges between (14% -3.33%). These are graded as follows: vowel quality (14%), vowel quantity (12.66%), zero adaptation (10%), consonant substitution (3.33%), and pronouncing silent /r/ (3.33%).

Vocalic adaptation affects both the quantity and quality of the vowel. All English short vowels /ɪ, e, æ, ə, ʌ, ɔ, u/ change their quality in different contexts. Vowel quality transformation entails vowel frontness, vowel height, vowel glide, and lip position. English short vowels are adapted into other short ones, while some diphthongs are subjected to monophthongization process, viz, they become pure vowels.

The adaptation of consonants is mainly computed via two major transformations; consonant substitution and vowel epenthesis. Consonants which are subjected to substitution are the plosive obstruents /p,k,d,g/ and the fricative obstruent /z/. The main contexts of adaptation are between two obstruents, between an obstruent and a sonorant, between a sonorant and an obstruent, and in word-final position following a sonorant or post-vocalically.

The other form of consonant transformation is computed via pronouncing silent /r/ word-finally or in post-vocalic context. Few number of integrated and on-line loanwords pertain their source pronunciation. This is interpreted in terms of the full conformity of the source form to L2 pronunciation.

Syllable patterning (phonotactics) of the loans is also modified. Adaptation of this type is in full agreement with the phonotactics of IA phonology. To put it differently, all the resulted output of the syllables patterns coincides with the licensed syllabic structure in the mother tongue.

9- Conclusions and Findings of the Study

In terms of generative grammar, this research has shown that the input to English loanwords transformations is constituted by the surface form of the source language, and that the adaptations are computed by the phonological grammar of the borrowing language, viz, IA. Technically speaking, adaptations of both integrated and on-line English loanwords fall within the framework of constraint-based phonology (output-oriented framework). All loanword adaptations are in conformity with IA phonology.

That is, no default patterns of adaptation are generated. This conclusion totally contradicts the findings of other researchers who have proved the generation of ill-formed patterns resulted from loanwords adaptation (cf. Shinohara 2000; and Kenstowicz and Sohn, 2001).

The main findings of this paper are the following:

(1) The potential motive behind adaptations is a psycholinguistic one where non-native sound structures are assimilated to ones that are well-formed in the native language.

(2) The resulted adapted pronunciation forms are well-integrated into the language system of IA. They are controlled by well-formedness constraints of IA language system where the adaptation outputs are legal surface forms in the native phonology. This finding supports the proposals of other researcher (e.g. Yip,1993; Paradis and Lacharite, 1997; and Peperkamp and Vendelin, 2004).

(3) The prominent phonological rules which underlie adaptation processing are vocalic lengthening rule, vocalic quality alteration rules, consonantal alteration rules, vowel insertion rules, alteration of syllabic phonotactics rules, and a combination of these rules.

(4) Vocalic segments which are militated by adaptation transformations are pure vowels and the closing diphthongs /eɪ, əu/.

(5) Consonantal segments which are affected by adaptation are the obstruent plosives / p, d, k, g/ and the obstruent fricatives / v, s, ʒ/, the sonorant nasal /n/ and the sonorant approximants / l, r/.

(6) Almost integrated and on-line loanwords are subjected to the same adaptation strategies with the exception that the alteration of the grammatical category of the loan is not elicited in the former type of loanwords.

(7) The main forms of adaptation transformations are modifying vowel quantity, vowel quality, consonantal substitution, pronouncing silent /r/, and multi-adaptation strategies.

(8) Few of the English loans preserve their source pronunciation because their input is in full coincidence to IA phonology.

(9) On-line loanwords have found their way into the lexicon of IA since they have become a part of IA vocabulary.

(10) The highest rating of adaptation strategies is scored by multi-adaptation (56.66%). Other forms of adaptation record the following ratings respectively (vowel quality – 14%, vowel quantity- 12.66%, zero adaptation- 10%, consonantal substitution and pronouncing final /r/ - 3.33% each).

References

- Abdul Sattar, M. A. (1997). Elision in Standard English and Basra Arabic, Unpublished Ph.D. Thesis. University of Baghdad.
- Best, C. (1994). " The Emergence of native-language Phonological Influences in Infants: A Perceptual Assimilation Model". In J. Goodman and H. Nusbaum (eds.). The Development of Speech Perception: The Transition from Speech Sounds to Spoken Words. Cambridge, MA: MIT Press. 167-224.
- Broselow, E. (2000). " Stress, Epenthesis, and Segment Transformation in Selayarese Loans". In S. Chang, L. Liaw and J. Ruppenhofer (eds.). Proceedings of the Twenty- Fifth Annual Meeting of the Berkeley Linguistics Society. 311-325.
- Dupoux, E., Pallier, C., Sebastian-Galles, N. and Mehler, J. (1997). " A destressing "deafness" in French" Journal of Memory and Language, Vol. 36, 406-421.
- Depoux, E. Kakehi, K., Hirose, Y., Pallier, C. and Mehler, J. (1999). " Epenthetic Vowels in Japanese: A perceptual Illusion" Journal of Experimental Psychology: Human Perception and Performance, Vol. 25, 1568-1578.
- Gbeto, F. (2000). Les emprunts linguistiques d'origine europeenne en Fon. Koln: Rudiger Koppe Verlag.
- Golstone, C. and Yang, P. (2001). " White Hmong Loanword Phonology". In C.Fery, A., A. Green and R.Van de Vijver (eds.). Proceedings of HILP, Vol.5, 40-57.
- Heffernan, K. (2007). " Phonetic Similarity and Phonemic Contrast in Loanword Adaptation" http://r1.chass.utoronto.ca/twpl/pdfs/twp124/Heffernan_TWPI24.
- Hsieh, F., Kenstowicz, M. and Moux, X. (2008). " Mandarin Adaptations of Coda Nasals in English Loanwords" Massachusetts Institute of Technology. 1-52.

Hyman, L.M. (1970). " The Role of Borrowings in the Justification of Phonological Grammars". *Studies in African Linguistics*, Vol. 1, 1-48.

_____. (1975). *Phonology: Theory and Analysis*. New York: Harcourt Brace Jovanivich College Publishers.

Ingram, J. and See-Gyoon (1998). " Language, Context, and Speaker Effects in the Identification and Discrimination of English /r/ and /l/ by Japanese and Korean Listeners" . *Journal of the Acoustical Society of America*, Vol. 103, 1161-1174.

Ito, Ch., Kang, Yo. And Kenstowicz, M.(2006). " The Adaptation of Japanese

Loanwords into Korean" In *MIT Working Papers in Linguistics*, Vol. 52, 65-104.

Jacobs, H. and Gussenhoven, C. (2000). " Loan Phonology: Perception, Saliency, the lexicon and OT" In J. Dekkers, F.Van der Leeuw and J. Van de Weijer (eds.). *Optimality Theory: Phonology, Syntax, and Acquisition*, 193-210.

Kang, Y.J. (2003). "Perceptual Similarity in Loanword Adaptation: English Postvocalic Word-final Stops in Korean". *Phonology*, Vol.20, pp. 219-274.

Kenstowicz, M. (2001). " The Role of Perception in Loanword Phonology". To appear in *Linguistique Africaine*, Vol. 20. Revised Version in *Studies in African Linguistics*, Vol.32, 95-112.

_____. (2005). " The Phonetics and Phonology of Korean Loanword Adaptation" *Proceedings of the First European Conference on Korean Linguistics*, edited by S-J.Ree, 17-32.

_____. (2006). " Tone Loans: The Adaptation of English Loanwords into Yoruba". *Selected Proceedings of the 35th Annual Conference on African Linguistics*, ed. John Mugane, et al., 136-146.

Kenstowicz, M. and Sohn, H.S. (2001). " Accentual Adaptation in North KyungsangKorean". In M. Kenstowicz (ed.) *Ken Hale. A Life in Language*, 239- 270. Cambridge, MA: MIT Press.

Kenstowicz, M. and Suchato, A. (2006). " Issues in Loanword Adaptation: A Case Study from Thai". *Lingua*, Vol. 116, 921-949.

Lovins, J. (1975). *Loanwords and the Phonological Structure of Japanese*. Bloomington: Indiana University Linguistics Club.

LaCharite, D. and Paradis, C. (2005). " Category Preservation and Proximity vs. Phonetic Approximation in Loanword Adaptation". *Linguistic Inquiry*, Vol.36, 223-258.

Paradis, C. and LaCharite, D. (1997). " preservation and Minimality in Loanword Adaptation". *Journal of Linguistics*, Vol.33, 379-430.

Peperkamp, S. (2005). " A Psycholinguistic Theory of Loanword adaptations" In M. Ettliger, N. Fleischer and M. Park-Doob (eds.). *Proceedings of the 30th Annual Meeting of the Berkeley Linguistics Society*, 341-352.

Peperkamp, S. and Dupoux, E. (2003). " Reinterpreting Loanword Adaptations: the Role of Perception . *Proceedings of the 15th International Congress of Phonetic Sciences*, 367- 370.

Peperkamp, S. and Vendelin, I. (2004). " Evidence for Phonetic Adaptation of Loanwords: An Experimental Study" In *Actes des Journees d'Etudes Linguistiques*,129-131.

Polivanov, E.(1931). "La perception des sons d'une langue etrangere". *Travaux du Cercle Linguistique de Prague*, Vol. 4, 79-96.

Roach, P. (2009). *English Phonetics and Phonology: A Practical Course*. (4th ed.). Cambridge: Cambridge University Press.

Rose, Y. (1999). " A Structural Account of Root Node Deletion in Loanword Phonology". *Canadian Journal of Linguistics*, Vol. 44, 359-404.

Shinohara, S. (1997). *Analyse phonologique de l'adaptation Japanese de mots etrangers*. Doctoral Dissertation, Univerite de Paris 111.

_____ . (2000). "Default Accentuation and Foot Structure in Japanese: evidence from Japanese Adaptations of French Words". *Journal of East Asian Linguistics*, Vol. 9. 55-96.

Silverman, D. (1992). " Multiple Scansions in Loanword Phonology: Evidence from Cantonese. *Phonology*, Vol. 9. 289-328.

Singh, S. and Singh, K. (1976). *Phonetics: Principles and Practices*. Baltimore: University Park Press.

Steriade, D. (2001). " The Phonology of Perceptibility Effects: the P-map and its Consequences for Constraint Organization". Ms.,UCLA.

Ulrich, C. (1997). " Loanword Adaptation in Lama: Testing the TCRS Model". *Canadian Journal of Linguistics*, Vol. 42. 415-463.

Yip, M. (1993). " Cantonese Loanword Phonology and Optimality Theory". *Journal of East Asian Linguistics*, Vol.2. 261-291.

_____. (2004). " The Symbiosis between Perception and Grammar in Interlanguage and Loanword Phonology". 12th Manchester Phonology Meeting (Submitted to *Lingua*).

Appendix (1)

The Corpus of English Loanwords

| <u>The Loanword</u> | <u>The Original Form</u> | <u>The Adapted Form</u> | <u>Pattern of Adaptation</u> |
|---------------------|--------------------------|-------------------------|------------------------------|
| Album | / əlbum / | / ?alboom / | multi-adaptation |
| antenna | / æntenə / | / ?anteena / | vowel quantity |
| back | / bæk / | / bagg / | consonant change |
| bacteria | / bækteriə / | / baktiirya / | multi-adaptation |
| balcony | / bælkəni / | / balakoona / | multi-adaptation |
| balloon | / bəlu:n / | / baaləʊn / | multi-adaptation |
| bank | / bæŋk / | / bang / | consonant change |
| battery | / bætəri / | / baatəri / | vowel quantity |
| bicycle | / baɪsɪkl / | / baaysikil / | multi- adaptation |
| biscuit | / bɪskɪt / | / bɪskɪt / | zero adaptation |
| bonnet | / bɒnɪt / | / baniid / | multi-adaptation |
| box | / bɒks / | / bɒks / | zero adaptation |
| brake | / breɪk / | / breek / | vowel quality |
| bread | / bred / | / breed / | vowel quality |
| break | / breɪk / | / breek / | vowel quality |
| bus | / bʌs / | / baas / | vowel quantity |
| biscuit | / bɪskɪt / | / bɪskɪt / | zero adaptation |
| cable | / keɪbl / | / keebl / | vowel quality |
| cacao | / kəkəʊ / | / kakaw / | vowel quality |
| cadre | / kɑ:də / | / kaadir / | multi-adaptation |
| cake | / keɪk / | / keek / | vowel quality |
| cafeteria | / kæfətəriə / | / kaaftiirya / | multi-adaptation |
| camera | / kæməərə / | / kaamira / | multi-adaptation |
| cancel | / kænsəl / | / ykansɪl / | multi-adaptation |
| cassette | / kəsɪt / | / kaseet / | vowel quantity |
| chatting | / tʃætɪŋ / | / tʃaatɪŋ / | vowel quantity |
| carbon | / kɑ:bən / | / kaarbəʊn / | multi- adaptation |
| card | / kɑ:d / | / kaart / | multi-adaptation |

| | | | |
|------------|----------------|---------------------|------------------------|
| cartoon | / ka:tu:n/ | / kaartəʊn / | multi-adaptation |
| cement | / sɪmənt / | / smɪnt / | multi-adaptation |
| cheque | / tʃek / | / tʃeek / or /ʃeek/ | vowel quantity |
| cholera | / kəʊləərə / | / kuleera / | multi-adaptation |
| cinema | / sɪnəmə / | / siinama / | multi-adaptation |
| classic | / klæsɪk / | / klaasiikɪ/ | multi- adaptation |
| click | / klɪk / | / klɪk / | zero adaptation |
| clips | / klɪps / | / klɪps / | zero adaptation |
| clutch | / klʌtʃ/ | / klʌtʃ/ | zero adaptation |
| cocktail | / kɒkteɪl / | / kɒkteel / | multi-adaptation |
| computer | / kəmˈpjʊ:tə / | / kɒmbjuutar / | multi-adaptation |
| condition | / kəndɪʃən / | / kɪndeɪʃɪn / | multi-adaptation |
| connect | / kənekt / | / ykannɪk / | multi- adaptation |
| coupon | / ku:pən / | / kəʊbəʊn / | multi-adaptation |
| crane | / kreɪn / | / kreen / | vowel quality |
| cup | / kʌp / | / kuub / | multi-adaptation |
| dashboard | / da:ʃbɔ:d / | / daʃbuul / | multi-adaptation |
| democracy | / dɪmɒkrəsi / | / diimuqraaʔiyya/ | multi-adaptation |
| democratic | / deməkrætɪk/ | / diimuqraaʔɪ/ | multi-adaptation |
| diplomacy | / dɪpləʊməsi/ | / dɪblumaasiyya/ | multi-adaptation |
| disk | / dɪsk / | / dɪsk / | zero adaptation |
| doctor | / dɒktə / | / dɪktɔər / | multi-adaptation |
| dollar | / dɒlə / | / dulaar / | multi-adaptation |
| dress | / dres / | / drees / | vowel quantity |
| drill | / drɪl / | / dreel / | multi-adaptation |
| e-mail | [ɪmeɪl] | [ɪmeel] | multi- adaptation |
| electronic | / ɪlektɹɒnɪk/ | / alɪkɪtrɔʊni/ | multi-adaptation |
| face book | / feɪs buk / | / fees buk / | vowel quality |
| fan | / fæn / | / faan / | vowel quantity |
| fax | / fæks / | / faaks / | vowel quantity |
| foreman | / fɔ: mən / | / fɔərman / | pronouncing silent /r/ |
| file | [faɪl] | [faayɪl] | multi-adaptation |
| filter | / fɪltə / | / fɪltar / | pronouncing silent /r/ |
| foot | / fu: t/ | / fuut / | zero adaptation |
| format | / fɔ:mæt / | / fɔərmaat/ | multi-adaptation |

| | | | |
|-----------|----------------|----------------|-----------------------|
| foul | [faʊl] | [faawɪl] | vowel quantity |
| gage | / geɪdʒ / | / geetʃ / | multi-adaptation |
| game | / geɪm / | / geem / | vowel quality |
| garage | / ɡæra:ʒ / | / garaadʒ / | consonant change |
| gas | / ɡæz / | / gaaz / | vowel quantity |
| gear | / ɡɪə / | / geer / | vowel quality |
| glass | / ɡlæs / | / glaas / | vowel quantity |
| Greenland | / ɡri:n lænd / | / ɡrɪd laan / | multi-adaptation |
| handbrake | / hænd breɪk / | / hand breɪk / | vowel quality |
| heater | / hi:tə / | / hiitar / | Pronouncing final /r/ |
| holder | / həʊldə / | / həɔldar / | multi-adaptation |
| hose | / həʊz / | / həɔz / | vowel quality |
| ice cream | / aɪs kri:m / | / aays kriim / | vowel quality |
| internet | / ɪntənət / | / ɪntarneet / | multi-adaptation |
| jacket | / dʒækɪt / | / tʃaakeet / | multi-adaptation |
| jelly | / dʒelɪ / | / dʒalɪ / | vowel quality |
| jug | / dʒʌg / | / dʒak / | consonant change |
| junction | / dʒʌŋkʃən / | / dʒankʃɪn / | multi-adaptation |
| kilo | / kɪlə / | / keelu / | multi-adaptation |
| kiwi | / kɪwɪ / | / kiwɪ / | vowel quantity |
| lamp | / læmp / | / lamba / | multi-adaptation |
| leak | / li:k / | / liik / | zero adaptation |
| lemon | / lemən / | / laymu:n / | multi-adaptation |
| light | / laɪt / | / laayɪt / | zero adaptation |
| line | / laɪn / | / laayɪn / | vowel quantity |
| load | /ləʊd / | /ləɔd / | vowel quality |
| lotion | /ləʃən / | /ləɔʃɪn / | multi-adaptation |
| memory | /meməɪ / | /mɪməɪ / | multi-adaptation |
| message | /mesɪdʒ / | /masɪdʒ / | zero adaptation |
| message | /mesɪdʒ / | /ymasɪdʒ / | multi-adaptation |
| million | /mɪljən / | /malyɔən / | multi-adaptation |
| miscall | /mɪs kɔ:l / | /mɪskɔəl / | zero adaptation |
| mobile | /məʊbaɪl / | /məbaayɪl / | multi-adaptation |
| model | /mɒdɪl / | /mudeel / | multi-adaptation |
| modem | /məʊdəm / | /məɔdəm / | vowel quality |

| | | | |
|---------------|-----------------|-----------------|-----------------------|
| motorcycle | / məʊtə / | / maatʊʊr / | multi-adaptation |
| off side | / ɔf saɪd / | / ɔʊf saayɪd / | multi-adaptation |
| on line | / ɔn laɪn / | / ɔɔn laayɪn / | multi- adaptation |
| over time | / əʊvə taɪm / | / ɔʊvar taayɪm/ | multi-adaptation |
| penalty | / penəltɪ / | / balantɪ / | multi-adaptation |
| pantaloon | / pæntəlu:n / | / panʔɪruun / | multi-adaptation |
| pick up | / pɪk ʌp / | / biik am / | multi-adaptation |
| pipe | / paɪp / | / baayɪb / | multi- adaptation |
| pizza | / pi:stə / | / biidza / | multi-adaptation |
| plastic | / plæstɪk / | / blaastɪk / | multi-adaptation |
| plug | / plʌg / | / blak/ | multi-adaptation |
| poster | / pəʊstə / | / bɔɔstar / | multi-adaptation |
| potatoes | / pətəɪəʊ/ | / buteeta / | multi-adaptation |
| powder | / paʊdə / | / bɔɔʔtra / | multi-adaptation |
| prestige | / presti:dʒ/ | / bristiidʒ/ | multi-adaptation |
| puncture | / pʌŋʔə / | / bantʃar / | multi-adaptation |
| radar | / reɪdɑ: / | / radaar / | multi-adaptation |
| ration | / ræʃən / | / raaʃan / | vowel quantity |
| rauter | /rautə / | / rawtar / | multi-adaptation |
| receiver | / rɪsi:və / | / rɪsiivar/ | pronouncing final /r/ |
| regime | / reɪʒi:m / | / radʒi:m/ | multi-adaptation |
| remote | / rɪməʊt / | / rɪmɔɔt / | vowel quality |
| routine | / ru:ti:n/ | / rɔɔtiin / | vowel quality |
| salad | / sæləd / | /zalaʔa / | multi-adaptation |
| sandwich | / sændwɪʃ/ | / sandawɪʃ/ | multi-adaptation |
| sardines | / sərdi:n / | / saardiin / | vowel quantity |
| scape | / skeɪp / | / skeeb / | multi-adaptation |
| screw | / skru: / | / sɪkru / | multi-adaptation |
| second driver | /sekɪnd draɪvə/ | / sɪkɪn / | multi-adaptation |
| set | / set / | / seet / | vowel quality |
| shampoo | / ʃæmpu: / | / ʃaambə / | multi- adaptation |
| slide | / slaɪd / | / slaayɪd / | zero adaptation |
| soup | / səʊp / | / suub / | multi-adaptation |
| split | / splɪt / | / sɪblɪt / | multi-adaptation |
| spanner | / spænə / | / sbaana/ | multi-adaptation |

| | | | |
|------------|---------------|-----------------|------------------------|
| stamp | / stæmp / | / ştamba / | multi-adaptation |
| starter | / sta:tə / | / staartar / | multi-adaptation |
| stop | / stɒp / | / ştaab / | multi-adaptation |
| sub base | / sʌb beɪs / | / subbees / | multi-adaptation |
| switch | / swɪtʃ / | / swiitʃ / | vowel quantity |
| tactic | / tæktɪk / | / taktiik / | vowel quality |
| tape | / teɪp / | / teeb / | vowel quality |
| taxi | / tæksɪ / | / taksɪ / | zero adaptation |
| telephone | / telɪfən / | / tɪlɪfəɒn / | multi-adaptation |
| television | / telɪvɪʒən / | / tɪlɪvɪzyɒn / | multi-adaptation |
| tennis | / tenɪs / | / tanɪs / | zero adaptation |
| tire | / taɪə / | / taayar / | pronouncing final /r / |
| top | / tɒp / | / tɒɒb / | multi-adaptation |
| video | / vɪdɪəʊ / | / viidyɒ / | vowel quantity |
| web site | / web saɪt / | / weeb saayɪt / | vowel quantity |
| wheel | [wi: l] | [wiil] | consonant quality |
| wireless | / waɪə lɪs / | / waayar las / | multi- adaptation |