Phonological Adaptation of Loanword into Egyptain Arabic

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1. Introduction

Loanwords are words that entered one language from another language (the source language). These types of words are also termed as borrowed words. They are not part of the recipient language vocabulary, they are adopted from some other languages and become part of the borrowing language's vocabulary" Nordquist,R (2019)[1]. Borrowing is a universal linguistic phenomenon; the majority of world languages contain borrowed words, because no nation has ever been completely isolated from other nations. (Jepersen,1964)[2]. Words are generally 'loaned' when two different cultures come into contact with each other (Hoffer,2002)[3]. This might result from immigration, trade, fashions or foods, travelers' tales, the arts (paintings, books, poetry, or film), technologies, wars, or colonization. Borrowing could occur across different linguistic levels; such

as lexeme level, phonological level, morphological level, and/or syntactic level. When a loanword transfers into a recipient language it is either adopted or adapted as noted by Bueasa, N (2015)[4]. Adoption occurs when the loanword is transferred into the recipient language without any change and is keeping its structure and pronunciation. For example, in English, the word "café" is adopted from French. On the opposite side, there is an adaptation in which the loanword undergoes linguistic changes to adapt to the phonological, or morphological, or syntactic structure of the recipient language. For example, the French word "coiffeur" /kwɒfˈɜːr/ is adapted in Egyptian Arabic (henceforth, EA) phonologically as /kuwafeːr/, this type of integration happens intuitively for ease of pronunciation. Like other languages, loanwords do exist in Arabic (Versteegh, 2014)[5]. Little studies such as Hafez (1996)[6] examine the integration of loanwords into Egyptian Arabic (EA). Hence, the current study focuses on investigating the phonological integration of loanwords into EA by Egyptian native speakers.

1.1 Aim of the Study

This study aims at

- Describing the production of English and/or French loanwords by Egyptian native speakers.
- Illustrating the phonological integration patterns of Egyptian Arabic into the source language of the loanwords.

2. **Loanwords in Egyptian Arabic**

In Egyptian Arabic, the occurrence of the majority of loanwords appears in the form of code-switching with phonological adaptation, in which the loanword is used instead of the Arabic word with different degrees of EA integration. Words as "Radiateur, Bougie, Salon, Cravat, Pantaloon, Pajamas, Rouge, Coiffeur, Dossier, Nougat, Oblique, Abajour, Croissant, Pâte, and Petit four, dereksyoon, "capot, and fiche" which are borrowed from the French language are using in EA with no other Arabic replaced words (see appendix I for a sample of French loanwords in EA). The same linguistic situation applies to English loanwords. For example, those related to electronics such as "Mobile, Video, Receiver, Tablet, and Remote" have no other alternative Arabic words (see appendix II for a sample of English loanwords in EA). Loanwords in EA aren't restricted to those of either English or French origin; many other loanwords were borrowed from other languages such as Italian, Turkish, and Persian. Many of the loanwords that exist in EA are using by Egyptians without knowing the origin of these words. Egyptian native speakers produce these words with different degrees of adaptation and integration. Hafez (1996) mentioned the factors that influence the degree of integration of loanwords. For example, the nature of the loanword itself, the speaker's attitude toward using foreign languages, the level of the speaker's education, and the time spent in using a loanword.

Many studies (ancient/ contemporary) focused on the integration of loanwords into Arabic such as Sibawayh (1317 A.H.)[7], Sa'id (1967)[8], Smeaton (1973)[9], Khalil (1984)[10], Heath (1989)[11], Al–Qinai (2000)[12] , and Saidat (2011)[13]

Sibawayh (1317 A.H.), the ancient Arabic grammarian, noted that "The Arabs change those foreign words which are absolutely incongruous with their own, sometimes assimilating them into the structure of their words, and sometimes not." In this quote, Sibawayh specified that loanwords are alternate to adapt the Arabic phonotactics by applying different types of assimilation in their speech. Sa'id (1967) investigated the integration of loanwords into Modem Standard Arabic (MSA), while Smeaton's (1973) focused on loanwords' integration into the Arabic of Al–Hasa, Saudi Arabia. Heath (1989) studied loanwords transferred into Moroccan Arabic through analyzing the code – switching between Arabic and French in a bilingual linguistic community. The study of Khalil (1984) is a diachronic one that is devoted to describe the origin of loanwords in EA rather than describing integration. Al–Qinai (2000), examined the morphological integration of loanwords into standard Arabic (SA) based on the contrastive approach of analysis. He noted that the Italian word "freno" is morphologically integrated into Arabic in the form of /farmala/ to adapt the Arabic morphology through breaking the initial consonant cluster.

Saidat (2011), investigated the morphological integration of English loanwords into Jordanian Arabic. For example, he mentioned that the word /dakto:r/ "doctor" is used to refer to the masculine while when it's used for feminine it gets inflected and suffixed by the addition of the vowel /–a/ as in /dakto:ra/.

Little studies were devoted to investigate the integration of loanwords into Egyptian Arabic. Hafez (1996) represented a synchronic study of loanword phonological and morphological integration into Egyptian Arabic. She focused on the assimilation of the loanwords to the phonological and morphological patterns of Egyptian Arabic.

As mentioned before, most of the loanwords in EA are originated from either English or French. Hence, to describe and analyze the phonological integration of loanwords into EA, we must first go through describing the phonological systems of these three languages.

3. The Phonological Systems of Egyptian Arabic, English, and French.

3.1. EA, English, and French Phonemic Inventory

3.1.1. Consonant Phonemes

		Bi Labial	Labio dental	Inter Dental	Alveolar		Post alveolar	Palatal	Velar	Uvular	Pharyngeal	Glottal
Plosive	Vls	[P]*			t	(tˤ)			K	(q)		ʔ
	Vd	b			d	(dˤ)						
Nasal	Vd	m				n			ŋ*			
Trill						R						
Fricatives	Vls		f	θ*	s	(sˤ)		ʃ		(x)	(ħ)	
	Vd		v	ð*	z	(zˤ)		ʒ		(ʁ)	(ʕ)	h
Affricates	Vls						[tʃ]					
	Vd						[dʒ]					
Glide	Vd	w						y				
Lateral	Vd					l						

Table (1)

The Phonemic Inventory of EA, English and French

- The symbols between brackets are those restricted only to the Egyptian Arabic phonemic inventory.
- The symbols highlighted by asterisks are those restricted to the English phonemic inventory.
- The symbols between square brackets are those shared between the English phonology and the French phonology and don't exist in ECA.

Despite that the Arabic phonemic inventory occupies the whole vocal tract starting from the glottis up to the end lips, it lacks some articulatory places of articulation that do exist in either English or French see (table 1). For example, EA doesn't contain the English interdental and the nasal velar. Meanwhile, the voiceless bilabial /p/, the voiced interdental /v/, and the affricates / ʧ/, /ʤ/ phonemes which are shared between the English and French don't occur in the EA phonemic system (See appendix III for the Arabic alphabetical representation of the EA phonemes).

3.1.2. **Vowel Phonemes**

EA loanwords include not only consonant phonemes that don't exist in the EA phonemic system, but also the same situation goes to the Egyptian loanwords' vowel phonemes. To better clarify how the EA vowel system differs from both English and French. The vowel phonemic system of the three languages will be illustrated in the following tables.

3.1.2.1. The Egyptian Arabic vowel phonemes

	Front		Back		
	Long	Short	Long	short	
Close	i:	i	u:	u	
Mid	e:		o:		
Open	æ:	æ			

Table (2)

The Vowel Phonemes of EA

3.1.2.2. The English Vowel Phonemes

	Front		Central		Back		
	Long	Short	Long	Short	Long	Short	
Close	i:	ɪ			u:	ʊ	
Mid		e	ɜ:	ə	ɔ:	ɒ	
Open		æ		ʌ	ɑ:		
Diphthongs					eə eɪ ɔɪ aʊ əʊ ɪə ʊə		
Triphthongs					eɪə aʊə ɔɪə eɪə əʊə		

Table (3)

The Vowel Phonemes of English

3.1.2.3. The French Vowel Phonemes

			Front	Central		Back		
	long		Short	Long	short	long	Short	
		Unrounded	Rounded					
Close	i:	i	Y			u:	u	
Mid	e:	e / ε / ɛ̃	Ø		ə	o:	o / ɔ / ɔ̃	
Open	æ:		Æ		ɐ		ɑ̃	

Table (4)
The Vowel Phonemes of French

It is well observed from this previous review that the EA has the simplest vowel system comparing to the other two languages (as opposed to the consonant phonemic system). The EA vowel system contains eight vowel phonemes three short and five long. According to tongue height, EA vowels have three tongue height positions (close–mid–open). Coming to the tongue position and movement, EA vowels are produced by either the tongue is forward and fronted or backward. From (table 3) it is noticed that the English vowel phonemes represent certain types of vowels in which the EA vowel system lacks such as the central vowels, the diphthongs, and the triphthongs. Coming to the French vowel phonemes, the uniqueness of this system comes from its front rounded vowels and its nasalized vowels.

Hence, it is predictable that the Egyptian native speakers will face some difficulties in pronouncing the English and French vowels of the Loanwords, and they will produce loanwords with a kind of phonological integration into EA. This phonological integration may occur across the vowel and consonant levels.   As mentioned before, the EA vowel system is the simplest system among the three languages, hence, Egyptian speakers may adapt their simple vowel system while producing, for example, the English diphthongs and/or the French front rounded vowels. Coming to the consonant inventories, Egyptian speakers may transfer their first langauge while producing sound classes such as interdentals, and post alveolars.

4. <u>Methodology</u>

4.1. <u>Speech Sample</u>

A corpus of loanwords was collected and examined from TV shows, and YouTube videos. Moreover, the speech of university students was observed and analyzed through a controlled conversation. The loanwords were elicited in a conversational context by asking questions, sentence completion, and describing the photos.

The observed loanwords were collected and then classified according to the domain. A phonemic transcription was applied to both the target loanwords and the Egyptian speaker pronunciation of these words. By comparing the

target transcription and the subjects' pronunciation the phonological processes that are used to integrate loanwords into EA will be illustrated and analyzed.

5. **Results**

Due to the phonological differences between the Arabic language and those of the loanwords, Egyptian native speakers overcome the difficulties of producing these loanwords by utilizing different types of phonological processes as utilized next.

5.1. **The Substitution Phonological Processes**

The speech of Egyptian speakers shows different types of substitution phonological processes across the consonants level and the vowel level.

5.1.1. *The vowel substitutions phonological Processes*

French loanwords in Arabic that contain either oral or nasal vowels show different substitution patterns. It is observed that the French nasalized vowel is replaced by two Arabic phonemes, the first goes to an EA vowel then followed by the nasal phoneme /n/. Pronouncing French front rounded vowels as /ø/ in the word "soeur" and /ʏ/ in the word "tu" is very challenging to Egyptian native speakers. They are substituted by high vowels either front high unrounded /i/ or back high rounded as /ʊ/. French mid short round vowels as /ɔ/ in "robe" and /o/ as in "zero" are replaced by either mid–long round vowel as /o:/ or short back

high round vowel as /ʊ/. See ⟨Table 5⟩, for the French vowel substitution phonological process by Egyptian speakers.

The French vowels	The substituted Arabic vowel	The target word	Transcribed target word	The replaced word
/ṽ/	v+n	Salon	/salɔ̃/	/sɑlo:n/
/ɔ̃/	o:+n	Direction	/diʀɛksjɔ̃/	/dɪrɪksɪjo:n/
/ã/	ɑ+n	Ascenseur	/asãsœʀ/	/ʔasanse:r/
	o:+n	Croissant	/kʀwasã/	/kʊrwaso:n/
/ɛ̃/	æ:+n	Pain	pɛ̃	bæ:n
/y/	/i:/	Autobus	otobʏs	ʔʊto:bi:s
		Jupe	ʒʏp	ʒi:bæ
		Manucure	manykʏʀ	moni:ki:r
	/ʊ/	parachute	paʀaʃʏt	baraʃʊt
		Lux	lʏks	lʊks
/ɔ/	/o:/	Robe	ʀɔb	ro:b
/o/	/ʊ/	Piano	Pjano	bijæ:nʊ
		Bolero	bɔleʀo	bʊle:rʊ
/ə/	/ɪ/	petit four	pətifur	bɪti:fo:r
	/ɑ/	crème caramel	kʀɛm kaʀamɛl	kɪre:m karamɛl

				karamıl
/œ/	/e:/	Radiateur	ʀadjatœʀ	ridijæte:r

Table (5)

EA adaptation of French vowels in French loanwords

Coming to the English loanwords in Arabic that contains English vowels, it is observed that Egyptian native speakers show different types of English vowel substitution phonological process in their speech. Starting with the English diphthongs, it is noticed that Egyptian speakers substitute English diphthongs by one vowel either long or short according to the type of the diphthong. For example, the diphthong / oʊ/ is replaced by either /o:/ or / ʊ/ as in the word "Post" is pronounced as /bo:st/. The diphthong / eɪ/ is substituted by either /e:/ or /ɑ/, for example, the word "cake" is pronounced as /ke:kæ/. As ECA lacks central vowel phonemes, they always are substituted by short vowels.

It is observed that there is a tendency for English mid back vowel to be substituted by Egyptian close back vowel despite that EA has short fronted unrounded vowel /i/, English words with this vowel is pronounced by a more mid vowel high such in "ticket" /ˈtɪkɪt/ which becomes /teɪkɪt/.For more examples on Egyptian vowel integration in loanwords see next (table 6)

The English vowels	The substituted Arabic vowel	The target word	Transcribed target word	The replaced word
/oʊ/	/o:/	Pullover	pʊloʊvər	bʊlo:vɑr
	/ʊ/	Cappuccino	kæpu:tʃi:noʊ/	kæbitʃi:nʊ
/eɪ/	/e:/	Sale	seɪl	se:l
	/ɑ/	Radio	/reɪdioʊ/	/rɑdijʊ/
/aʊ/	/ʊ:/	Blouse	blaʊs	blʊ:zæ
	/ɑw/	Router	ˈraʊtə	rɑwtɑr
/əʊ/	/o:/	Mobile	/məʊbaɪl/	mo:bɑjl
	/ʊ/	Coca-Cola	/kəʊkəkəʊlə/	/kʊkækʊlæ/
/ɔ:/	/ʊ/	Short	/ ʃɔ:rt/	/ ʃʊrt/
/ɑ:/	/o:/	Block	/blɑ:k/	/bɪlo:k/
/ə/	/ɪ/	Tablet	tæblət	tæblɪt
	/ɑ/	Freezer	/fri:zər/	/fre:zɑr/
/ʌ/	/ɑ/	Mug	mʌg	mɑgg

| /ɜː/ | /ɪ/ | U turn | ˈjuː tɜːrn | ˈju tɪrn |

Table (6)

EA adaptation of English vowels in English loanwords

5.1.2. Consonant Substitution

Egyptian Arabic speakers show different types of foreign phonemes substitution phonological processes. For example, the substitution of the foreign phonemes /p/, /v/ by /b/, /f/ respectively can be regarded as a "devoicing" phonological process. The substitution of the foreign phonemes /tʃ/, /dʒ/ by ,/ʃ/,/ʒ/ respectively as in "Chips" / tʃɪps/ that is pronounced as /ʃibsi/, and "Jeans" /dʒiːnz/ that is pronounced as /ʒɪns/can be regarded as a "de-affrication" phonological process. The substitution of the French consonant uvular trill /ʀ/ by the Egyptian Arabic alveolar trill /r/ as in "Marche arrière" / maʀʃaʀjɛʀ/ that is pronounced as /marʃideːr/ can be regarded as a kind of "fronting" phonological process.

The target phoneme	The substituted EA phoneme	The Target word	The Target transcribed word	The replaced transcribed word
/p/	/b/	Parachute	/ˈpærəʃuːt/	/baraʃut/
/v/	/f/	Vase	vɑːz	fɑza
/tʃ/	/ʃ/	Chat	tʃæt	ʃæːt
/dʒ/	/ʒ/	Jacket	dʒækət	ʒæːkit

	/t/	Card	/kɑːrd/	kært
/d/		salad	ˈsæləd	salata
/R/	/r/	Radiateur	RadjatɔR	ridijæteːr

Table (7)

EA adaptation of Foreign Phonemes in Loanwords

5.2. Syllabic Structure Phonological Processes

5.2.1. Gemmination

Doubling of foreign phonemes in certain phonological context is observed in the speech of the Egyptians in words as "ballon" / /bəˈluːn/ as /bælloːnæ/. The French word "Cravat" /krəˈvæt/ is pronounced as /karavatta/.

5.2.2. Cluster Reduction

As Egyptian Arabic phonotactic constraints don't allow initial consonant cluster and only permits a final cluster of two codas, any loanword with these types of clusters are reduced and simplified by Egyptian speakers. For example, "Croissant " /kʀwasɑ̃/ is pronounced as /kirwasoːn/, and "Spaghetti" /spagetti is pronounced as /ʔisbagitti/. The football word expression "Hands" /hændz/ in which it ends with three coda clusters is pronounced as / hændis/.

5.2.3. Addition

Consonant insertion is a type of syllabic structure phonological process that appears in the pronunciation of

loanwords by Egyptian speakers. For example, the process of "nasal insertion" in which a nasal consonant is inserted after a vowel to replace a French nasalized vowel as in "Salon" /salɔ̃/ that produced as salo:n/. The process "velar insertion" describe the addition of the velar /g/ after nasal /n/ to substitute the English velar /ŋ/ as in "Ping – pong" /ˈpɪŋpɒŋ/ is pronounced as /bing bung/. The process "glottal insertion" occurs to break initial consonant clusters in loanwords such in "play station" /pleɪ ˈsteɪʃn/ which pronounced as /bleɪʔɪsteɪʃæn/, and it occurs also in English loanwords that begin with vowels such as "out" /aʊt/ to be produced as /ʔæwɪt/.

This type of phonological process EA integration isn't restricted to consonants, otherwise, vowels are inserted as well in other instances such as "Cake" /keɪk/ that is produced as /ke:kæ/, and Salad" /sæləd/ is pronounced as /salata. At the same time vowel substitution, phonological process is combined with a type of vowel lengthening such as the French single vowel /y/ is substituted by a lengthen vowel /i:/ as in the word "jupe" which is pronounced as /ʒi:ba/.

5.2.4. Deletion

In some instances, it is noticed that vowel substitution phonological process may lead to a vowel shortening and deletion. For example, the substitution of English diphthongs by EA short vowel as noted above.

6. Conclusion

Egyptian Arabic contains a great amount of loanwords. Most of these words are of either French or English origin. The phonological system of Egyptian Arabic differs from those of English and French across different aspects. At the consonant phonemic level, Egyptian Arabic lacks the foreign phonemes /p/,/v/, /tʃ/, /dʒ/, /θ/, /ð/, /ŋ/, and /ʀ/. Differences between the three languages' vowel systems are also noted. The Egyptian Arabic doesn't have diphthongs, mid short vowels, central vowels, front rounded vowels and nasalized vowels. When it comes to Egyptian native speakers, these phonological differences lead to pronunciation difficulties. To overcome these difficulties Egyptian native speakers transfer their phonological system while pronouncing loanwords. Egyptian Speakers illustrate different types of phonological integration of loanwords into Egyptian Arabic. This phonological integration into EA influences both the foreign consonant phonemes as well as the foreign vowel phonemes, and it leads to two types of major phonological processes; syllabic structure phonological process, and substitution phonological process. Under each type of these processes there are different subtypes. The syllabic structure phonological process appears in the form of deletion, addition, gemination, and cluster simplification. The substitution phonological process appears in the form of devoicing, de-affrication, and fronting. More than one phonological process could be occurred in one integrated

loanword such as the occurrence of the phonological processes substitution and vowel lengthening simultaneously, or substitution and vowel shortening, or cluster simplification and vowel insertion, or cluster simplification and glottal insertion. The degree of integration isn't absolute; it governs by many social variables such the level of education, the age of learning a foreign language, and gender.

Appendix I
French Loanwords in EA

Number	The Target Word in Arabic	The Target Word in French	The Transcribed Word
1.	لوكس	Lux	/lyks/
2.	بوكيه	Bouquet	/bukɛ/
3.	بارشوت	Parachute	/paʀaʃyt/
4.	كافيه	Café	/kafe/
5.	تابلوه	Tablo	/tɑbləʊ/
6.	أتوبيس	Autobus	/otobys/

7.	أسانسير	Ascenseur	/asãsœʀ/
8.	فيلا	Villa	/vila/
9.	شاليه	Chalet	/ʃalɛ/
10.	شاليموه	Chalumeau	/ʃalymo/
11.	بيانو	Piano	/piˈænoʊ/
12.	كرفاتة	Cravat	krəˈvæt//
13.	بوليرو	Bolero	boˈleroʊ//
14.	بيجامة	Pajamas pyjamas	pəˈdʒɑːməz// piʒama//
15.	أوكازيون	Occasion	əˈkeɪʒn̩//
16.	روب	Robe (French word)	/ʀɔb/
17.	بلوزة	Blouse	French /bluz/ blaʊs/ English /
18.	جيبة	Jupe	/ʒyp/
19.	بنطلون	Pantaloon	pæntəˌluːn//

20.	جاتوة	Gateau	/gɑto/
21.	كرواسون	Croissant	/kʀwasɑ̃/
22.	باتيه	Pâte	/pɑt/
23.	بانيه	Pané	/pane/
24.	باتون ساليه	Battons sale	/sale/
25.	بيتنفور	Petit four	pəti fuʀ/ /
26.	بيتى بان	Petit pain	pəti pɛ̃/ /
27.	كريم كاراميل	Cream caramel	/kriːm kerəməl/
28.	باتون ساليه	Battons sale	/sale/

Appendix II
English Loanwords in EA

Number	The Target Word in Arabic	The Target Word	The Transcribed Word
1.	موبايل	/məʊbaɪl/	Mobile
2.	فيديو	/vɪdɪəʊ/	Video
3.	بيبسى	/pepsi/	Pepsi
4.	موتوسيكل	/moʊtəsaɪkḷ/	Motorcycle
5.	راديو	/reɪdioʊ/	Radio
6.	بلوك	/blɑːk/	Block
7.	كاميرا	/kæmərə/	Camera
8.	سوبرماركت	/suːpər mɑːrkət/	Super market
9.	كى بورد	/kiːbɔːrd/	Keyboard
10.	ماوس	/maʊs/	Mouse

11.	فريزر	/friːzər/	Freezer
12.	مايكروويف	/maɪkrəweɪv/	Microwave
13.	تواليت	/ tɔɪlɪt/ /twalɛt/	Toilet (English word) Toilette (French word)
14.	مزيكا	/mjuːzɪk/	Music
15.	بامبرز	/pæmpərz/	Pampers
16.	ترام	/træm/	Tram
17.	سويت شيرت	/ˌsweˌtʃərt/	Sweatshirt
18.	جينس	'dʒiːnz//	Jeans
19.	جاكت	/dʒækət/	Jacket
20.	سلطة	/sæləd/	Salad
21.	كابيتشينو	/kæpuːtʃiːnoʊ/	Cappuccino

22.	كيكة	/keɪk/	Cake
23.	كب كيك	/kʌp keɪk/	Cup cake
24.	بسكوت	/bɪskət/	Biscuit
25.	شيبسى	/tʃɪps/	Chips
26.	بولوفر	pʊloʊvər/	Pullover
27.	واتس اب	wʌts ˈæp/	WhatsApp
28.	انيستجرام	instgræ:m/	Instagram
29.	مول	mɔl/	Mall
30.	بلاى استيشن	/pleɪsteɪʃn̩/	Play station
31.	فيس بوك	feɪsˈbʊk//	Facebook
32.	واتس اب	wʌts ˈæp//	WhatsApp

Appendix III

The EA phonemes and their Equivalent Arabic Alphabet

The Egyptian Arabic Phoneme	The Arabic Equivalent Alphabet
b	ب
m	م
w	و
f	ف
t	ت
tˤ	ط
d	د
dˤ	ض
n	ن
r	ر
s	س
sˤ	ص
z	ز
l	ل
ç	ش
Y	ى
K	ك
q	ق
x	خ
ʁ	غ

ħ⁢⁢⁢⁢⁢⁢	ح
؟	ع
?	ء
H	ه

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