INTERFERENCE IN THE DEVELOPMENT OF ARABIC VOCABULARY (A MORPHOLOGICAL REVIEW)

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Abstract

Purpose: This study aims to describe the forms of Arabic language interference on terminologies in the domains of science, technology, and art.

Methodology: The study was conducted morphophonologically using descriptive-analytical research methods. The descriptive-analytic research method was used to facilitate the achievement of goals specified in this study. The data findings were reviewed using the distributional method.

Main Findings: The study found that language interference is an aspect of vocabulary development and enrichment, which requires harmonization of speech sounds. The results showed that in the Arabic language, interference produced partial absorption and full absorption. Phonologically, partial absorption occurred through the absorption of sound elements at the beginning or end of a word.

Applications: Understanding the issue of language transfer in the development of Arabic vocabulary is useful for non-native Arabic speakers. The findings can also help Arabic teachers revise their teachings methods accordingly.

Novelty/Originality of this study: This study contributed to a better understanding of the forms of phonological interference of foreign languages into the Arabic language. These forms can be represented as partial absorption, total absorption, and sound change. While in morphological forms, interference causes different developments of word patterns from classical Arabic.

Keywords: Arabic, Interference, Absorption, Sound Harmonisation, Vocabulary Development and Enrichment.

INTRODUCTION

Prevailing societal dynamics have a direct impact on the dynamics of language. In today's era of globalisation, human society is experiencing rapid developments at an astounding rate. Communication between citizens of different countries, both domestic and international, has become profoundly effortless. When people of different cultures meet and communicate with each other, and interaction between different languages also takes place, since language is the primary medium of communication. When two or more languages interact, it results in interference, which necessitates language development, especially in the field of vocabulary enrichment (Rojihi, 2002; Joffe & Hudspith, 2011; Skersy et al., 2012; Al-khresheh, 2016).

Language interference arising out of encounters between two or more languages can result in the absorption of vocabulary from the interference language, which is generally the language belonging to the more advanced culture. A language may possess more sway and clout if it's a religious language, such as Hebrew or Sanskrit in the past or Arabic until now (Al-Khresheh, 2015; Lamri & Cherifi, 2020; Lay & Yavuz, 2020).

In today's world, many languages tend to interfere with English/European languages due to the latter's stronger culture, namely their progress in the domains of science, technology, and art (next abbreviated to science and technology). Arabic, which was primarily a religious language until recently, is being influenced by English when it comes to establishing the terminology of science- and technology-related fields (Al-khresheh et al., 2020).

When vocabulary is absorbed, it is usually in adherence to the principle of ease in pronunciation, which results in articulation adjustments. These adjustments tend to affect the tenses of the respective language. Essentially, the issue of vocabulary enrichment through interference has been broached upon by many Arabic or language experts in their writings, even though specific studies dealing with this issue remain relatively unknown, especially in the phonological and morphological adjustments. The new research was conducted on 10 terminology dictionaries covering the fields of economics and business, politics, linguistics, science, medicine, chemistry, and communication. The data obtained in this first phase of research were 1,186 vocabularies (terminologies) that exhibited a variety of phonological symptoms, both phoneme absorption, phoneme change, partial translation, and unchanged vocabulary (Muter et al., 2004; Zahra et al., 2020)

In this study, the issue of interference and enrichment of vocabulary will be examined morphophonologically. Phonologically, does the articulation of sound change and adapt, or does it produce a new articulation outside the common articulation in Arabic? Morphologically, does this process affect changes in word structures and their formation

patterns? Can its features be identified? Furthermore, this study is expected to develop rules that can complement the existing Arabic rules (Hachoumi, 2017; McCollum, 2019; Stefanich et al., 2019).

This study is also expected to validate the evidence that language interference is a process of developing and enriching vocabulary that will continue to occur. It also plays a very large role in vocabulary and language development, including in established languages that have vocabulary enrichment like Arabic. Instead of being solely limited to the process of vocabulary absorption, it also enables the harmonisation of speech sounds, as in many languages in the world. Additionally, it describes the uniqueness of Arabic, in terms of sound, structure, and word-formation patterns.

Science and technology have assumed more prominent roles in cultivating language interference in today's world. Hence, this research study is primarily focused on the terminology from the domains of science and technology.

LITERATURE REVIEW

Previous Research

Encounters between two or more languages are a certainty. When two or more languages interact, interference is bound to occur. The strength of the culture that uses a certain language is what will determine whether that particular language will gain or lose in the event of interference. When the language speaker's culture is weak, it causes that language to experience defeat in the interference. This kick starts the absorption process, which may even go as far as to completely replace the existing language with the newer, stronger one. The absorbed vocabulary tends to undergo changes and developments in sound, shape, and structure, and word patterns (Al-khresheh & Al-Ruwaili, 2020, Buckwalter & Parkinson, 2014, Thoyib & Hamidah, 2018).

Budiarti (2013) discussed the forms of interference that occur in scientific journals in morphological, syntactical, and semantical ways. In her study, she employed a descriptive method with distributional and entity study methods. Her research was based on Weinreich's theory which explained that interference is a change in a language system that occurred due to the contact of the language with other language elements carried out by bilingual speakers. It was explained that morphologically, there was a reduction in the function of inflected morphemes in the formation of third-person verbs, plurals, and possession. Syntactically, there was a reversal of the pattern of English phrases, the absence of "to be", and the incoherence of the passive sentence structure. Semantically, there were additions and subtractions.

According to Pradjarto (2015), the basis of his research was Boey's theory, which coined the term 'transfer' to refer to the displacement of pronunciation, intonation, or sentence patterns of the first language to the second or third language. If it offered convenience, the transfer was referred to as "positive transfer". But if it caused difficulties, the transfer was termed "negative transfer" or "interference". In his study, grammatical interference that had the potential to cause language errors was observed. It was also observed to affect/determine the level of students' productive abilities directly or indirectly.

Widianto (2015) explained that Arabic and Javanese had influenced Indonesian in at least three ways: language loyalty, language pride, and awareness of the norm. Similarly, Fauziati (2016) stated that there were seven types of grammatical interference: mismatching, the use of prepositions, excessive expression, parallel construction, passive construction, the use of conjunctions, and the use of adverbs.

Several researchers have discussed the importance of interference research (e.g. Melly, 2019; Krish & May 2020; Baghana et al., 2019; Jäger et al., 2020; and Bürki et al., 2020). Melly (2019) stated that there are eight common errors made by second language learners in their narrative essays; production and distribution of verb groups, the use of articles, spelling, preposition, part of speech, the use of singular/plural, and question. Krish and May (2020) asserted that the effect of lexical interference, discourse, and syntax was able to help learners facing the difficulty in understanding the distinction of semantic systems between L1 (first language) and L2 (second language). The difficulty is also influenced by cultural differences. Baghana et al., (2019) stated that language errors occur due to interference and cultural differences. The difference of interlingual system between French and African languages is likely to become the underlying cause of interference.

Jäger et al., (2020) stated that while the inhibitory interference effect has subject to intense scrutiny by experts, faciliatory interference is yet to be studied properly. This gave rise to a claim stated that they had not discovered the facilitative interference-effect. However, they conducted facilitative interference and inhibitory with plenty of data findings, with the result showing that they found facilitative interference effect on reflectivity (Thyab, 2016).

In accordance with Bürki et al., (2020), the semantic interference effect is an experiment conducted on respondents who have to name pictures. However, apart from pictures, many interfering words are also presented in an auditory way, namely the picture-word interference paradigm. The result of this experiment showed that respondents needed additional time while these words were mentioned as interfering words tended to hail from the same semantic categories, such as cat-dog. In conclusion, their statement that there was no definite conclusion was corrected. Current evidence still provides little information about the character of the semantic interference-effect. It's also hardly ever used to describe lexical access.

Based on several previous studies, this study will discuss the influence of interference in the development of Arabic vocabulary. Additionally, it will place extra focus on the science and technology terminology morphophonologically. In the Arabic language, not only does interference absorb vocabulary but it also changes the articulation of sound, structure, and word patterns. In Arabic, phonologically, when the interference has the effect of absorbing vocabulary or terminology, it is also possible to replace and absorb sound in addition to sound harmonisation. Morphologically, it is also possible that the number of consonants forming basic words may consist of more than three consonant elements (trisyllable), deviating from the rules dictating word patterns in Arabic, as in the source language (which is absorbed) or close to the source language (Nicolaou et al., 2014).

Therefore, the researcher deemed it necessary to conduct a study on the effects of language interference based on phonological and morphological terms by addressing the elements which shape particular words that are most influential in present-day Arabic language. Moreover, there are also several reasons why this research is required. First, this research would support the development of previous studies. Second, interference plays an important role in vocabulary development (Art, Science, and Technology terminology) of Arabic language for both sounds and forms, which are assembled in orderly patterns. For this reason, specific rules that enable changes in sounds and forms that express vocabulary patterns should be formulated. The third is to emphasize that not only does interference impact vocabulary absorption, but it can also be assessed from its phonological and morphological level, as well as other levels in linguistics (Haspelmath, 2020).

Along with the development and the dynamics of its speakers, the language will continue to grow and be dynamic (Elbaset et al., 2019). Manfredi (2017) stated that language development is influenced by several factors, with the most indispensable factors being (1) generation shift; (2) language interference; (3) social, individual, and geography; and (4) deliberate language (vocabulary) creation, for instance, through language institutions or educational institutions.

Language development may occur at any level of language. It doesn't have to be restricted to sounds, words, sentences – it can also extend to levels of meaning. In the context of enrichment and development of vocabulary, Abdul-Wahid (2020) also elaborated on six ways to satisfy the needs and language development for vocabulary enrichment, namely:

1) القياس [al-qiyās] `analogy`, i.e. comparing words with words, forms with forms, practice with practice, with the intention of expanding language and avoiding language disorder Abdul-Wahid (2020);

2) الإشتقاق [al-`isytiqāq] `derivation`, i.e. forming a new word from an existing word or forms from other forms; or forming a word from another word with similar meaning and sound Abdul-Wahid (2020);

3) القلب والإبدال [al-qalbu wa al-`ibdāl] `metathesis and mutation`, i.e. advancing or ending one of the sounds in a word, followed by the preservation of its original meaning or slightly changing its meaning Savage et al. (2020);

4) النحت [al-naḥt] `acronym`, i.e. forming a word from two words or more Abdul-Wahid (2020);

5) الإرتجال [al-`irtijāl] `inventice/invention`, i.e. a speaker declares a word with a new meaning and form Abdul-Wahid (2020) and

6) الإقتراض [al-`iqtirāḍ] `absorption`. Dayeh (2019) and Larsen (2018) mentioned absorption with the term الدخيل [al-dakhīl], i.e. words from a foreign language vocabulary have been adopted into the Arabic language.

A language is a social form, which is influenced by significant historical developments and evolves from social events. It's also an apt reflection of the state of society. Therefore, language undergoes growth and development simultaneously with the advancement and development of its community. Language-speaking societies need not always be in a state of absolute peace and consistency – they may also alternate between periods of conflict and harmony, which affects the condition and the development of language. The growth and development of language occur in all aspects of language - sounds, words, sentences, and meaning (Silva et al., 2019).

Furthermore, language vocabulary undergoes its most productive stage of growth and development only when interference occurs. When two languages or two dialects interact – for any reason, any quality, and any end result – inevitably, it will influence each other (Fyshe et al., 2019; Levin & Hovav, 2017; Manfredi, 2017).

Among the different factors that generate interference, the most important factor is the existence of a community of different languages that influence or coexist with another community. This results in an interaction between two different languages and interference, where [1] one of the languages influences the other, thus replacing the native language or the native language incorporates the donor language partially, which may extend to its vocabulary and other elements; or [2] balanced, consequently either the two languages absorb each other or nothing is absorbed between the two languages (Manfredi, 2017; Al-khresheh, 2016a).

In Arabic, the absorption of language (vocabulary) from other languages (vocabulary of other languages) is called *Dakhīl*. Larsen (2018) stated that some researchers today adopt from foreign languages that are related to the development of terminology of Art, Science, and Technology. The Arabic Language Institute (Majma 'al-Lughah al-'Arabiyah) in Cairo, which was founded in 1930, does not allow the use of foreign vocabulary (Marpuah, 2019). Arabic is indeed a rich language. There are hundreds of thousands of unused, beautiful, harmonious, and derivative

vocabularies, which does away with the need to incorporate new vocabulary. Presently, most vocabularies are associated with electronics and their usage that has been acquired from foreign languages. A similar fashion applies to the terminologies of Art, Science, and Technology. Essentially, these vocabularies and terminologies are new vocabularies created by scientists (Abdul-Wahid, 2020).

Phonological Review

Phonologically, vocabulary adopted from foreign languages tends to undergo significant changes. This can be understood because the sound of one language to another has many differences in articulation. In this context, Arabic is a language that optimally uses all speech organs, starting from lungs to the nose. (Stetkevych, 2006), Based on articulation, Arabic sounds can be divided into the following:

1. *Bilabial*, i.e. sound formed by closure of the lips, such as /ب/.

2. *Labiodental*, i.e. sound made by the contact of lower lip and (upper) teeth, such as /ف/.

3. *Interdental*, i.e. sound produced by the tip of the tongue between the upper and lower teeth, like /ث/, /ذ/, dan /ظ/.

4. *Apico-alveolar*, i.e. sound articulated with the tip of the tongue touching near alveolar ridge without touching upper front teeth, namely /ز/, /س/, dan /ص/.

5. *Apico-alveodental*, i.e. sound articulated with the tip of the tongue touching alveolar ridge and upper front teeth, such as /ت/, /د/, /ط/, dan /ض/.

6. *Fronto-palatal*, i.e. sound produced by the front of the tongue forwarding to the hard palate, like /ج/ dan /ش/.

7. *Dorso Velar*, i.e. sound articulated by the back of the tongue with the soft palate, such as /ك/ dan /ش/.

8. *Rooto-pharyngeal*, i.e. sound produced by the proximity of the root of tongue and pharynx, without touching, such as /ح/.

9. *Dorso Uvular*, i.e. sound produced by the back of the tongue touching the uvula, like /ق/.

10. *Glottal*, i.e. sound that is produced in the larynx, namely /ء/ dan /ه/.

Nazir et al. (2019) reveal several aspects that give rise to the change and development of language sounds, which among others are نظرية السهولة [*naẓariyyah al- suhūlah*], as also supported by Curtius Whitney. Manfredi (2017) asserts that two different sounds or adjacent articulation would sometimes affect each other. Moreover, simplification and articulation factors often influence the sound changes of the absorbed vocabulary. Adjacent sounds in a word require sound harmonization (انسجام الأصوات). Consider the following example:

Table 1: Sound Harmonization

No.	Original Vocabulary	Arabic Vocabulary	Transliteration
1.	Tourbe	طرب	*ṭarbu*
2.	Euphorbe	فربى	*Farbiyūn*
3.	Physical	الفيزيقى	*Al-fīzīqī*
4.	Pleora	البلور	*Al-balūra*
5.	Pontederiacees	بنطديريات	*bunṭudīriyyāt*
6.	Gentianacees	جنطيانيات	*janṭiyāniyyāt*
7.	Metabolisme calcium	تصرف الكلسيوم	*Taŝarrufu'l kalsiyūm*

Source: Authors

Referring to the description above, phonologically, the acquisition is the formation of a word in one language from another language by changing/replacing one or more sounds, according to the articulation of the absorbent language for the simplification and sound harmonization of the word (Miyashiro & Harada, 2013).

Overall, the change/replacement of sounds in a word might occur due to several factors, namely, for the simplification and proper articulation of the language and its sounds respectively.

Morphological Review

In a language, language interference may lead to the process of word enrichment. Through this process, the formation of new vocabularies, which never existed before in that language takes place. As mentioned above, absorption is related to الأشتقاق [*al-`ištiqāq*] 'etymology', which is the process of forming a word or lexeme from another word or another lexeme. (Khalifa et al., 2017).

Absorption is the process of producing a new word by adopting a word from a foreign language, resulting in a new word. The new vocabulary would either retain its original form and meaning, or maintain its original form with a different

meaning, or overhaul both the forms and the core meaning. Modifications in the form may occur due to sound/phoneme changes, removal, or sound addition. The sample data presented in the previous section is an excellent example of this (Bowers et al., 2010; Muhammed et al., 2018).

Since the dawn of the 15th century, the rapid development of art, science, and technology in Europe and the United States has introduced new terminologies that had never previously existed in several languages. Moreover, these developments and related terminologies have also spread to many regions all over the world including Arab countries. Although translation procedures have been carried out continuously, several vocabularies/terminologies are difficult to translate due to the lack of proper vocabulary to replace it. Therefore, the adoption process of vocabulary and Art, Science, and Technology terms could not be avoided (Carlisle, 2010).

METHODOLOGY

Research Model

The descriptive-analytic research method has been used to facilitate the achievement of the goals specified in this study. This method is used with the hope that it would be able to describe and explain naturally about the data obtained in the language. The examined data referred to written data obtained from the latest terminology dictionaries in Arabic, English, and French. Then the data is crosschecked through informants.

In this study, data were analyzed through two simultaneous approaches. To express changes and transformations in sound, a phonological approach was used. Meanwhile, to examine its shape due to changes and transformations in sounds as well as the reduction and addition of sounds, a morphological approach is used. These two approaches are expected to reveal the effects of interference in the development and enrichment of language vocabulary, especially Arabic vocabulary.

Data Collection Techniques

Data collection is done by observing the data sources that have been determined, referring to the basic and follow-up content analysis techniques. Such methods were used because the data sources in this study are written data findings taken from terminology dictionaries written in the modern age. Some of these are *al-Mu'jamu'l Muwahhad (*Cairo, 2010, compiled by *al-Munaẓẓamatu'l 'Arabiyyatu li'ttarbiyyati wa'ṭtaqafati wa'l'Ulūmi maktabi tansīqi't Ta'rībi*) and *Majallatu'l Majma'i'l 'Ilmy* (published *by a- Majma'ul' Ilmy'l 'Araby"* Damascus, 1963), as well as other dictionaries. The usage of these dictionaries is intended to test the data in a contrastive and comparative manner in the hope of strengthening the validity and reliability of the data. Contrastive research was conducted to search for similarities in structural changes in each word absorbed, while comparative research was conducted to see the differences in word structure changes and the number of words produced through the absorption process. Also, the results were checked by Arabic native speakers as well, who hailed from Saudi Arabia and Egypt and were informants.

Research Method

In order to answer the problems iterated and achieve the objectives, this study used the descriptive analysis method, which is to illustrate, systematically, factually, and accurately about the data, nature, and the relationship of the phenomena under the study of Khalifa et al. (2016). With this method, it is expected that the writer can describe the absorption process in accordance with the nature of the available data.

To analyze the data, the distributional study method is used with a distribution technique. In the distributional study method, each element of the language is associated with one another to form a unified whole. The distributional study technique means that the determinant tool is part of the language itself. With this technique, the researcher is expected to understand how changes occur, both phonologically and morphologically (Taji et al., 2018).

RESULTS AND DISCUSSION

The Interference and Enrichment of Vocabulary (Science and technology terminology)

An encounter of two or more languages allows interference to happen. Furthermore, these encounters, if it occurs in a long period of time or because there is a need for language fulfillment, can lead to language absorption. In language absorption, there may be partial absorption or full absorption.

Partial Absorption

In Arabic, the absorption of science and technology terminology will instigate the absorption of the phoneme or morpheme, the substitution of phoneme or morpheme, and the translation of some word elements.

1. Absorption of the phonemes

Phonologically, in Arabic, interference can occur by the absorption of one or several phonemes.

a. Absorption at the beginning of words

- Vocabulary that starts with a sound (syllable) *al* will experience a sound absorption (syllable) *al* at the beginning. This is to avoid mistakes with the particle [*al*] that exist in Arabic, to avoid repetition of the sound (syllable). For example, the word "alcohol" becomes كوحول [kūḥūl], not الكوحول [alkūḥūl]. This vocabulary is categorized as a noun ('*ism*) which can be combined with particles al (ال) at the beginning. This vocabulary will become alalkūḥūl.

- Vocabulary that starts with a syllable vowel will experience sound absorption (syllable) at the beginning because Arabic is a consonantal language, no vocabulary begins with a vowel.

b. Absorption at the end of words

- The adjustment of vocabulary sounds in phonological interference is also done by the absorption of several final syllables in the word. These sounds are less commonly used in Arabic. For example, the sound -*um* in the words *napthalinum [nafṯālīn]* and *chromium [al-karūm]*; the sounds -*ic* in the word *racemic* [*razīm*]; the sound -*t* in the word *ploretariat* [*al-brūlītãriyã*]; the sound -*eum* in the word *petroleum* [*bitrūl*]; the sound -*mile* in the word *facsimile* [*fax*]; the sound -*lite* in the word *satellite* [*sãtal*]; the sound -*ine* in the word *chlorine [al-kalur]*; and the -*stic* sound in the word *caustic* [*kãwu*].

Morphologically, these interferences occur by still referring to the rules of the prevailing Arabic language. The foreign vocabulary is absorbed to approach the Arabic word structure itself. Arabic vocabulary, both *tris*yllabic and above, each has a specific word pattern structure. New word structures and patterns that have been generated due to interference are made to follow traditions that occur in Arabic, which have certain patterns, both the same as existing patterns and new patterns, which are the development of existing patterns. Consider the following words:

Table 2: The Development of Word Patterns in Arabic

No.	Original Vocabulary	Arabic Vocabulary	Transliteration	Word Pattern
1.	*Alcohol*	كوحول	kūḥūl	فعول
2.	*Amalgam*	ملغم	Malġam	فعلل
3.	*Parliamentary*	برلمانى	barlamãny	فوعلال
4.	*Quinine*	كنين	Kanīn	فعيل
5.	*Napthalinum*	تفثالين	nafṯālīn	فوعاليل
6.	*Facsimile*	فاكس	Fãkis	فاعل
7.	*Bromine water*	البروم	Al barūm	فعول

Source: Authors

1. Change of phonemes

Phonologically, every language has its own sound articulation. The sounds of one language differ from the sounds of other languages in their articulation. When interference occurs and causes vocabulary to be absorbed by other languages, sound adjustments will occur. The vocabulary it produces will replace some phonemes. This substitution allows for changes in the structure and pattern of word-formation.

The English language and other languages in Europe have different articulations and phonetic symbols than that in the Arabic language. When the vocabulary (science and technology terms) interferes and is absorbed by the Arabic language, there is an adjustment in the articulation as well as the phonetic symbol. Among the adjustments is the replacement of some phonemes or sounds (syllables). However, the change of phonemes or sounds (syllables) is sometimes not consistent in one phoneme or sounds (syllables) and the same phonetic symbols (Nasution et al., 2019; Ladefoged and Johnson, 2014).

a) The European [ch] sound { ش [š] }h and { ص [ŝ] }, for example *check* {شيك [šīk]} and *book of chaques* {دفتر صكوك [daftar ŝakūk]};

b) The [s] sound {س [s]}, {ز [z]} and {ص [ŝ]}, for example *opsin* { [ubsīn]}, *adafter claisen* {وصلة كليزن [waŝlatun kalīzan]} and *consular fees* {رسوم قنصلية [rusūm qanŝuliyyah]} or *osmium* {أوصميوم [ʔūŝamiyūm]};

c) The [g] sound generally becomes {ج [j]}, but sometimes become {ك [k]}, or {غ [ġ]}, for example *giga* {جيجا [jījã]}, *catalogue* {كاتالوج [kãtãlūj]}, *juglar* {جوكلار [jūklãr]}, and *density absolute-gas* {الكثافة المطلقة لغاز [al-kaṯafatu'l muṭlaqatu liġãz]};

d) The [p] sound generally becomes {ب [b]}, but sometimes become {ف [f]}, for example *peptidase* {ببتيداز [bibtīdãz]}, *oxprenolol* {أوكسبرينولول [ūksbirīnūlūl]}, *opium* {أفيون [ʔufiyūn]}, *napthalin* {نفثالين [nafṯãlīn]}.

e) The [c] sound - {ك [k]}, {س [s]}, or {ق [q]}, for example *pancreatin* {بنكرياتين [bankiriyãtīn]}, *uracil* {يوراسيل [yūrãsīl]}, and *sicilian* {سقلى [siqilly]}.

f) The [x] sound -{اكس [ks]} or at the beginning of the word{ز [z]}, and {س [s]} for example *oksazepam* {أوكسزيبام [*ūksazībãm*]}, *oxprenolol* {أوكسبرينولول [*ūksabarīnūlūl*]}, *xenon* {زينون [*zīnūn*]}, *xylose* {زيلوز [*zīlūz*]}, *ku-klux klan* {كو كلوس كلان [*kū kalūs kalan*]}.

g) The [v] and [ph] sound - ف [f]}, for example *papaverine* {ببافرين [*babãfirīn*]}, *sphingomyelin* {سفنغوميلين [*sifanġūmīlīn*]}, *phospholipase* {فسفوليباز [*fasfūlībãz*]}.

h) The [t] sound - {ط [ṭ]}, {س [s]}, {ش [š]}, or {ذ [d̠], for example *Constantin* {قسطنطين [*qasṭanṭin*]}, *diplomatic* {دبلوماسى [*diblūmãsy*]}, *lutetium* {اللوتشيوم [*al-lūtišiyūm*]}, and *tail* {ذيل [*d̠ayl*]}.

i) The [th] sound - {ث [t̠]} or {ش [š]} or {ت [t]}, for example *napthalin* {نفثالين [*naft̠ālīn*]}, *lanthanides* {لانثانون [*lãnt̠ānūn*]}, *lithium* {الليثيوم [*al-līšiyūm*]}, and *thrombokinase* {ترمبوكيناز [*tarumbūkīnãz*]}.

j) The [q] sound - {ك [k]}, for example *quinolone* {كوينولون [*kuwīnūlūn*]}.

k) The [u] sound in the beginning of the word - {يو [yū]}, for example *ubiquinone* {يوبيكوينين [*yūbīkuwīnīn*]}, *uranium* {يورانيوم [*yūrãniyūm*]}, *uracil* {يوراسيل [*yūrãsīl*]}.

l) The [y] sound in the beginning of the word {! [ʔi]}, for example *ytterbium* {إتيربيوم [*ʔitīribiyūm*]}, *yttrium* {إتريوم [*ʔitriyūm*]}.

m) The [d] sound - {د [d]} or {ض [ḍ]}, for example *hydrogen* {هدروجين [*hidrūjīn*]}, *modem* {مضمّن [*maḍammin*]}.

Morphologically, this permeation spawns word-forming patterns outside the customary Arabic word-forming patterns. In classical Arabic, the word pattern is composed of a maximum of 6 consonants; through interference with word patterns of more than 6 consonants as in the classical Arabic rules.

2. Translation of Some Elements

a. Plural

In Arabic, the partial absorption of science and technological terminologies related to the plural vocabulary not only replaces or removes some of the phonetic elements but also includes the plural pronouns commonly used in the Arabic vocabulary, which extends to *muʔ annas sãlim* (plural for feminine) *alif* and *tãʔ* (ات...) appended to the end of the absorbed word.

For example: *ion* {أيونات [*ʔayūnãt*]}, *hormones* {هرمونات [*harmūnãt*]}, *lipids* {ليبدات [*libīdãt*]}, *kolkhoze* {كولخوزات [*kūlaḫūzãt*]}, *electrons* {الكترونات [*iliktarūnãt*]}.

b. Ism Nisbat (Relative Noun)

The science and technological vocabulary/expressions absorbed by the Arabic language that expresses the type, race, nature, class (*relative noun*) have not only the substitution or absorption of phonetic elements or morphemes but replaces and includes the *'relative'* morphemes at the end of the word, which is by eliminating the *relative* morpheme in the original vocabulary and replacing it with the *relative* morpheme in Arabic, which is يّ or يّة.

Example: *adsorption physical* {إمتزاز فيزيائى [*ʔimtizãz fīziyãʔy*]}, *amperometric titration* {المعايرات الأمبترومترية [*al-maʔãyirãtu'l ʔambitirūmitriyyah*]}, *amphoteric oxides* {الحاصد أمفوتيرية [*al-ḥãsiduʔamfūtīriyyah*]}, *Brownian movement* {حركة برانية [*ḥarkatun burãniyyah*]}, *geographical concentration* {تركيز جغرافى [*tarkīzun juġrãfiyyun*]}.

c. Phrase

The terms of science and technology which are absorbed in Arabic are not only words but also phrases. The phrase is not completely absorbed. In its absorption, it also changes the elements of the phoneme or morpheme, even only absorbing some of the elements. Regardless of the number of constituent words, only one word interferes. While other word elements are translated into Arabic.

Example: *Adapter Claisen* {وصلة كليزن [*waṣlatun kalīzan*]}, *addition polymer* {بليمر إضافة [*balīmar ʔiḍãfatun*]}, *Adsorption physical* {امتزاز فزائى [*ʔimtizãzun fīzãʔiyyun*]}, *anodic dissolution* {الذبان الأنودى [*aʔḍ d̠ūbān al ʔanūdiyyu*]}, *caustic potash* {البوتس الكاوية [*al būtasu'l kāwiyyatu*]}, *hydrogen overpotential* {الجهد الفوقى للهدروجين [*al juhdu'l fauqiyyu li'l hadrūjīn*]}, *ionic product of water* {الحاصل الأيونى للماء [*al ḥãṣilu'l ʔayūniyyu li'l mãʔi*]}, *normal hydrogen electrode* {قطب الهدروجين العيارى [*qaṭbu'l hadrūjīni'l ʕiãry*]}, *normal density of gas* {الكثافة المطلقة للغاز [*al kat̠t̠āfatu'l muṭlaqatu li'l ġãz*]}, *oxidation reduction indicator* {دليل التفاعلات الأكسدة والإختزال [*dalīlu tafãʕulāti'l ʔaksidati wa'l ʔiḫtizāli*]}, *polarography linear sweep* {بولاروجرافيا الجهد الخطى [*būlārūjrāfiyã'l juhdi'l ḫaṭiyyi*]}, *polar neutral amino acids* {حمض أمينى متعادل القطعية [*ḥimḍun ʔamīniyyun mutaʕādilu'l qaṭʕiyyati*]}.

Complete Absorption (Intact)

The intertextual interpretation of science and technology terms in the Arabic language also absorbs it fully and completely. The vocabulary used in European languages is fully absorbed and used in Arabic without any alteration, either phonetic or morphemic. Fully and completely absorbed vocabulary refers to those terms whose articulation/sound

is the same or similar to the articulation/sound of the original and Arabic language. The only possible change is in the vocal to harmonize the sound (Zalmout & Habash, 2017).

For example: *zinc* {زنك [*zink*]}, *sotalol* {سوتالول [*sūtālūl*]}, *nitrite* {نتريت [*nitrīt*]}, *nickel* {نيكل [*nīkal*]}, *benelux* {بنلوكس [*binilūks*]}, *cominform* {الكومنفورم [*al kūminfūrm*]}, *telstar* {تلستار [*tilsitār*]}, *alkane* {ألكان [*ʔalkāna*]}, *alkene* {ألكين [*ʔalkīna*]}.

Mapping Research of Language Interference

According to the explanation, the Arabic language has experienced the absorption of science and technology terms from foreign languages. The absorption could be identified by phonological and morphological processes. These processes potentially cause phoneme or morpheme absorption, phoneme or morpheme interpretation, and word interpretation. While in the morphological process (Gandhi & Dhanasekaran, 2013); interference causes word-forming patterns outside the classical Arabic word-forming patterns. Moreover, the total absorption process also occurs in the inter-textual interpretation of science and technology terms. The vocabulary used in European languages is fully absorbed and used without any alteration, either phonetic or morphemic (Al-Khresheh & Al-Ruwaili, 2020). As proof of the research result, let's see Table 3 below.

Table 3: Mapping Research of Language Interference

Years	Themes	Results
Budiarti (2013)	Interference Forms of Indonesian Language in the English Language.	1. Morphology; reduction of inflectional morpheme in word-formation of a third-person singular verb, plural verb, and possessive; 2. Syntax: reverse English phrase; 3. Semantics; addition and subtraction meaning.
Pradjarto (2015)	Indonesian Interference in English Oral	Pattern change in pronunciation, intonation, or sentence from the first language into the second language.
Widianto (2015)	The Interference of Arabic and Javanese in Indonesia Language	Three methods for reducing interference on Arabic and Javanese, are language loyalty, language pride, and realization of social norms.
Fauziati (2016)	Grammatical Interference from Indonesia Language into the English Language	Incorrect preposition usage, exaggerated expression, parallel construction, passive construction, conjugation usage, and adverb usage.
Thoyyib-Hamidah (2018)	Phonological Interference of Arabic in Indonesian Language Phoneme	Diglosis, code-switching, code-mixing, convergence, and language shifting.
Melly (2019)	Interference of Indonesian Language in the English Language	Eight most common errors made by second language learners in their narrative essay; production and distribution of verb groups, the use of articles, spelling, preposition, part of speech, the use of singular/plural, and question.
Baghana, et al., (2109)	Interference of African in European Language	Interference causes difficulty in understanding of the difference interlingual systems between European and African.
Krish-May (2020)	Interference of Chinese Language in the English Language	The effect of lexical interference, discourse, and syntax was able to make learners facing the difficulty in understanding the distinction of semantic systems between L1 (first language) and L2 (second language).
Jäger, et al., (2020)	Intralingual Interference of English Language on S-V Pattern	Facilitative interference effects on English reflexive verbs.
Bürki et al., (2020)	Semantics Interference of English Language on the picture and audio words	There was no definite conclusion.
Savage et al., (2020)	Interference of Foreign Language in the Arabic Language	The forms of phonological interference of foreign language into the Arabic language, are (1) partial absorption, (2) full absorption, (3) sound change. While in morphological forms, interference causes the different development of word patterns in classical Arabic.

Source: Authors

As shown in Table 3 (mapping research of language interference), it can be proven that new phonological interference found in foreign languages into Arabic is (1) partial absorption, (2) total absorption, (3) sound changes. While morphological interference causes the different development of word patterns in classical Arabic.

Languages that are established and have sufficient rich vocabulary, such as the Arabic language, are capable of limiting the absorption of vocabulary and terminology. As a matter of fact, the Arabic language does not need to adopt the vocabulary used in daily activities, both spoken and written language, in most cases, except for several Art, Science, and Technology terminologies that could not be translated (Suleiman, 2013; Dweik & Othman, 2017).

CONCLUSION

In the current era of globalization, interference has become an unavoidable necessity. There is no language that does not experience interference. However, interference generally results in a major shakeup of the language. First, it can eliminate a language that is weak in culture. Second, it can cause chaos in the language system. Third, it can help vocabulary enrichment. Fourth, it can develop grammatical patterns. In the Arabic context, interference instead results in vocabulary enrichment. That happens because Arabic is one of the world's most powerful and established languages. Related to the development of science and technology, especially in the context of Arabic, interference has an important role in the enrichment of science and technology terminology itself in every language. This interest is not only for languages whose vocabulary still needs development but for all languages including those that are already well established such as Arabic.

LIMITATION AND STUDY FORWARD

This Arabic interference research is an effort to enrichen Arabic vocabulary and focuses on specific fields. This research is synchronous, meaning that this research is carried out at a certain time in accordance with the time of providing data. Additionally, this research remains limited in enriching language vocabulary in the fields of science, technology, and art terminology. This research is also expected to be continued in the fields of medicine, tourism, and the humanities. This study only focuses on morphophonology, namely in an effort to enrichen Arabic vocabulary. In the next research study, the influence of Arabic language interference needs to be studied in greater detail to simplify learning for non-Arabs.

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AUTHORS CONTRIBUTION

Abu Sufyan provided and analyzed the interference Data, Yani Rohmayani processed the interference data in fields Science, Technology, and art terminology. Tubagus Chaeru Nugraha studied recent studies and literature reviews in this field and Mohammad verified the data results of interference so that it can be presented in this article.

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