Sound Correspondences of Modern Standard Arabic Moroccan Arabic and Najdi Arabic

Darsita Suparno[1],*, Ulil Abshar[1],**, M. Wildan[2],***, Tri Pujiati[2],****

[1]UIN Syarif Hidayatullah Jakarta, Indonesia.
Email: darsitasuparn@uinjkt.ac.id*, ulilabshar@uinjkt.ac.id**
[2]Universitas Pamulang Tangerang Selatan, Indonesia.
Email: dosen00278@unpam.ac.id***, dosen00536@unpam.ac.id****

Abstract

This paper studies the process of sound correspondences that occur in Modern Standard Arabic (MSA), Moroccan Arabic (MAR), and Najdi Arabic (NAR). It attempts to find answers for the following questions: a) What are the identical word pairs, words couples that have a phonemic correspondence, a phonetic similarity, and a pair of words that contains difference of one phoneme, b) What are the process of morphophonemic in the form of assimilation, metathesis, and epenthesis. It is addressed to portray the process of morphophonemic assimilation, metathesis and epenthesis in three Arabic languages using Crowley's theory. This study used 207 of Morris Swadesh's basic vocabulary as the key standard procedure for collecting data. The criteria adopted to analyze the data were orthographic, sound-change, phonological, and morpheme contrast. This research used descriptive qualitative method. The source of the data was basic-word vocabulary. The data were gathered from three dictionaries as sources to get information. The data were analyzed by using structural linguistics, especially phonology, morphology, and semantics. This investigation informed several aspects of findings such as identifying prefixes, suffixes, assimilation, metathesis, and epenthesis. Using the Swadesh vocabulary list, the results of this study found 207 vocabularies for each language. By analyzing parts of speech, it was found that these vocabularies can be classified into five-word classes, namely, nouns, pronouns, verb, adjectives, adverbs, and determiners.

Keywords: *morphophonemic, metathesis, epenthesis, Moroccan, and, Najdi Arabic.*

A. Introduction

It is generally known that Modern Standard Arabic, Moroccan Arabic, and Nadji Arabic are typologically similar in many respects. However, there are many differences between them, namely a difference in function, writing, standardization, lexicon, and phonology. Those differences were caused by migration done by Arabic people from one place to another in nearby region due to various reasons, such as economics, politics, culture, environment and education. This movement will directly or indirectly affect the native language (mother tongue) the people acquire when they move. They have many opportunities in learning many languages that will broaden their horizon to understand everything better. The various languages of a person learn will provide new insights that make everyone more aware of the culture, lifestyle, customs, and beliefs of others. In other words, learning and investigation of various languages are crucial for everyone. According to Al-Mansoob & Alrefaee cross-language study over four decades shows that the results of this study have stimulated scholars to undertake cross-linguistic and cultural studies as cited by Al-Mansoob (Al-Mansoob et al., 2019, p. 2).

Some scholars focus their studies on sound correspondence analysis of word's structure in cross-Arabic language, as to come up with what is special and particular about that American English and Yemeni Arabic as Al-Mansoob and Matar, in (Al-Mansoob et al., 2019), (Matar et al., 2019).

Just to mention some studies the cross linguistic Arabic-English, Haitham & Khateb studied Resolving the Orthographic Ambiguity during Visual Word Recognition in Arabic: An Event-Related Potential, and Thaha & Hadad studied The Role of Phonological versus Morphological Skills in the Development of Arabic Spelling: An Intervention Study, (Haitham & Khateb, 2013); (Thaha & Hadad Saiegh, 2016). On the other hand, others conducted different studies, such as in Shaw et. all, this study presents a new articulatory data bearing on the phonetic expression of syllable structure in Moroccan Arabic (Shaw et al., 2011).

However, people's lack of interest in the study of Arabic language and its dialects especially in the fields of morphology and

syntax becomes an obstacle in understanding synchronic studies, language dynamics and language change which use computational and sociocultural linguistics. For instance, Ismail examined how often the Arabic Najdi vocabulary used by 137 Saudi male students by applying computational linguistic based lexicographic study (Ismail et al., 2019). Moreover, Shaw reported that phonetic variants of Moroccan Arabic indicate an identifiable syllable structure in a language can be identified in a language in which the initial group of words, regardless of their sonority profile, is claimed to be parsed hetero-syllable (Shaw et al., 2011) and AlQahtani and AlArifi investigates the syntactic derivation of grammaticalized auxiliary verbs found in a variety of Arabic, precisely, Najdi Arabic (NA). It analyzes the syntactic position which those grammaticalized auxiliary verbs occupy as lexical items in particular structures and as functional items in other structures. It also differentiates between those lexical and functional items in light of the theory of Distributed Morphology (AlQahtani & AlArifi, 2020)

Therefore, the current study contrasts MSA to MAR and to NAR with respect to the realization of the three languages, when viewed from a phonological perspective, have similarities and differences, which show that all three have inherited from the same proto-language and have a close kinship. In general, this study provides information about MSA, MAR, and NAR for comparative historical linguistic research from Indonesian perspective that will broaden repertoire of knowledge and specifically analyze the existence of phonemic correspondences in those three languages.

1.1 Statement of the problem

World cultural differences, in general, and cross differences language, in particular, lays the groundwork for stimulating comparative language analysis. Comparative historical linguistics as a branch of linguistics has the main task, among others determine the facts and levels of intimacy and kinship between languages, which are related to the grouping of related languages. As explained in comparative linguistic studies, especially language, sounds, and forms of words variety can be of concern to linguists and experts of comparative historical linguistics. Familiar language belonging to a

language group member has a similar historical development. The phenomena of migration and urbanization have created social, linguistic, and cultural contacts. As a result, cultural relations among Arabic speaking societies raise an interesting linguistic issue as stated by Hachimi and Al-Essa, in (Hachimi, 2018, pp. 60–98); and (Al-Essa, 2009, pp. 70–109). According to Sedeek, Arabic has several dialects. There is a myth that states Arabic speakers from different countries who speak different dialects need to use the lingua franca of the Arab world, namely Modern Standard Arabic (MSA) in communicating with other Arabic speakers (Sedeek, 2019, p. 4). Cote highlighted that Arabic is spoken by more than 400 million persons in nearly 12 countries and holds the dual distinction of being the fifth most widely spoken as well as one of the fastest growing languages in the world (Cote, 2009, p. 75). The 12 countries which use Arabic are located in Middle East and North Africa (Sedeek, 2019, p. 4). Arabic is important for more than one billion Muslims around the world as a ritual language of the Muslims Holy book the Qur'an (Newman, 2008, p. 66), (Sedeek, 2019, p. 4). Arabic (along with Greek, Haitian, and Swiss German) is considered as a prime example of the linguistic phenomenon "diglossia," where one language community uses two language or two dialects of one language (Ageli, 2013, pp. 233–243); (Munther, 2015, pp. 1–4). Additionally, Eastern Arabic people use North Arabian colloquial which include Gulf Arabic and Najdi Arabic, spoken in Iraq, Saudi Arabia, Syria, and Jordan (Al-Ghamdi, 2018, p. 6). On the other hand, Western Arabic Language and its dialects used in Western Libya, Morocco and some North African countries (Al-Ghamdi, 2018, p. 6). This was supported by Ferguson which stated that language variation concept refers to the superposed variety as high (H) and to the primary dialects as low (L). In Arabic language, Ferguson's (H) refers to what is known as Fusha, a term that includes both Modern Standard Arabic (MSA) and its older form, Classical Arabic (CA), and (L) refers to the Arabic colloquial dialects (Munther, 2015, p. 4). In short, MSA, MAR, NAR differ cross-culturally not only in the way they are realized but also in their area of distribution, their word frequency of occurrence, and in the functions they serve. The differences between everyday dialects prevail in Arabic today's world

can easily be associated with the different dialects of the tribes who immigrated with this part during and after the period of Islamic conquest (Ageli, 2013, p. 235). These tribes save (al-fusħa) Arabic, the language of the Koran and literature for reading and writing, which has manifested in poetry and speech, among themselves. (Issa, 1987, p. 62). Therefore, based on a cross cultural scale, this paper examines the sound correspondence in MSA, MAR and NAR to reveal the similarities and differences in the realizations of the phonological across the basic word. As far as the literature searches, the object of this study has never been studied by any researchers.

1.2 The Question of the Study

This study attempts to find answers for the following questions: a) How are the relationship between form and meaning, which has been seen from cognate, phonemic correspondence, and a pair of words that contain a different pattern in MSA, MAR, and NAR? b) What is the sound change in the form of assimilation, metathesis, the prediction of word syllable system, epenthesis, in MSA, MAR and NAR?

1.3 Significance of the Study

This study aims to observe sound correspondence between MSA, MAR, and NAR. It is expected to facilitate cross-culture studies specifically through language comparison. It is also used to encourage curriculum designers to focus on possible diversity of basic-words, particularly language comparisons concerning their pedagogical plans in Master Program of Arabic Language and Literature UIN Jakarta. Moreover, they can apply more authentic content to learn Arabic as a second language. This study is also expected to be able to provide a better theoretical approach to the specificity and universality of languages, especially Arabic languages. MSA, MAR, NAR data can also be used as a basis for further inter-language studies. Besides, this study is expected to contribute not only to the pedagogy of second languages but also to the growing flow of comparative historical linguistic research and cross-cultural studies.

1.4 Theoretical Framework

As this cross-language study undertakes a comparative investigation of the language of sound correspondence, this section uses comparative historical linguistics as the theoretical framework. Historical and comparative linguistics has been a growing scope of research interest among both historical and linguists as it studies the relationship between language forms and their meanings, which emphasizes the general philological underpinnings of this discipline, including the cultural and historical background and parallels for linguistic change and diversification. Taking a modern definition of historical linguistic comparative, it stated that comparative historical linguistics is a branch of (theoretical) linguistics that investigates the development of language from one time to another as well, the comparison of a language with another and language sounds change, (Anttila, 1989, pp. 3, 9, 237), (Anttila, 1972, p. 255), (Keraf, 1996b, p. 22), (Crowley & Bowern, 2010, pp. 3–5), (Campbell, 2013, p. 14). Consequently, there is a consensus among scholars of comparative linguistics that two or more different words are compared by this study to understand similarities, differences, sound changes, and some historical relations between the two languages.

Like comparative linguistic studies, which concern the study of the language family and kinship, language families, mother tongue, language distribution, language migration, language typology, and language contact, sound change, and comparative historical linguistics emerged as a very crucial scope in the studies of sound correspondent. It concerns with the "study of types of sound change, phonetic and phonemic change, determining relatedness, internal reconstruction morphological changes among different communities regarding how influences in direction of change" (Crowley & Bowern, 2010, pp. 1–11), (Anttila, 1989, pp. 80–84), (Yule, 2013, pp. 225–234), (Keraf, 1996b, pp. 32–40). There is a great benefit in comparative historical linguistics studies to shed light the boundaries across languages around the world, such as comparing related languages and studying the development of language from one period to another and observing how language changes and finding out the causes and effects of these language changes. Such research motives are highly adopted by

comparative historical linguistics scholars taking into the effect of language contact is better observed through a comparative study of the phonological and morphological change each language has undertaken. Otero for instance, proved that one of the problems in comparative historical linguistics is the correspondence of the sounds of the languages which has been compared (Otero, 2019, p. 4). Then, the sound correspondent was verified by morphological evidence to support the internal structure of the words of one particular language family. In this respect, the benefit of comparative linguistic or comparative historical linguistic for understanding across languages can result in a complete phonetic, phonemic, morphemic and lexical reconstructions as they appear to be more beneficial. Comparative historical linguistic can be a valuable knowledge for other sciences. Comparative linguistic empirical findings can be used, among others, by history, archeology, anthropology, sociology, anatomy and ethnic character, climate and geography, as stated by Krisanjaya in (Krisanjaya, 2011, p. 1.14-1.18) and Crowley & Bowern in (Crowley & Bowern, 2010, pp. 12–13).

In this study, several aspects were used to establish a kinship relation between MSA, MAR, and NAR namely: identical word pairs, word couples that have phonemic correspondence, phonetic similarities, and a pair of words that contain one different phoneme but can be explained by environmental influences. Identical word pairs refer to pairs of words that have the same forms, sounds, and meanings.

B. Methods

This comparative linguistic study is conducted to compare MSA, MAR and NAR. There were three college students who become the target participants of the study. They were a participant who speaks MSA, a participant who speaks MAR and a participant who speaks NAR. The data sources are categorized into primary and secondary. The primary resource was taken from two post-graduate students who participated in the study as main informants. They were an Indonesian lecturer who has studied in Morocco, a college student in second semester of Master Program of Arabic Language and Literature at the "Faculty of Adab and Humanity Syarif Hidayatullah State Islamic

University, and a Najdi native speaker from other university in Jakarta. This study applies qualitative research (Creswell, 2009, p. 24). Morphological analysis method to analyze the sound changes, phonological analysis method to analyze phonological contrast and allophone variations, morphophonemic refers to Crowley & Bowern and Anttila (Crowley & Bowern, 2010, pp. 24–35), (Anttila, 1989, pp. 114–115). The quantitative method was done by applying lexicostatistic techniques (Anttila, 1989, p. 231) to see kinship relations of languages. To obtain the data the writer did some procedures: (1) observing MSA, MAR, and NAR through the Swadesh basic vocabularies as guidance to understand the basic words of it, (2) typing 207 basic Swadesh vocabularies in a form of questionnaire to get the data from informants, (Anttila, 1989, p. 231), (3) identifying the problem as the main issue. In analyzing the data, the study used the lexicostatistics method to collect the basic vocabulary of the language. There are five stages of analysis. The first is the collection and classification of words. The second starts with phonology, morphology, then, semantics analysis. The third stage involves the method of comparing phonemic correspondence. At this stage, segments have compared with each other to find sound change, their similarities, and differences in their sound correspondence, (Anttila, 1989, pp. 11–28), (H. H. Hock & Joseph, 2009, p. 113).

C. Result and Discussion
3.1. The relationship between form and meaning

To answer the question point (a) of this study, namely the relationship between form and meaning, which has seen from identical word pairs (cognate), words couples that have phonemic correspondences and word pairs that have different phonemes where a descriptive analysis shows determination of kinship relations of MSA, MAR, and NAR have been conducted. The data obtained in this study are representative of the study population. The data in the form of 207 basic vocabularies were used by the writers to compare three Arabic languages, namely MSA, MAR, and NAR. The discussion starts from the sample data that show sound correspondence, such as:

3.1.1 Cognate words

Cognate words refer to pairs of words that have similar forms, sounds, and meanings. Examples of identical word pairs are as follows:

Table 3.1.1 Cognate Words Pairs in MSA, MAR, and NAR.

No	English word	Word		Word		Word	
		MSA	IPA	MAR	IPA	NAR	IPA
Noun							
1.	'animal'	حيوان	/ħajawa:n/	حيوان	/ħajawa:n/	حيوان	/ħajawa:n/
2.	'meat'	لحم	/laħm/	لحم	/laħm/	لحم	/laħm/
3.	'blood'	دم	/dam/	دم	/dam/	دم	/dam/
4.	'horn'	قرن	/qarn/	قرن	/qarn/	قرن	/qarn/
5.	'hair'	شعر	/ʃaʕr/	شعر	/ʃaʕr/	شعر	/ʃaʕr/
6.	'tongue'	لسان	/lisa:n/	لسان	/lisa:n/	لسان	/lisa:n/
7.	'wings'	جَنَاح	/jana:ħ/	جَنَاح	/jana:ħ/	جَنَاح	/jana:ħ/
Adjective							
9.	'warm'	دفيء	/dafi:ʔ/	دفيء	/dafi:ʔ/	دفيء	/dafi:ʔ/
10.	'far'	بعيد	/baʕi:d/	بعيد	/baʕi:d/	بعيد	/baʕi:d/
11.	'wet'	مَبْلول	/mablūl/	مَبْلول	/mablūl/	مَبْلول	/mablūl/
Verb							
12	'to beat'	عض	/ʕadˤdˤa/	عض	/ʕadˤdˤa/	عض	/ɑdˤdˤa/
13	'to suck'	مص	/masˤsˤa/	مص	/masˤsˤa/	مص	/mɑsˤsˤa/
14	'to breathe'	تنفس	/tanaffasa/	تنفس	/tanaffas/	تنفس	/ tanaffas/

Table 3.1.1 shows 14 words are similar or cognate among MSA, MAR, and NAR.

It was found that 14 out of 207 lexical elements or basic words which are being compared are similar. Identification of cognate is a main of comparative linguistics to understand the relatedness of languages. Cognates are words that share the same Arabic root, are very similar in spelling and have the same or similar meaning (H. Hock, 1988, pp. 557–558). To calculate the percentage of relationship between the three languages, it has carried out in the following way.

Number of words (N) = 207, identic words or cognates 25, C = 25. Formula = C / N x 100%, (Keraf, 1996a, pp. 130–131). The cognate presentation about 25/207 x 100% = 12,07 % of MSA, MAR and NAR. The 12,1% percent similarity occurs due to direct inheritance from the same proto language, such as a Semitic language. In other word, Arabic vernacular or 'Āmmiyya in this case MAR and NAR are linguistically related to standard Arabic, as stated by (Broselow & Ouali, 2009, p. 272), (Younes, 2015, p. 5). For example, the phonemic inventory of MSA related to the MAR and NAR, from manner articulation, such as in the word in MSA / دم / consists of consonant stop, interdental and voiced / د /, /d/ and / م /, /m/ identified as a nasal, bilabial, this articulation is same in MAR and NAR. In this analysis, the writer presented a comprehensive mapping from graphemic MSA to IPA as an important step in the phoneticization of Arabic, something similar is done by (Brierley et al., 2016, p. 169). It has been defined in terms of direct descent from common words (or morphemes), belonging to a common in the family language. Therefore, cognate words are always found in genetically related languages. In short, these similarities are inherited by the same ancestral language, thus showing the similarity of language typology. All phonemes of MSA's word are present in MAR and NAR. Those are identical word pairs because all phonemes are similar. Thus, in comparative linguistics, historical linguistics and philology, to provide a basic definition of the word cognate shows that language has a relationship. Based on this perspective, cognate is a part of relationships. It has defined in terms of direct descendants of common words (or morpheme), belongs to a shared ancestral language. In short, the similarity has inherited by the same ancestral language so that it shows the similarity of language typology.

3.1.2 Sound Correspondence

Table 3.1.2 Sound Correspondence.

No	Phoneme type	Corres-pondence	Word		Word		Word		Gloss
			MSA	IPA	MAR	IPA	NAR	IPA	
15	vocal	/aʸ/-/i/-/e/	كيف	/kayfa/	كيفاش	/ki.fa.ʃ/	كيف	/keif/	'how'

	vocal	/y/-/i/-/i/	كيف	/kayfa/	كيفاش	/ki.fa:ʃ/	كيف	/keif/	'how'
17	vocal	/a/-/ø/-/ə/	قليل	/qali:l/	قليل	/qli:l/	قليل	/gəlīl/	'few'
18	diphtong	/aʸ/-/i:/-/ie/	بيض	/baydˤ/	بيضة	/bi:.dˤa/	بيضة	/bíeð□ah/	'egg'
19	vocal	/i/-/i/-/ə/	جلد	/dʒild/	جلد	/ʒıld/	جلد	/jeld/	'skin'
20	diphtong	/aʸ/-/i:/-/ē/	عين	/ʕayn/	عين	/ʕi:n/	عين	/ʕēn/	'eye'
21	consonant	/θ/-/t/-/θ/	ثلاثة	/θala:θa/	تلاتة	/tla:ta/	ثلاثة	/θala:θa/	'three'
22	consonant	/q/-/q/-/g/	قملة	/qamla/	قمل	/qmal/	قملة	/gamlah/	'louse'
23	consonant	/s/-/ʃ/- / ʃ /	سمن	/samn/	شحم	/ʃħam/	شحم	/ šaħm /	'fat' noun
	consonant	/m/-/ħ/-/ħ/	سمن	/samn/	شحم	/ʃħam/	شحم	/ šaħm /	'fat' noun
	consonant	/n/-/m/-/m/	سمن	/samn/	شحم	/ʃħam/	شحم	/ šaħm /	'fat' noun

Note: IPA International Phonetic Alphabet; Italics brackets (/ /): denote a phonemic element; One quotation mark ('...'): states the meaning or meaning.

Based on the data obtained and presented in table 3.1.2, it can be seen that MSA /ay/ diphthong has innovated into the phoneme /i:/ in MAR language, while in NAR, it has innovated to become /eiy/. The innovation formula is as follows: MSA / ay⁊ MAR / i⁊ NAR /eiy/. This innovation can be explained as / ay / and / eiy / are similar to / a: / and / i: / as long vowels these diphthongs are close to MSA similar sounds (Holes, 1984, p. 34). Another pattern of phonemic correspondence is that the vocal phoneme MSA / a / experiences disappears in MAR, while in NAR, it has innovated to become / ə /. Furthermore, the vocal phoneme MSA / i / experienced retention in MAR / i /, but in NAR, it has innovated to become / ə /. Apart from vowel innovation, consonant innovation has also been found, which is the phonological evidence separating MSA groups MAR and NAR. It has shown in table 2. Datum number 21 shows the consonant phoneme MSA / θ / or / ث / has innovated to be / t / or / ت / in MAR language, but it has retention in NAR language. Likewise, in datum number 22, the consonant phoneme / q / or / ق / is retention in MAR, but it has innovated in NAR to become / g / although orthographically / ق / is the same, the pronunciation is different. This innovation event has explained by the principle of primary change in the form of a shift in which the phoneme

with a specific sound type in MSA becomes a phoneme with another sound type in NAR, namely MSA / q ⁊ NAR / g /. Furthermore, datum number 23 shows the consonant phoneme MSA / s / or / س / has innovated to become / ʃ / or / ش / in MAR and NAR languages. Likewise, in datum number 23 the nasal consonant phoneme / m / or / م / has been innovated in MAR and NAR languages to become / ħ / or / ح /. In brief, this innovation event can be explained as a principle of primary change in the form of a shift where a phoneme with a certain sound type in MSA becomes a phoneme with another sound type in NAR, namely MSA / s ⁊ MAR / ʃ ⁊ NAR / ʃ /; MSA / m ⁊ MAR / ħ ⁊ NAR / ħ /; and MSA / n ⁊ MAR / m ⁊ NAR / m /. In sum, there are 11 pattern sound correspondence as shown in table 3.1.2.

3.1.3 A pair or words couples that have some different phonemes

Table 3.1.3 Words with different phonemes.

	English word	Word		Word		Word	
		MSA	IPA	MAR	IPA	NAR	IPA
Noun							
25	'seed'	زرع	/zarʕ/	زريعة	/zar.ri:.ʕa/	عَزمَة	/ʕajmah/
26	'bark'	لحاء	/liħa:ʔ/	قشرة	/qaʃra/	جِدع	/jedeʕ/
27	'nose'	أنف	/ʔanf/	نيف	/ni:f/	حَشِم	/xaʃim/
28	'river'	نهر	/nahr/	واد	/wa:d/	شت	/šaṭṭ/
Verb							
29	'to fight'	تَقَاتَل	/taqātala /	تدابز	/tda:bez/	تَهَاوَش	/tahāwaš
30	'to lie'	استلقى	/istalqa:/	تمدى	/tmad.da/	إنْزِدع	/ənjedeʕ/
31	'to hold'	أخذ	/axaða/	شد	/ʃad:/	قَبَض	/gabɑð▢/
Adjective							
32	'full'	ممتلئ	/mumtali ʔ/	عمر	/ʕa.mɪr/	مِنْتِلِي	/mənteli
33	'good'	جيد	/dʒajjid/	مزيان	/me.zjan/	زيان	/zien/
34	'bad'	سيئ	/sajjiʔ/	خيب	/xajb/	سيئ	/šēn/
35	'thin'	رقيق	/raqi:q/	نحيف	/nħi:f/	دَقِيق	/dəgīg/
36	'thick'	سميك	/sami:k/	غليض	/ɣli:dˤ/	مَتِين	/matíyen/
Verb							
37	'to think'	فَكَّر	/fakkara/	فكر	/fak.kar/	فكر	/feker/
		اعتقد	/iʕtaqada/				
38	'to fight'	تَقَاتَل	/taqātala /	تدابز	/tda:bez/	تَهَاوَش	/tahāwaš
39	'to stab'	طَعَن	/tˤaʕana/	تعز	/tʕaz/	تعزن	/ṭaʕən/
40	'to lie'	استلقى	/istalqa:/	تمدى	/tmad.da/	إنْزِدع	/ənjedeʕ/

This study has found 182 lexical elements dissimilar from 207 lexical elements or basic words which are being compared. Identification of dissimilarity is a main of comparative linguistics to understand language relatedness. The word differences that occur in Arabic dialects can be seen from its history. The Moroccan Arabic is influenced by Berber (Amazigh), French, and Spanish. Historically Morocco was a former French colony, and because of this, most Moroccans are fluent in French since It has been taught universally and serves as the language of Moroccan commerce and economy, culture, science, and medicine. Besides that, it is also widely used in education and government. Morocco is also a member of the Francophonie. While the Najd Arabic is influenced by Persian, Portuguese, several Indian languages, and English (Ni'mah, 2009, pp. 36, 40). Najdi is a dialect of Arabic spoken by people in the Riyadh region and the northern part of the city center (Anis, 2015, pp. 117–118). There internal and external factors in language change. The Internal factor of language change is correlated with grammar system, namely in the phonological system, the sequence of phrases and sentences. The external factor of language changes refers to language changes that occur due to outside influences, such as changes influenced by social factors, culture, natural environment that occur in society.

The interaction of a language with another language can occur because humans are interconnected between one ethnic to another, from one country to another. The interaction has many purposes, for example, economics, politics, religion, science and acculturation. All that can only happen because language is a means of communication in many activities. Judging from the netlinguistics domain of Arabic, Arabic dialects show relatively high diversity. It happened because the dialect experiences evolution of language in about 1400-1600 years ago (Ben Hamed et al., 2015, p. 95). Every language experience change. The way the language changes shows about the nature of that language (Hickey, 2003, p. 34). In short, table 3.1.3 shows 16 words that have some different phonemes. In other words, those three languages always change and develop. They adapt to each other's natural or social environment. That adjustment is followed by a

tendency to innovate, which ultimately makes languages differ from one another, even though they originate from a single language family.

3.2 Sound Change

To answer the question in point (b) of this study, namely the sound changes in the form of assimilation, metathesis, epenthesis, epithesis, apheresis, apocope, syncope, elision, dissimilation in which a descriptive analysis shows determination of kinship relations of MSA, MAR, and NAR has been conducted. The data obtained in this study are representative of the study population. The data in the form of 207 basic vocabularies were used by the writers to compare three Arabic languages, namely MSA, MAR, and NAR. The discussion starts from the sample data that show assimilation, such as:

3.2.1 Assimilation

The process of adding the prefix /al-/ or ال that functions as a noun marker have found in MSA, MAR and NAR. Adding a prefix to a free morpheme can lead to an assimilation process. This process has been categorized as regressive assimilation due to the change is influenced by the sound afterward. In this case, the prefix /al-/ assimilate with the sound after it.

Table 3.2.1 Assimilation.

	fish	NAR					MAR					MSA			
41	السَمَكة	←	سمكة	+	ال		الحُوت	←	حُوت	+	ال		السمك	←	سمك	+	ال
	/as samakah	←	/samakah/	+	/al/		/ah hu:t/	←	/hu:t	+	/al/		/as samak/	←	/samak/	+	/al/
	back	NAR					MAR					MSA			
42	الظهر	←	ظهر	+	ال		الظهر	←	ظهر	+	ال		الظهر	←	ظهر	+	ال
	/aðˤðˤahr/	←	ðˤahr/	+	/al/		/aðˤðˤahr/	←	ðˤahr/	+	/al/		/aðˤðˤahr/	←	ðˤahr/	+	/al/
	tail	NAR					MAR					MSA			
43	الذنب	←	ذَنَب	+	ال		الشوال	←	شوال	+	ال		الذنب	←	ذَنَب	+	ال
	/aððanab/	←	/ðanab/	+	/al/		/aʃʃwa:l/	←	/ʃwa:l/	+	/al/		/aððanab/	←	/ðanab/	+	/al/
	river	NAR					MAR					MSA			
44	الشت	←	شت	+	ال		الواد	←	واد	+	ال		النهر	←	نهر	+	ال
	/aʃʃatt/	←	/ʃɑṭṭ/	+	/al/		/al wa:d/	←	/wa:d/	+	/al/		/an nahr/	←	/nahr/	+	/al/

From the description above, it is known that its phonological process in the form of consonant assimilation. Sound [l] can turn into several other consonant sounds because of the influence of the sound after. Simply these changes can be seen in the rules below:

$$/l/ \quad + \quad \begin{cases} /s/ \\ /ð^ʕ/ \\ /ð/ \\ /ʃ/ \\ /n/ \end{cases} \quad \rightarrow \quad \begin{cases} /s/ \\ /ð^ʕ/ \\ /ð/ \\ /ʃ/ \\ /n/ \end{cases}$$

This rule states that the phoneme consonant /l/, / ل /can turned into sound /s/, or / س /, /ð^ʕ/or / ظ /, /ð/ or / ذ /, /ʃ/ or / ش /, and /n/ or / ن / meets sound s/, or / س /, /ð^ʕ/or / ظ /, /ð/ or / ذ /, /ʃ/ or / ش /, and /n/ or / ن /.

3.2.2 Metathesis

Metathesis is identified as a speech error or someone mispronunciation, (Crowley & Bowern, 2010, p. 32). Metathesis is considered as a kind of sound change which switches the position of letters. It is a process in which two sounds change their position within the same comparing word. Therefore, in a series of sounds where we expect a linear sequence of two sounds with a pattern -xy-, a pattern –yx- was found. This phenomenon is called "Al Qalb al Makany" in Arabic, or the phenomenon of inversion. Thus, the term was formulated by Arabic linguists. The examples are as follow:

Table 3.2.2 Metathesis.

	English word	Word		Word		Word	
		MSA	IPA	MAR	IPA	NAR	IPA
45	'father'	أَب	/ʔab/	با	/ba:/	أَبُو	/ʔubō/
46	'to know'	جَرَّبَ	/jarraba/	خَبَر	/xabara/	خَبَر	/xabara/
47	'we'	نَحْنُ	/naħnu/	حَنَا	/ħana/	أَحْنَ	/əħna/
48	'when'	مَتَى	/mata:/	إِمْتَى	/imta/	مَتَى	/meta/
49	'smooth'	أَمْلَس	/ʔamlas/	مَالَس	/ma:las/	أَمْلَس	/ʔamlas/

*In this data, the metathesis is divided into two.

3.2.2.1 Metathesis Form A

Metathesis form A refers to the way of pronouncing the word by inverting the segments from behind to the front (completely invert the segments). Form A is accepted only if the replaced word can be pronounced easily. Basically, this metathesis form A is a word which has C-V-C-V structure. If the word is qualified, the speakers only invert the words and pronounce it naturally. The example datum no 49, shows the metathesized sequence of consonants /a/ and /m/ between MSA and MAR.

	'smooth'	IPA	'father'	IPA
MSA	أَمْلَس	/ʔamlas/	أب	/ab/
MAR	مالس	/maːlas/	با	/baː/
NAR	أَمْلَس	/ʔamlas/	أَبُو	/ʔubō/

IPA → International phonetics alphabet

The word أَمْلَس in datum no. 49, the first vowel in MSA word أَمْلَس /ʔamlas / occur metatheses to مالس /maːlas / in MAR, the first vowel /a/ occur MSA transpose second position of a sound in a word of MAR. The speakers of MAR naturally invert the segments because they have used it for so long so the change sounds just as usual or natural. In contrast to MAR, NAR speakers maintain أَمْلَس. In datum no. 45, the first vowel in MSA word أب /ab / occur metatheses to با /baː / in MAR. The first vowel /a/ occurs in MSA transpose second position of a sound in a word of MAR, but it doesn't occur in NAR. The processes of the words above are:

Syllable change:

/ʔam las/ ⟶ /maː las/
first syllable second syllable   first syllable second syllable

/ab/ ⟶ /baː/
a syllable   a syllable

Vowel alteration

/ʔam las/ ⟶ /maː las/
V_1C_1 CVC C_1V_1 CVC

Particular attention is paid to metathesis studies in MAR and NAR has been viewed by the writers as a means of enriching the vocabulary of language.
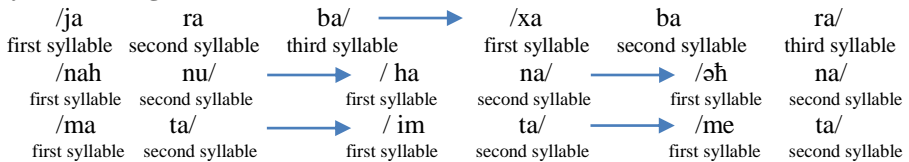
3.2.2.2 Metathesis Form B

Metathesis type 2 only switches one or more segments within a word. There are various patterns in forming the metathesis words type 2, such as some words become closed syllable, some switch between its vowel, consonant or even syllable, and some others change unconditionally. The examples of this type 2 that the writers got from the participants are:
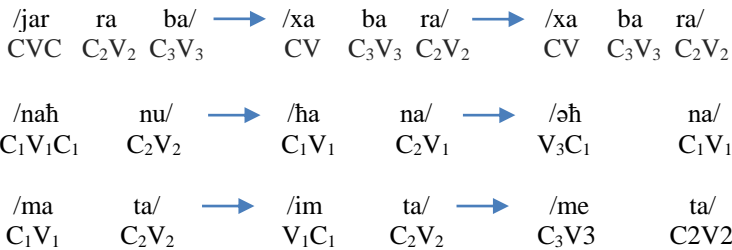
	'to know'	IPA	'we'	IPA	'when'	IPA
MSA	جَرَّبَ	/jarraba/	نَحْنُ	/naħnu/	متى	/mata:/
MAR	خَبَر	/xabara/	حنّا	/hana/	امتى	/imta/
NAR	خَبَر	/xabara/	أحْن	/əħna/	متى	/meta/

The processes of the words above are:

Syllable change

/ja   ra   ba/ ⟶ /xa   ba   ra/
first syllable second syllable third syllable   first syllable second syllable third syllable

/nah   nu/ ⟶ / ha   na/ ⟶ /əħ   na/
first syllable second syllable   first syllable second syllable   first syllable second syllable

/ma   ta/ ⟶ / im   ta/ ⟶ /me   ta/
first syllable second syllable   first syllable second syllable   first syllable second syllable

Vowel alteration

/jar ra ba/ ⟶ /xa ba ra/ ⟶ /xa ba ra/
CVC C_2V_2 C_3V_3 CV C_3V_3 C_2V_2 CV C_3V_3 C_2V_2

/naħ nu/ ⟶ /ħa na/ ⟶ /əħ na/
$C_1V_1C_1$ C_2V_2 C_1V_1 C_2V_1 V_3C_1 C_1V_1

/ma ta/ ⟶ /im ta/ ⟶ /me ta/
C_1V_1 C_2V_2 V_1C_1 C_2V_2 C_3V3 $C2V2$

3.2.2.3 The Prediction of the Syllable Word System

Based on the metathesis data found above, several deep patterns form a new way to pronounce vocabulary from MSA to MAR and NAR. Therefore, the writers try to create predictions of how to shape new words based on metathesis theory.

a. If the word in MSA has V-C-C-V-C structure, it can switch into C-V-C-V-C in MAR. MSA word V-C-C-V-C pattern structure is maintained in NAR. For example:

MSA word	The Changes		Note
	MAR	NAR	
/ʔ a m l a s/ 1 2 3 4 5	/m a: l a s/ 2 1 3 4 5	/ʔ a m l a s/ 1 2 3 4 5	The word has same meaning with 'smooth'
	The sound /m/ reverses the phoneme from behind to the front and the sound /a/ change into the sound /a:/		

b. If the word in MSA has V-C structure, it can switch into C-V in MAR and it can switch to be V-C-V in NAR. For example:

MSA word	The Changes		Note
	MAR	NAR	
/ʔ ab/ 12	/ba:/ 21	/ʔ ubō / 314	The word has the same meaning with 'father'
	The sound /b/ switches into the second sound in MSA to be the first sound in MAR of a syllable	The sound /b/ switches into the second sound in MSA to be the middle sound in NAR of a syllable and the sound /a/ in MSA change into the sound /u/ in NAR	

c. If the word in MSA has C-V-C-C-V-C-V structure, it can switch into C-V- C-V- C-V- in MAR and it can switch into C-V- C-V- C-V- in NAR. Moreover, the sound / ج/ or the /j/ changes into the / ح / or the sound /x/ in MAR and NAR, For example:

MSA word	The Changes		Note
	MAR	NAR	
/jar ra ba/ 123 45 67	/xa ba ra/ 12 67 45	/xa ba ra/ 12 67 45	The word has the same meaning with 'to know'
	The sound /ra/ switches the second syllable in MSA into the third syllable in MAR	The sound /ra/ switches the second syllable in MSA into the third syllable in NAR	

d. If the word in MSA has C-V-C-C-V structure, it can switch into C-V- C-V in MAR and it can switch into V- C- C-V- in NAR. Moreover, the sound /a/ in MSA and MAR changes into /ə / in NAR, For example:

MSA word	The Changes		Note
	MAR	NAR	
/ naħ nu/	/ħ a na/	/ə ħ na/	
123 45	32 42	63 42	The word has the same meaning with 'to know'
	The sound /ħ / switches the third sound of first syllable in MSA into the first sound in the first syllable in MAR.	The sound /a/ in MSA and MAR changes into the sound /ə / in NAR.	
	The sound /a/ switch the middle sound of close syllable in MSA to be the first open syllable in MAR	The sound /ħ / switch the third sound of the first syllable in MSA to be the second sound in NAR	

According to the data above, there are four kinds of metathesis languages system in MAR, and NAR refers to MSA as guidance.

3.2.2.4 Epenthesis

One of the sound changes in the form of adding sound (insertion / epenthesis) is anaptyxis. Anaptyxis is an epenthesis in which an additional vowel is inserted between two consonants, (Campbell, 2013, p. 33). Epenthesis is used to describe the change by which a vowel is added in the middle of a word to break up two consonants in a cluster, (Crowley & Bowern, 2010, p. 31). Consonant insertion or epenthesis is a process of adding a phoneme or consonant in an utterance by the speaker. In this analysis, a vowel insertion was found in several words, such as:

Table 3.1.2.4 Epenthesis.

No	English	MSA	IPA	MAR	IPA	NAR	IPA
50	'all'	كُلّ	/kull/	كامل	/ka: .mɪ l/	كل	/kell(e)/,
51	'man' (male)	رجل	/radʒ ul/	راجل	/ra:jel/	رَخَّل	/rajjā l/
52	'rope'	حبل	/ħ abl/	حبل	/ħ bal/	حبل	/ħ abel/
53	'meat'	لحم	/laħ m/	لحم	/lħ am/	لحم	/laħ am/
54	'star'	نجم	/najm/	نجمة	/najme/	نجم	/najem/
55	'sea'	بحر	/baħ r/	بحر	/bħ ar/	بحر	/baħ ar/
56	'sand'	رمل	/raml/	رمل	/reml/	رمل	/ ɾ̣ ɑ mə l/

In the table 3.1.2.4 we see that the epenthetic vowel used word-internally is a copy of the preceding vowel (if there is one) or of the following vowel:

	The Changes		Insertion	Sound change
MSA	**MAR**	**NAR**		
/kull/ -	/ka:mil/ -	/kelle/	/a/, /ɪ /, /m/, /e/	/u/ →/a:/ →/e/
-	-			/-/ → /i/ →/e/
-	-			/l:/ →
				/l/
-	-			/l:/ → /m/→ /l:/
/radʒ ul/ -	/ra:jel/ -	/rajjā l/	/a:/; /j:/	/u/ → /e/ → /a:/
-	-			/j/ → /j:/
/ħ abl/ -	/ħ bal/ -	/ħ abel/	/a/, /e/	/a/ → /-/ → /a/
-	-			/-/ → /a/ → /e/
/laħ m/ -	/laħ m/ -	/laħ am/	/a/	/-/ → /-/ → /a/
/najm/ -	/najme/ -	/najem/	/e/	/-/ → /-/ → /e/
/baħ r/ -	/bħ ar/ -	/baħ ar/	/a/	/a/ → /-/ → /a/
-	-			/-/ → /a/ → /a/
/raml/ -	/reml/ -	/ ɾ̣ ɑ mə l/	/ə /	/a/ →/e/ → /a/
-	-			/-/ → /-/ → /ə l /

D. Conclusion

Based on the sound change analysis of the form and meaning relationship in the previous discussion, the first research question namely the relationship between form and meaning, which has seen from cognate, phonemic correspondence, and a pair of words that contain a different pattern, in MSA, MAR, it is found 25 words or 12,07% cognate, 11 patterns of sound correspondence, 16 word-

couples that have the some different phonemes reference to Crowley & Bowern's sound change theory from 207 words data containing cognate word, sound correspondence and pair of word couples. These data have been chosen through random sampling from data number 1-50. The second research question or determination of the sound change in MSA, MAR, and NAR namely sound change in the form of assimilation exposes that there are five rules states that the phoneme consonants have two types of metathesis, there are four kinds of word syllable system and there are two form of adding sound or insertion in a word such as four vowel insertion and a consonant insertion. This study has discussed about the sound correspondence of Modern Standard Arabic, Moroccan Arabic, and Najdi Arabic, in scope of lexical analysis. The writers would like to suggest to the next researcher to explore the study of linguistics comparative or cross language passionately in different context, as compare in syntactical aspect, dialectology, sociolinguistics point of view, such as the addition of comparative of Arabic loanword, analogical change, spoonerism, slip of the tongue, linguistics reconstruction or internal reconstruction between Arabic language in relation trend Arabic culture and social. Furthermore, the next researcher can choose another genre of sound change analysis of phrase, or sentence. They can use other sources instead of acquiring the data from dictionary, such as visual and verbal text in social media. These diversities can broaden more perspectives on language change, historical linguistics and provide capability to decide on research in the university.

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