Mutual Assimilations of the Coronals /t/ and /d/ in the Holy Quran: A Morphological Syntactic Analysis

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الملخص العربي: تحليل صرفي نحوي على عمليات الادغامات المتبادلة بين الأصوات التاجية التاء و الدال في القرآن الكريم

تقسم عمليات الادغامات الصوتية في القرآن الكريم إلى ثلاث أقسام : ادغام كامل الصوتية. يتضمن , و ادغام من ناحية تحول المخرج , و ادغام على حسب الذبذبة هذا البحث الادغامات الصوتية المتعلقة بالذبذبات التي تهتز فيها الأحبال الصوتية, تحدث هذه العمليات الصوتية كنتيجة لبعض الخصائص الصرفية النحوية المتعلقة بالاسم و الفعل. يتضمن هذا البحث صوتي الدال و التاء, اللذان يعدان من الأصوات الانفجارية و التي يتم فيها الهمس مع بعض الهواء المندفع من بين الأسنان. و بتصفح القرآن الكريم, يوجد حروف خالية من علامات التشكيل حيث يتعلق مضمون بها هذا البحث. و استنتج البحث أن أداة التأكيد "قد / لقد" تتفاعل صوتيا مع صوت التاء على الأخص على حد سواء في زمن المضارع و زمن الماضي و أما تحويل الدال إلى التاء فإنه يتم في زمن الماضي عندما يلتحق الضمير المخاطب الجمع "ــــــــتم"بالفعل و أما تحويل التاء إلى الدال فإنه يتم في زمن الماضي عندما يلتحق ضمير المونث الغائب المفرد "ــــــــت" بالفعل.

الكلمات المفتاحية: القرآن الكريم، الادغامات الصوتية, الصرف و النحو، الأفعال, أداة التأكيد "لقد"

English Summary

The processes of assimilation divided into three categories: assimilation of manner, assimilation of place, and voicing assimilation. The current research is pertinent to mutual voicing assimilation through which a voiced segment is transformed into a voiceless segment or vice versa. In the Holy Quran, the mutual voicing assimilation process is accomplished according to morphological and syntactic factors. In the current research, mutual voicing assimilation is bound to the alveolar plosives /t/ and /d/. /t/ is described as the voiceless alveolar plosive; nevertheless, /d/ is described

as the voiced alveolar plosive. The researcher surveys both phonemes according to free diacritical patterns in the Holy Quran. The study concludes that voicing assimilation of /t/ and /d/ is stimulated by inflectional and syntactic features. Morphologically, voicing assimilation of /d/ is activated through fixed inflectional particle "laqad" either in the imperfective or perfective form. Syntactically, voicing assimilation of /d/ is accomplished through the second person plural masculine. Furthermore, the mutual voicing assimilation of /t/ is triggered by the third person singular masculine feminine /-t/ in the perfective from.

Abstract

In the Holy Quran, the processes of assimilation is categorized either into manner, place, or voicing. The current research is associated with voicing assimilation especially coronal phonemes which are produced through raising the blade of the tongue (Chomsky, 1968); they are included in /t/, /d/, /s/, /z/, /n/, /l/, /Ɵ/, /ð/, /tˤ/, /dˤ/, and/ðˤ/. Only /t/and /d/ are the phonemes which are assimilated in the current research. The coronal voicing assimilation occurs as a result of some morphological and syntactic factors. In accordance with morphological factors, both nominal and verbal inflectional features are included to achieve syntactic agreement included in Verb + Subject + Object and Verb +Object. Verbal inflectional categories are nominated in tense, voice, mood, and aspect; nominal inflectional categories are included in definiteness, gender, case, and number. Furthermore, most coronal assimilations occur in both clausal structures. To conclude, the inflectional categories of verb and noun

facilitates the process of coronal voicing assimilation in the Holy Quran.

Keywords: Assimilation, Morphosyntax, Coronals, The Holy Quran

1) Introduction

There is a strong relationship among the phonological, morphological, and syntactic systems of the Holy Quran (HQ); that is to say, the absence and the presence of diacritics assign syntactic cases through some inflectional morphological categories. Furthermore, the orthographic system of Muṣhaf Al-Madina is ruled by diacritics varying into /ɑ/, /i/, /ʊ/, /ɑ:/, /i:/, /ʊ:/, or free diacritical patterns abbreviated as FDPs; there may be /sˤɑːdʊn/, /sˤɑːdɑn/, /sˤɑːdin/, or /sˤɑːd/. In addition, the presence of /ɑ/, /i/, or /ʊ/, pertinent to nominal inflectional categories, identifies its syntactic case into nominative, accusative, or genitive (Kulick, 2010) as shown below:

وَمِنَ ٱلنَّاسِ مَن ⁽¹⁾ يَقُولُ ءَامَنَّا بِٱللَّهِ وَبِٱلۡيَوۡمِ ٱلۡأَخِرِ وَمَا هُم ⁽²⁾ بِمُؤۡمِنِينَ ۝

This verse is taken from Surat –Al-baqra. Regarding diacritics, there are some letters which have no diacritics over their syllabic structures. More clearly, both number (1) and (2) identify certain segments which are free from any diacritics. These forms are called free diacritical patterns. In addition, the mono-transitive verb /jɑqʊːl/ identifies the 3rd person singular through the proclitic /jɑ-/. Proclitics are initial clitics which identify morphological and syntactic features; however, final clitics are known as enclitics (Albuhayri, 2013).

2) Statement of the Problem

The HQ recitation is a recurrent process among a lot of Muslims all over the world. The HQ is characterized by certain phonological processes which are known as Tajweed (Albuhayri 2013). These phonological processes, generated by the presence of FDPs in certain position, are ruled by specific morphological and syntactic patterns. All segments are liable to be assigned to assimilation processes when being allocated in the FDPs' position. Diacritical forms rule the phonemic shape either by fronting or lowering tongue; however, FDPs position means phonemic assimilation. Some certain phonemes are specified to coronal voicing assimilations. Accordingly, there is integration between morphology and syntax with reference to coronal voicing assimilations although the HQ is not submitted to linguistic rules.

3) Limitations of the Study

The current research is constricted to a morphological syntactic analysis on coronal voicing assimilations pertaining to the HQ. Although assimilation is divided into progressive and regressive, the current research sheds light upon regressive assimilation. In addition, the current research covers the FDPs which are orientated to /d/ and /t/. Accordingly, the current research is pertinent to specifying the FDPs according to /d/ and /t/ in the position of coda -C syllabic typologies. A morphological syntactic overview is clarified with reference to the verbal inflectional system in the HQ, preceded by the fixed particle "laqad".

Verbal inflectional categories are represented in mood, tense, aspect, and voice (Alfozan, 1989). This combinatorial morphological syntactic form contributes to dictating and facilitating the mutual voicing assimilations of the coronals /t/ and /d/. In addition, the Subject + Verb + Object and Verb + Object clausal structures are the two categories allocated within the current research. Some verses are taken from the HQ as specific patterns to show the influence of morphology and syntax upon mutual voicing assimilation of the coronals /t/ and /d/.

4) Research Objectives and Questions

The study aims to demonstrate the following points:
- To show the influence of the fixed particle /qɑd/ in the imperfective and perfective form.
- To highlight the verbal syntactic role upon coronal assimilations.

The study tries to answer the following questions:
- What is the role of the fixed particle "qɑd" of voicing assimilation?
- How are/t/ and /d/ assimilated in the perfective form?

5) Previous Studies Related to the Current Research

This section sheds light on authors who are interested in dealing with morphology, phonology, or syntax.

Al-Hashimi (2004) investigates a phonological analysis on the nasal /n/ assimilation according to its four assimilatory patterns (Basfar, 2001) of using Prince and Smolensky (1993) Optimality Theory (OT) framework; there are two types of constraints: markedness and faithfulness.

Markedness constraints are constraints associated with the well-formed structures of language; nonetheless, faithfulness constraints demonstrate similarity degrees between the stem (input) and the possible limitless outputs. The study adopts Kurisu's (2001) realization of morpheme theory (RMT) application to Tajweed to show the relationship between the morphological forms and the phonological categories. The study reveals that correspondence theory is highly ranked over markedness constraints owing to similarities between the Input–output. The study concludes that MAX-μ(T), Phary.Gem, and $\tilde{v}$(N)ʕ outrank RMT.

Al sharif and Sadler (2009) conduct a morpho-syntactic analysis on the influence of the five negation particles namely "lä", "lan", "lam", "mä", and "laysa" which affect Modern Standard Arabic (MSA) sentential structures. The study adopts an LFG approach which stands for lexical-functional grammatical approach through the framework of Benmamoun's (2000) and Shlonsky's (1997) Minimalist Theory. Data are collected through seven contrasted structures: affirmative and negative. The study reveals that "lam", "laa", and "lan" show some distinctions of TENSE occurring only with the imperfect form of verbal system while "maa" and "laysa" are more related to the determination of the syntactic categories of their post-nominal functions as the subject. The study concludes that the jussive mood works more with "lam" whereas "lan" is specified through the indicative mood. Further, the negative particle "laysa" has the ability to be procliticized to express the SUBJ syntactic agreement; in addition, it is deemed to be verb in the meantime.

To conclude, these former researches contribute to providing a lot of linguistic patterns to interlink the morphosyntax with phonology.

6) The HQ's Phonological System

The HQ's phonemic system is categorized into vowels and consonants. According to Hassig (2011), the HQ includes six vowels three short and three long vowels represented in /i/, /ɑ/, /ʊ/, /iː/, /ɑː/, and /ʊː/. There are six vowels three of which are long whereas the other three vowels are short. The three short vowels are /i/, /ɑ/, and /ʊ/; however, /iː/, /ɑː/, and /ʊː/ are long. Moreover, he states that the HQ is also featured by the presence of the diphthongs /ɑʊ/ and /ɑi/. In terms of consonants, Hassig (2011) points out that consonants are described according to the manner of articulation, the place of articulation, and voicing.

There are stops, fricatives, nasal, and glides. Stops are /b/, /d/, /t/, /dˤ/, /tˤ/, /dʒ/, /k/, /q/, and /ʔ/ while fricatives include /f/, /z/, /s/, /θ/, /ð/, /ðˤ/, /sˤ/, /ʃ/, /ɣ/, /x/, /ʕ/, /ħ/, and /h/. In addition, nasals are /n/ and /m/. Laterals and approximants are known as glides; glides cover /l/, /w/, /r/, and /j/. In terms of articulation place, there are labials, alveolars, dentals, emphatics, palatals, velars, uvulars, pharyngeals, and glottals. Labials are /b/, /f/, /m/, and /w/. Alveolars are /d/, /t/, /z/, /s/, /n/, /l/, and /r/.

Dentals are /ð/ and /θ/. Emphatics are /dˤ/, /tˤ/, /ðˤ/, and /sˤ/. Palatals are /dʒ/, and /ʃ/, Velars re /g/ and /k/. Uvulars are /q/, /ɣ/, and /x/. Pharyngeals are /ʕ/ and /ħ/. Glottals are /ʔ/ and /h/. In terms of voicing, voiced consonants are /b/, /d/, /dˤ/, /dʒ/, /z/, /ð/, /ðˤ/, /ɣ/, /ʕ/, /n/ /m/, /l/, /w/, /r/, and /j/, whereas

voiceless consonants are /t/, /tˤ/, /k/, /q/, /ʔ/ /f/, /s/, /θ/, /sˤ/, /ʃ/, /x/, /ħ/, and /h/.

7) The HQ's Syllabic Structures

According to Gadoua (2000), the HQ syllabic typologies are restricted to five syllables as shown hereby:

- CV   bi   "by"
- CVC   min   "from"
- CV: lee   "to me"
- CV:C   bāb   "door"
- CVCC   kalb   "dog"

In accordance with Gadoua (2000), it is explicit that the HQ prevent branching onsets. However, two final [-CC] consonants are allowed in CVCC. In other words, complex codas are allowed in the HQ.

8) The HQ's Morphological Syntactic System

The HQ's morphological system is associated with POS which is pertinent to noun, verb, and particle. In accordance with verb, the inflectional categories are detected below:

- **Tense**

In Arabic, verb has tri-distinctive forms with regard to past, present, and imperative. According to Haywood and Nahmad, (1965), perfective and imperfective tenses are the two main tenses in Arabic. However, Wright (1967) discusses the two basic Arabic tenses in addition to their occurrence in some diverse forms. Both the present and the past tenses are formerly discussed; nonetheless, the future tense is structured through adding the enclitic sa- /sɑ-/ or sawfa /sɑʊfɑ/ which follows the syllabic structures of

CV/CV. Benmamoun (2000) points out that the HQ is characterized by the compound perfective tense which indicates a progressive action.

- **Mood Marking**

According to Mahfoudhi (2002), verbs coincide with nouns in the HQ. Whereas nouns are monitored for case, verbs are morphologically marked for mood. Clearly, verbs display agreement with their subjects; in addition, they demonstrate morphological distinctions of tense. Morphologically, traditional Arab grammarians assume that verbs are to be inflected by certain morphological markers such as nouns with the aim of denoting certain grammatical conditions. The exploration of these markers is completely governed by verb tense.

Marantz (1995) draws a lot of distinctions between the uninflected and the inflected forms. The past tense of verbs is uninflected; it is restricted to one form which shows mood distinction. However, the imperfective verbal forms are inflected; they are inflected through diverse morphological endings to monitor mood (Bohas, 1990; Plunkett, 1993). In terms of Holes (1995), there are four different moods. Furthermore, the use of certain mood is specified by its verbal structure. There are four verbal moods: indicative, subjunctive, jussive, and imperative.

In accordance with indicative mood, it indicates report and expresses factual statements especially in declarative affirmative sentences (Ryding, 2005). Furthermore, the subjunctive mood expresses an action of desire, wish, doubt, or necessity (Ryding, 2005). It is monitored through the use of the diacritics /-ɑ/. According to Saidat (2006), verbs,

followed by the complementizer /ʔɑn/ or the particle /ħɑtɑː/, are assigned to such a linguistic mood.

However, the jussive mood is concerned with negation especially the negative particle "lam" (Fassi Fehri, 1993). The jussive mood diacritics are expressed through sokoon which means that there are no vowels at the end; in other words, it ends with a consonantal phoneme (Ryding, 2005). Accordingly, it is featured by the non-existence of proclitics. That is, no proclitic is to be added to the verb after the final consonant. More clearly, the jussive mood lacks both short vowels /-ʊ/ and /-ɑ/.

In terms of the indicative mood, it is realized through final /-nɑ/or /ni/ since the subject is a pronominal clitic; however, both the subjective and jussive moods are identified through the absence of /-nɑ/ or /-ni/. To clarify, the presence of "lam" /lɑm/, before the 3rd person plural masculine, indicates the long /ʊː/. As for the imperative mood, it occurs when the verb expresses command. Further, imperative mood is only restricted to the 2nd person either singular or plural.

- **Voice**

Voice in the HQ is divided into active and passive (Ryding, 2005). In the HQ, the passive voice is a fundamental morphological process. Further, both the past and present verbal forms, in Arabic, are transformed into passive through turning the form of vowels (Fassi Fehri, 1993). The vowel following the initial consonant is transformed into the short /-ʊ/ in accordance with both forms. The one, preceding the final consonant, is turned into the short /-i/ with reference to the perfective form and the short /-ɑ/ in the imperfective form.

9) Morphological syntactic Agreement (Word order)

In the HQ, the unmarked word order is the VSO. According to Fassi Fehri (1993), the VSO is pragmatically-neutralized sentences which are the common word order existent in the HQ. This structure requires few derivatives and interpretative mechanisms. Furthermore, the HQ allows alternative syntax; that is to say, the HQ allows SVO and VO. Accordingly, in the HQ, the structures of the VSO, SVO, and VO are existent.

In accordance with the HQ, verb is to figure out partial impoverished agreement when it is allocated before the subject "post-verbal subject". However, full agreement is shown when the subject is allocated after the verb "preverbal subject" (Mohammad, 2000). When a preverbal position is to be occupied by a full NP subject, it is pertained to a resumptive pronoun which is attached to the lexical verb; in other words, it seems to be a proclitic to the verb. Thereby, clitics can be analyzed as a subject (Hassan, 1961, Ouhalla, 1997); however, the preverbal NP is realized to be a TOPIC or FOCUS. Bolotin (1995) and Benmamoun (2000a) treat the resumptive pronoun as a marker of number "clitic"; nevertheless, the pre-verbal NP is a real subject (Fasi Fehri, 2004).

The HQ's morphological system, which is associated with the case marking, avails for the HQ to have a high rank of word order freedom (Mohanmmad, 2000). Furthermore, the agreement is said to include some implications of syntactic variation due to verbal-subject agreement. According to Mohammad (2000), syntactic features remain restricted when some case-marking is suppressed. Therefore, the

variation of word order is a reflection of diverse syntactically-specified movements or internal merge in accordance with Chomsky (2000, 2001).

10) Methodologies

The current research analyzes voicing assimilation of the coronals /t/ and /d/ within the HQ. Since voicing assimilations are found in verbal contexts, there is requirement of verbal inflectional categories. Some verses are chosen from Mushaf Al Madinah as the content of the required data. Furthermore, there is FDPs identification from /t/ to /d/ and /d/ to /t/ in mutual contexts of codas and onsets as the trigger and the target. The researcher makes a list of some verses within Mushaf Al-Madinah. There is an employment of observation method. Tracing the FDPs, it is explicit that both coronals are recurrent within imperfective and perfective forms. Furthermore, the syntactic structures of Verb + Subject + Object and Verb + Object are required to illustrate the process of mutual voicing assimilations of the coronals /t/ and /d/.

11) Data Analysis

According to Ladefoged (2000), coronals are phonemes which are pronounced with the tongue blade raised from its neutral region.

- **Coronal Assimilation from the voiceless /t/ to the voiced /d/**

It is clear that the assimilation process of the coronals /t/ to /d/ is restricted to proclitic /t/ which is represented in the past tense (perfective aspect). That is to say, it indicates the

nominative case with reference to the diacritic long /ʊ:/ which is demonstrated in the following context:

1. Uǧĭbat daɛwatukumä   قَال قَدْ أُجِيبَت دَّعْوَتُكُمَا (يونس: 89)

   /ʔʊdʒi:bat daʕwatʊkʊma:/

2. Athqalat daɛawū /ʔaθqalat daʕawa:/   فَلَمَّا أَثْقَلَت دَّعَوَا اللَّهَ (الأعراف: 189)

In terms of (1), the proclitic /-t/ is attached to the verb which indicates the passive form which adopts the syntactic structure of Verb + Pro-agent (NP) in the HQ (Yaqoot, 1996). Therefore, the proclitic coronals /-t/ is motivated to be assimilated to the coronal /d-/. Furthermore, the NP is composed of two elements. The first element is the noun identifying the nominative case; however, the second element is the dependent pronoun /-kʊma:/ which identifies the 2nd person dual syntactically existent through the diacritic long /ɑ:/ to identify duality. In terms of (2), the voicing assimilation process occurs in terms of morphological syntactic factors as shown below:

هُوَ الَّذِى خَلَقَكُم مِّن نَّفْسٍ وَاحِدَةٍ وَجَعَلَ مِنْهَا زَوْجَهَا لِيَسْكُنَ إِلَيْهَا فَلَمَّا تَغَشَّاهَا حَمَلَتْ حَمْلاً خَفِيفًا فَمَرَّتْ بِهِ فَلَمَّا أَثْقَلَت دَّعَوَا اللَّهَ رَبَّهُمَا لَئِنْ ءَاتَيْتَنَا صَلِحًا لَّنَكُونَنَّ مِنَ الشَّكِرِينَ (الأعراف: 189)

/falamma ʔaθqalat daʕawa: ʔallah/

Morphologically, the intransitive verb /ʔaθqalat / is conjugated in the perfective form via the 3rd person singular feminine through the pronominal proclitic /-t/. Further, the pronominal proclitic /-t/ is a resumptive pronoun for the NP /nafs/ embedded in the PP. Syntactically, the HQ is featured by discursive resumption in which pronominal clitics play an influential role (Attia, 2008). Furthermore, there are two clauses within the aforementioned structure which are

headed by the subordinator /lɑmmɑ/ (Aliwy, 2013). The first clause is the dependent one which is represented in the VP /ʔaΘqɑlat /; however, the second one is the independent one which is covered in the VP /daʕawaː/. The long /ɑː/ indicates a dual form which is introduced in identifies Eve and Adam.

- **Coronal Assimilation from the voiced /d/ to the voiceless /t/**

The voicing assimilation of /d/ to /t/ is triggered through some morphological syntactic factors as shown in the following extract:

1. Qad tabayyan /qad tabɑjjɑn/   • قَد تَّبَيَّنَ ٱلرُّشْدُ مِنَ ٱلْغَيِّ(البقرة؛256)

2. Qad taƐlam ūn /qad taʕlamʊːn/   • وَقَد تَّعْلَمُونَ أَنِّي رَسُولُ ٱللَّهِ(الصف؛5)

3. Laqad taba /lɑqɑd tɑbɑ/   • لَّقَد تَّابَ ٱللَّهُ عَلَى ٱلنَّبِيِّ(التوبة؛117)

4. Laqad taraknaha / lɑqɑd tɑrɑknɑhɑː/   • وَلَقَد تَّرَكْنَهَآ ءَايَةً فَهَلْ(القمر؛15)

5. Ɛudtum /ʕuttʊm/   • وَإِن عُدتُّمْ عُدْنَا(الإسراء؛8)

6. Ɛabadtum /ʕabadtʊm/   • وَلَآ أَنْ عَابِدٌ مَّا عَبَدتُّم(الكافرون؛4)

Regarding the former extracts, it is clear that the voicing assimilation of /d/ to /t/ is attained through morphological syntactic factors. In (1), (2), (3), and (4), the emphatic particle /lɑqɑd/ or /qɑd/, following CV-CVC syllabic structures, is assimilated owing to its fixed inflectional form. In other words, the coronal /t/ is located as the onset of the adjacent VPs which are classified into perfective and

imperfective aspect. In (1), (2), and (4), the emphatic particle is adjacent to the perfective aspect of VPs whose onsets begin with the coronal /t/. However, in (4), the coronal /t/ is existent in a VP which is syntactically divided into a di-transitive verb +a proclitic1 + a proclitic2.

With reference to (1), the emphatic particle /qɑd/, following CVC syllabic structure, is followed by the perfective aspect of the verb /tabajjan/ which expresses the 3rd person plural masculine with reference to the NP /ʔarrʊʃdʊ/. Furthermore, the NP /ʔarrʊʃdʊ/ is realized as its subject "nominative case". In terms of (2), the emphatic particle /qɑd/, following CVC syllabic structure, is followed by the imperfective aspect of the verb /taʕlamʊːn/ which expresses the 2nd person plural masculine with reference to the pronominal proclitic /-ʊːn/.

In terms of (3), the emphatic particle /laqɑd/, following CV-CVC syllabic structures, ends in the coronal /d/. It is motivated to be assimilated with the perfective aspect of the intransitive verb /tɑːba/ which begins with the coronal /t/. Further, the intransitive verb is followed by the NP /ʔallahʊ/ which is thought to be its subject since it ends with the [-long] /ʊ/ referring to the nominative case. In accordance with (4), the 1st proclitic expresses the 1st person plural which indicates its subject (nominative case). Furthermore, the 2nd enclitic is identified as the 3rd person singular feminine which is the 1st object (accusative case). However, the NP, /ʔajatan/ is realized to be the 2nd object of the di-transitive verb /tarak/.

According to (5), the process of voicing assimilation is motivated by syntactic reasons owing to the presence of the

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conditional conjunction /ʔin/ followed by two clauses: dependent and independent. Both clauses are rendered in terms of two transitive verbs followed by their subjects on the form of pronominal proclitics (dependent pronouns). The 1st VP is attached to the 2nd person plural masculine which expresses the subject of the intransitive verb. However, the 2nd clause, the independent one, includes the pronominal proclitic /-nɑː/, the 1st person plural, realized as its subject (the nominative case).

In terms of (6), the voicing assimilation process is stimulated by the presence of proclitic /-tʊm/ which denotes the 2nd person plural masculine with reference to the imperfective form. In addition, this fixed inflectional form is the subject of the mono-transitive verb /ʕabɑdɑ/. Therefore, voicing assimilation is realized to be allocated within the VP which identifies a mono-transitive verb plus the subject. Thereby, the pronominal clitic pronoun contributes to forming the process of voicing assimilation.

To conclude, the voicing assimilation process is allocated within word boundaries or within a word (internal assimilation); it is, further, accomplished through the presence of the fixed particle /lɑqɑd/ which attains word boundaries assimilation since it is adjoined to VPs (perfective or imperfective). However, internal voicing assimilation of /d/ to /t/ is attained in the perfective aspect through the presence of pronominal proclitics identifying the nominative case namely /-tʊ/, /tɑ/, and /-tʊm/.

12) Conclusion

The study concludes that mutual voicing assimilation is accomplished through morphosyntactic factors. As for morphological factors, the fixed particle "laqad" /lɑqɑd/ shows a high degree of voicing assimilation of /d/ to /t/ since it ends with /d/ either in the imperfective and perfective forms. Furthermore, the mutual voicing assimilation of the coronals /t/ and /d/ are demonstrated within the perfective form through the presence of the 3rd person singular feminine /-t/ and the 2nd person masculine plural /-tʊm/. Syntactically, dependent clause testifies the phonological transformations from /t/ to /d/ on being attributed to second person plural masculine in the perfective aspect.

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