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**Morphophonemic Analysis of Verbal Inflectional Morphemes in
Algerian Arabic as Spoken in Tiaret**

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in Linguistics

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بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

Dedication

In the name of Allah, Most Gracious, Most Merciful

My deepest gratitude and sincere thanks go to my parents; Mother thank you for your love, Support, and prayers during my studies, you were with me during the long nights and the hard days; Fatherr thank you for your hard workk and encouragement. This dream wouldn't be a reality without you.

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Ikram Lagraa

Dedication

In the Name of Allah, the Most Gracious and the Most Merciful. All the Praise is due to Allah alone the Sustainer of all the worlds.

To every member of the family: Merabet

To my beloved mother may Allah forgive her and have mercy on hersoul.

To my beloved uncle khalfallah and Aunt Fatma

To my lovely brothers Amin, Fayçal, khalfallah, Mohamed

To my lovely sistersRooya, Aicha, Manel, Randa, Rahil, Meriem

To my beloved husband Ahmed Zakaria and his family

To my extended family aunts, uncles, and cousins

To all my best friends: Ikram, Sarah, Amina, Hiba, Ismahane, Imane, Houda, Amira, Souad

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List of Symbols

1. Consonants in Algerian Arabic

Consonants	Symbols in IPA
ء	/ʔ/
ب	/b/
پ	/p/
ت	/t/
ث	/θ/
ج	/dʒ/
ح	/h/
خ	/x/
د	/d/
ذ	/ð/
ر	/r/
ز	/z/
س	/s/
ش	/ʃ/
ص	/sʰ/
ض	/dʰ/
ط	/tʰ/
ظ	/ðʰ/
ق	/q/
ك	/k/
ل	/l/
م	/m/
ن	/n/
ه	/h/
و	/w/
ي	/j/

2. Vowels in Algerian Arabic

Vowel (IPA)	Description
/i/	Front high unrounded short vowel
/i:/	Front high unrounded long vowel
/a/	Front low unrounded short vowel
/a:/	Front low unrounded long vowel
/u/	Back high rounded short vowel
/u:/	Back high rounded long vowel
/e/	Front mid unrounded short vowel
/ə/	Mid central vowel
/ɔ/	Back mid rounded short vowel
/ɔ:/	Back mid rounded long vowel

List of Abbreviations and Acronyms

ADA: Algerian Dialectal Arabic

MSA: Modern Standard Arabic

TAA: Tiaretian Algerian Arabic

TD: Tiaret Dialect

List of Tables

Table (1): Aspects of the Past Tense in Tiaret dialect.....	49
Table (2): Past Tense Inflectional Morphemes in TD.....	50
Table (3): Aspects of the Present Tense in Tiaret Dialect.....	52
Table (4): Present Tense Inflectional Morphemes in TD.....	53
Table (5): The Future Tense in Tiaret Dialect	54
Table (6): Future Tense Inflectional Morphemes in TD.....	56
Table (7): Substituting /a:/ by /e/ or /u:/.....	57
Table (8): Substituting /a:/ by /i:/.....	58
Table (9): Substituting ‘-u:’ by [w].....	60
Table (10): Inserting [i:].....	60
Table (11): Inserting [ə].....	61
Table (12): Regressive Total Assimilation.....	62
Table (13): Metathesis Process in Perfect Verbs.....	63
Table (14): Regressive Voice Assimilation.....	64
Table (15): Regressive Total Assimilation.....	65
Table (16): Inserting [ə]or [u].....	66
Table (17): Deleting the Final Sound /i:/.....	68
Table (18): Deleting the Vowel /ə/.....	69
Table (19): Metathesis Process in Imperfect Verbs.....	70

Table of Contents

Dedication -----	2
Acknowledgments -----	4
List of Symbols -----	5
List of Abbreviations and Acronyms-----	6
List of Tables-----	7
Table of Contents -----	8
Abstract -----	11
General Introduction -----	12

Chapter One: Phonology

1.1. Introduction-----	17
1.2. Etymology and Origin -----	17
1.3. Definition of Phonology -----	18
1.4. Phonology and Phonetics-----	20
1.5. Phones, Phonemes, and Allophones -----	21
1.6. Distinctive Features Theory-----	23
1.6.1. Major class features -----	24
1.6.2. Place features -----	26
1.6.2.1. Consonant Place Features-----	26
1.6.2.2. Vowel Place Features-----	28
1.6.3. Manner features-----	29
1.6.4. Laryngeal features -----	27
1.7. Phonological Processes -----	29
1.7.1. Assimilation -----	30
1.7.2. Dissimilation -----	31
1.7.3. Deletion -----	31
1.7.4. Metathesis -----	31
1.7.5. Epenthesis -----	31
1.7.6. Substitution-----	32
1.8. Conclusion-----	32

Chapter Two: Morphology

2.1. Introduction -----	34
2.2. Morphology: Etymology and Definition -----	34

2.3. Function of Morphology -----	35
2.4. Morphemes -----	36
2.5. Types of Morphemes -----	36
2.6. Morph vs Allomorph -----	37
2.7. Base, Root, Stem -----	38
2.8. Word Formation -----	38
2.9. Types of Word Formation Processes -----	39
2.9.1. Compounding -----	39
2.9.2. Affixation -----	39
2.9.3 Conversion -----	40
2.9.4. Back-formation -----	40
2.9.5. Blending -----	40
2.9.6. Acronym -----	41
2.9.7. Clipping -----	41
2.9.8. Reduplication -----	41
2.9.9 Borrowing -----	42
2.9.10 Coinage -----	42
2.9.11. Eponym -----	42
2.9.12. Double word-formation processes -----	43
2.10. Morphophonology -----	43
2.11. Morphophoneme's Realization -----	44
2.12. Conclusion -----	44
Chapter Three: Methodology, Results, and Discussion	
3.1. Introduction -----	46
3.2. research Aim -----	46
3.3. Research Approach -----	46
3.4. Participants -----	47
3.4. Data Collection -----	47
3.5. Data Analysis -----	48
3.5.1. Verbal Inflectional Morphemes in Tiaret Dialect -----	48
3.5.2. Verbal Inflectional Morphemes' Morphophonemic Analysis -----	56
3.6. Discussion -----	70
3.7. Conclusion -----	71
General conclusion -----	73

Bibliography	75
Appendices	78
الملخص	81
Résumé	81
Summary	81

Abstract

The research at hand aims at examining the morphophonemic structure of the verbal inflectional morphemes in Algerian Arabic as Spoken in Tiaret. It seeks to determine the verbal inflectional morphemes that exist in Tiaret dialect, investigate how the use of these verbal inflectional morphemes with particular verbs affects the sound structure of these verbs, and identify the phonological processes applied. To conduct this research, two lists were created. The first one includes a set of past tense verbs which are used in Tiaret dialect; while the second one consists of a number of present tense verbs which are employed in the same dialect. The lists were given to twenty native speakers of Tiaret dialect, who were asked to use the verbs in the list with all the possible personal pronouns that exist in Tiaret dialect, All the participant's responses were recorded and transcribed. The results of the study revealed that the verbal inflectional morphemes used in Tiaret dialect can be grouped into two main categories: Inflectional past tense morphemes and inflectional present tense morphemes. The first category consists of only suffixes; whereas the second one consists of both prefixes and suffixes. The results also revealed that the use of these inflectional morphemes result in numerous phonological processes such as assimilation, insertion, substitution, deletion, and metathesis. The study ends with some recommendations.

Keywords: Morphophonemic analysis, phonological processes, Tairet dialect, verbal inflectional morphemes

General Introduction

1. Introduction

Many language in this world has a set of verbal inflectional morphemes which are used to indicate some grammatical aspects like tense, number, and gender. Just like English, Algerian Arabic as spoken in Tiaret employs a number of bound grammatical morphemes to inflect verbs and assign particular grammatical properties to them, However, unlike English which uses only suffixes as inflectional morphemes; Tiaret dialect utilizes both prefixes and suffixes. What is interesting about the verbal inflectional morphemes in Tiaret dialect is that they affect the phonological structure of the verbs to which they are attached. That is, when these verbal inflectional morphemes are attached to verbs in Tiaret dialect, several phonological processes take place. These processes change the deep structure of the verbs.

2. Research Motivation

Several studies have been conducted to investigate the morphophonemic structure of verbal inflectional morphemes in English, French, Chinese...etc. However, it seems that the morphophonemic analysis of verbal inflectional morphemes in Algerian dialect has not been discussed yet. This motivates us to examine the morphophonemic behavior of verbal inflectional morphemes in Algerian Arabic; more precisely in Tiaret dialect.

3. Research Aim

The primary aim of this study is to examine the morphophonemic structure of the verbal inflectional morphemes in Algerian Arabic as Spoken in Tiaret. The present study seeks to:

- Determine the verbal inflectional morphemes that exist in Tiaret dialect.

- Find out how the use of these inflectional morphemes with particular verbs, in Tiaret dialect, affects their sound structure.
- Identify the phonological processes that occur when these inflection morphemes are attached to verbs in Tiaret dialect.

It is worth mentioning that the verbal inflectional morphemes examined in this study are those inflectional morphemes which are used with verbs in the indicative mood and the active voice only. That is, the verbal inflectional morphemes used in other moods (such as interrogative, subjunctive, and imperative mood) and those inflectional morphemes that are employed in the passive voice are not investigated in this study.

4. Research Questions

The study at hand attempts to answer the following research questions:

1. What are the verbal inflectional morphemes used in Tiaret dialect?
2. How these inflectional morphemes affect the sound structure of verbs in Tiaret Dialect?
3. What are the phonological processes involved in the use of the verbal inflectional morphemes in Tiaret dialect?

5. Research Hypotheses

As an attempt to answer the research questions mentioned above, the following hypotheses have been proposed:

1. The verbal inflectional morphemes that may exist in Tiaret dialect are ‘n-’, ‘t-’, ‘j-’, ‘-t’...etc.
2. The verbal inflectional morphemes may affect the sound structure of the verbs to which they are attached by changing some features of the verbal inflectional morphemes, or the sound (s) preceding and/or following these verbal inflectional morphemes.

3. Several phonological processes may occur when the verbal inflectional morphemes in Tiaret dialect are attached to verbs, such as assimilation, insertion, and metathesis.

6. Significance of the Study

According to the best of the researchers' knowledge, the morphophonemic analysis of verbal inflectional morphemes in Tiaret dialect has not been examined yet. Thus, the significance of this study lies in being the first scientific work that attempts to investigate the phonological structure of the verbal inflectional morphemes in Tiaret dialect. Moreover, the results of the study can be used to enrich the literature that focuses on the morphophonemic analysis of Arabic inflectional morphemes.

7. Research Methodology

To conduct the present study, twenty native speakers were recorded. The speakers were given two lists of verbs which are used in Tiara dialect. The first list includes a set of past tense verbs; while the second consists of a number of present tense verbs. The participants were asked to read each verb with all the possible personal pronouns that exist in Tiaret dialect. The participants' responses were transcribed.

8. The Structure of the Dissertation

The dissertation includes three main chapters. The first chapter is devoted to describe the term phonology, its etymology and origin. It also explains the differences between phonology and phonetics, the differences between phonemes and phones, the distinctive feature theory, and the phonological processes applied by language users. The second chapter is dedicated to present necessary information about morphology, types of morphemes, and word formation processes. The third chapter is practical. It reports the process of data collection. Moreover, it presents and analyzes morphophonemic behavior of verbal inflectional morphemes in Tiaret

dialect. It is worth noting that the present dissertation is written according to the APA style (7thh edition).

Chapter One

Phonology

1.1. Introduction

This chapter explores the fundamental concepts of phonology, including phonemes, phones, and allophones. It also examines how phonological rules govern the way sounds are pronounced in a given language, and how these rules can vary depending on context and dialect. Moreover, the chapter discusses the phonological theory which is based on the idea that the sounds in a language can be broken down into a set of distinctive features. By the end of this chapter, readers will have a solid understanding of the basic principles of phonology and the role it plays in the structure and function of language.

1.2. Etymology and Origin

The word 'phonology' comes from two Greek roots: 'phono' which means 'voice sound', and the suffix 'logia', which means 'subject of discussion or study'. The study of phonology has its origins in ancient Greece, where scholars recognized the importance of sound in language and developed a system of phonemes - the smallest units of sound that distinguish one word from another. The Romans expanded on this system by adding vowels and consonants. (Hayes, B, 2009).

In the 19th century, linguists began to study language more closely and, focused, therefore, on phonology. The term 'phonology' was first used in English by William James in his book 'The Principles of Psychology' in 1890, where he referred to the study of speech sounds and their psychological effects. Similarly, August Schleicher (1861), a German linguist and founder of comparative linguistics, used the term 'phonology' in the 19th century to refer to the study of the distinctive sounds used in different languages and how they are organized and patterned.

In the early 20th century, Ferdinand de Saussure used the term 'phonology' in his book 'Course in General Linguistics'. Saussure argued that language consists of two distinct parts:

The signifier, which refers to the sound of a word, and the signified, which refers to its meaning. (Saussure, Ferdinand, 1916). Moreover, Leonard Bloomfield (1933) and Edward Sapir (1921) developed a structural approach to linguistics, and phonology was seen as a part of the larger linguistic structure, alongside syntax and morphology. Bloomfield defined phonology as the study of sound patterns, while Sapir emphasized its role in determining word structure and relationships between words.

As linguistics continued to develop, the study of phonology grew rapidly with the help of scholars such as Roman Jakobson (1968), Noam Chomsky (1968), and Morris Halle (1968). They established phonology as a distinct subfield of linguistics, separate from phonetics, which focuses on the physical properties of speech sounds. Chomsky's generative grammar theory (1957), which posits universal rules governing the structure of all languages, has been used to explain phonological structure and language acquisition. Today, phonology remains an important field of study in linguistics, providing insights into the structure and evolution of language.

1.3. Definition of Phonology

Phonology, as a subfield of linguistics, is concerned with the systematic study of a language's sound system. This comprises investigating the phoneme inventory, phonological features, and the regulations that govern their distribution (Crystal, D, 2008). Scholars such as Iggy Roca (1972), Wyn Johnson (1999), and John Goldsmith (2011) have defined phonology as the study of the sound patterns in language, including their systematic organization, distribution, inventory, and structure.

Additionally, Noam Chomsky and Morris Halle (1968) asserted that phonology also involves the study of the components of grammar that determine the distribution and ordering of speech sounds.

In this regard, Goldsmith (2011, p. 3) clearly said that “phonology is the branch of linguistics that deals with the sounds of language, both segmental and suprasegmental, and their interaction with other linguistic units such as morphemes and words”. Phonology is concerned with understanding the underlying structure of a language's sound system, which includes identifying phonemes, or the smallest units of sound that can distinguish meaning in a particular language, and analyzing the distribution of these units across words and syllables.

Phonologists are also interested in the patterns of sound organization that occur in a language, such as the rules governing syllable structure or the distribution of stress. Additionally, phonology is concerned with the way that sounds change over time and how these changes can be explained in terms of the sound system and other linguistic factors. Ultimately, phonology seeks to understand how language works as a complex system, and how the sounds of language are used to convey meaning and communicate with others (Goldsmith, 2011).

Likewise, Trudgill and Hannah (2002) described phonology as the examination of a language's sound system, which encompasses the systematic relationships between the sound system and other parts of the language. Overall, phonology is a rich and multifaceted domain that sheds light on the intricacies of language and the human mind.

Several linguistic disciplines, including psycholinguistics, cognitive science, sociolinguistics, and language acquisition, are related to phonology because phonology is fundamental to our understanding of how language functions. Phonology is the study of language sound systems, and as such, it deals with the mental processes which underpin speech sound production and perception. Psycholinguistics and cognitive science are fields of study which look at how the brain processes language and how humans learn to speak and understand it. Sociolinguistics investigates how language usage differs across social groups and

circumstances, whereas language acquisition studies how children learn to use language (Goldsmith, 2011).

Phonology principles can also be utilized in the treatment of speech pathologies and technological advancements since phonological knowledge is required for the diagnosis and treatment of speech disorders. Speech therapists, for example, use phonological principles to help people with articulation and phonological issues create correct speech sounds. Advances in the recognition of voices and synthesis rely on phonological understanding as well, because computers must be able to recognize and produce speech sounds accurately (Gussenhoven, C., & Jacobs, H,2017).

Phonology is an important part of language acquisition, as it helps children learn to recognize, interpret, and produce the sounds of their language. Children learn their language's sound patterns by hearing it spoken around them, and phonology provides a framework for understanding these patterns. Children can communicate effectively with others by understanding and reproducing the sound patterns of their language (Kageret al., 2010).

1.4. Phonology and Phonetics

Phonology and phonetics are two distinct fields of linguistics that share some similarities but also have important differences. Phonology is the study of the sound system of a given language, by contrast, phonetics is the discipline of linguistics which studies the physical aspects of speech sounds, such as the shape and movements of the vocal organs, the acoustic properties of speech sounds, and their perception by the ear (Jakobson, 1961). That is, phonology mainly investigates abstract mental entities like structures and processes, focusing on how these categories are stored in the mind. Conversely, phonetics looks at the physical production of speech sounds, concentrating on the vocal organs involved in their creation. (Johnson and Bayley, 2012).

Phonetics is part of descriptive linguistics, while phonology belongs to theoretical linguistics (Goldsmith et al., 201è). The phonetic unit is called ‘phone’, enclosed in square brackets, while the phonological unit is known as ‘phoneme’, enclosed in slashed brackets. (Ladefoged and Johnson, 2014). Phonology studies how sounds combine and change in combination, including which sounds can contrast to produce meaning differences. In contrast, phonetics focuses on describing the articulatory and acoustic properties of speech sounds. (Ladefoged, P., & Johnson, K, 2015)

1.5. Phonemes, Phones, and Allophones

The concept of ‘phoneme’ was first introduced by the American linguist Kenneth Pike in 1947. Since then, many linguists have contributed to the study of phonemes and provided their own definitions. Phonemes are a set of distinct features used to differentiate between different sounds in a language (Noam Chomsky, 1968). Similarly, Edward Sapir (1925) defines them as the basic components of speech sounds that are used to distinguish words in a language. He argued that the combination of phonemes used to create a word determines its meaning. For instance, the word ‘cat’ has three phonemes: /k/, /æ/, /t/. The phoneme /k/ can be replaced by other phonemes as /h/, /b/ to create new words with new meanings such as hat and bat. In this sense, Ladefoged (2012) clearly stated that phonemes are abstractions that are defined by the way they contrast with one another in particular positions within words. Thus, for example, the sounds /p/ and /b/ in English are phonemes because they can occur in the same position in words (initially), and substituting one for the other can change the meaning of the word (as in ‘pat’ versus ‘bat’). However, the same sounds might not be phonemes in another language where they are not contrastive in this way. Phonemes are often represented using distinctive features, which are a set of binary values that describe the attributes that distinguish one phoneme from another.

Additionally; Roman Jakobson (1949) asserted that phoneme is a system of contrasting sounds shown to express meaning in a language. Linguists such as John Goldsmith, Morris Halle,

and Noam Chomsky agree that phonemes are the smallest units of sound in a language that can change the meaning of a word. They are abstract representations of the sounds used in a language and are used to differentiate words from one another. Phonemes can be analyzed using various methods and techniques, including phonological analysis and acoustic analysis (Ladefoged, 2014).

Unlike phonemes which are abstract entities; phones are the concrete manifestations of phonemes (Goldsmith, 1999). While phonemes are the building blocks of words and sentences, phones are the physical sounds that we hear and produce when we speak. By studying phones, we can gain a better understanding of the variability and diversity of speech sounds across different languages and dialects. “Phones are the fundamental units of speech that may be recognized and examined through auditory and articulatory measures” (William Labov, 2014, p. 10).

According to Ladefoged (2006), phones are the physical sounds that human beings produce when they speak. Ladefoged established a set of methods and tools for measuring and analyzing the physical sounds such as spectrograms. Phones are one of the smallest units of sound utilized in the description of a language's sounds (Rodman, & Hyams, 2007). Similarly Goldstein, Pouplier, and Chen (2010) have defined them as physical representations of speech sounds that can be measured both acoustically and physically.

Allophones refer to the different ways in which a particular phoneme can be pronounced based on the surrounding phonetic environment. In other words, allophones are variant realizations of a single phoneme that are influenced by the sounds that precede or follow (Leonard Bloomfield, 1933). According to Roman Jakobson (1941) allophones serve a symbolic role in addition to being phonetic varieties. He claimed that the allophone choice (s) may transmit additional meaning, such as class or regional identity. Peter Ladefoged (1975) clearly defined an allophone as “one of a set of multiple possible spoken sounds (or phones) used to pronounce a single phoneme in a particular language”. For example, [p^h] and [p] are allophones for the phoneme /p/ in the English language.

Allophones are phonetically distinct forms of one phoneme that can be predicted based on the phonetic context in which they occur (Goldsmith, 1990).

1.6. Distinctive Features Theory

Distinctive Features Theory is a linguistic theory that was proposed by Roman Jakobson and Morris Halle in the 1950's. According to this theory, the sounds in a language can be analyzed in terms of a set of binary features, with each feature being either present or absent in a given sound. These features are used to describe the contrasts between different sounds in a language. Jakobson's theory of phonology, which he developed in the early 20th century, is the basis for the distinctive features theory. He proposed that features can be specified by binary values, with each feature having one of two values, plus (+) or minus (-). This means that each phoneme either has the property [+F] or lacks the property [-F]. As the feature [voiced] is present in the sound /b/ and absent in the sound /p/. It is worth to mention that some features are unary (Jakobson and Halle 1956).

The theory states that all the sounds of a language can be described in terms of a set of distinctive features. These features are used to differentiate between sounds in that language. They can also be used to explain why certain sounds are found in certain languages and not in others and why some sounds are difficult for non-native speakers to produce, as they may not have the same set of distinctive features in their native language (Jakobson and Halle 1956).

Distinctive features are used to analyze phonemic inventory and create meaning by identifying which sounds are contrastive and which are not. (Jakobson & Halle, 1956; Chomsky & Halle, 1968). They can be used to compare sound systems to identify patterns and differences (Ladefoged, 2001). They are also used to understand how children learn the sounds of their native language (Stampe, 1973; Kuhl, 2000).

Distinctive features are grouped into four main categories which are: Major class features, place features, manner features, and laryngeal features.

1.6.1. Major Class Features

Major class features are a set of distinctive features in phonology that help to classify sounds into classes. Linguists, such as Chomsky and Halle (1968), Clements and Keyser (1983), and Goldsmith (1990) have all discussed major class features and their role in phonology. According to Clements and Keyser (1983, p.150), major class features are “features that pertain to the major categories of sounds that is, consonants, vowels, and glides”. The features that represent the major classes of sounds are: [+/- consonantal], [+/- sonorant], [+/- syllabic], and [+/- approximant].

[+/- consonantal]: Consonantal sounds are characterized by the presence of constriction in the vocal tract, which causes turbulence or complete blockage of the airflow. This feature distinguishes consonants from vowels, which are produced with a relatively open vocal tract. All consonants have these features. This means that, obstruent, nasals, and liquids are [+consonantal]; by contrast, glides and vowels are [-consonantal] (Jakobson, et al., 1952).

[+/- syllabic]: This feature distinguishes syllabic sounds from nonsyllabic sounds. Syllabic sounds are sounds that can function as the nucleus of a syllable. This means that vowels and syllabic consonants are [+syllabic]; while other sounds are [-syllabic] (Jakobson, et al., 1952).

[+/- approximant]: An approximant is a consonant sound produced by narrowing the vocal tract, but not to the point of creating turbulent airflow. Instead, the airstream flows smoothly, resulting in a sound that is more vowel-like than consonant-like. This means that vowels, glides and liquids are [+approximant]; whereas other sounds are [-approximant] (Jakobson, et al., 1952).

[+/- sonorant]: Sonorant sounds are sounds which are produced with a relatively open vocal tract, including vowels, glides, liquids, and nasals. (Chomsky & Halle, 1968). They are characterized by a continuous and resonant airflow, and they are produced without a significant constriction in the oral cavity. Obstruents and /h/are [-sonorant], other sounds are [+sonorant].

1.6.2. Place Features

The place features are those feature used to describe the location of a constriction in the vocal tract during the production of a sound and to differentiate between sounds that are produced with a constriction at different places in the vocal tract, such as the lips, teeth, or tongue (Jakobson, et al., 1952). Place features can be grouped into two main categories which are consonant place features and vowel place features.

1.6.2.1. Consonant Place Features

Consonants place features are used to describe the different places in the vocal tract involved in the production of consonants. Some of these features are unary; while others are binary. The unary features are [labial], [coronal], [dorsal], [guttural]; whereas the binary features are: [+/-anterior], [+/-strident], [+/-distributed], [+/-high], [+/-low], [+/-back], [+/-round] (Ladefoged, 1993).

[Labial]: Labial sounds are sounds produced with the lips, they include bilabial sounds like /p/, /b/, and /m/, as well as labiodental sounds like /f/and /v/ (Ladefoged, 1993).

[Coronal]: Coronal sounds are made by articulating the tip or blade of the tongue against or near the teeth or alveolar ridge (Ladefoged, 2006).

[Dorsal]: Dorsal is a linguistic term used to describe sounds that are produced with the tongue body raised toward the roof of the mouth, also known as the velum. As defined by Peter

Ladefoged (2001), dorsal refers to “sounds articulated with the back of the tongue raised towards the velum” (p. 23). For example, the sounds /k/ and /g/ in English are considered dorsal consonants because they are produced with the back of the tongue raised toward the velum.

[Guttural]: Ladefoged (1996) briefly discusses guttural consonants in various languages, using the term to refer to sounds produced in the back of the mouth or throat. However, he notes that the term is not always used consistently, and that it is often better to use more precise terms when describing specific sounds.

[+/-Anterior]: Anterior sounds are produced with the tongue blade, tip, or underside against the alveolar ridge or teeth, or in the case of postalveolar sounds, slightly behind the alveolar ridge. Examples of anterior sounds in English include the consonants /t/, /d/, /s/, /z/, /n/, and /l/ (Ladefoged, 2001).

[+strident]: Strident sounds are consonants caused by a small constriction in the vocal tract, resulting in turbulent airflow and a high-frequency noise. Strident sounds include the letters /s/, /z/, /ʃ/, and /ʒ/ (Laver, 1994).

[+distributed]: As a phonetic feature that is spread over more than one part of the vocal tract, rather than being localized in one specific area. An example of a distributed feature is voicing, which involves the vibration of the vocal cords as well as the opening and closing of the glottis. Another example is nasalization, which involves the lowering of the velum to allow air to pass through the nasal cavity while the oral cavity remains closed (John Goldsmith, 1990)

[+high]: High consonants are those which are articulated with the highest part of the tongue, which is usually near the hard palate or the alveolar ridge. They are distinguished by a

higher frequency of the first formant, which is connected to the size of the oral cavity(Ladefoged& Johnson, 2015).

[+- low]: By bringing the dorsum (tongue body) down towards the floor of the mouth, a low sound is produced. The sound /h/ is [+low]; other consonants and glides are [-low]. (Ladefoged, 2006)

[+- back]: The dorsum is retracted in back sounds and brought forward in front sounds: velars, uvelars, pharyngeals, and /r/ are [+ back]; other consonants are [- back](Ladefoged, 2006).

[+- round]: Round sounds are made by constricting the muscles surrounding the lips to form a ring. /r/ and /w/ are [+rounded]; other consonants and the glide /j/ are [-round](Goldsmith, 2011).

1.6.2.2. Vowel Place Features

Vowel place features are used to describe the production of vowels. There are five features which are [+/-high], [+/-low], [+/-back], [+/-round],and [+/-tense].

[+-high]: A high vowel is produced by raising the tongue's body from its neutral position.: All high vowels are [+high]; other vowels are [-high] (Ladefoged, 2001).

[+-low]: A low vowel is produced by lowering the tongue body towards the floor of the mouth: All low vowels are [+low], other sounds are [-low], mid vowels are [-high, -low] (i.e., they are neither high nor low) (Ladefoged and Johnson, 2014).

[+-back]: Back vowels are produced by retracting the tongue body from a neutral position. /u/, /u:/, /ə/, /ɔ:/, /ʌ/, /ɑ/, /ɒ/ are [+back], other vowels are [-back] (Ladefoged, 2006).

[+-round]: Constricting the muscles around the lips to form a ring produces rounder sounds. All back vowels are [+round] except /ɑ/, /ʌ/, and /ə/ which are [-back]; other vowels are [-back] (Ladefoged, 2006).

[+-tense]: Vowels with this feature require deliberate, accurate, and maximally distinct gestures that require great muscular effort. Long vowels (except long schwa), /e/, and /a/ are [+tense]; other vowels are [-tense] (Ladefoged, 2006).

1.6.3 Manner Features

The manner features distinguish sounds based on the way in which they are produced, such as whether the airflow is stopped completely or allowed to pass through, whether the tongue touches the roof of the mouth or the teeth, and so on (Ladefoged, 2006). There are four manner features which are [+/-continuant], [+/-delayed released], [+/-nasal], and [+/-lateral].

[+/-continuant]: Continuant sounds are those in which the airstream is not completely blocked but is allowed to escape through a narrow channel, while **[-continuant]** sounds are those in which the airstream is completely blocked for a moment, as in the production of plosives (Jakobson et al, 1952).

[+/-delayed released]: The delayed release feature refers to the fact that some stops in English and other languages are released with a delay, or aspiration, after the closure of the vocal tract is released (Ladefoged, 1975).

[+/-nasal]: Nasal sounds are those in which the airstream passes through the nasal cavity; while **[-nasal]** sounds are those in which the airstream passes through the oral cavity only (Jakobson et al, 1952).

[+/-lateral]: According to Jakobson et al. (1952) lateral sounds are those in which the airstream escapes laterally over one or both sides of the tongue; while [-lateral] sounds are those in which the airstream does not escape over the sides of the tongue.

1.6.4. Laryngeal Features

Laryngeal features are a set of distinctive features which describe the state of the glottis during speech production. The glottis is the opening between the vocal folds in the larynx, and its state can affect the production of speech sounds (Hayes, B, 2009). Laryngeal features are as follows: [+/-spread glottis], [+/-constricted glottis], [+/-voice].

[+/-spread glottis]: [+spread glottis] sounds are those produced with a spread vocal fold posture, resulting in a period of voicelessness before the onset of voicing. Whereas [-spread glottis] sounds are those produced without a spread vocal fold posture, resulting in a more abrupt onset of voicing (Goldsmith, 1990).

[+/-constricted glottis]: [+constricted glottis] sounds are produced with a narrow constriction in the glottis. While [-constricted glottis] sounds are produced without a narrow constriction in the glottis (Hayes, 2009).

[+/-voice]: Voiced sounds are those produced with vocal fold vibration, resulting in a voiced sound. However, voiceless sounds are those produced without vocal fold vibration, resulting in a voiceless sound. (Goldsmith, 1990).

1.7. Phonological Processes

Phonological processes refer to a set of processes that describe the mapping of language expressions underlying and surface forms (Noam Chomsky and Morris Halle, 1968). They explain how a speaker moves from the abstract representation stored in the brain to the real sound they articulate when speaking. For instance, the English phoneme /s/ in the plural form

can be pronounced as [s] after a voiceless, sound such as /p/, /t/, /k/...etc. If a word ends in a voiced sound, like /b/, /d/,/g/, then the phoneme /s/ is realized as [z]. this phoneme is also pronounced as [ɪz] after sibilant sounds, such as [z], [ʃ], [tʃ]...etc. Though there are three different articulations of the phoneme /s/ in the plural form, these three articulations are stored in the brain as the same sound which is /s/. What causes this three-surface pronunciation is a set of phonological processes. There are several types of phonological processes

1.7.1 Assimilation

Noam Chomsky and Morris Halle (1968) provide a detailed analysis of assimilation as a phonological process. They describe assimilation as a rule that operates between adjacent phonemes, where one sound changes to become more similar to the other. Assimilation occurs when a feature of one phoneme spreads to a neighboring sound, resulting in a change in the pronunciation of that phoneme (John Goldsmith, 1990). There are three types of assimilation:

a. Regressive Assimilation: This type, which is also called right-to-left assimilation is referred to as a change in phoneme characteristics caused by the influence of a later occurring sound in the word (Garn-Nunn & Lynn, 2004). Thus, regressive assimilation takes place when the features of a phoneme are affected by the features of the phoneme that comes after it. (Forel&Puskás, 2005,). For instance, the sound /v/ in the phrase ‘have to’, is pronounced as [f] due to the voiceless sound /t/ that comes after it.

b. Progressive assimilation: This type of assimilation, is known as **left to right**. occurs when the phoneme's features are influenced by the phoneme's features directly preceding it (Forel& Puskás, 2005, p.50). For instance, the plural /-s/ can become /-z/ when it is preceded by the voiced /g/ as in bags (CelceMurcia et al, 1996).

c. Reciprocal Assimilation: It is a type of assimilation in which two sounds interact with one another and produce one sound (Garn-Nunn & Lynn, 2004). For instance, the

two sounds /t/ and /j/ in the English phrase 'get you' are articulated as [tʃ]. This means that the phrase is pronounced as [getʃu:].

1.7.2 Dissimilation

It is the opposite of assimilation. This process occurs when a sound shifts one of its features so that it is less similar to another sound, usually in order to make both sounds easier to distinguish or to make them sound more natural. This phonological process is common among those who speak a language that is not their mother tongue, where sound contrasts may be difficult. In other words, dissimilation is a process of sound change in which two similar sounds in a word become less similar (Gimson, 2014).

1.7.3. Deletion (Elision)

Deletion is a phonological process whereby a sound segment is omitted or deleted from a word, resulting in a change in its phonetic form. Chomsky and Halle (1968) define deletion as "the removal of a segment from a word" (p. 116). In the word 'often', the "t" sound is often deleted in casual speech, resulting in the pronunciation "of-en" or "of-n". This deletion occurs due to the difficulty of pronouncing the "t" sound in this position, and it has become a common feature of English pronunciation (Gimson, 2014).

1.7.4 Metathesis

Metathesis is "a term used in linguistics to refer to the transposition of elements in a word or sentence" (Hume, 1998:148). Hume argues that when two adjacent sounds in a word change, it usually includes the letters l or r and a vowel. The following examples demonstrate this type of change: Ask - Aks: The pronunciation 'aks' instead of 'ask' can be heard in some dialects of English (Labov, et al., 2006).

1.7.5. Insertion (Epenthesis)

According to John Goldsmith (2011), insertion is "the addition of an element to a word to satisfy some phonological constraint" (p. 64). He goes on to explain that insertion can occur

for various reasons, including the need to break up an illegal consonant cluster or to provide a nucleus for a syllable. Insertion is a phonological process in which a sound or segment is added into a word, typically to break up a sequence of consonants or to create a more phonetically or phonologically acceptable form (Goldsmith, 1995)

1.7.6. Substitution

It is defined as a phonological process in which “one phoneme is substituted by another without the environment being changed” (Jakobson, 1968, p. 62). This definition emphasizes that substitution occurs without regard for surrounding sounds or phonetic context. Halle and Stevens (1971) clearly define substitution as “the replacement of one phoneme by another in a given phonetic context” (p. 34).

1.8. Conclusion

This chapter presented phonology as a broad discipline; it described different linguistic concepts that exist inside or in relation to phonology as phonetics, phonemes, phonological theories (distinctive features), and processes (rules). Through this brief overview or study of phonology, readers may gain a deeper understanding of how language is structured and how it is used to communicate meaning.

Chapter Two

Morphology

2.1.Introduction

This chapter highlights morphology's definition and its components from the smallest unit which is morpheme to the word formation processes which is the core of morphology. The chapter describes the term morphology and morphemes. Moreover, It details the word formation processes used to create new words. The chapter also explains the concept morphophonology.

2.2. Morphology: Etymology and Definition

The word 'morphology' comes from the two a Greek roots "morph" which means form or shape, and 'logy' which refers to the study of something (Mark and Fudeman, 2011). This word was attributed to describe two different fields. First in (1749_1832) morphology was used, by the German poet and novelist, Johann Wolfgang Von Goethe, for biological purposes. Later in 1859, August Schleicher used the term 'morphology' in linguistics to refer to the building or the structure of words.

Morphology is a subfield of linguistics that studies word formation. It also examines the pieces of a single word known as morpheme (Radford et al., 1999).The term Morphology has been defined by a number of scholars. In 1983, Bauer stated that morphology is a field of linguistics that is concerned with word combination following rules. Similarly, Geert Booji (2005) defined morphology as a section of linguistics that deals with how words are put together.

According to Crystal (1980), morphology is a part of grammar that deals with the creation of words and how these words interact with each other using morphemes, sharing the same opinion with Mccarthy (2005) who claimed that morphology is a component of grammar that focuses on the process of making a word with morphemes. In addition, Yule (2006) argued

that morphology refers to the sort of research that examines all the fundamental components of language, these components are known as morphemes.

Moreover, Goldsmith (2001) considered morphology as the study of the minimal units of meaning in language. While O'Grady (1997) described morphology as the examination of word structure and the system that categorize the rules of word creation. Likewise, O'Grady, Archibald, Aronoff (2017,p.210) stated that "morphology is a component of generative transformational grammar which studies the internal structure of words especially complex words". Furthermore, Mark Anoroff and Fudeman (2011, p.1) maintained that "morphology is the mental system involved in word formation or the branch of linguistics that deals with words their internal structure and how they are formed".

2.3.Function of Morphology

One cannot study a language without understanding its morphology since it focuses on the parts of a word and the word itself. According to Geert Booji (2005), morphology has two main functions. First, morphology enables speakers to create new expressions to describe new things, and ideas, that didn't exist before. Second, morphology provides the appropriate form of the word in a syntactic context. Similarly, Matthews (1991) stated that the function of morphology is to encode the grammatical and semantic relationships between words in a sentence, allowing speakers to convey complex meanings with relatively simple structures. Furthermore, Spencer (1991) declare that morphology serves the function of providing a finite means for generating an infinite number of words from a finite set of morphemes. Moreover, the function of morphology is to allow language users to distinguish between different forms of a word and to make finer semantic distinctions (Haspelmath, 2002).

2.4.Morphemes

Morphology is the study of how sounds are combined to generate the smallest, most distinctive unit of meaning in words known as ‘morphemes’ (Hence 2009). The concept ‘morpheme’ was introduced by Jan Baudouin de Courtenay in 1880, later it became familiar when it was used in Bloomfield’s study in 1933. Many linguists have provided similar definitions of the term ‘morpheme’. For instance, Bauer (1983) claimed that a morpheme is the most basic meaningful unit in morphology. Likewise (2006), Yule stated that a morpheme is the smallest part of morphology that can determine the meaning or the grammatical purpose of a word. In addition, Mc Carthy (2002) describes the term ‘morpheme’ as a unit of grammar that carries meaning with no specific length and can be a word or a piece of word. Moreover, Geert Booij (2005) defined a morpheme as a linguistic unit that can express lexical or grammatical meaning. Furthermore, Aronoff and Fudeman (2011, p.2) stated that “morphemes often defined as the smallest linguistic pieces with a grammatical function”.

A morpheme may be one word as in ‘book’ or a part of a word such as the suffix ‘-ed’ in shared Genetti and Adelman (2014). In this regard, Fromkin, Rodman, and Hyams, (2017,p. 232) clearly stated that “A morpheme is the smallest unit of language that carries meaning. It is not necessarily a word, but rather a unit of meaning that can be combined with other morphemes to create words”.

2.5.Types of Morphemes

Morphemes can be divided into two types: Lexical and grammatical morphemes. The former refers to content morphemes that carry semantic meaning such as nouns, verbs, adjectives, and adverbs. Whereas, the latter are functional morphemes which serve to indicate the grammatical relationship between words such as articles, prepositions, and conjunctions. The two types are further divided into free and bound morphemes. Free lexical morphemes are

those morphemes that can express a complete meaning on their own, for example, ‘school’, ‘book’, ‘table’, ‘dog’, and ‘door’. Whereas, free grammatical morphemes refer to those morphemes that can stand alone, but cannot convey meanings by themselves such as ‘and’, ‘at’, ‘for’, and ‘in’ (Geert Booij, 2005, McCarthy, 2002).

Unlike free morphemes, bound morphemes must be attached to other morphemes. They cannot stand alone as words, such as the plural suffix ‘-s’ and the prefix ‘un-’. Bound morphemes can be classified into two main categories: Inflectional and derivational morphemes. Inflectional morphemes are bound morphemes that are attached to words to indicate some aspects of the grammatical function of these words without changing their meaning. The plural suffix ‘-s’ in ‘books’, ‘dogs’, and ‘stars’, the present tense marker ‘-s’ in the verb ‘drinks’, and the final ‘-ed’ in the verb ‘watched’ are examples of inflectional morphemes. By contrast, derivational morphemes refer to those bound morphemes that create new words and change, therefore, the meanings of these words, such as the suffix ‘-er’ in ‘worker’ and the prefix ‘un-’ in unhappy (Yule, 2006).

2.6. Morph vs Allomorph

Francis (1958) suggested that a morph is a number of phones that carries meaning and cannot be separated into smaller parts. Moreover, Soekemi (1995, p.19) defines a morph as “the minimal part in language”. Furthermore, Yule (2006) states that a morph is the actual shape that a morpheme takes when it is realized, for example, the word cars has two morphs the noun ‘car’ and the plural ‘-s’. Whereas an allomorph refers to the various forms of the same morpheme for example the sounds /s/, /z/, and /ɪz/ are different pronunciations of the same plural ‘-s’ as in rats, bags, and races. These different realizations of the same morphemes are called allomorphs. McCarthy (2002) suggested that an allomorph is a different representation of one single morpheme. Meanwhile, Geert Booij (2005) defined allomorphy as a situation that

happens when a morpheme can have more than one shape which corresponds to a different morph and a morph is the phonetic form of a morpheme. Likewise, Lieber (2009, p. 158) stated that “allomorphs are phonologically distinct variants of the same morpheme”.

2.7.Root, Base, and Stem

Payen (2006, p.18) described a root as a morpheme that transmits the intended meaning of the word which cannot be decomposed into smaller parts. While Katamba (1993, p 41) defined a root as the heart of a word with nothing else related to it. Likewise, O’Grady and his colleagues (2010, p. 119) claimed that a root is the most important part of a word that expresses meaning. According to McCarthy (2002. p.20) root is the foundation of a word that remains after removing any affixes (i.e., prefix or a suffix).

A stem is the basic form of a word to whichever affixes are related, a stem could be simple consisting of one part, for example, count, believe, and remember, or a complex consisting of two parts or more, for example, Reformulation consists of three morphemes ‘re’, ‘formulate’, ‘ation’ (Mark Aronoff and KristenFudeman 2011). Aronoff (1994, p1) stated that the two concepts ‘root’ and ‘stem’ are different from each other, he mentioned that “although root and stem both designate sound forms of lexemes, the most important difference between them is that a root is defined with respect to a lexeme, while a stem it always defined with respect to realization rules”. A base is the main morphological element that any other parts are related to during the word formation process Famala Eka (Samarinda 2021

2.8.Word Formation

The core of morphology is the production of words which is accomplished through a number of processes. Trask (1997) defined word formation as the creation of new words out of already existing ones. Similarly, Blag (2003) describes it as the invention of new words based on others. Moreover, Harley (2006) stated that word formation is the manipulation of words

that exist to make new words through the application of a number of processes such as blending, compounding, and affixation. Furthermore, Hacken and Thomas (2013) described word formation as the production of new words following a set of rules. In addition, Harchand (1969) defined word formation as part of the language that analyzes the strategies which a language uses to create new words. Likewise, Crystal (1987,p.240) stated that “word formation is, in a more practical way, considered as the process of creating words out of sequences of morphemes”. Besides, Monitor (2017) argued that a new concept is added every 98 minutes to the English language through the use of word formation processes.

2.9.Types of Word Formation Processes

To create new words, several word formation processes can be used. The main processes are:

2.9.1. Compounding

Compounding is a word formation process which means the combination of two words to make one word. This process is highly used in German and English, unlike French and Spanish (Yule, 2006). McCarthy (2002) stated that compound words are a combination of roots. For example, the words ‘textbook’, ‘fastfood’, ‘wallpaper’, ‘homework’, ‘basketball’, and ‘Facebook’ are called compound nouns which is the most used compound in English. The meaning of compound words is different from their components (MC Carthy, 2002). According to Yule (2006), adjectives, verbs, and nouns can be all used to create compounds.

2.9.2. Affixation

According to Huddleston and Bauer (2002), “affixation is the addition of affixes to form a new base” (p.1667). Moreover, Plag (2003) described an affix as a kind of bound morpheme that it is related to the base. An affix can be a suffix or prefix. Whenever an affix is

related to a root it can change the word phonologically by changing the stress of a word for example, drama, dramatize, or the way of writing sad becomes sadness, or it can change the word semantically as in emerge emergency, and it can alter change the form-class of a word for as in ‘impress’, ‘impression’ (Brinton and Brinton 2010.)

2.9.3. Conversion

Conversion is a word formation process that means adding a new meaning to a word without changing its structure. Booji (2005)defined conversion as a process that changes the word class of a word. This process alters the grammatical category of words, fro instance from noun to verb. The noun ‘work’ can be used as a verb ‘work’. Other words which are created by conversion are the verbs ‘to dirty’, ‘to clean’, and ‘to empty’. These verbs are created from the adjectives ‘dirty’, ‘clean’, and ‘empty’, respectively (Quirk et al,1987). It seems that, when a word is created by the conversion process, it remains as it is without any change in its written form.

2.9.4. Back-formation

Back-formation is a specific kind of reduction process that changes a word’s part of speech to create we word with a new meaning. This process involves removing some parts of a word as in the words ‘babysit’ and ‘edit’. These two words are created from the word ‘babysitter’ and ‘editor’ by removing the morphemes ‘er’ and ‘or’ (Yule,2006).

2.9.5. Blending

Blending occurs when two forms are combined to make a new term by connecting the starting part of one form to the end part of another (Yule 2006). Blending is similar to compounding; however, blending includes shortening one form.Booij (2005) defined blending as joining the first part of a word with the second part of another to form a new word. Moreover,

McCarthy (2002) stated that blending is the reproduction of two words by modifying the components of these words partially to form a new word. For example, the word 'brunch' is created by blending together the two words 'breakfast' and 'lunch'

2.9.6. Acronym Formation

The acronym formation process refers to the creation of a new word to express a phrase through the use of the first letter of each word pronounced as one word (Yule 2006). C (2002) and Booji (2005) described acronym formation as the use of initials to refer to a phrase as in 'NATO' and 'FiFa'.

2.9.7. Clipping

Clipping is a word formation process that involves deleting some parts of these words to create synonyms, as in 'exam' which is created from 'examination'. Other words that are created by clippings are 'maths', 'prof', and 'doc' (Bauer, 2002; Booji, 2005; Yule, 2006).

2.9.8. Reduplication

Reduplication is a word formation process in which a word or part of it is repeated to create a new word. This process can change the phonological structure of a word (Brinton & Brinton 2010). Reduplication is less productive than other processes in creating new words (Brinton & Brinton, 2010; Quick et al 1995). Bauer (2013) classified the reduplication process into three types. First, the components of reduplicated words are homophonous, as in woof woof. second, the vowel sound changes while the consonant sound does not alter, for example flipflop and zigzag. Third, the starting part of word changes but the final part remains as is it for example, okey-dokey.

2.9.9. Borrowing

Thomas and Kaufman (1988) defined borrowing as the process through which speakers of a group's native language incorporate traits from another tongue; the original tongue is kept but transformed by the addition of the incorporated features. Moreover, George Yule (2006) stated that the most productive process in word formation in the English language is borrowing which is the adaptation of words from one language to another without any change, for example, coffee from the French word *café*, pizza is an Italian word.

Bloomfield (1933) was the first linguist that classifies borrowing into different types: first, dialect borrowing this type is found within the same speech area. Second, cultural borrowing refers to the adaptation of borrowed words from another language for example 'tabla' is an Algerian borrowed word from the French word 'table'. Third, intimate borrowing is the intense interaction between speakers of different languages.

2.9.10. Coinage

Williamson (2004) argued that coinage is considered as a significant source of word creation which means inventing new terms. By contrast, according to Yule (2006), coinage is among the least-used word formation processes in English which is the production of new concepts. The most observed use of coinage is the names of commercial products including aspirin, vaseline, Kleenex, and nylon.

2.9.11. Eponym

Eponymy refers to a word-formation process by which different things are named after a person or a place, as in Mc Donald's (George Yule, 2006).

2.9.12. Double Word-Formation Processes

According to Yule (2006), one can use more than one process in the construction of words. For example, the two processes ‘compounding’ and ‘conversion’ can be used to create words such as the verb ‘snowball’. This verb is created by conversion from the noun ‘snowball’ which is created by compounding the two words ‘snow’ and ‘ball’. Another example of double word formation processes is the use of compounding and affixation, as in live blogging.

2.10. Morphophonology

The concept morphophonology was first employed at the first Congress of Slavic Philologists in Prague in October 1929, by N.S.Trubetzkoy (as cited in Martinet, 1973). Morphophonology deals with the investigation and categorization of the phonological variables that influence the appearance of morphemes or, similarly the grammatical elements that influence the appearance of phonemes (Crystal, 2010). It is concerned with the phonemic shape of morphemes. It is the branch of phonology that deals with the alternations of sounds that occur within morphemes in a given language (Anderson, 1985). Arnoson (2012) defined morphophonology as part of linguistics which examines the relationship between phonology and morphology in word construction.

Morphophonemic analysis reveals how phonological elements affect morpheme pronunciation. It also shows the way that morphemes influence each other’s sound structure in the process of word formation. Wells (1949) argued that when the utterances of a language have been analyzed into their smallest meaningful units (i.e., morphemes), a number of these units in most languages have more than more morpheme alternant. Moreover, to Hockett (1942:274) maintained that morphophonemic analysis is a field of grammar that examines the phonetic structure of morphemes, words and compositions disregarding their meaning. In addition,

Bloch (1947) stated that morphophonemic is the study of the transition between related phonemes in various forms of one signal morpheme.

The goal of morphophonemic analysis is to determine the phonological rules that govern the alternations and to describe the formal properties of the morphophonemic system of a language. These rules may involve processes such as assimilation, dissimilation, deletion, insertion, and vowel and consonant mutation, among others (Anderson, 1985).

2.11. Morphophoneme's Realization

The realization of a morphophoneme refers to how it is pronounced or realized in speech. This can vary depending on the phonological rules of the language, such as assimilation, deletion, and insertion. For example, in English, the past tense morpheme "-ed" can be pronounced as /t/, /d/, or /ɪd/ depending on the final sound of the verb stem. If the stem ends in a voiceless consonant sound, the '-ed' morphophoneme is pronounced as /t/, as in 'walked'. If the stem ends in a voiced consonant sound or a vowel sound, the '-ed' morphophoneme is pronounced as /d/, as in 'played'. If the stem ends in the sound /t/ or /d/, the '-ed' morphophoneme is pronounced as /ɪd/, as in 'waited'. The realization of morphophonemes can also vary across different dialects of a language or in different contexts of use (Goldsmith, et al.2001, p.1).

2.12. Conclusion

Morphology is a branch of linguistics that examines the internal structure of words breaking them into the smallest units called morphemes. This branch also examines how new words are created by a set of word formation processes. This chapter presented the basic concepts of morphology. It explained in details the terms morphemes, morphs, allomorphs, word formation processes, and morphophonology.

Chapter Three

Methodology, Results, and Discussion

3.1. Introduction

This chapter provides a morphophonemic analysis of the verbal inflectional morphemes used in Tiaret dialect. First, the chapter describes the verbal inflectional morphemes that exist in Tiaret dialect. All the tenses and the aspect used in Tiaret dialect are taken into consideration. Then, it analyses the phonological processes that take place when these morphemes are attached to verbs.

3.2. Research Aim

As stated in the general introduction, the aim of the present study is to examine the morphophonemic structure of the inflectional morphemes in Algerian Arabic as Spoken in Tiaret. The present study seeks to determine the inflectional morphemes that exist in TAA, investigate how the use of these inflectional morphemes with particular words affects the sound structure of these words, and identify the phonological processes applied.

3.3. Research Approach

To conduct this research, a qualitative research approach was used. This approach provides deeper insights into the topic since it gathers participant's experiences, perceptions, and attitudes. Qualitative research refers to the collection and analysis of non-numerical data for example; text, video, or audio (Creswell, J. W.2014). In the present study, the researchers recorded a group of native speakers of Tiaret dialect.

3.4. Participants

A group of 20 native speakers of Tiaret dialect (TD) has been randomly selected to be the representative sample of the study. Social factors like age, gender, education, and

economic status are not taken into consideration. It is worth mentioning, the influence of these factors goes bound the research aim.

3.4. Data Collection

To conduct the present research and collect the necessary data, the researchers used a verbal inflection task method. The researchers gave the participants, two lists, each of which includes a number of verbs used in Tiaret dialect and asked them to conjugate these verbs with all the personal pronouns that exist in Tiaret dialect. The first list is dedicated to collect data about the verbal inflectional morphemes used with past tense verbs; while the second list is dedicated to those morphemes used with present tense verbs. It is worth mentioning that the list was written in Algerian Arabic (see Appendix A and B). To create the two lists, two steps were required:

- **Step 1: Identify the verbal inflectional morphemes used in the Algerian dialect as spoken in Tiaret**

In order to examine the morphophonemic analysis of verbal inflectional morphemes in Tiaret dialect, the first thing to do is to determine these verbal inflectional morphemes. To do this, the researchers who are native speakers of Tiaret dialect identified all the tenses and the aspects that exist in this dialect, then listed the morphological behaviour of verbs in each tense and aspect by taking into consideration all the personal pronouns used in this dialect. It is worth mentioning that the study at hand examines the verbal inflectional morphemes used in indicative mood and the active voice only.

➤ **Step (2): Checking the phonemic behavior of the verb-morphological inflectional morphemes**

After identifying the verbal inflectional morphemes used in TD, the next step is to check each verbal inflectional morpheme against all the possible sounds that exist in TD. To do this, two lists were created. The first list (appendix A) contains forty verbs. Each verb ends with one particular sound from the set of sounds that exist in final positions. The second list (appendix B) includes sixty verbs, each of which begins with one particular sound from the set of sounds that exist in initial positions.

3.5. Data Analysis

To analyse the data, two subsections are used. The first one is devoted to present and analyse the verbal inflectional morphemes that exist in Tiaret dialect. The second one is dedicated to display and examine the phonemic behaviour of these verbal inflectional morphemes

3.5.1. Verbal Inflectional Morphemes in Tiaret Dialect

To determine the verbal inflectional morphemes used in Tiaret dialect, all the tenses and the aspects that exist in this dialect are detailed. A tense is a method that speakers use to indicate the time at which an action or an event may take place such as past, present, and future, whereas an aspect refers to the duration of an action or an event within a particular tense (Yule, George2016). Tiaret Dialect has three tenses: Past, present, and future. To describe these three tenses, the verb [kteb] ‘to write’ is used.

➤ **Past Tense**

Past tense refers to a tense that is used to talk about something that started and finished at a definite time in the past. To describe the past tense, users of Tiaret dialect employ two aspects,

namely: Perfect (complete) and continuous aspects. Perfect aspect (complete) is the aspect of a verb that expresses a completed action whereas continuous aspect is the aspect of a verb that expresses an ongoing action. Table (1) below describes the use of these aspects with the pronouns that exist in Tiaret dialect.

Table (1): *Aspects of the Past Tense in Tiaret dialect*

Aspects of Past Tense	Pronouns in TA	Pronouns in English	Verbs in TA	Verbs in English
Perfect Aspect	[ʔana:]	I	[ktebt]	(I) wrote
	[ħna:]	We	[ktebna:]	(we) wrote
	[nta]	You (sin. masc.)	[ktebt]	(you) wrote
	[nti:]	You (sing. fem.)	[ktebtɪ:]	(you) wrote
	[ntu:ma:]	You (plu. gender neutral)	[ktebtu:]	(you) wrote
	[huwa]	He	[kteb]	(he) wrote
	[hiya]	She	[ketbət]	(she) wrote
	[hu:ma:]	They	[ktebu:]	(they) wrote
Continuous Aspect	[ʔana:]	I	[kunet nəkteb]	(I) was writing
	[ħna:]	We	[kunna: nəketbu:]	(we) were writing
	[nta]	You (sin. masc.)	[kunet təkkeb]	(you) were writing
	[nti:]	You (sing. fem.)	[kunti:təkkebɪ:]	(you) were writing
	[ntu:ma:]	You (plu. gender neutral)	[kuntu: təkkebɪ:]	(you) were writing

	[huwa]	He	[ka:n jəkɛb]	(he) was writing
	[hiya]	She	[ka:net təkɛb]	(she)was writing
	[hu:ma:]	They	[kanu: jəkɛtɒu:]	(they)were writing

As seen in table (1), to indicate the past simple (i.e., the perfect aspect), users of Tiaret employ seven verbal inflectional suffixes which are ‘-t’, ‘-na:’, ‘-t’, ‘-ti:’, ‘-tu:’, ‘-t’, and ‘-u:’. Whereas to talk about the past continuous aspect, they use the auxiliary ‘ka:n’ in the perfect aspect with the main verb in the present simple. Table (2) below summarizes Tiaret dialect’s verbal inflectional morphemes which are used in the past tense.

Table (2): *Past Tense Inflectional Morphemes in TD*

Pronoun in TD	Pronoun in English	Inflectional Morphemes	
		Prefixes	Suffixes
Perfect Aspect (main verb)			
[ʔana:]	I		-t
[hna:]	We		-na:
[nta]	You (sing.masc)		-t
[nti:]	You (sing.fem)		-ti:
[ntu:ma:]	You (plu. gn)		-tu:
[huwa]	He		
[hiya]	She		-t
[hu:ma]	They		-u:
Continuous Aspect (auxiliary)			

[ʔana:]	I		-t
[ħna:]	We		-na:
[nta]	You (sing.masc)		-t
[nti:]	You (sing.fem)		-ti:
[ntu:ma:]	You (plu. gn)		-tu:
[huwa]	He		
[hiya]	She		-t
[hu:ma]	They		-u:
Continuous Aspect (main verb)			
[ʔana:]	I	n-	
[ħna:]	We	n-	-u:
[nta]	You (sing.masc)	t-	
[nti:]	You (sing.fem)	t-	-i:
[ntu:ma:]	You (plu. gn)	t-	-u:
[huwa]	He	j-	
[hiya]	She	t-	
[hu:ma]	They	j	-u:

➤ Present Tense

Present tense is a verb tense that describes a current activity or state of being. To talk about the present tense in Tiaret dialect, two aspects are employed: Simple and continuous. Simple present is used to describe facts and habits, whereas, present continuous is used to describe actions that began in the past and are still continuing into the present. Table (3) below describes the use of these aspects with the pronouns that exist in Tiaret dialect.

Table (3): *Aspects of the Present Tense in Tiaret Dialect*

Aspects of Present Tense	Pronouns in TA	Pronouns in English	Verbs in TA	Verbs in English
Simple Aspect	[ʔana:]	I	[nəkʰteb]	(I) write
	[ħna:]	We	[nəkʰtebu:]	(we) write
	[nta]	You (sin. masc.)	[təkʰteb]	(you) write
	[nti:]	You (sing. fem.)	[təkʰtebi:]	(you) write
	[ntu:ma:]	You (plu. gender neutral)	[təkʰtebu:]	(you) write
	[huwa]	He	[jəkʰteb]	(he) writes
	[hiya]	She	[təkʰteb]	(she) writes
	[hu:ma:]	They (plu. gender neutral)	[jəkʰtebu:]	(they) write
Continuous Aspect	[ʔana:]	I	[ra:ni:nəkʰteb]	(I) am writing
	[ħna:]	We	[ra:na:nəkʰtebu:]	(we) are writing
	[nta]	You (sin. masc.)	[ra:k təkʰteb]	(you) are writing
	[nti:]	You (sing. fem.)	[ra:ki: təkʰtebi:]	(you) are writing
	[ntu:ma:]	You (plu. gender neutral)	[ra:kum təkʰtebu:]	(you) are writing
	[huwa]		[ra:h jəkʰteb]	(he) is writing
	[hiya]		[ra:hi: təkʰteb]	(she) is writing
	[hu:ma:]		[ra:hum jəkʰtebu:]	(they) are writing

Table (3) shows that speakers of TD use different morphemes to indicate the present tense. To form the simple aspect, they use both prefixes and suffixes. The prefixes used are ‘t-’, ‘n-’ and ‘j-’. The first prefix is used with the first person singular pronoun (I), the second person pronouns (you), and the third person feminine and plural pronouns (she and they). The second prefix is used with first person plural pronoun (we). The last prefix is used with the third person singular masculine pronoun (he). Concerning the suffixes, the users of Tiaret employ the two suffixes ‘-u:’ and ‘-i:’. the first one is used with the first person, the second person, and the third person plural pronouns (we, you, and they). While the second one is used with the second-person singular feminine pronoun (you)

To talk about the continuous aspect, Tiaret dialect uses the particle ‘ra:h’ with the main verb in the present simple. That is, the same inflectional morphemes used with simple present verbs are used with the main verbs in the continuous aspect. Table (4) below summarizes Tiaret dialect’s verbal inflectional morphemes which are used in the present tense.

Table (4): *Present Tense Inflectional Morphemes in TD*

Pronoun in TD	Pronoun in English	Inflectional Morphemes	
		Prefixes	Suffixes
Simple Aspect (main verb)			
[ʔana:]	I	n-	
[ħna:]	We	n-	-u:
[nta]	You (sing.masc)	t-	
[nti:]	You (sing.fem)	t-	-i:
[ntu:ma:]	You (plu. gn)	t-	-u:

[huwa]	He	j-	
[hiya]	She	t-	
[hu:ma]	They	j-	-u:
Continuous Aspect (main verb)			
[ʔana:]	I	n-	
[hna:]	We	n-	-u:
[nta]	You (sing.masc)	t-	
[nti:]	You (sing.fem)	t-	-i:
[ntu:ma:]	You (plu. gn)	t-	-u:
[huwa]	He	j-	
[hiya]	She	t-	
[hu:ma]	They	j-	-u:

➤ **Future Tense**

The future tense is a verb tense used to talk about an event, action, or state that hasn't happened but is expected to happen in the future. The future tense in Tiaret dialect is performed by using the auxiliaries that indicate the future with simple present-tense verbs. The future auxiliaries used in Tiaret dialect are: [ya:di:] 'will', and [ba:j]' going to'. Table (5) below describes the use of the future tense with the pronouns that exist in Tiaret dialect.

Table (5): *The Future Tense in Tiaret Dialect*

Pronouns in TA	Pronouns in English	Future Auxilliaris	Verbs in TA	Verbs in English
[ʔana:]	I	[ya:di:] 'will'	[nəkṭeb]	(I)will/going to write

		[ba:j] ‘going to’		
[ħna:]	We	[ya:di:] ‘will’ [ba:j] ‘going to’	[nəkɛtbu:]	(we) will/going write
[nta]	You (sin. masc.)	[ya:di:] ‘will’ [ba:j] ‘going to’	[təkɛb]	(you) will/going write
[nti:]	You (sing. fem.)	[ya:di:] ‘will’ [ba:j] ‘going to’	[təkɛtbi:]	(you) will/going write
[ntu:ma:]	You (plu. gender neutral)	[ya:di:] ‘will’ [ba:j] ‘going to’	[təkɛtbu:]	(you) will/going write
[huwa]	He	[ya:di:] ‘will’ [ba:j] ‘going to’	[jəkɛb]	(he) will/goingwrite
[hiya]	She	[ya:di:] ‘will’ [ba:j] ‘going to’	[təkɛb]	(she) will/going write
[hu:ma:]	They	[ya:di:] ‘will’ [ba:j] ‘going to’	[jəkɛtbu:]	(they) will/going write

Table (7) demonstrates that native speaker of TD use two auxiliaries to differentiate between near future and far future. The auxiliary ‘[ba:j] ‘going to’ is used to describe near future; while the auxiliary [ya:di:] ‘will’ is employed to talk about far future. In addition to these two auxiliaries, the native speakers also use simple present-tense verbs. Table (6) below summarizes Tiaret dialect’s verbal inflectional morphemes which are used in the future tense.

Table (6): *Future Tense Inflectional Morphemes in TD*

Pronoun in TD	Pronoun in English	Inflectional Morphemes	
		Prefixes	Suffixes
[ʔana:]	I	n-	
[ħna:]	We	n-	-u:
[nta]	You (sing.masc)	t-	
[nti:]	You (sing.fem)	t-	-i:
[ntu:ma:]	You (sing.gn)	t-	-u:
[huwa]	He	j-	
[hiya]	She	t-	
[hu:ma]	They	J	-u :

3.5.2. Verbal Inflectional Morphemes' Morphophonemic Analysis

The analysis of Tiaret dialect's aspects and tenses shows that the verbal inflectional morphemes can be grouped into two main categories. The first group includes the verbal inflectional morphemes which are used in the simple past. In this category, only suffixes are used. The second category consists of verbal inflectional morphemes which are used in the present continuous, the present tense, and the future tense. This category includes both prefixes and suffixes.

a. Verbal Inflectional Morphemes Used in the Simple Past

As illustrated above, the verbal inflectional morphemes used in Tiaret dialect to talk about the simple past are seven suffixes ('-t', '-na', '-t', '-ti', '-tu:', '-t', 'u:'). When these morphemes

inflect simple past verbs, four phonological processes take place. These processes are: Substitution, insertion, assimilation, and metathesis.

➤ Substitution

The results of the present study reveal that the vowel /a:/ in some simple past verbs is substituted by /e/, /u/, or /i:/. The vowels /e/ and /u/ are used to substitute the vowel /a:/ when the first (singular/plural) and the second person (singular/plural masculine/feminine) suffixes ‘-t’, ‘-na:’, ‘-t’, ‘-ti:’, and ‘-tu:’ are used to inflect the simple past verbs which consist of the vowel /a:/ that occurs between two consonants. That is, when the vowel /a:/ occurs between two consonants, this vowel is substituted either by /e/ or /u/. This can be illustrated in table (7) below

Table (7): *Substituting /a:/ by /e/ or /u:/*

Verbal Inflectional morphemes	Input	Output
-t (1 st / sing.)	/ʃa:b-t/	[ʃeɪt]
	/ba:ʃ-t/	[beɪt]
	/na:m-t/	[numt]
	/xa:f-t/	[xuɪt]
-na: (1 st / plu.)	/ʃa:b-na:/	[ʃeɪna:]
	/ba:ʃ-na:/	[beɪna:]
	/na:m-na:/	[numna:]
	/xa:f-na:/	[xuɪna:]
-t (2 nd / sing. masc.)	/ʃa:b-t/	[ʃeɪt]
	/ba:ʃ-t/	[beɪt]
	/na:m-t/	[numt]
	/xa:f-t/	[xuɪt]

-ti: (2 nd / sing. fem.)	/ʃa:b-ti:/	[ʃɛbti:]
	/ba:ʃ-ti:/	[beʃti]
	/na:m-ti:/	[numti]
	/xa:f-ti:/	[xufti:]
-tu: (2 nd /plu.)	/ʃa:b-tu:/	[ʃɛbtu:]
	/ba:ʃ-tu:/	[beʃtu:]
	/na:m-tu:/	[numtu:]
	/xa:f-tu:/	[xuftu:]

However, the vowel /i:/ is used to substitute the vowel /a:/ when the first (singular/plural) and the second person (singular/plural, masculine/feminine) suffixes ‘-t’, ‘-na:’, ‘-t’, ‘-ti:’, and ‘-tu:’ are attached to the simple past verbs that have the vowel /a:/ in final position. This can be illustrated in table (8) below:

Table (8): *Substituting /a:/ by /i:/*

Verbal Inflectional morphemes	Input	Output
-t (1 st /sing.)	/kla:-t/	[kli:t]
	/mʃa:-t /	[mʃi:t]
	/bra:-t /	[bri:t]
	/nha:-t /	[nhi:t]
	/tmena:-t /	[tmeni:t]
	/pa:rʔa:ʒa:-t /	[pa:rʔa:ʒi:t]
-na: (1 st /plu.)	/kla:-na:/	[kli:na:]
	/mʃa:-na:/	[mʃi:na:]
	/bra:-na:/	[bri:na:]

	/nha: -na:/	[nhi:na:]
	/tmena -na:/	[tmeni:na:]
	/pa:rta:za: -na:/	[pa:rta:zi:na]
-t (2 nd / sing. masc.)	/kla:-t/	[kli:t]
	/mfa:-t/	[mfi:t]
	/bra:-t/	[bri:t]
	/nha:-t/	[nhi:t]
	/tmena:-t/	[tmeni:t]
	/pa:rta:za:-t/	[pa:rta:zi:t]
-ti (2 nd / sing. fem.)	/kla:-ti:/	[kli:ti:]
	/mfa:-ti:/	[mfi:ti:]
	/bra:-ti:/	[bri:ti:]
	/nha:-ti:/	[nhi:ti:]
	/tmena:-ti:/	[tmeni:ti:]
	/pa:rta:za:-ti:/	[pa:rta:zi:ti:]
-tu: (2 nd /plu.)	/kla:-tu:/	[kli:tu:]
	/mfa:-tu://	[mfi:tu:]
	/bra: tu:/	[bri:tu:]
	/nha: tu:/	[nhi:tu:]
	/tmena: tu:/	[tmeni:tu:]
	[pa:rta:za: tu:]	[pa:rta:zi:tu:]

Another substitution process occurs when the third person plural suffix ‘-u:’ is used to inflect the simple past verbs that end with the vowel [a:]. In this case, the suffix ‘-u:’ is substituted by the semivowel [w]. This can be seen in table (9) below:

Table (9): *Substituting '-u:' by [w]*

Verbal Inflectional morphemes	Input	Output
-u: (3 rd /sing. fem.)	/kla:-u:/	[kla: w]
	/mfa:-u:/	[mfa: w]
	/bra:-u:/	[bra: w]
	/nha:-u:/	[nha: w]
	/tmena:-u:/	[tmena: w]
	/pa:rta:za:-u:/	[pa:rta:za: w]

➤ **Insertion**

In addition to the substitution process, the findings show that the use of the past tense inflection morphemes in Tialet dialect results in another phonological process, called insertion. The findings display that when the first (singular/plural) and the second person (singular/plural masculine/feminine) suffixes '**-t**', '**-na:**', '**-t**', '**-ti:**', and '**-tu:**' are used to inflect the simple past verbs which consist of one short vowel occurring between two consonants, the vowel [i:] is inserted before these suffixes. This can be illustrated in table (10) below:

Table (10): *Inserting [i:]*

Verbal Inflectional morphemes	Input	Output
-t (1 st /sing.)	/ʕas-t/	[ʕasi:t]
	/ʕek-t/	[ʕeki:t]
	/mes-t/	[mesi:t]
-na: (1 st /plu.)	/ʕas-na:/	[ʕasi:na]

	/ʃek-na:/	[ʃeki:na:]
	/mes-na:/	[mesi:na:]
-t (2 nd / sing. masc.)	/ʃas-t/	[ʃasi:t]
	/ʃek-t/	[ʃeki:t]
	/mes-t/	[mesi:t]
-ti : (2 nd / sing. fem.)	/ʃas-ti:/	[ʃasi:ti:]
	/ʃek-ti:/	[ʃeki:ti:]
	/mes-ti:/	[mesi:ti:]
-tu : (2 nd /plu.)	/ʃas-tu:/	[ʃasi:tu:]
	/ʃek-tu:/	[ʃeki:tu:]
	/mes-tu:/	[mesi:tu:]

Moreover, when the third person singular feminine suffix ‘-t’ is used to inflect the simple past verbs which are non-monosyllabic and end with a consonant, the vowel ‘shwa’ [ə] is inserted before this suffix. This can be illustrated in table (11) below:

Table (11): *Inserting [ə]*

Verbal Inflectional morphemes	Input	Output
-t (3 rd /sing. fem.)	/weraθ-t/	[wareθət]
	/tʰayeb-t/	[tayebət]
	/rʂʌm-t/	[rasmət]
	/kteb-t/	[ketbət]

➤ **Assimilation**

The results also reveal that the assimilation process occurs when the first (singular) and the second person (singular/plural masculine/feminine) suffixes ‘-t’, ‘-t’’, ‘-ti:’, and ‘-tu:’ are used to inflect the simple past verbs which end with one of the following sounds: /d/, /d^s/, and /t^s/.

When the four verbal inflectional suffixes are attached to the simple past verbs that end with one of the first three sounds (i.e., /d/, /d^s/, and /t^s/), a regressive total assimilation occurs. In this process, the /t/ sound, in the four suffixes, which functions as a trigger, assimilates the preceding sounds and motive them to adopt all of its features. As a results, these three sounds are pronounced as [t]. This can be illustrated in table (12) below:

Table (12): *Regressive Total Assimilation*

Verbal Inflectional morphemes	Input	Output
-t (1 st /sing.)	/mahad-t/	[mahatt]
	/gbad ^s -t/	[gbatt]
	/hbat ^s -t/	[hbatt]
-t (2 nd / sing. masc.)	/mahad-t/	[mahatt]
	/gbad ^s -t/	[gbatt]
	/hbat ^s -t/	[hbatt]
-ti: (2 nd / sing. fem.)	/mahad-ti:/	[mahatti:]
	/gbad ^s -ti:/	[gbatti:]
	/hbat ^s -ti:/	[hbatti:]
-tu: (2 nd /plu.)	/mahad-tu:/	[mahattu:]
	/gbad ^s -tu:/	[gbattu:]

	/hbat ^s -tu:/	[hbattu:]
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➤ **Metathesis**

The findings of the present study demonstrates that the verbal inflectional morphemes used in the past verbs result also in metathesis by which the order of two sounds in some simple past verbs switch their places. This happens when these verbs are inflected with the third person (singular/ feminine and plural) suffixes ‘-t’ and ‘-u:’. This can be illustrated in table (13) below

Table (13): *Metathesis Process in Perfect Verbs*

Verbal Inflectional morphemes	Input	Output
-t (3 rd /sing. fem.)	/weraθ-t/	[wareθət]
	/t ^s ayeb-t/	[t ^s ayebət]
	/reħal-t/	[raħelət]
	/xradʒ-t/	[xardʒət]
-u: (3 rd /plu.)	/weraθ-u:/	[wareθu:]
	/t ^s ayeb -u:/	[t ^s ayebu:]
	/reħal-u:/	[raħelu:]
	/xradʒ-u:/	[xardʒu:]

b. Verbal Inflectional Morphemes Used in the Present Continuous, Present simple, and future tense

The analysis of the verbal inflectional morphemes used in Tiaret dialect shows that the same inflectional morphemes used in the present tense are used in the present continuous and future

tense. Thus, only one type of inflectional morphemes is analysed, i.e, the verbal inflectional morphemes used in the present simple.

The data presented in the first section has shown that Tiaret dialect uses imperfect verbs with three prefixes to describe the present tense. These prefixes are ‘n-’, ‘t-’, and ‘j-’. In addition to these inflectional morphemes, the suffixes ‘-u:’ and ‘-i:’ are placed at the end of an imperfect verb when it is used with the pronouns ‘we’, ‘you’ (plu.) and ‘they’, and the pronoun ‘you (sin. fem)’. The use of these inflectional morphemes (prefixes and suffixes) with imperfect verbs give rise to four phonological processes, namely assimilation, insertion, deletion, and metathesis.

➤ Assimilation

The findings of this study reveal that the assimilation process takes place when the second person singular/plural masculine/feminine and the third person singular feminine prefix ‘t-’ is attached to an imperfect verb starting with one of the following sounds: /ð/, /g/, /dʒ/, /d/ and /t̪/. When the prefix ‘t-’ is placed before the first two sounds (i.e., / ð / and / g/), a regressive voice assimilation occurs by which the voiced sounds / ð / and / g/ assimilate the preceding voiceless sound ‘t’. As a results, the sound /t/ changes its voicing feature and becomes pronounced as [d]. This can be illustrated in table (14) below

Table (14): *Regressive Voice Assimilation*

Verbal Inflectional morphemes	Input	Output
t- (2 st /sing. masc.)	/t-ðu;b/	[dðu:b]
	/t-gu:l/	[dgu:l]
t- (2 st / sing. fem.)	/t-ðu;bi:/	[dðu:bi:]
	/t-gu:li:/	[dgu:l:]

t- (2 nd / plu.)	/t-ðu;bu:/	[dðu:bu:]
	/t-gu:lu:/	[dgu:lu:]
t- (3 rd / sing.fem.)	/t-ðu;b/	[dðu:b]
	/t-gu:l/	[dgu:l]

However, a regressive total assimilation occurs when the second person singular/plural masculine/feminine and the third person singular feminine prefix ‘t-’ is attached before an imperfect verb starting with the sound /dʒ/, /d/ or /t̥/. In this type of assimilation, the sounds /dʒ/, /d/ or /t̥/, which function as triggers, motivate the sounds /t/ to adopt all their features and become, therefore, exactly like these triggers. This can be illustrated in table (15) below.

Table (15): *Regressive Total Assimilation*

Verbal Inflectional morphemes	Input	Output
t-(2 st /sing. masc.)	/t-dʒi;b/	[dʒdʒi:b]
	/t-dewəf/	[ddewəf]
	/t̥-tajeb/	[t̥t̥ajeb]
t- (2 st / sing. fem.)	/t-dʒi;bi:/	[dʒdʒi:bi:]
	/t-dewəfi:/	[ddewəfi:]
	/t̥-tajebi:/	[t̥t̥ajebi:]
t- (2 nd / plu.)	/t-dʒi;bu:/	[dʒdʒi:bu:]
	/t-dewəfu:/	[ddewəfu:]
	/t̥-tajebu:/	[t̥t̥ajebu:]
t- (3 rd / sing.fem.)	/t-dʒi;b/	[dʒdʒi:b]
	/t-dewəf/	[ddewəf]
	/t̥-tajeb/	[t̥t̥ajeb]

➤ **Insertion**

The findings also display that when all the prefixes are attached to imperfect verbs starting with two consonants, either [ə] or [u] is inserted after these prefixes. This can be illustrated in table (16) below.

Table (16): *Inserting [ə] or [u]*

Verbal Inflectional morphemes	Input	Output
n- (1 st /sing.)	/n-kteb/ /n- <i>tfaredʒ</i> / /n-fham/ /n-xrudʒ/ /n-nkər/ /n-rgəs̚/	[nək ^ə teb] [nə ^ə tfaredʒ] [nə ^ə fham] [n <u>u</u> xrudʒ] [n <u>u</u> nkər] [n <u>u</u> rgəs̚]
n- (1 st /plu.)	/n-kteb-u:/ /n- <i>tfaredʒ</i> -u:/ /n-fham-u:/ /n-xrudʒ-u:/ /n-nkər-u:/ /n-rgəs̚-u:/	[nək ^ə tebu:] [nə ^ə tfaredʒu:] [nə ^ə fhamu:] [n <u>u</u> xurdʒu:] [n <u>u</u> nkru:] [n <u>u</u> rgəs̚u:]
t- (2 st /sing. masc.)	/t-kteb/ /t- <i>tfaredʒ</i> / /t-fham/ /t-xrudʒ/ /t-nkər/	[tək ^ə teb] [tə ^ə tfaredʒ] [tə ^ə fham] [t <u>u</u> xrudʒ] [t <u>u</u> nkər]

	/t-rgɔs̥/	[turgɔs̥]
t- (2 st / sing. fem.)	/t-kteb-i:/ /t-ʃaredʒ-i:/ /t-fham-i:/ /t-xrudʒ-i:/ /t-nkɔr-i:/ /t-rgɔs̥-i:/	[təkɛbi:] [təʃaredʒi:] [təfhami:] [tuxrudʒi:] [tʌnkri:] [turgs̥i:]
t- (2 nd / plu.)	/t-kteb-u:/ /t-ʃaredʒ-u:/ /t-fham-u:/ /t-xrudʒ-u:/ /t-nkɔr-u:/ /t-rgɔs̥-u:/	[təkɛbu:] [təʃaredʒu:] [təfhamu:] [tuxrudʒu:] [tʌnkru:] [turgs̥u:]
j- (3 rd / sing. mas.)	/j-kteb/ /j-ʃaredʒ/ /j-fham/ /j-xrudʒ/ /j-nkɔr/ /j-rgɔs̥/	[jəkɛb] [jətʃaredʒ] [jəfham] [juxrudʒ] [jʌnkɔr] [jurgɔs̥]
t- (3 rd / sing. fem.)	/t-kteb/ /t-ʃaredʒ/ /t-fham/ /t-xrudʒ/ /t-nkɔr/	[təkɛb] [tətʃaredʒ] [təfham] [tuxrudʒ] [tʌnkɔr]

	/t-rgɔs̥/	[turgɔs̥]
j- (3 rd / plu.)	/j-kteb-u:/	[jəkɛtɓu:]
	/j-tfaredɜ-u:/	[jətɸaredɜu:]
	/j-fham-u:/	[jəɸahmu:]
	/j-xrudɜ-u:/	[juxurdɜu:]
	/j-nkɔr-u:/	[jɯnkru:]
	/j-rgɔs̥-u:/	[iurgs̥u:]

➤ **Deletion**

The results of the study reveal that two types of deletion occurs when present tense inflectional morphemes are used. The first type takes place when the imperfect verbs that end with the vowel /i:/ are attached to second person and the third person plural suffix ‘-u:’. In this case, the vowel /i:/ is deleted. This can be seen in table (17).

Table (17): *Deleting the Final Sound /i:/*

Verbal Inflectional morphemes	Input	Output
-u: (2 nd /plu.)	/t-dɜi: -u :/	[dɜdɜu:]
	/t-byi: -u:/	[təɓyu:]
	/t-bki: -u :/	[təɓku:]
	/t-mɸi: -u: /	[təmɸu:]
-u: (3 rd /plu)	/j-dɜi: -u :/	[jədɜu:]
	/j-byi: -u:/	[jəɓyu:]
	/j-bki: -u :/	[jəɓku:]

	/j-mʃi: -u: /	[jəmʃu:]
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The second type occurs when the imperfect verbs that end with a vowel /ɔ/ and a constant are attached to the second person singular feminine suffix ‘-i:’, and The second person and the third person plural suffix ‘-u:’. In this case, the vowel /ɔ/ which occurs in the final position before the consonant is deleted. This can be illustrated in table (18) below

Table (18): *Deleting the Vowel /ɔ/*

Verbal Inflectional morphemes	Input	Output
-i: (2 nd / sing.fem.)	/t-nkɔr-i:/	[tunkri:]
	/t-rgɔs ^ɕ -i:/	[turgs ^ɕ i:]
-u: (2 rd /plu.)	/t- nkɔr-u:/	[tunkru:]
	/t- rgɔs ^ɕ -u :/	[turgs ^ɕ u:]
-u: (3 rd /plu)	/j- nkɔr -u:/	[junkru:]
	/j- rgɔs ^ɕ -u: /	[jurgs ^ɕ u:]

➤ Metathesis

The findings also demonstrate that a metathesis process occurs when the inflectional morphemes (prefixes and suffixes) of the first persona plural pronoun, the second person singular feminine pronoun, and the second and the third person plural pronouns are attached to some imperfect verbs. This can be seen in table (19).

Table (19): *Metathesis Process in Imperfect Verbs*

Verbal Inflectional morphemes	Input	Output
n-...-u: (1 st /plu)	/n-kteb-u:/	[nəkɛtbu:]
	/n-fham-u:/	[nəfahmu:]
	/n-xrudʒ-u:/	[nuxurdʒu:]
t-...-i: (2 nd / sing.fem.)	/t-kteb-i:/	[təkɛtbi:]
	/t-fham-i:/	[təfahmi:]
	/t-xrudʒ-i:/	[tuxurdʒi:]
t-...-u: (2 rd /plu.)	/t-kteb-u:/	[təkɛtbu:]
	/t-fham-u:/	[təfahmu:]
	/t-xrudʒ-u:/	[tuxurdʒu:]
j-...-u: (3 rd /plu)	/j-kteb-u:/	[jəkɛtbu:]
	/j-fham-u:/	[jəfahmu:]
	/j-xrudʒ-u:/	[juxurdʒu:]

3.6. Discussion

The present study aims to analyze the morphophonemic structure of verbal inflectional morphemes that exist in the Algerian Arabic as spoken in Tiaret. It analyzes the inflectional morphemes used with past tense verbs and those used with imperfect verbs. The results shed light on the characteristics of these morphemes and the phonological processes they trigger.

In the case of past tense verbs, the results reveal seven distinct suffixes that can be attached to the verb stems. These suffixes are [-t, -na:, -t, -ti:, -tu:, -t, -u:]. When they are added to past

tense verbs, these inflectional morphemes cause various phonological processes, including substitutions, insertions, assimilation, and metathesis. However, imperfect verbs in Tiaret dialect display a different pattern. The inflectional morphemes used with imperfect verbs involve both prefixes and suffixes. The identified prefixes for present tense verbs are [n-, n-, t-, t-, t-, j-, t-, j-], while the suffixes are [-u:, -i:, -u:, u:]. When these affixation are attached to imperfect verbs, they trigger various phonological processes, such as assimilation, deletion, insertion, and metathesis. These processes affect the sound structure of perfect and imperfect verb forms and contribute to their morphophonemic characteristics in Tiaret dialect.

The results demonstrate that the inflectional morphemes used in TD are different from those used in English. In English, verbal inflectional morphemes primarily include suffixes that indicate tense, aspect, and agreement. For example, adding "-ed" to a verb signifies the past tense (e.g., walked), while "-s" indicates the third-person singular present tense (e.g., walks). These inflectional morphemes in English often follow regular patterns, although irregular verb forms exist. However, regarding the phonological processes, it seems that English verbal inflectional morphemes also result in various phonological processes, such as reduction, assimilation, devoicing, and deletion (Crystal, 2008).

3.7. Conclusion

The chapter presented and analysed the data obtained from the native speakers of Tiaret dialect. First, it detailed the verbal inflectional morphemes used in the Algerian Arabic as spoken in Tiaret. The inflectional morphemes were grouped into two main categories. The first category includes those inflectional morphemes which are used with past tense verbs; while the second category consists of the inflectional morphemes that are employed with present tense verbs. Then, the chapter presented and discussed the morphophonemic behaviour of these

inflectional morphemes. It described and analysed the phonological processes applied when these verbal inflectional morphemes are attached to verbs in TA.

General Conclusion

This research aims to examine the morphophonemic analysis of the verbal inflectional morphemes as spoken in Tiara dialect, one of the Algerian varieties. It seeks to determine the verbal inflectional morphemes that exist in this variety, find out how these inflectional morphemes affect the phonological structure of the verbs to which they are attached, and identify the phonological processes that take place when these verbal inflectional morphemes are used. To conduct this study, three chapters are used. The first two chapters are theoretical. They provide an overview of phonology as a broad discipline, and describe morphology and its basic components. The third chapter is theoretical. It details the research protocol used to conduct this research. Moreover, it presents and discusses the data collected from the participants.

The results of the study reveal that the verbal inflectional morphemes used in Tiara are of two types. The first type refers to those inflectional morphemes used with past tense verbs. The findings show that these past tense verbs can be attached to seven suffixes which are [-t, -na:, -t, -ti:, -tu:, -t, -u:]. Attaching these inflectional morphemes to past tense verbs results in numerous phonological processes like substitutions, insertion, assimilation, and metathesis.

Regarding the second type, it refers to those inflectional morphemes which are employed with imperfect verbs. Unlike the previous type which includes only suffixes; this type consists of both prefixes and suffixes. The prefixes attached to the present verb tense are '[n-, n-, t-, t-, j-, t-, j-]', while the suffixes are [-u:, -i:, -u:, u:]. When these affixes are used with imperfect verbs, several phonological processes take place like assimilation, deletion, insertion, and metathesis.

Limitations

- The researchers found difficulties to investigate the present study, because there is no study examine the verbal inflectional morphemes used in Tiara dialect.
- The process of audio recording was time consuming.
- Since the present study is a new topic, it needs more time and efforts to accomplish. This delayed the process of data analysis.
- The present study focuses on the verbal inflectional morphemes used in indicative mood and the active voice. The other moods and the passive voice were not examined.

Recommendations

- Researchers are highly recommended to examine the morphophonemic behaviour of inflectional morphemes in Algerian Arabic, especially in Tiara dialect.
- Researchers who examined verbal inflectional morphemes in Algerian Arabic are recommended to take into consideration interrogative, subjunctive, imperative moods and the passive voice.

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Appendices

Appendix A: List of the verbs used with the past tense inflectional morphemes

sound in final position	verbs used in td
b	شاب- طيب-كتب
t	بات- مات-عصب
θ	ورث
dʒ	خرج
ħ	مسح
x	ردخ
d	مهد
r	دور-كور
z	هز
s	عس-مس
sʕ	رقص
ʃ	فرش
dʕ	قبض
tʕ	هبط
ʕ	قربع-باع
ʎ	فرغ
f	ضيف-خاف
q	قلق-لصق
g	فلق
k	شك

l	رحل
m	رسم-نام
n	خون-خزن
a :	کلا-مشا-بقا-برا-تمنا-بارطاجا

Appendix B: List of the verbs used with the present tense inflectional morphemes

sound in initial position	verbs used in td
ʔ	اذن
b	بخر-بات-بقا-باع-برا
t	تفرج-تمنا
θ	ثمر
dʒ	جا-جاب
ħ	حسب
x	خرج-خاف-خزن
d	دخل-دابز-دوش-دور
ð	ذاب
r	رسم-رقص-رحل ردخ
z	زاد-زیر
s	سمع
s ^ʕ	صطر
ʃ	شعر-شك-شاب
d ^ʕ	ضیف
t ^ʕ	طیب

ʕ	عس-عصب
ʁ	غمس
f	فرش-فهم-فرغ
v	فوطى
q	قلق
g	قمط-قبض
k	كتب-كور-كلا
l	لصق
m	مس-مشا-مشط-مات-مهد-مسح
n	نام-نكر
h	هبط
w	وسع-ورث
j	بيس
p	بارطاجا

المخلص

الهدف من هذا البحث هو فحص التحليل المورفيمي للتحولات التأثيرية اللفظية كما يتم التحدث بها في تيارت. تبدأ منهجية هذا البحث بتحديد المورفيمات ثم تفسير تأثير هذه المورفيمات عند اتصالها بالافعال من حيث التغيرات الصوتية التي تطرأ عليها ومن ثم تحديد العمليات الصوتية اثناء هذه التجربة. من اجل تطبيق هذا البحث تم القيام بلانحتين ضمت اللائحة الاولى الافعال المصرفة في زمن الماضي اما الثانية فقد ضمت الافعال المصرفة في الزمن الحاضر. تم نطق هذه الافعال من قبل عشرين متحدث اصليا لهذه اللهجة ثم تم تسجيل هذه العملية ونصها تظهر النتيجة ان في اللهجة التيارتية يوجد نوعان من التشكيلات التاجيحية اللفظية يستخدم النوع الاول في الماضي ويحتوي على اللواحق فقط بينما النوع الثاني يستخدم في الحاضر ويحتوي على كل من اللواحق والبادئات في الاخير اظهرت النتائج ان عند استخدام هاته التشكيلات التاجيحية تظهر العمليات الصوتية التالية المشابهة و الاستبدال و الحذف و الادخال او الادغام و الابدال.

Résumé

Le but de cette recherche est d'examiner l'analyse morphophonémique des morphèmes d'inflexion verbale parlés dans Tiaret. La méthodologie de cette recherche commence par l'identification des morphèmes que par l'explication de l'effet des inflexions attachées à certains verbes en terme de leur son structure que la spécification des processus, à carry sur cette recherche deux listes a été faite d'abord l'un fait au passé verbes l'autre comprennent verbes au présent ,ces verbes a été prononce par vingt locuteurs natifs de ce dialecte . Il ya deux types de morphèmes d'inflexion verbale l'un utilisé dans le passé l'autre est utilisé dans le présent, le premier type n'inclut les suffixes tandis que le second type inclut les suffixes bith et les préfixes le résultat final révèle que lors de l'utilisation de ces morphèmes inflectionnels, ces processus prend places assimilation, substitution, délétion, insertion et methasis.

Summary

The aim of this research is to examine the morphophonemic analysis of verbal inflectional morphemes as spoken in Tiaret. The methodology of this research begins with the identification of the morphemes than the explanation of the effect of inflections that were attached to certain verbs in term of their sound structure than specifying the phonological processes using during this experiment. To carry on this research two lists was made one for the present tense verbs the other include past verbs tense. These verbs were pronounced with different pronouns by twenty native speaker of this dialect this process was recorded and transcribed. The result shows that in Tiaret dialect there are two types of verbal inflectional morphemes one is used with past the other is used with present. The first type includes suffixes, the second type include both suffixes and prefixes. The final result reveals that when using these inflectional morphemes these processes take place: assimilation, substitution, deletion, insertion and metathesis.

