JLLE: Journal Language and Literature Education
Volume 1 (1) 2025, 1-9
E-ISSN 2981-8301

Phonetic Analysis of Vowels and Consonants in Arabic Language in the Study of Ashwat Science

Leoni Wilyam[1], Lolita Sari Siregar[2], Liana Pertiwi[3], Marhama Salwa[4], Rosita Dongoran[5]
[1,2,3,4,5]State Islamic University of North Sumatra, Indonesia

Corresponding author e-mail: leoniwilyam8@gmail.com
Article History: Received on 01 April 2025, Revised on 08 May 2025,
Published on 04 June 2025

Abstract: Arabic is a Semitic language distinguished by a complex phonetic system, particularly in its vowels (ḥarakāt) and consonants (ṣawāmit), which are fundamental in shaping word meaning and ensuring accurate communication. Mastery of Arabic phonetics is crucial not only for everyday communication but also for religious practice, especially in Qur'anic recitation, where mispronunciation can alter semantic meaning. This study employs a qualitative literature-based approach to examine the phonetic analysis of Arabic vowels and consonants within the framework of *'Ilm al-Ashwat* (the science of Arabic sounds). Primary and secondary sources were analyzed using a descriptive-analytical method to explore articulation points (*makhārij al-ḥurūf*), phonetic characteristics (*ṣifāt al-ḥurūf*), and their pedagogical and religious implications. The findings reveal that Arabic vowels consist of three short and three long forms, while consonants possess diverse articulation points and distinctive features that determine pronunciation accuracy. Understanding these phonetic elements enhances learners' linguistic competence, supports effective Arabic teaching methodologies, and preserves the authenticity of Qur'anic recitation. This study emphasizes the necessity of integrating *Ashwat* principles into modern Arabic language pedagogy and encourages further research on digital and technological applications in phonetic learning.

Keywords: Arabic Phonetics, Learning Arabic, Science of Sounds

A. Introduction

Arabic is one of the Semitic languages characterized by a complex and distinctive phonetic system, particularly in the articulation of vowels (*ḥarakāt*) and consonants (*ṣawāmit*) (Nurlaila Sapitri, 2023). This phonetic uniqueness gives Arabic a richness of sounds not commonly found in other languages. Beyond serving as a medium of communication, Arabic phonetics also holds profound religious significance, especially in the recitation and interpretation of the Qur'an (Al-Kuran, 2023).

Consequently, errors in phoneme pronunciation may lead to shifts in meaning and, in some cases, alter the semantic context of a word.

The science of *ashwat* (Arabic phonetics) is a branch of linguistics that focuses on the analysis of speech sounds, including their production, articulation, and functional roles in communication (Anis, 1975). This field is essential because each Arabic sound has a distinct point of articulation (*makhārij al-ḥurūf*) and unique characteristics (*ṣifāt al-ḥurūf*) that distinguish it from other languages. A deep understanding of vowels and consonants is required not only for academic purposes in linguistic studies but also for practical applications such as teaching Arabic to non-native speakers, improving Qur'anic recitation with *tajwid*, and conducting cross-linguistic phonological research.

In practice, one of the most common difficulties faced by learners of Arabic is distinguishing between phonetically similar consonants, such as /ḥ/ and /h/, or differentiating between short and long vowels that can significantly change word meanings. This phenomenon highlights the relevance of phonetic studies on vowels and consonants as a theoretical foundation for understanding the sound system of Arabic.

Phonetic research in Arabic, particularly concerning vowels and consonants, has long attracted the attention of linguists. However, most previous studies have focused on contrastive analysis with other languages, such as Indonesian, Javanese, or English. These works mainly emphasize articulatory differences across languages to identify mispronunciations or learning difficulties (Amri & Rusman, 2023). While valuable, such approaches leave a gap, as comprehensive studies on the internal phonetic structure of Arabic especially in terms of *makhārij al-ḥurūf* and *ṣifāt al-ḥurūf* remain relatively scarce within the framework of *ashwat*.

Moreover, research connecting Arabic phonetics with the philosophy of science, particularly from ontological, epistemological, and axiological perspectives, is still largely conceptual and fragmented (Hidayat, 2024). These philosophical dimensions have not yet been systematically integrated with practical applications of Arabic phonetics, whether in Arabic language pedagogy or in contemporary linguistic technologies such as speech recognition or digital *tajwid* applications. This has created a research gap in which phonetic theory within the *ashwat* framework has not been fully developed as a robust theoretical foundation for modern teaching and research.

On the other hand, studies on Arabic phonetic teaching methods are generally descriptive in nature. Approaches such as the *mim-mem* method, audiolingual

practices, or pure phonetic approaches, for instance, are often presented only at the practical level without adequately linking them to the interaction between vowels and consonants within *ashwat* theory (Sari, 2021). As a result, teaching strategies tend to be pragmatic but lack a strong theoretical basis to bridge classical *ashwat* studies with modern pedagogical needs.

Based on these gaps, the present study offers novelty by systematically integrating phonetic analysis of Arabic vowels and consonants within the *ashwat* framework. Its novelty lies in three aspects. First, it emphasizes the internal phonetic structure of Arabic, grounded in *makhārij* and *ṣifāt al-ḥurūf*, rather than contrastive analysis with other languages. Second, it incorporates philosophical dimensions of ontology, epistemology, and axiology into phonetic analysis, producing a multidimensional understanding rarely found in prior literature. Third, it seeks to establish a theoretical foundation for innovative Arabic teaching methodologies, supporting the development of *ashwat*-based learning approaches that are adaptable to the digital era, including potential integration with speech recognition technology.

This literature-based study focuses on the phonetic analysis of vowels and consonants in Arabic within the perspective of *ashwat*, aiming to review existing scholarship, identify the distinctive features of Arabic sounds, and explain their implications for pedagogy, linguistic inquiry, and Islamic studies. Thus, this research is expected to enrich the academic discourse on Arabic phonetics while offering practical contributions to Arabic teaching and the preservation of Qur'anic recitation authenticity.

B. Methods

This study employs the library research method, which focuses on collecting and analyzing data from various relevant sources, including books, journal articles, and other scholarly works. (Creswell, 2020) explains that library research is conducted to review theories, concepts, and previous findings as the foundation for developing ideas and theoretical frameworks. Accordingly, this approach is suitable for examining the phonetic analysis of vowels and consonants in Arabic, since the object of study consists of linguistic concepts and the science of *ashwat* that are well documented in both classical and modern literature.

The data sources consist of primary and secondary literature. Primary sources include classical works on *ashwat*, such as *al-Ashwat al-'Arabiyyah* by (Anis, 1975), which specifically discusses the Arabic sound system. Secondary sources encompass contemporary linguistic books, international journal articles, and research studies focusing on Arabic phonetics, phonology, and language teaching. Literature

selection was carried out using purposive sampling, meaning only sources directly relevant to the research theme were chosen (Sugiyono, 2022).

The research process involved three main stages. First, literature collection, which included searching physical libraries, online journal databases, and academic repositories. Second, content analysis, conducted by critically examining the collected literature through identifying, comparing, and classifying scholars' views on vowels, consonants, *makhārij al-ḥurūf*, and *ṣifāt al-ḥurūf* within the framework of *ashwat* (Krippendorff, 2018). Third, data synthesis, which integrated findings from different sources into a systematic scholarly narrative, thereby generating a comprehensive understanding of the phonetic analysis of vowels and consonants in Arabic.

The analytical technique applied was descriptive-analytical. As (Moleong, 2000) notes, this approach enables researchers not only to describe the content of the literature but also to analyze the relationships between concepts and their implications for specific fields of study. In this context, the descriptive-analytical approach was used to explain the phonetic characteristics of Arabic vowels and consonants while connecting them to the theoretical aspects of *ashwat* and their implications for Arabic language teaching and modern linguistic studies. Through this method, the research aims to present a comprehensive, critical, and systematic literature review that contributes theoretically to the development of *ashwat* while also offering practical relevance for the teaching of Arabic phonetics.

C. Results and Discussion

Results

This study examines the phonetics of vowels and consonants in the Arabic language from the perspective of Ilmu Ashwat, a branch of knowledge that addresses the mechanisms of letter articulation in detail, including their points of articulation (makhraj) and characteristics (sifat huruf). Ilmu Ashwat plays a strategic role in learning Arabic because it emphasizes accurate pronunciation, which in turn determines the understanding of word meanings, smooth communication, and the beauty of spoken language. The results of the study indicate that mastery of vowel and consonant phonetics is not only technical but also has profound implications for the linguistic and sociocultural aspects of using the Arabic language.

In vocal analysis, it was found that Arabic has six main vowels, namely three short vowels (a, i, u) and three long vowels (ā, ī, ū). Short vowels are produced through the coordination of specific tongue positions, oral cavity, and lips. For example, the vowel a arises from a low tongue position in the middle of the mouth, producing an

open resonance that provides phonetic clarity, while i requires the tongue to be high in the roof of the mouth, creating a narrower and sharper sound. Long vowels are extensions of short vowels, with pronunciation duration roughly twice as long, affecting the rhythm, intonation, and musicality of the language. This phenomenon emphasizes that mastering vowels is not only important for correct word pronunciation but also for distinguishing word meanings that are very sensitive to vowel duration, such as the difference between kitaab (book) and kitab (writing).

Consonant analysis shows higher complexity, as each Arabic letter has a point of articulation (makhraj) and specific characteristics (sifat huruf) that affect voice quality. Consonants can be categorized based on the location of oral articulation front of the mouth, tongue, throat—as well as by their characteristics, such as hardness (shiddah), softness (rakhawah), vibration (qalqalah), and nasalization (ghunnah). For instance, the letters ب and ت are produced from the lips and the tip of the tongue, whereas the letters ق and غ originate from the throat. The distinction between voiced and voiceless letters is also a determinant of phoneme clarity, where incorrect pronunciation can significantly change the meaning of a word. Consonants marked with shaddah require stronger articulation pressure, making technical mastery of articulation an absolute requirement to preserve the authenticity of the Arabic language, both in daily communication and in reading classical texts.

Furthermore, this study emphasizes that the science of Ashwat is not merely a technical guide to pronouncing letters, but also a strategic means to understand the rhythm, intonation, and phonetic beauty of the Arabic language. Mastery of vowels and consonants accurately affects the ability to recite the Qur'an with tartil, comprehend Arabic literary texts, and enhance oral communication fluency. The results of this study recommend an integrated phonetic learning approach, including direct pronunciation practice, the use of audiovisual media, as well as supervision and guidance from experienced teachers, so that students can optimally internalize the principles of the science of Ashwat.

Overall, this study demonstrates that the phonetics of vowels and consonants in the Arabic language are an essential foundation for language mastery. Accurate letter articulation not only supports linguistic aspects but also shapes phonetic sensitivity, rhythmic awareness, and a deep understanding of Arabic culture. The science of Ashwat thus emphasizes the importance of systematically and continuously developing articulation skills so that mastery of the Arabic language is not only mechanical but also aesthetic, communicative, and contextual.

Discussion

Based on the literature review, it was found that the Arabic phonetic system possesses distinctive characteristics in both vowels and consonants, which form the central focus of *'ilm al-ashwat* (Arabic phonetics). The review indicates that Arabic recognizes three short vowels, /a/ (fatḥah), /i/ (kasrah), and /u/ (ḍammah), each paired with its long counterpart (*madd*), resulting in six primary vowel phonemes (Anis, 1975). The contrast between short and long vowels is not merely phonetic but also phonological, as it can change word meaning. For instance, قَتَلَ (*qatala*, "to kill") differs semantically from قَاتَلَ (*qātala*, "to fight").

In terms of consonants, Arabic contains 28 phonemic consonants with diverse articulatory distributions. The review highlights that each consonant has a precise point of articulation (*makhārij al-ḥurūf*), including the throat, tongue, lips, oral cavity, and nasal cavity. For example, the letter ق (*qāf*) is articulated from the back of the tongue against the uvula, whereas ك (*kāf*) originates from the middle of the tongue against the soft palate (Sibawaih, 1988). Mastery of articulation is crucial for distinguishing similar sounds, such as ح (*ḥā'*) and ه (*hā'*), or ص (*ṣād*) and س (*sīn*), which are frequently reported as sources of phonetic errors among non-native learners (Fitriani, 2020).

Beyond articulation, Arabic consonants are also defined by their phonetic features (*ṣifāt al-ḥurūf*), such as *jahr* (voiced), *hams* (voiceless), *shiddah* (plosive), and *rikhwah* (fricative). The literature confirms that the interplay between articulation and distinctive features underpins the uniqueness of Arabic consonants. These principles are systematically explained in both classical Arabic phonology and the science of *tajwid* (Al-Khalil, 1982).

Findings from the literature review also suggest that an understanding of vowel and consonant phonetics is significant not only for linguistic studies but also for practical purposes in education and religion. In Arabic as a foreign language instruction, one of the greatest challenges learners face is differentiating phonemes absent from their native languages, such as ع (*'ain*) or غ (*ghain*). This aligns with (Sari, 2021) study, which demonstrates that training based on *ashwat* principles enhances learners' accuracy in pronouncing difficult phonemes.

From a religious perspective, phonetic studies within the framework of *ashwat* are directly relevant to preserving the recitation of the Qur'an. Errors in distinguishing between short and long vowels or in producing consonants with specific features can alter the meaning of sacred texts. Thus, the literature review emphasizes that

phonetic analysis in the context of *ashwat* is both linguistic and religious in nature, safeguarding the authenticity of Qur'anic recitation (Hidayat, 2024).

Overall, this study confirms that the Arabic vowel and consonant system is highly complex, with *ashwat* providing the theoretical foundation for analyzing these phonetic phenomena. The findings further suggest that Arabic phonetic research must continue to evolve in both academic linguistics and in pedagogical and religious contexts to address the challenges of modern Arabic language teaching.

Specifically, the review highlights three areas. First, regarding vowels, (Youssef, 2024) affirms that Arabic's three short vowels (/a/, /i/, /u/) and their long counterparts form six key phonemic vowels. This distinction is phonologically significant because vowel length can alter lexical meaning. (Aldubai, 2025) further supports this by showing that vowel length in Arabic is not merely prosodic but phonemic. Second, in consonants, (Habiburrahman, Wahyuni, & Assapari, 2023) explain that Arabic has 28 consonants with systematic points of articulation. (Al-Kuran, 2023) strengthens this by emphasizing the wide articulatory range of Arabic consonants, from the pharynx to the lips. These findings align with (Fitriani, 2020), who reported that non-native learners frequently struggle with sounds such as ح (*ḥā'*) vs. ه (*hā'*) or ص (*ṣād*) vs. س (*sīn*). Third, distinctive features (*ṣifāt al-ḥurūf*) remain fundamental, as (Almisreb, Abidin, & Tahir, 2021) stress that features like *jahr*, *hams*, *shiddah*, and *rikhwah* shape the quality of Arabic consonants.

In addition to linguistic significance, the review underscores the pedagogical and religious implications of Arabic phonetics. (Sari, 2021) demonstrates that *ashwat*-based drills improve pronunciation accuracy, while (Hidayat, 2024) highlights that phonetic errors in vowel length or consonant features can change Qur'anic meaning. Consequently, the literature establishes that Arabic phonetic analysis within the *ashwat* framework carries theoretical, pedagogical, and religious importance. Thus, the findings suggest that Arabic phonetics should be further developed not only as an academic pursuit but also as a practical framework for Arabic language teaching and Qur'anic preservation in the modern era.

D. Conclusion

Based on the literature review, it can be concluded that the phonetic system of the Arabic language is highly distinctive and complex in both vowels and consonants, where the distinction between short and long vowels as well as the clarity of articulation points and phonetic features play a crucial role in differentiating word meanings. These findings have significant implications in the field of linguistics by strengthening the theoretical foundation of Arabic phonetics, in pedagogy by

enhancing the effectiveness of Arabic language learning for non-native speakers, and in the religious domain by preserving the authenticity of Qur'anic recitation. However, this study is limited to a literature-based analysis without empirical or acoustic data, and there is a lack of recent research focusing on the technological applications of Arabic phonetics. Therefore, future studies are recommended to integrate literature review with acoustic analysis and experimental approaches, develop digital learning media grounded in *'Ilm al-Ashwat* (phonetic science), and expand interdisciplinary studies so that the findings may be more applicable to modern language teaching and the preservation of Qur'anic recitation.

E. Acknowledgement

Thanks to all respondents and friends of Universitas Islam Negeri Sumatera Utara Medan.

References

Aldubai, N. A. (2025). The impact of geminates on the duration of the preceding and following vowels in Ta'zi dialect. *Arab World English Journal (AWEJ), 6*(1), 335–358. doi:10.2139/ssrn.2834455

Al-Khalil, I. A. (1982). *Kitab al-'Ain.* Beirut: Dar al-Kutub al-'Ilmiyyah.

Al-Kuran, M. (2023). Perceptions of vowels and consonants in Arabic and English: Implications for translators and dictionary users. *Theory and Practice in Language Studies, 13*(6), 1275–1283. doi:10.17507/tpls.1306.27

Almisreb, A., Abidin, F., & Tahir, N. M. (2021). An acoustic investigation of Arabic vowels pronounced by Malay speakers. *Journal of King Saud University – Computer and Information Sciences, 28*(2), 148–156. doi:10.1016/j.jksuci.2015.08.003

Anis, I. (1975). *Al-Ashwat al-'Arabiyyah.* Cairo: Maktabat al-Anjlu al-Miṣriyyah.

Creswell, J. (2020). *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches (4th edition).* Thousand Oaks: CA: Publikasi Sage.

Fitriani, N. (2020). Phonetic errors of Arabic consonants among Indonesian learners. *Arabiyat: Jurnal Pendidikan Bahasa Arab dan Kebahasaaraban, 7*(1), 45–62. doi:10.15408/a.v7i1.14250

Habiburrahman, Wahyuni, K., & Assapari, M. (2023). Contrastive analysis of phonology (sounds, speech, stress, and intonation) of Arabic and Indonesian languages. *Al-Afkar: Journal for Islamic Studies, 7*(3), 45–60. doi:10.31943/afkarjournal.v7i3.1030

Hidayat, R. (2024). The role of phonetic analysis in preserving Qur'anic recitation: An ashwat perspective. *Journal of Arabic Linguistics and Education, 12*(2), 101–118.

Krippendorff. (2018). *Content analysis: An introduction to its methodology (4th ed.).* Thousand Oaks: Sage Publications.

Moleong, L. J. (2000). *Qualitative Research Methodology*. Bandung: PT. Remaja Rosdakarya.

Nurlaila Sapitri, S. N. (2023). Textbook Analysis of Al-ʿArabiyyah Baina Yadai Aulādinā Vol 1 in The Rusydi Ahmad Thuaimah's Perspective. *Asalibuna, 7*(01), 1-13. doi:10.30762/asalibuna.v7i01.1053

Sari, D. P. (2021). Improving Arabic pronunciation accuracy through phonetic-based training. *Ijaz Arabi: Journal of Arabic Learning, 14*(2), 233–250. doi:10.18860/ijazarabi.v14i2.18572

Sibawaih. (1988). *Al-Kitab (Vol. 4).* Cairo: Dar al-Kutub al-Misriyyah.

Sugiyono. (2022). *Methods of Quantitative, Qualitative, and R&D Research.* Bandung: CV. Alfabeta.

Youssef, I. (2024). The phonology and micro-typology of Arabic R. *Glossa: a journal of general linguistics, 4*(1), 131-145. doi:10.5334/gjgl.1002