

The Raison D'être Of Kiswahili Online Dictionaries as Supplementary Tools for Pronunciation and Vocabulary Development: Challenges and Perspectives

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ABSTRACT

This study examines the utility of Kiswahili Online Dictionaries (KODs) as supplementary tools for pronunciation and vocabulary development, with a focus on challenges and user perspectives. Data from a survey of Kiswahili learners and KODs users, particularly non-native speakers (NNLs), reveal that while KODs play a significant role in vocabulary acquisition, their effectiveness in pronunciation practice remains limited. Only 36.21% of respondents use KODs for pronunciation, with many citing poor sound quality and inaccurate pronunciation guides as key challenges. Conversely, 72% of users find ODs highly effective for vocabulary learning, especially for technical and specialised terms. However, gaps in contextual examples and user interface issues were noted, with respondents highlighting difficulties in navigation and access. Additionally, technical challenges such as slow loading times and broken links further hinder the use of ODs. The study suggests that improvements in pronunciation features, contextualised vocabulary examples, and interactive tools would enhance the overall effectiveness of Kiswahili ODs, making them more valuable resources for language learners.

Keywords: Kiswahili, Online Dictionaries (ODs), Pronunciation, Vocabulary, Language Learning, E-lexicography, Non-native learners (NNLs), Language Acquisition.

INTRODUCTION

Kiswahili has risen to prominence as one of the most widely spoken African languages. It serves as both a regional lingua franca and an official language in several East African countries. Its adoption as one of the working languages of the African Union and its growing influence across international platforms have amplified the need for effective Kiswahili language learning resources. For NNLs, mastering Kiswahili presents unique challenges, particularly in areas like pronunciation and vocabulary development, where traditional classroom methods may be insufficient or inaccessible. As the result, the advancement of digital technologies has revolutionised language learning by offering learners a wide collection of online tools such as websites, language learning platforms, social media and other related learning applications. Among these, online dictionaries have become indispensable as they provide quick access to vocabulary definitions, translations, usage examples, and sometimes, visual and pronunciation aids. However, the effectiveness of these tools in supporting Kiswahili learners especially in pronunciation and vocabulary acquisition remains under-explored. For instance, pronunciation is a critical aspect of language learning, and online dictionaries equipped with audio features can serve as valuable resources for non-native speakers. Studies such as those by Lew and de Schryver (2014) have emphasised that the availability of audio pronunciations in dictionaries significantly improves learners' phonetic accuracy. In a similar vein, empirical research by Nation (2013) underscores the importance of repeated vocabulary exposure in different contexts to facilitate retention and use. While these insights have proven valuable for global languages like English and French, they are only beginning to be applied to Kiswahili. Despite their potential, KODs face several limitations. Therefore, this paper aims to examine the role of KODs as supplementary tools for pronunciation and vocabulary development. By analysing their current functionality, strengths, and limitations, it will provide a critical

overview of how these digital resources can be optimised. The discussion will also draw on relevant studies to offer perspectives on improving the utility of online dictionaries in fostering more effective Kiswahili language acquisition for NNLs.

Research Questions

- i. How do ODs ease the access to Kiswahili language learning in terms of pronunciation and vocabulary acquisition?
- ii. What are the challenges faced by users while accessing online dictionaries?
- iii. What are the potential effective ways of using online dictionaries so as to better serve users while acquiring language?

Research Objectives

Objectives of this paper are three folds. Firstly, to determine how do ODs ease the access to Kiswahili language learning in terms of pronunciation and vocabulary acquisition. Secondly, to identify challenges faced by users while engaging with Kiswahili ODs and lastly to ascertain the effective strategies for using Kiswahili ODs to enhance language acquisition among users.

LITERATURE REVIEW

This sections probes on the reviews of concepts and other related works

Online Electronic Dictionaries

An online dictionary is a digital reference source containing information about the spelling, definitions, pronunciations, origins, and other details of words in a language, accessible through the Internet (Ambarwati & Mandasari, 2020). They offer information anytime, anywhere. They feature a huge database full of word entries that contains the latest terminologies and vocabularies that might not be readily available in offline versions (Benson & Greaves, 2018). Furthermore, Benson and Greaves (2018), asserts that ODs are characterised with regular updates that ensure users have access to the most current information (see also Lew, 2015). Additionally, many ODs incorporate multimedia features such as audio pronunciations, pictures, diagrams, and even video clips to enhance the user experience and enhance different learning styles (Trinh et al., 2021). They also have sophisticated search functionalities that allow users to delve deeper into the intricacies of words such as by searching part of speech, etymology, synonyms, hyperlinks, rhyme or schemes (Dwaik, 2015).

Types of Online Dictionaries

According to the scholar Yongwei Goe (2012:423 – 426) in the paper titled “Online English dictionaries: Friend or foe”, there are three types of online dictionary namely, one, “clicks-and-mortar” dictionaries, two, one-stop dictionaries, and three, Do-It-Yourself (DIY) dictionaries. Clicks-and-mortar dictionaries are digital adaptations of existing printed references, such as the Oxford Advanced Learner’s Dictionary becoming Oxford Advanced Learner’s Dictionary.com, and TUKI (Taasisi ya Uchunguzi wa Kiswahili) transitioning to MobiTUKI.com. One-stop online dictionaries, also known as dictionary aggregators, provide a platform that sources word meanings from multiple online dictionaries, akin to “one-stop shopping.” Examples include Dictionary.com, OneLook.com, the Free Dictionary.com, and Lexicologos.com for Kiswahili. On the other hand, DIY online dictionaries are user-generated and operate without a traditional editorial team. Visitors to these sites can add, edit, or vote on entries, as seen in platforms like Wiktionary and Urban Dictionary. This collaborative approach to lexicography, inspired by models like Wikipedia, allows for free and open contributions from users.

Vocabulary

Payne (2024) defines vocabulary as the inventory of words used by a particular person or group or the words in a particular language or field of knowledge. Nation (2013) highlights the fact that vocabularies are the

bedrock of language. They allow language users to express thoughts, ideas, and feelings, and comprehend the communication of others. The strong possession of vocabularies empowers the engagement in an effective communication on both spoken and written language. According to Shanahan (2008) and Horst (2013), strong vocabulary skills are linked to better academic performance across various subjects. Additionally, research like Schmitt (2010) suggests that a strong vocabulary correlates with improved memory, critical thinking skills, and problem-solving abilities. Having a strong vocabulary can boost confidence in communication situations, as Teahan (2023) asserts that, the ability to express oneself clearly and understand others more fully can lead to a greater sense of empowerment and self-assurance.

Researchers categorise vocabulary in various ways to understand how learners acquire and use words such as skill-basis (Montgomery, 2007), Frequency (Nation, 2001). As for this study, it opts for the prominent typology of vocabulary called three-tier model of vocabulary by Beck et al. (2002). Three tiers of vocabulary typology is a valuable model for categorising vocabulary (see also, Christina, 2023). They divide words into three tiers based on frequency of use. Firstly, tier 1 which include the most basic words used in everyday speech. These words are generally learned implicitly and have a single meaning (Hutton, 2008). While not complex, Tier 1 words still require attention from second-language learners. Secondly, Tier 2, these words are more likely to appear in written text than spoken language. They are frequently encountered in various reading materials, including informational texts, technical texts, and literature. For instance, in English, Tier 2 vocabulary consists of approximately 7,000-word families (Hutton, 2008). Lastly, Tier 3 comprises low-frequency words specific to a particular domain or field of study. Understanding these different types of vocabulary is essential for learners so as to target their vocabulary development based on their specific needs and goals.

Vocabulary Learning

Vocabulary learning is the process of acquiring new words and deepening one's understanding of existing ones (Ghalebi et al., 2020). It is therefore the process of acquiring and building knowledge of words and their meanings. It is an ongoing process that happens throughout our lives, and essential for effective communication and comprehension in any language (Mohamed, 2024). Vocabulary learning empowers NNLs to the extent of not only grasping written and spoken aspects but also developing competence in other aspects of language skills like reading and writing (Susanto, 2017). Moreover, vocabulary learning can be either implicit and explicit or intentional and incidental learning, whereby, implicit vocabulary learning is an unconscious process of acquiring new words. It usually occurs naturally through exposure to language in everyday contexts, without any deliberate memorisation efforts. Ellis (1994) defines it as an acquisition of knowledge by a process which takes place naturally, simply and without conscious operation. Proponents of implicit vocabulary learning argue that new words are best absorbed when presented within a meaningful context, rather than being isolated and drilled repetitively (Frensch & R nger, 2003; Marzban & Kamalian, 2013). In contrast, explicit vocabulary learning is a conscious effort and struggle applied by the learner to understand and retain new words (Mohd Tahir et al., 2021). This approach involves activities that directly focus on vocabulary acquisition, such as note taking, dictionary use, association techniques, mnemonic devices, etc. (Marzban & Kamalian, 2013). Furthermore, intentional learning refers to deliberate efforts to memorise vocabulary, often by using techniques like synonyms, antonyms, word substitution, crossword puzzles among others (Elgort & Nation, 2010). However, research suggests that intentional learning can be less effective due to a tendency toward rote memorisation, which leads to poorer long-term retention (Macis et al., 2021). On the other hand, incidental vocabulary learning occurs unintentionally. It is a by-product of exposure to language during other activities (Webb et al., 2023). Extensive reading (newspapers, magazine, etc.) is a prime example of this sort of learning (Paribakht & Wesche, 1999). This suggests that vocabulary development can occur even without a conscious focus on memorisation.

Pronunciation

Cook (1996) as cited in Pourhosein (2016:2) defines pronunciation as the production of sounds. Also, according to Yates (2002) as cited in Pourhosein (2016:2), pronunciation is the production of sounds that is used for making meaning. Furthermore, Paulston and Burder (1976) assert that, pronunciation is the

production of a sound system which doesn't interfere with communication either from the speakers' or the listeners' viewpoint. Moreover, Otlowski (1998) argues that pronunciation is the way of uttering a word in an accepted manner. Last but not least, Richard and Schmidt (2002) define pronunciation as the method of producing certain sounds. In general, pronunciation refers to the way humans produce speech sounds and apply prosodic features of a particular language during communication. According to James (2010) as cited in Pourhosein (2016:2) claims that acceptable pronunciation can be understood based on the three basic levels. In level 1, what the speaker is saying or pronounce is not understandable to people. In this level the speaker uses the wrong sounds when producing words or uses the wrong prosodic features when producing sentences. Therefore, this is a beginning level for pronunciation (Celce-Murcia & Goodwin, 1991). In level 2, what the speaker is saying can be understandable to people but the speaker's pronunciation is not acceptable or appropriate to listen to because of either strange or heavy accent. This is an intermediate level of pronunciation. Morley (1994) as cited in Pourhosein (2016:2) confirms that when a speaker's pronunciation is heavily accented it can affect the speaker's understanding. Lastly, in level 3, listeners understand the speaker and the speaker's pronunciation is therefore acceptable to listen to. Scovel (1988) called it comfortable intelligibility and it is an advanced level of pronunciation. Pronunciation is not an intrinsic component of the dictionary. For some languages, such as Kiswahili, Spanish, Finnish, among others, the correspondence between orthography and pronunciation is so close that a dictionary need only to spell a word correctly to indicate its pronunciation (Pourhosein, 2016). Wardhaugh (2009) emphasises that clear and accurate pronunciation is essential for effective spoken language communication. It impacts how well the message is understood by others and the confidence when speaking. Particularly, it is very important since in cross-cultural communication contexts, where minor pronunciation errors can lead to misunderstandings.

Empirical Review

KODs are supplementary learning tools. These online tools are valuable supplements to traditional language instruction, especially in blended learning environments. They provide learners, particularly non-native Kiswahili speakers, with instant access to word meanings, examples, and audio pronunciations, fostering self-regulated learning (SRL) by allowing students to control their pace and focus on their immediate language needs (Godwin-Jones, 2018; Dabbagh & Kitsantas, 2012). These tools are crucial for learners without easy access to native speakers or formal language instruction and help improve pronunciation over time. Concerning Multi-Sensory Learning and Engagement. These online tools also cater to diverse learning styles by engaging multiple senses visual, auditory, and kinaesthetic. Using multimedia features like text, audio, and interactive exercises, they enhance vocabulary acquisition and pronunciation (Mayer, 2021). KODs, such as Glosbe, offer comprehensive learning experiences by providing pronunciation samples and usage examples, promoting better vocabulary retention (Mutua, 2020). As for autonomy and personalisation in learning, ODs support learner autonomy, giving students the freedom to explore language content at their own pace and focus on areas relevant to their goals, such as regional dialects or phonetic patterns (Kessler, 2018). However, challenges arise related to content quality, digital literacy, and accessibility. Inconsistent entries and limited multimedia capabilities can hinder learning, especially for those in low-resource environments with limited access to digital tools (Conole & Alevizou, 2019; Akinyemi & Hendricks, 2021; González-Lloret & Ortega, 2020).

Referring to other related studies, research on the use of online dictionaries (ODs) for pronunciation and vocabulary development highlights both benefits and challenges. Metruk (2017) showed that Electronic Dictionaries (EDs) aid English pronunciation but noted limitations in generalising the results. Onyango (2019) emphasised the role of ODs in Kiswahili pronunciation but called for further research on pronunciation aids. Studies like Singleton (2016) show ODs' potential, but some learners underutilise features like audio, while others experience anxiety about achieving native-like pronunciation (Khan, 2020; Coppinger & Sheridan, 2022). For vocabulary development, ODs are effective in recall and vocabulary acquisition. Studies like Lee and Kim (2022) show that blended learning with ODs enhances vocabulary compared to traditional methods. Research also highlights the benefits of online collaborative dictionaries (OCDs) in fostering greater vocabulary gains and the importance of self-regulation strategies for better learning outcomes (Wu, 2018; Yu & Wu, 2020).

METHODOLOGY

The study utilises a quantitative method approach. This quantitative aspect involved administering surveys to collect data from a large sample of online dictionary users using online format through Google Forms. The sample population consist of a subset of Kiswahili online dictionary users, including students, professionals, and independent learners. A total of 58 respondents were selected based on the following criteria (i) Non-native Kiswahili speakers (ii) Actively learning Kiswahili through courses or self-study (iii) Access to technology and the Internet to use ODs (iv) Varied levels of Kiswahili proficiency. As for sampling techniques, the study used purposive sampling, selecting participants based on specific criteria relevant to the research focus on online Kiswahili dictionary users. As for methods of data collection, primary data was collected using questionnaires whereby an online questionnaire was administered via Google Forms. It included multiple-choice, Likert scale, and open-ended questions to assess participants' Kiswahili learning experience, use of ODs, challenges, and perceptions of ODs' effectiveness. The questionnaire was designed to address the study's research questions regarding pronunciation and vocabulary development.

Theoretical Framework

This study's theoretical framework integrates three key social science theories to examine the essence of KODs in learning pronunciation and vocabulary development: Learner Autonomy Theory (LAT), Second-Language Acquisition (SLA) theories, and the Technology Acceptance Model (TAM). LAT, developed by Holec (1981) and expanded by scholars like Little (1991) and Benson (2013), emphasises learners' independence in managing their own learning, promoting self-directed progress. While autonomy increases motivation, beginners may still need teacher support (Dam, 1995). SLA theories, particularly Krashen's Input Hypothesis (1985) and Long's Interaction Hypothesis (1983), highlight the importance of comprehensible input and interaction in language learning. ODs enhance this process through definitions, examples, and multimedia aids (Benson & McHugo, 2014), with some offering interactive elements like quizzes (Read, 2023). Finally, the Technology Acceptance Model (TAM) by Davis (1989) explores how users accept technology based on Perceived Usefulness (PU) and Perceived Ease of Use (PEU). Learners are more likely to adopt ODs if they find them both useful and easy to navigate, though factors like motivation and technical support also play a role (Morris & Venkatesh, 2000). Together, these theories explain the interplay between ODs, language accessibility, and NNLs.

FINDINGS AND DISCUSSION

This section focuses on the presentation and discussion of findings based on the objectives of the study.

Demographic characteristics of the sample

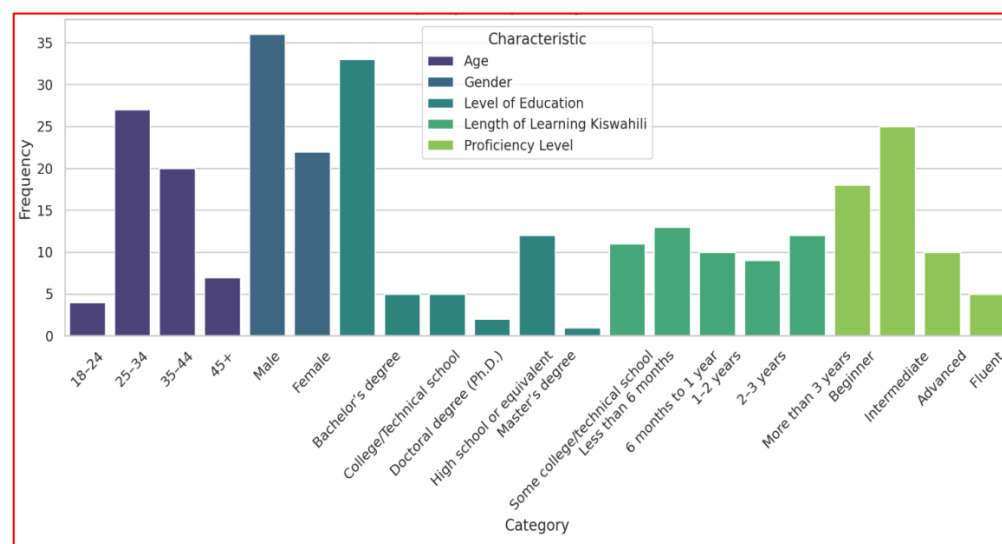


Figure 1: demographic characteristic of the sample

The demographic profile of the 58 respondents in this study reveals a diverse range of backgrounds in terms of age, gender, education, learning duration, and Kiswahili proficiency. Most respondents fall within the young to middle-aged groups, with 46.6% aged 25–34 and 34.5% aged 35–44, indicating a focus on adults in the primary years of their careers or advanced studies. Males make up 62.1% of the sample, suggesting a potential gendered aspect in the accessibility or interest in Kiswahili learning within the sampled context. Educationally, a majority (56.9%) hold a bachelor’s degree, with significant representation at the master’s level (20.7%), indicating a generally well-educated group likely to approach language learning with strong foundational skills. Regarding the length of Kiswahili study, 22.4% have between six months to one year of experience, while 20.7% have been learning for over three years, showing a mix of new and seasoned learners. Proficiency levels are largely clustered around beginners (31.0%) and intermediate (43.1%) stages, with fewer reaching advanced (17.2%) and fluent (8.6%) levels. This distribution highlights a learning continuum, with many learners in the intermediate stage, reflecting varied progression rates and commitment levels across the sample.

Kiswahili Online Dictionaries and Pronunciation

ODs integrate some pronunciation features. Below are the findings on online dictionary and pronunciation.

Amount of Use of ODs for Pronunciation

Table 1: Amount of use of KODs for pronunciation learning

Option	Frequency	Percentage
Yes	27	46.55%
No	31	53.45%
Total	58	100%

Out of 58 respondents, 53.4% (31 people) don’t use ODs for Kiswahili pronunciation, while 46.6% (27 people) do. This shows that while ODs are useful for some, they aren’t the main tool for most participants.

Frequency of Finding ODs with Pronunciation Features

Table 2: Frequency of finding ODs with pronunciation elements

Option	Frequency	Percent
Maybe	4	6.9%
No	35	60.3%
Yes	19	32.8%
Total	58	100.0%

The table shows that 60.3% of participants (35 out of 58) do not find ODs with pronunciation features, while 32.8% (19 participants) do. A small portion, 6.9% (4 participants), was uncertain. This suggests that most participants struggle to find ODs with pronunciation features, though a significant minority have encountered them.

Pronunciation Quality in KODs

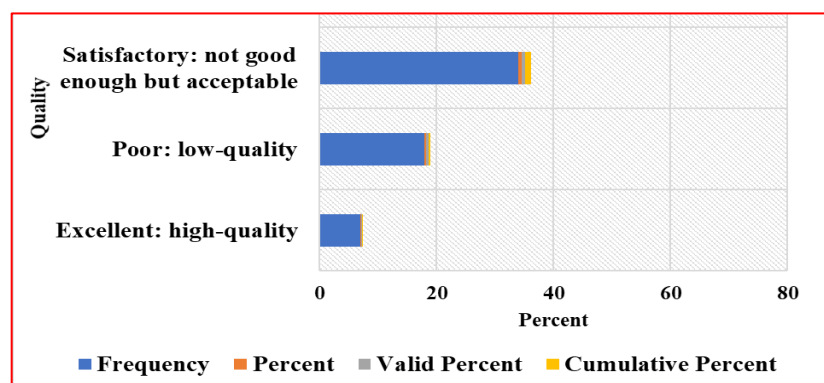


Figure 2: The quality of pronunciation in ODs

In this survey, the sound quality of ODs, 57.6% rated it as satisfactory acceptable but not high-quality while 30.5% found it poor or low-quality. Only 11.9% rated the sound quality as excellent. This indicates that while a portion of users find the sound quality acceptable, there is a notable percentage who consider it inadequate or poor, highlighting a potential area for improvement.

Supplementary Remarked Challenges of Pronunciation in ODs

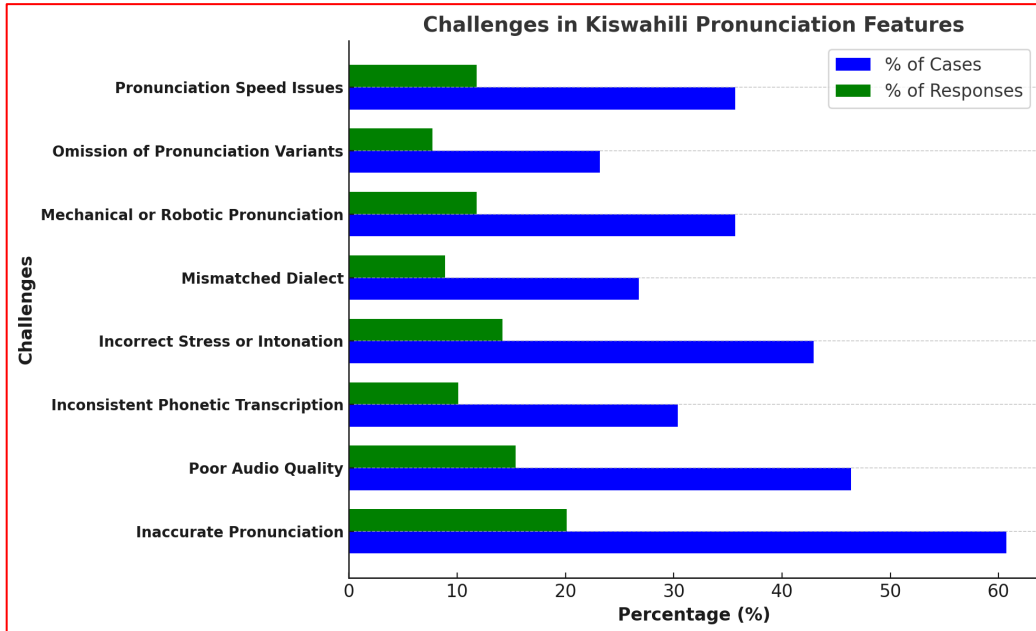


Figure 3: Other related encounters related to pronunciation in KODs

The data reveals several key issues in pronunciations. The most significant challenge is inaccurate pronunciation, reported by 34 respondents (20.1%), impacting 60.7% of cases. Poor audio quality follows, affecting 26 respondents (15.4%) and 46.4% of cases. Incorrect stress or intonation is noted by 24 respondents (14.2%), affecting 42.9% of cases. Mechanical or robotic pronunciation and pronunciation speed issues are both reported by 20 respondents each (11.8%), impacting 35.7% of cases. Inconsistent phonetic transcription affects 17 respondents (10.1%) and 30.4% of cases, while mismatched dialects are noted by 15 respondents (8.9%), affecting 26.8% of cases. Finally, omission of pronunciation variants is a challenge for 13 respondents (7.7%), impacting 23.2% of cases. These issues highlight the need for improvements in audio quality and pronunciation accuracy to better support users.

Overall Productivity of Audio Features in Improving Kiswahili Pronunciation

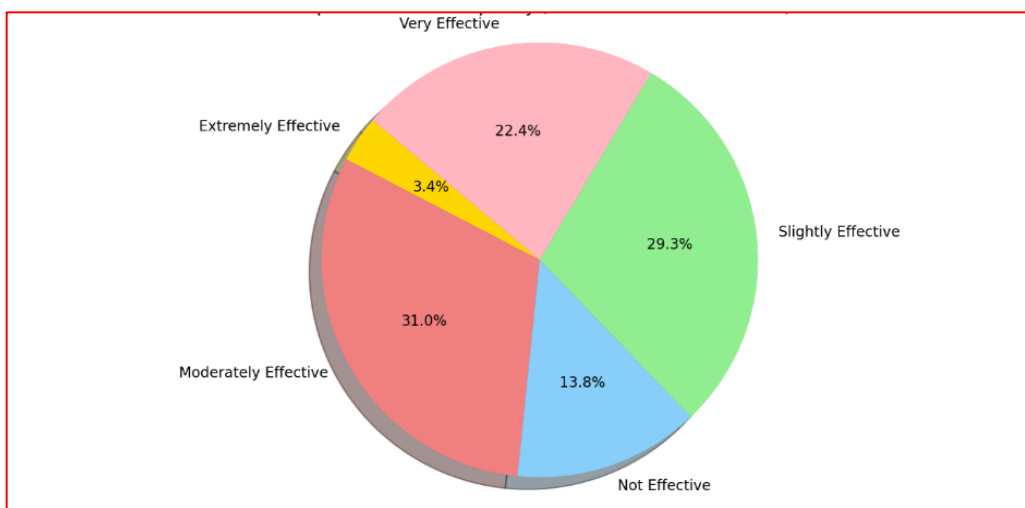


Figure 4: Effectiveness of pronunciation in KODs

Respondents' views on the effectiveness of online audio features for improving Kiswahili pronunciation vary. Of 58 responses, 13 (22.4%) found them "Very Effective," and 18 (31.0%) rated them "Moderately Effective," showing a generally positive reception. However, 17 (29.3%) viewed them as "Slightly Effective," 8 (13.8%) as "Not Effective," and only 2 (3.4%) found them "Extremely Effective." While most respondents see online audio features as helpful, a significant portion perceives them as less impactful.

Kiswahili Online Dictionaries and Vocabulary Learning

This subsection presents the findings on the extent to which online dictionaries are useful for vocabulary learning

Frequency of Use of ODs to in Learning Kiswahili Vocabularies

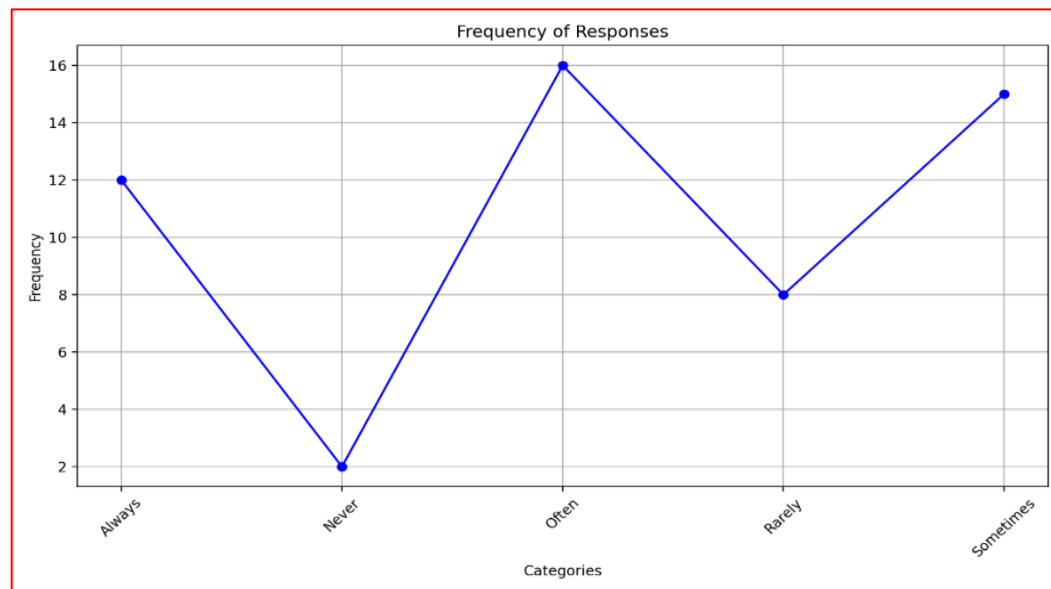


Figure 5: Frequency of use of KODs for Kiswahili for vocabulary learning

Out of 58 respondents, 13 (22.4%) use ODs "Always," 16 (27.6%) use them "Often," and 17 (29.3%) use them "Sometimes." Fewer respondents use ODs "Rarely" (10, 17.2%), and only 2 (3.4%) "Never" use them. This shows most users frequently or occasionally rely on ODs to learn new Kiswahili vocabulary, with a smaller group using them less or not at all.

Types of Vocabulary Commonly Searched for Meaning in Kiswahili Online Dictionaries

Table 3: Types of vocabularies that are more searched in KODs

Frequency Level	Frequently used words in everyday use	Academic words in an academic text	Technical or specialised words	Any Words Important for the Task I am doing
Frequent	21.9%	9.4%	31.3%	9.4%
Less Frequent	34.4%	62.5%	40.6%	15.6%
More Frequent	31.3%	18.8%	12.5%	15.6%
Most Frequent	12.5%	9.4%	15.6%	59.4%
Total	100.0%	100.0%	100.0%	100.0%

The analysis of vocabulary types commonly searched in KODs shows distinct usage patterns driven by context and need. Every day vocabulary, familiar to most users, is less frequently searched, with only 12.5% considering it "most frequent", while academic terms are also infrequently looked up, rated "less frequent" by 62.5% of respondents, likely reflecting their specialised use among students or scholars. Technical terms, however, have a steadier demand, as 31.3% of users label them as "Frequent," suggesting their relevance in professional or educational settings that require specialised language. Notably, task-specific words are the most

frequently searched, with 59.4% of users marking them as “most frequent”, underscoring their immediate value in accomplishing specific objectives where accuracy is essential. This trend highlights KODs’ critical role in catering to users’ diverse vocabulary needs, ranging from general to highly specialised or task-focused contexts, making them indispensable tools for non-native Kiswahili learners across varied applications.

The Range of Vocabulary and Availability of Contextual Examples of Vocabulary in ODs

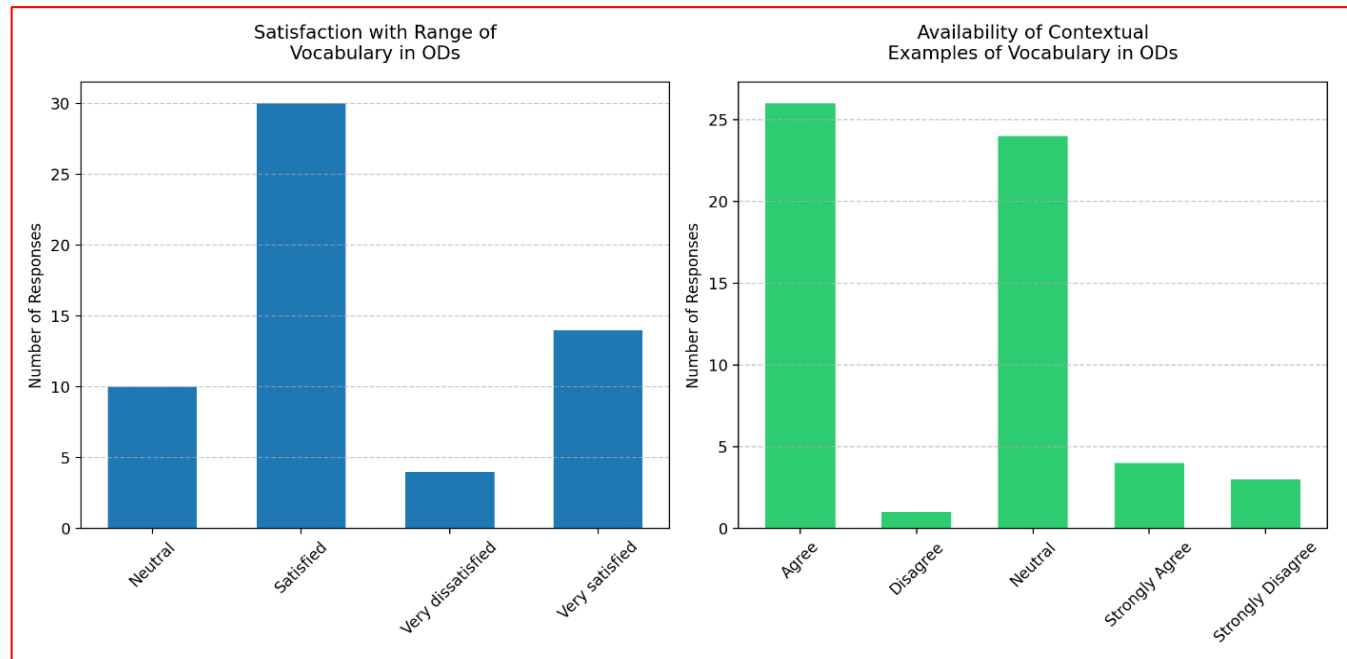


Figure 6: Range and availability of contextual examples of vocabularies

The data highlights user satisfaction with ODs, focusing on vocabulary range and contextual examples. Most respondents (58.6%) are satisfied or very satisfied with the vocabulary range, while 24.1% are neutral or disagree, and 17.2% are very dissatisfied. In contrast, 48.3% are neutral or dissatisfied with the availability of contextual examples, with only 31% satisfied. A smaller group (20.7%) strongly agree or agree with the availability of examples. Overall, users are content with the vocabulary range but seek more contextual examples.

The General Rated Extent of Utility of KODs in Kiswahili Vocabulary Learning

Table 4: Extent of usefulness of ODs for Kiswahili vocabulary learning

Extent	Frequency	Percent
To a Great Extent	16	28.10%
To a Moderate Extent	10	17.50%
To a Small Extent	5	8.80%
To a Really Great Extent	25	43.90%
To No Extent	1	1.80%
Total	57	100.00%

A majority of respondents find ODs effective in expanding their Kiswahili vocabulary, with 43.9% stating they help “To a Really Great Extent” and 28.1% saying, “To a Great Extent.” Together, these responses account for 72% of users. Additionally, 17.5% feel they help “To a Moderate Extent,” 8.8% “To a Small Extent,” and only 1.8% say they help “To No Extent.” This shows that most users view ODs as valuable tools for learning new Kiswahili words.

Challenges Related to Kiswahili Online Dictionaries

This section focuses on different challenges that NNLs faces while engaging with Kiswahili ODs.

Various Challenges Encountered Associated with ODs

Table 5: Figure 8: Challenges experienced during KODs consultation

Challenges	Frequency	% of Cases
Difficulty finding accurate pronunciation guides	39	26.9%
Limited vocabulary options	23	15.9%
Lack of cultural context for words and phrases	24	16.6%
Unclear or complex grammar explanations	20	13.8%
Difficulty navigating the dictionary interface	30	20.7%
Others	9	6.2%

The analysis shows that the main challenge for online dictionary users is finding accurate pronunciation guides (26.9%). Other difficulties include limited vocabulary (15.9%), lack of cultural context (16.6%), unclear grammar explanations (13.8%), and a difficult interface (20.7%). These findings suggest the need for improvements in pronunciation, vocabulary coverage, cultural context, grammar explanations, and user interface design to enhance the effectiveness of ODs.

Instances of Misleading or Inaccurate Information in Kiswahili Online Dictionaries

Table 6. Extent of encountering misleading or inaccurate information in KODs

Option	Frequency	Percentage
Yes	12	20.69%
Maybe	12	20.69%
No	34	58.62%
Total	58	100%

This data on the perceived accuracy of information in KODs, 12 respondents (20.7%) believe they have maybe encountered misleading or inaccurate information. 34 respondents (58.6%) reported no such experiences. 12 respondents (20.7%) indicated yes to encountering inaccurate or misleading information. This suggests that while a majority (58.6%) find KODs reliable, a notable portion (20.7%) has had doubts or negative experiences with the accuracy of the content.

Challenges Faced by Users in Finding Reliable Kiswahili Online Dictionaries

Table 7: Challenges faced during the search for reliable KODs

Challenge	Frequency	%
Limited dictionary options	48	65.8%
Internet-related distractions (subscription, ads, etc.)	41	79.5%
Language barriers in interface	28	38.4%
Unreliable content	10	13.7%
Lack of specialised dictionaries	3	4.1%
Not knowing any reliable dictionary	4	5.5%
No audio for pronunciation	1	1.4%
Costly/paid access	1	1.4%

The most common challenge faced by users is Internet-related distractions, including subscription requirements, which affect 79.5% of respondents. Limited dictionary options also pose a significant issue for 65.8% of users. Additionally, 38.4% of user's struggle with language barriers in the interface, while 13.7% report unreliable content. A smaller number of users cite difficulties such as a lack of specialised dictionaries (4.1%), not knowing any reliable dictionary (5.5%), and limited audio pronunciation options (1.4%). A few users (1.4%) also mention the high cost of accessing crucial content. These findings emphasise the need for more comprehensive, affordable, and user-friendly Kiswahili dictionaries.

Challenges Related to User-Friendliness of Search Functionalities in Kiswahili ODs

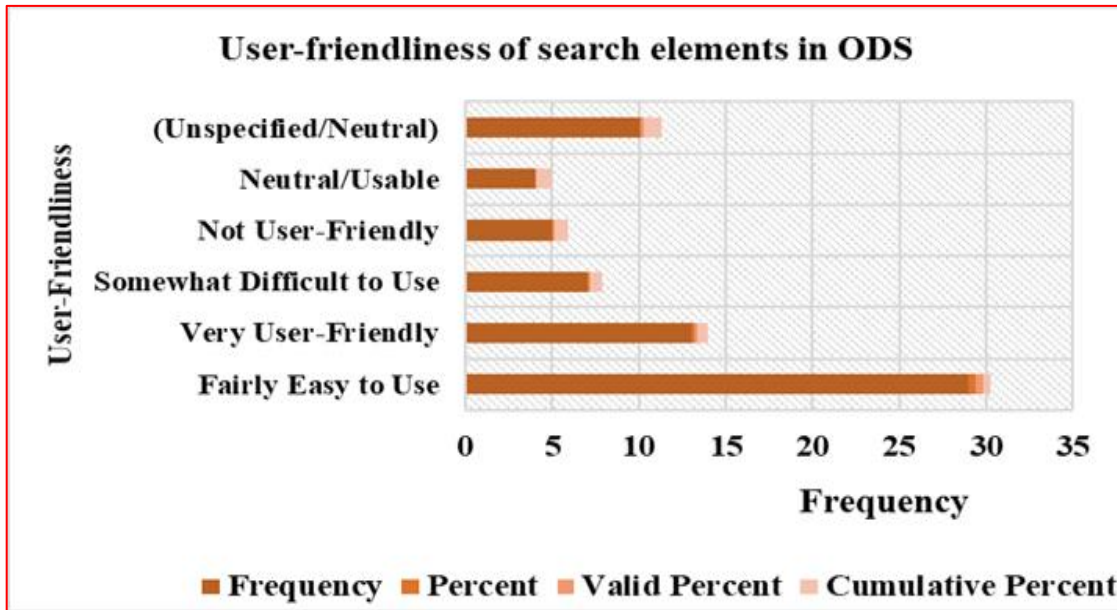


Figure 7: User-friendliness of search elements in KODs

In evaluating the user-friendliness of search functionalities in online Swahili dictionaries, 42.6% of users found them *fairly easy to use*, while 19.1% rated them as *very user-friendly*. A smaller portion, 10.3%, found them *somewhat difficult to use*, and 7.4% felt they were *not user-friendly*. Only 5.9% of respondents held a neutral stance, and 14.7% did not specify. Overall, a significant majority of users found the search functions to be either easy or very user-friendly, though some users still encounter difficulties.

Challenges on Incorrect and Unclear Definitions in ODs

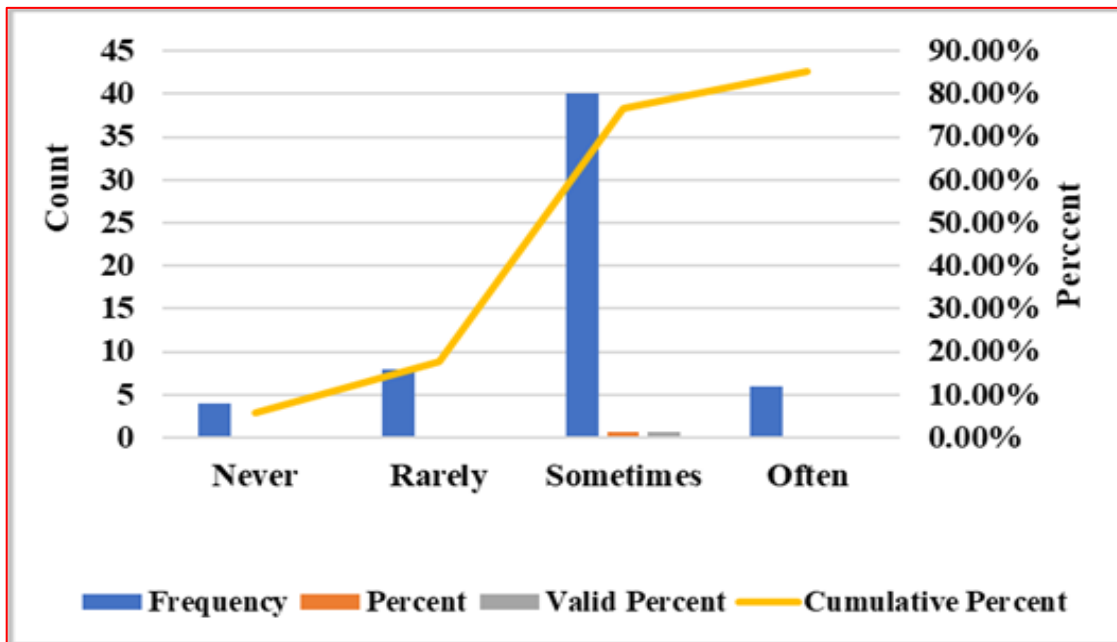


Figure 8: Frequency of Encountering Incorrect or Unclear Definitions in Online Kiswahili Dictionaries

Regarding how often users encounter incorrect or unclear definitions in online Kiswahili dictionaries, the majority (58.8%) report encountering them *sometimes*, while 11.8% encounter them *rarely*. A smaller percentage, 8.8%, report encountering them *often*, and 5.9% have *never* experienced such issues. Additionally, 14.7% provided no specific response. This suggests that while most users occasionally face unclear or inaccurate definitions, it is not a consistent issue for everyone.

Encountered Technical Challenges with Online Kiswahili Dictionaries

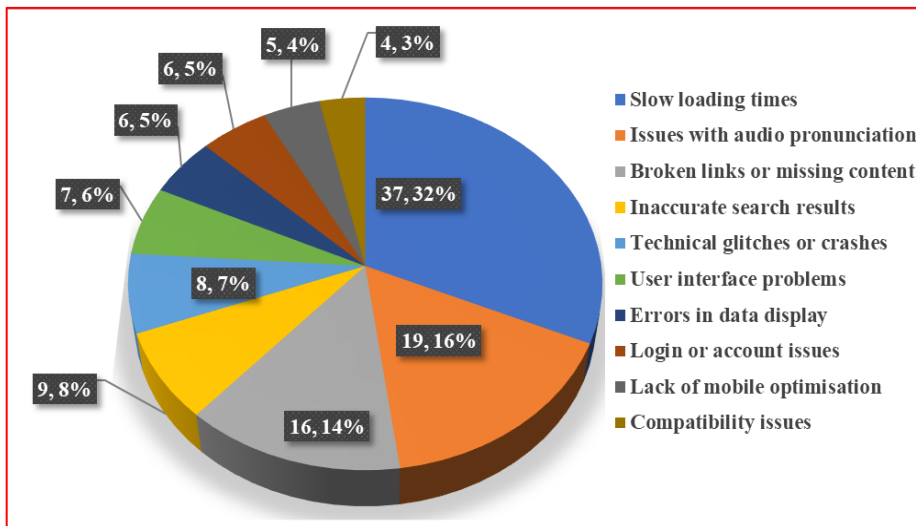


Figure 9: Other common technical defies with Online Swahili Dictionaries

Users commonly encounter several issues with online Kiswahili dictionaries. The most frequent problem is slow loading times, reported by 32% of users. Issues with audio pronunciation follow at 19%, while 16% of users experience broken links or missing content. Other common issues include inaccurate search results (14%), technical glitches or crashes (9.8%), user interface problems (7.6%), and errors in data display (6.5%). Login or account issues affect 6.5% of users, while lack of mobile optimisation and compatibility issues are reported by 5.4% and 4.3%, respectively. These findings highlight key areas for improvement to enhance the overall user experience with online Kiswahili dictionaries.

Possible Effective Ways of Using Kiswahili ODs

This subsection probes into findings on encountered challenges during ODs consultations

Proposed Ways to Overcome Challenges Associated with KODs

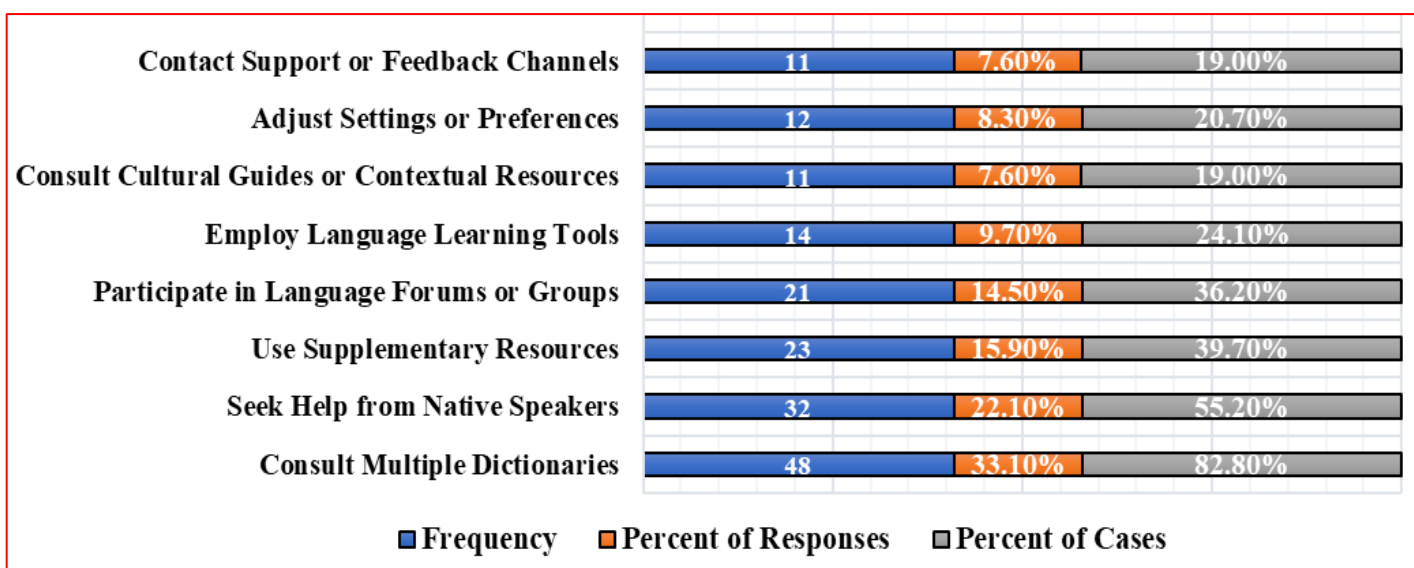


Figure 10: Actions taken when encountering issues with Kiswahili KODs

When users encounter issues with online Kiswahili dictionaries, the most common action taken is to consult multiple dictionaries, with 33.1% of responses and 82.8% of cases involving this strategy. Additionally, 22.1% of responses and 55.2% of cases involve seeking help from native speakers, while 15.9% of responses and

39.7% of cases involve using supplementary resources. Participating in language forums or groups accounts for 14.5% of responses and 36.2% of cases. Employing language learning tools is observed in 9.7% of responses and 24.1% of cases, while consulting cultural guides or contextual resources makes up 7.6% of responses and 19.0% of cases. Adjusting settings or preferences occurs in 8.3% of responses and 20.7% of cases, and contacting support or feedback channels is the least common, at 7.6% of responses and 19.0% of cases.

Additional potential Features That can Enhance Learning Kiswahili with Kiswahili Online Dictionaries

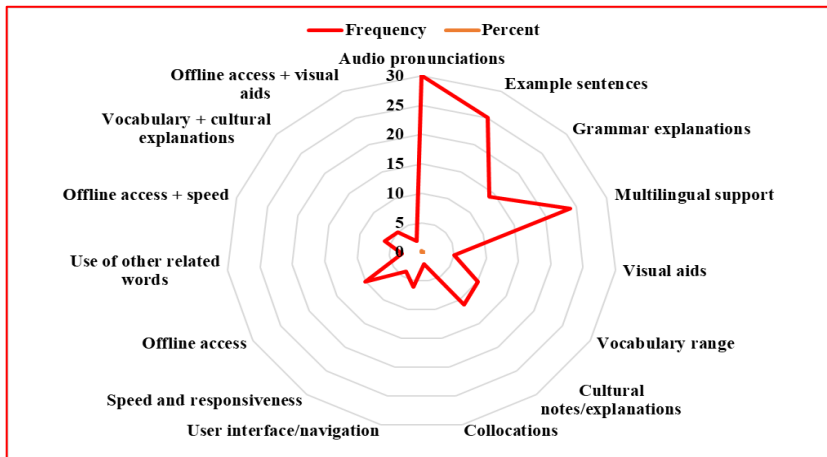


Figure 11: Supplementary features of KODs that may be most helpful for learning Kiswahili

The data shows that the most desired features in online Swahili dictionaries are “Audio pronunciation” (36.2%) and “Multilingual support” (37.9%), followed by “Example sentences” (32.8%) and “Grammar explanations” (20.7%). “Visual aids” and “vocabulary range” were selected less frequently, at 8.6% and 13.8%, respectively, but still reflect important aspects for some users. Additional features like “cultural notes,” “User interface/navigation,” “Speed and responsiveness,” and “Offline access” also play a role, indicating that while core features like pronunciation and examples are crucial, improved navigation and offline capabilities are valued as well.

Additional Linguistic Aspects in KODs for Effective Kiswahili Learning

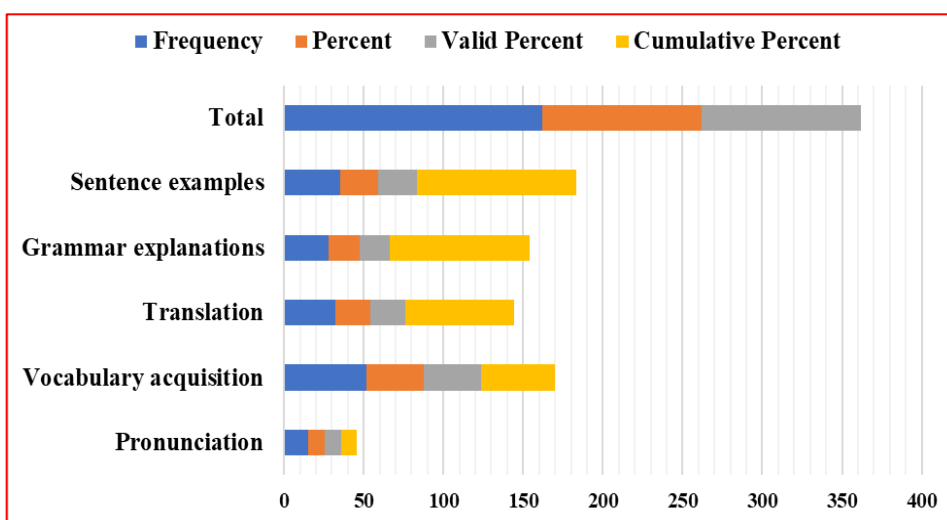


Figure 12: Further aspects of the language that may be most helpful in KODs

The data shows that users mostly rely on vocabulary acquisition (35.9%) and sentence examples (24.1%), followed by translation (22.1%) and grammar explanations (19.3%). While pronunciation is considered less frequently (10.3%), it remains relevant for certain learners.

Suggested Learning Features to Include in KODs for More Effective Learning

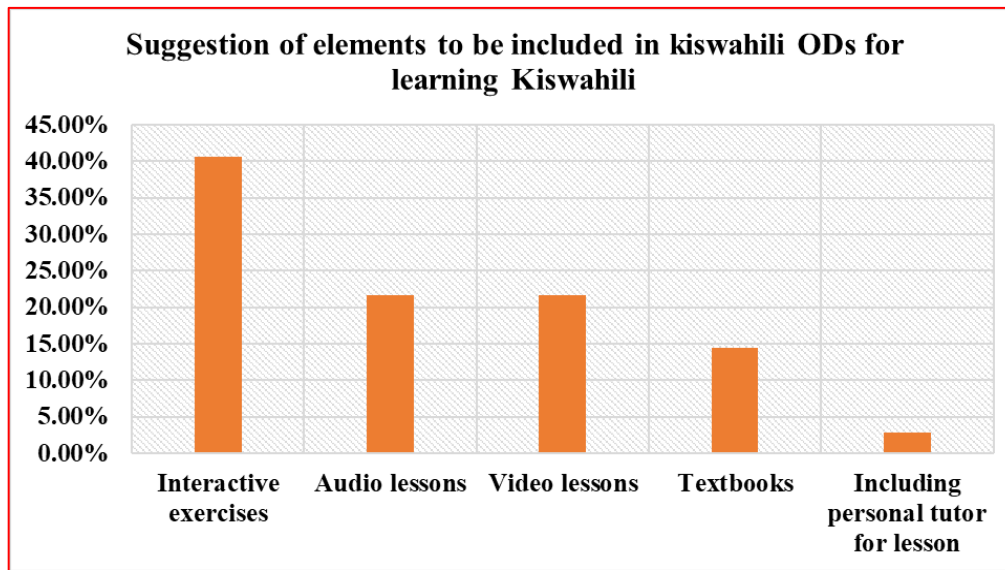


Figure 13: Suggestion of learning elements to be included in Kiswahili KODs

The data shows that “interactive exercises” is the most mentioned element for Kiswahili learning (40.6%), indicating a preference for engaging methods. “Audio” and “video lessons” follow, each at 21.7%, highlighting the value of multimedia for comprehension and practice. “Textbooks” account for 14.5%, suggesting a preference for interactive over traditional methods, while “Games and puzzles” are least mentioned (2.9%). Overall, the focus on interactive and multimedia elements reflects a modern, practical approach to language learning.

DISCUSSION

This subsection deals with discussion based on trends and patterns of findings

Pronunciation in Kiswahili Online Dictionaries

The data reveals that only 36.21% of respondents use KODs to practise Kiswahili pronunciation, while 63.79% do not. This suggests that while ODs are useful for a significant portion of users, they are not the primary resource for pronunciation practice. Furthermore, 60.3% of participants reported difficulty in finding pronunciation features in ODs, indicating a gap in their availability, which could limit their effectiveness for NNLS. In terms of sound quality, 57.6% of respondents rated it as “satisfactory”, but not excellent, with 30.5% finding it poor and only 11.9% rating it as excellent. This suggests that while pronunciation tools are present, their quality often falls short, potentially impacting learners’ ability to master proper pronunciation. Additionally, common pronunciation challenges reported include inaccurate pronunciation (60.7%), poor audio quality (46.4%), incorrect stress or intonation (42.9%), and mechanical or robotic pronunciation (35.7%). These issues highlight the need for improvements, as substandard pronunciation features could mislead learners and hinder progress. Additionally, only 3.4% of respondents found online audio features “Extremely Effective,” with 31% rating them as “Moderately Effective.” This suggests that while audio tools contribute to pronunciation learning, they need to be enhanced to better serve a wider range of users.

Vocabulary Development and Kiswahili Online Dictionaries

The study demonstrates that ODs play a significant role in enhancing vocabulary acquisition for Kiswahili learners, showing a stronger positive impact compared to pronunciation tools. A majority of respondents reported frequently using ODs for vocabulary learning, with 22.4% using them “Always,” 27.6% “Often,” and 29.3% “Sometimes.” This underscores the value of ODs for vocabulary development, as only 3.4% of users stated they never turn to these resources for this purpose. Specialised vocabulary, particularly technical and complex terms, are the most frequently searched words (31.3%), indicating that ODs are particularly beneficial

for learners seeking terminology not typically covered in traditional learning resources. In contrast, everyday vocabulary and academic terms are less frequently sought, suggesting that ODs are more useful for addressing specific learning needs rather than general language acquisition. Moreover, while 58.6% of respondents expressed satisfaction with the vocabulary range in ODs, nearly half (48.3%) remained neutral or dissatisfied with the lack of contextual examples. This gap suggests that learners require more contextualised usage to fully understand and apply new vocabulary. Enhancing contextual examples could significantly improve the utility of ODs. Additionally, 72% of respondents rated ODs as highly effective tools for vocabulary learning, with 43.9% stating they are useful “To a Very Great Extent” and 28.1% “To a Great Extent.” These findings emphasise the potential of ODs in supporting Kiswahili vocabulary learning, particularly when tailored to meet users’ needs for specialised and everyday language. Addressing gaps in contextual examples and broadening vocabulary coverage could further enhance their effectiveness.

Challenges in Accessing Kiswahili Online Dictionaries for Pronunciation and Vocabulary

Several challenges emerged from the data regarding pronunciation and vocabulary in Kiswahili ODs. For pronunciation, 26.9% of respondents reported difficulty in finding accurate pronunciation guides, a critical issue for NNLs with limited exposure to native speakers. Similarly, 15.9% noted that ODs offer limited vocabulary, which can hinder comprehensive language acquisition. Another challenge, highlighted by 16.6% of respondents, is the lack of cultural context for words and phrases, which is essential for understanding nuanced meanings. Grammar explanations in ODs were found to be unclear or too complex by 13.8% of respondents. For NNLs, clear grammatical guidance is crucial for building language competency. Additionally, 20.7% of users experienced difficulty navigating OD interfaces, and Internet-related barriers such as subscription requirements affected 79.5% of respondents. Limited dictionary options (65.8%) and language barriers in interfaces (38.4%) further complicated user experiences. Technical issues, such as slow loading times (54.4%), poor audio pronunciation (27.9%), and broken links (23.5%), also hindered users’ access to accurate pronunciation and content. Furthermore, the lack of mobile optimisation (7.4%) and compatibility issues (5.9%) were particularly disruptive for users relying on mobile devices for Internet access. These findings suggest that ODs need to address both technical and content-related issues to better serve Kiswahili learners.

Potential Improvements for Kiswahili Online Dictionaries

The study highlights several strategies for improving ODs to better serve users. Consulting multiple dictionaries (62.3%) and seeking help from native speakers (29.4%) were common practices among users facing challenges with ODs. Users also expressed a preference for interactive features, such as gamified exercises (40.6%), audio lessons (21.7%), and video lessons (21.7%), to enhance engagement and learning. Visual elements, such as the use of colours and illustrations, were found helpful by 70.7% of respondents. Incorporating those elements could support well visual learners. Additionally, improving search functionality, navigation, and speed, as well as adding multilingual support and translation features, would significantly enhance the user experience. Including contextual and cultural notes would further aid learners in understanding the appropriate usage of Kiswahili expressions. To sum up, while Kiswahili ODs are valuable tools for vocabulary acquisition, there are significant gaps in their effectiveness for pronunciation practice. Enhancements in interactive features, audio pronunciation, contextual examples, and user-friendliness would make these dictionaries more comprehensive and effective resources for Kiswahili learners, particularly non-native speakers.

RECOMMENDATION

Based on the study’s findings and identified limitations, several recommendations are proposed to improve the effectiveness of KODs for non-native Kiswahili learners. First, enhancing pronunciation guides by incorporating high-quality audio pronunciations, phonetic transcriptions, and regional variations would enable learners to correctly recognise and pronounce words. Second, integrating visual aids such as images, videos, and infographics, alongside interactive tools like quizzes and flashcards, would make vocabulary learning more engaging and intuitive. Third, expanding dictionary entries to include idiomatic expressions, cultural notes, and context-specific usage would facilitate a deeper understanding of Kiswahili and its cultural nuances.

Additionally, ODs should offer clear grammar explanations and contextual example sentences to accommodate learners at different proficiency levels. Technical optimisation is also essential, including improving loading times, resolving technical issues, and enhancing navigation through user-friendly interfaces. Furthermore, providing offline access and ensuring mobile compatibility would ensure uninterrupted learning for users in areas with limited connectivity. Incorporating multimedia resources such as audio and video lessons, along with customisable learning environments, would cater to diverse learning styles. Lastly, the inclusion of supplementary materials such as grammar books, cultural guides, and links to language learning apps, as well as integrating community features like forums and discussion groups, would encourage learner interaction and real-time practice, significantly enhancing the overall learning experience.

CONCLUSION

In conclusion, this study highlights the significant potential of KODs as supplementary tools for pronunciation and vocabulary development, while also revealing various challenges faced by users. The findings indicate that, although a considerable number of learners appreciate the utility of ODs in enhancing their language skills, many still struggle with issues such as the accuracy of pronunciation guides, limited vocabulary options, and unclear definitions. Moreover, the research identifies effective strategies for overcoming these challenges, such as consulting multiple dictionaries, engaging with native speakers, and utilising supplementary resources. Users expressed a strong preference for features that enhance their learning experience, including audio pronunciation, multilingual support, and interactive exercises. Ultimately, for Kiswahili ODs to reach their full potential as educational tools, it is crucial to address the identified challenges and incorporate the desired features. By improving user experience and content reliability, Kiswahili Online Dictionaries can play a vital role in supporting learners' journey toward fluency in Kiswahili, thereby contributing to the broader goal of promoting the language in a digital age. As the demand for effective language learning tools continues to grow, ongoing research and development will be essential to ensure that Kiswahili ODs evolve to meet the needs of diverse learners.

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