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Students' Perceptions of Smartphone-Based AI Tools in Arabic Vocabulary Learning: Evidence from Universiti Sains Islam Malaysia / Persepsi Mahasiswa Terhadap Penggunaan Alat AI Berbasis *Smartphone* dalam Pembelajaran Kosakata Bahasa Arab: Bukti dari Universiti Sains Islam Malaysia

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Abstract: This research aims to: (1) analyze the perceptions of Arabic language students at USIM, specifically at FPBU, regarding the use of AI tools on smartphones for learning Arabic vocabulary, and (2) provide an empirical depiction of FPBU Arabic language students in improving vocabulary through AI applications. The study employs a quantitative method, using a survey approach with questionnaire instruments to analyze FPBU Arabic students at USIM related to the use of AI tools via smartphones. The instrument was validated by a USIM lecturer, Yuslina Mohamed. A quantitative approach was conducted with 70 Arabic students from FPBU USIM who actively used smartphones in their teaching and learning processes, selected through purposive sampling techniques. The quantitative data were analyzed using IBM SPSS Statistics 27, employing descriptive analysis, instrument validity tests (validity and reliability), and hypothesis tests (Pearson correlation). The findings indicate a significant relationship between AI tool usage and students' perceived vocabulary improvement. Pearson's correlation test showed a positive and significant relationship between AI tool applications on smartphones and the enhancement of Arabic vocabulary ($r = 0.846$, $p < 0.001$). These findings suggest that Arabic AI tools are effective in improving vocabulary, memory retention, and confidence, aligning with current literature in digital Arabic language learning.

Abstrak: Penelitian ini bertujuan untuk; (1) menganalisis persepsi pelajar bahasa Arab di USIM khususnya di FPBU mengenai penggunaan AI tools di smartphone untuk pembelajaran kosakata Arab, (2) menyajikan gambaran empiris mengenai penilaian dan pengalaman pelajar bahasa Arab FPBU dalam peningkatan kosakata Arab melalui aplikasi AI. Penelitian ini menggunaakan metode kuantitatif, yaitu pendekatan survei menggunakan instrumen kuisioner untuk menganalisis persepsi pelajar Bahasa Arab FPBU di USIM) terkait penggunaan AI tools melalui smartphone. Instrumen dalam penelitian ini sudah divaliditas langsung oleh dosen dari USIM yaitu Yuslina Mohamed. Pendekatan kuantitatif dilakukan terhadap 70 pelajar bahasa Arab FBPU USIM yang aktif menggunakan smartphone dalam pengajaran dan pembelajaran, dipilih menggunakan teknik purposive sampling. Data kuantitatif di analisis menggunakan IBM SPSS Statistic 27 melalui analisis deskriptif, uji kevalidan instrumen (validitas dan reabilitas) serta uji hipotesis (korelasi Pearson). Hasil analisis menunjukkan bahwa penggunaan aplikasi bahasa Arab yang rutin dan moderat berdampak signifikan pada peningkatan kosakata Arab. Berdasarkan uji korelasi Pearson, ditemukan hubungan positif dan signifikan penggunaan aplikasi AI tools di smartphone dan peningkatan kosakata Arab ($r = 0{,}846$, $p < 0{,}001$). Temuan ini menunjukkan bahwa penggunaan aplikasi AI tools Arab efektif dalam peningkatan kosakata, kemudahan mengingat, dan kepercayaan diri berbahasa Arab, sesuai dengan literatur terbaru di bidang pembelajaran bahasa Arab digital.

Introduction

Technological advances in the digital era have changed various aspects of life, including in the field of education. With these advancements, educational institutions around the world are starting to develop various technologies to improve the teaching and learning process.[1] Communication and information technology have created a new era in the world of education with innovative learning opportunities, ease of access, and a wide and interactive experience. The use of computers, the internet, learning applications, and online education platforms is now the norm in many schools and universities.[2]

Technology that comes in various forms and functions is one of those that has gained attention in mobile learning and teaching technology, such as *smartphones. Smartphones* come with a variety of Linux and open-source operating systems that make it easy to access any kind, including the presence of AI *tools* and applications,[3] especially in the Arabic language learning sector.

The rapid development of AI-based applications has influenced various aspects of Arabic language learning. This scenario illustrates the technological transformation that is now growing and is beneficial to human life.[4] Along with technological advancements, traditional learning methods have now been enriched through the use of AI *tools* on *smartphones.*[5] AI tool applications specifically designed for Arabic language learning offer a variety of advantages, including more interactive and flexible learning, as well as the ability to tailor content to the individual needs of students. Previous research has shown that the use *of* Arabic AI *tools*, such as Almaany,[6] Duolingo,[7] and ChatGPT.[8]

[1] Umar Faroid et al., "The Scientific Journal of Citra Bakti Chatboy Mondly Education as an Innovative Media in Arabic Language Learning," *Citra Bakti* Education Scientific Journal 12 (2025): 253–64.
[2] Silfiya and Irwan Siagian, 'Penggunaan Teknologi Dalam Dunia Pendidikan Tanpa Menghilangkan Nilai-Nilai Sosial', *Journal on Education*, 07.01 (2024), pp. 2554–68.
[3] S. Astuti, "Development of Android-Based Arabic Language Learning Media," *Al-Ta'rib: Scientific Journal of the Arabic Language Education Study Program IAIN Palangka Raya* 9, no. 1 (2021): 67–78.
[4] Muhamad Khairul Anuar Zulkepli and others, 'Analisis Keperluan Aplikasi Kosa Kata Bahasa Arab Komunikasi Dalam Pembelajaran Analysis of Needs Arabic Communication Vocabulary Application in Learning', *Journal of Sultan Alauddin Sulaiman Shah*, 10.2 (2023), pp. 110–20.
[5] Moh Aldi Fitrah, U I N Maulana, and Malik Ibrahim, 'Aplikasi Artificial Intelligence Al-Qalam Dalam Pembelajaran Keterampilan Menulis Bahasa Arab (Mahāra ṭ Al-Kitābah); Peluang Dan Tantangan', *Jurnal Ilmiah Al-Mashadir:Journal of Arabic Education and Literature*, 04 (2024), pp. 1–20, doi:10.30984/almashadir.v4i2.1245.
[6] Khairul Asyraf Mohd Nathir and others, 'Students` Perception On Learning Qur`anic Language Vocabulary Towards The Almaany Application In Smartphone', *International Journal of Islamic Studies*, 8.1 (2017), pp. 2289–9944 <http://myjms.mohe.gov.my/index.php/alqanatirhttp://myjms.mohe.gov.my/index.php/alqanatir>.
[7] Taufiqurrahman Hidayatullah, Mad Ali, and Shofa Musthofa Khalid, 'Analisis Penggunaan Duolingo Sebagai Media Pembelajaran Maharah Istima' Pada Abad 21', *Ar-Risalah Media Keislaman Pendidikan Dan Hukum Islam*, 22.1 (2024), p. 148, doi:10.69552/ar-risalah.v22i1.2385.

Using smartphones can significantly improve students' vocabulary mastery, while providing a learning experience that is more interesting and less boring. In addition, AI *tool* applications also provide repetitive exercises, instant feedback, and various gamification features that can increase students' motivation and interest in continuing to learn.[9]

The learning of Arabic vocabulary among students of the Faculty of Primary Language Studies (FPBU) of Universiti Sains Islam Malaysia (USIM) is gaining more attention along with the development of digital technology.[10] Vocabulary mastery is a fundamental element and is very important in the Arabic language learning process, because without sufficient vocabulary mastery, students will face difficulties in understanding, writing, and communicating in the language.[11] Sufficient vocabulary mastery is a crucial aspect in supporting the ability to read, write, speak, and understand Arabic thoroughly.[12] According to Rifai, students face many problems in memorizing vocabulary, difficulties in understanding the meaning of sentences, and the correct use of vocabulary in sentences.[13] So, in this context, students need more than a dictionary and a mukjam to be used as a comparison in getting the equivalent of the meaning of vocabulary that is in accordance with the sentence structure.[14]

Mastery of Arabic vocabulary at Malaysian Public Higher Education Institutions is crucial, especially for institutions that offer Arabic language study programs and use Arabic as a medium of instruction. Universiti Sains Islam Malaysia (USIM) is an institution that provides various Arabic language programs using the latest teaching and learning methods. These efforts are in line with technological advances and meet current

[8] Amir Bakhrum, 'Pemanfaatan Aplikasi ChatGPT Dalam Meningkatkan Kemampuan Mahasiswa Pada Mata Kuliah Maharoh Kitabah', *Jurnal Lughoti Jurnal Pendidikan Bahasa Arab*, 2.02 (2021), pp. 37–59.
[9] Mardi Hadi and Hendri Abdul Qohar, 'Peran Artificial Intelligence Dalam Meningkatkan Pembelajaran Interaktif Bahasa Arab', *Journal of Multidisciplinary Research and Development*, 6.6 (2024), pp. 3010–23.
[10] Mohammad Hasnizam Umar, Yuslina Mohamed, and Nurkhamimi Zainuddin, 'Enhancing Students ' Vocabulary In Arabic Language Through The Use Of Google Classroom', *The Malaysian Journal Of Islamic Sciences*, 35.3 (2023).
[11] Muhamad Naufal Badarudin, Harun Baharudin, and Nik Mohd Rahimi Nik Yusoff, 'Keberkesanan Strategi Pemerolehan Kosa Kata Bahasa Arab Melalui Teknologi Multimedia Penceritaan Digital Dan Lakonan', *ASEAN Comparative Education Research Journal on Islam and Civilization (ACER-J)*, 4.1 (2021), pp. 20–39 <https://medium.com/@arifwicaksanaa/pengertian-use-case-a7e576e1b6bf>.
[12] Muhamad Khairul Anuar Zulkepli and others, 'Perception Of Arabic Vocabulary Learning Problems', *International Journal Of Education, Psychology and Counseling*, 9.55 (2024), pp. 392–402, doi:10.35631/IJEPC.955026.
[13] Husnul Khotimah and Nisfi Nurlaila, 'Investigating Challenges in Arabic Vocabulary Mastery Among Students at MTs Nahdlatul Ulama Maesan Bondowoso', *International Journal of Islamic Education*, 3.2 (2024), pp. 105–14, doi:10.35878/guru.v1i1.255.8.

needs.[15] As well as innovative and effective teaching and learning through the use of teaching aids (ABM), such as smart *boards*, smartphones, computers, tablets, iPads, and various other devices.

The mastery of Arabic vocabulary among Arabic language students at the Faculty of Primary Language Studies (FPBU) USIM shows a significant increase, driven by the integration of digital technology, which is now an important element in the lives and learning methodologies of the digital native generation. However, despite the rapid development in language teaching technology, there is a significant lack of research on students' perceptions of the use of *smartphone-accessible AI tools* to improve Arabic vocabulary. Previous studies have mainly examined AI application effectiveness[16] and technological development[17], whereas limited studies have investigated students` perceptions of AL-assisted Arabic vocabulary learning in higher education contexts, particularly among Arabic language students in Malaysia.

Based on this, this research brings novelty by combining learners' perceptions and AI technology in learning Arabic vocabulary quantitatively. The focus on the use of AI *tools* that can be accessed through *smartphones* provides a new perspective on the ease of access and effectiveness of independent learning in the digital era, and researchers are interested in collecting data on students' perceptions of the use of AI *tool applications* and the improvement of Arabic vocabulary in the learning process.[18] Thus, this research aims to;(1) analyze the analytical perception of Arabic language students at USIM, especially among students of the Faculty of Primary Language Studies (FPBU) regarding the use of AI *tools* in *smartphones* as an aid in learning Arabic vocabulary, (2) present a specific empirical picture of how USIM students assess and feel the improvement of Arabic vocabulary through the application of AI *tools*, which is expected to be the basis

[14] Asyraf Mohd Nathir and others, 'Students` Perception On Learning Qur`anic Language Vocabulary Towards The Almaany Application In Smartphone'.
[15] Mualimin Mochammad Sahid, Baidar Mohammade Hasan, and Mohammad Najib Jaffar, 'Kepentingan Pengajaran Subjek Syariah Dan Pengajian Islam Menggunakan Bahasa Arab: Kajian Persepsi Pelajar Syariah Dan Undang- Undang, USIM', *The 3rd International Conference of the Postgraduate Students and Academics in Syariah and Law 2020 (INPAC 2020)*, 2020.Inpac (2020), pp. 171–82.
[16] Aunur Shabur Maajid Amadi and Khizanatul Hikmah, "Student Perceptions of the Utilization of AI Technology in Arabic Language Learning in Indonesian Islamic Universities," *Journal of Education Research* 6, no. 2 (2025): 291–301, https://doi.org/10.37985/jer.v6i2.2343.
[17] Pham My Linh and Ting-Ting Wu, 'A Conceptual Framework On Learner's Attitude Toward Using AI Chatbot Based On TAM Model in English Classroom', *The Proceedings of the English Language Teaching, Literature, and Translation (ELTLT)*, 12.1 (2023), pp. 2580–7528.
[18] Rosyawati Ab Rahim and others, 'Arabic Vocabulary Learning Through Smartphone Application :A Bibliometric Analysis', *International Journal of Modern Education*, 6.22 (2024), pp. 409–27, doi:10.35631/IJMOE.622029.

for the development of Arabic learning methods that are more innovative and in accordance with the needs of the current digital generation.

Method

Research Design

This study uses a quantitative method, namely a survey approach using a questionnaire instrument to analyze the perception of Arabic students of the Faculty of Primary Language Studies (FPBU) at Universiti Sains Islam Malaysia (USIM) regarding the use of AI *tools* through smartphones.[19] This survey approach is seen as particularly appropriate due to its ability to collect data from large populations efficiently and effectively. This survey approach is seen as particularly appropriate due to its ability to collect data from large populations efficiently and effectively. This survey approach is seen as particularly appropriate due to its ability to collect data from large populations efficiently and effectively. Given the exploratory nature of this study, the findings are intended to provide an empirical description of students' perceptions rather than aiming for a broad generalization of findings.[20]

The selection of participants in this study employed a purposive sampling technique. To ensure the validity of the data, specific inclusion criteria were established for the respondents: (1) they must be active students at the Faculty of Primary Language Studies (FPBU), Universiti Sains Islam Malaysia (USIM); (2) they are currently studying the Arabic language; (3) they actively use smartphones; and (4) they have prior experience using AI tools in their learning activities.

This research began by conducting a comprehensive literature review of previous studies related to technology-based Arabic language learning, especially research focusing on AI tools applications and their use to learn Arabic vocabulary[21]. Then, the examiner adapted the questionnaire research instrument from the previous study using the Likert scale to measure students' perception of learning Arabic vocabulary through AI

[19] Rahmat Linur, Torkis Lubis, and Khabib Syaikhu Rohman, 'Student Perception Analysis of AI ' s Impact on Arabic Language Learning : A Personality Perspective', *Jurnal Jurusan Pendidikan Bahasa Arab*, 17.2 (2025), pp. 312–28, doi:10.24042/fya8h073.

[20] John W Creswell, 'Research Design, Pendekatan Metode Kualitatif, Kuantitatif, Dan Campuran, Terj', *Achmad Fawaid Dan Rinayati K. Yogyakarta: Pustaka Pelajar*, 2016.

[21] Jeong-Bae Son, Natasha Kathleen Ružić, and Andrew Philpott, 'Artificial Intelligence Technologies and Applications for Language Learning and Teaching', *Journal of China Computer-Assisted Language Learning*, 5.1 (2023), pp. 94–112, doi:10.1515/jccall-2023-0015.

tools, which refers to the *Technology Acceptance Model (TAM) construct* that has been adapted from the relevant study.[22]

Theoretically, the results of this study are expected to make a significant contribution to the development of TAM theory in the context of foreign language learning and the use of AI *tool* applications, as well as broaden understanding of the factors that affect the adaptation of educational technology.[23] Practically, the resulting analysis can be an input for the development of AI *tool* applications to improve the usability and ease of use offered[24]. In addition, the results of this study can provide recommendations for higher education institutions in effectively integrating technology into the Arabic curriculum, in line with the latest trends in education 4.0.[25]

A population is defined as a whole of individuals, objects, or events that are the primary focus of a study.[26]. The population that is the focus of this study is 550 students of the Arabic study program at FPBU USIM who actively use *smartphones* in teaching and learning. A sample is a subset of the population that is selected to represent the overall characteristics of the population.[27]. A sample of 70 respondents has taken part in this study.[28] The sample selection technique used is *purposive sampling*. *Purposive sampling* is a non-random sampling method in which researchers select samples based on specific characteristics that are relevant to the research objectives.[29]. With the criteria of participants who have or are utilizing the application of AI *tools*[30].

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[22] Viswanath Venkatesh and Fred D. Davis, 'A Theoretical Extension of The Technology Acceptance Model: Four Longitudinal Fields Studies', *Institute for Operations Research and the Management Science*, 46.2 (2018), pp. 186–204, doi:10.1287/mnsc.46.2.186.11926.

[23] Yan Zou and others, 'Beyond Instrumental Use : A TAM - Based Study of Al - AssistedLanguage Learning Among Chinese University Students', *Journal of Education and Training Studies*, 14.1 (2026), pp. 79–93, doi:10.11114/jets.v14i1.8034.

[24] Linh and Wu, 'A Conceptual Framework On Learner's Attitude Toward Using AI Chatbot Based On TAM Model in English Classroom'.

[25] Siti Fatimah, 'Integrasi Teknologi Dalam Pengajaran Bahasa Arab Di Madrasah', *Journal of Arabic Language, Literature, and Education*, 6.1 (2025), pp. 164–82, doi:10.37680/aphorisme.v6i1.7236.

[26] Primadi Candra Susanto et al., "Quantitative Research Concepts: Population, Samples, and Data Analysis (A Literature Review)," *Journal of Multidisciplinary Science* 3, no. 1 (2024): 1–12.

[27] Putu Gede Subhaktiyasa, 'Pendekatan Metodologi Penelitian Kuantitatif Dan Kualitatif', *Jurnal Ilmiah Profesi Pendidikan*, 9.4 (2024), pp. 2721–31.

[28] Maite Solans-Domenech and others, 'Development and Validation of a Questionnaire to Measure Research Impact', *Research Evaluation*, 28.April (2019), pp. 253–62, doi:10.1093/reseval/rvz007.

[29] Ika Lenaini, 'Teknik Pengambilan Sampel Purposive Dan Snowball Sampling Info Artikel Abstrak', *Jurnal Kajian, Penelitian & Pengembangan Pendidikan Sejarah*, 6.1 (2021), pp. 33–39 <http://journal.ummat.ac.id/index.php/historis>.

[30] Bimo Nugroho, Tuti Iriani, and R. Eka Murtinugraha, 'Analisis Penggunaan Aplikasi Artificial Intelligence (AI) Sebagai Alat Bantu Penyelesaian Skripsi Pada Mahasiswa', *Jurnal Ilmiah Ilmu Pendidikan*, 8.3 (2025), pp. 3022–29, doi:10.54371/jiip.v8i3.7391.

In this study, data collection was carried out through questionnaire distribution. A questionnaire is a data collection method that involves providing a list of questions to respondents to obtain responses to the questions asked. The distribution of the questionnaire was carried out in a hybrid manner, with distribution carried out online through *Google Form; the responses to* this questionnaire will later become the primary data of the research. In this study, the Likert Scale was used to test how the proposed variables in the model interact with each other. The following is the preparation of the Likert scale, namely 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly Agree, which is divided into four parts, namely Part A (Demographics), Part B (Perception of the use of *tools* Arabic AI), Part C (Perception of improving Arabic vocabulary), Part D (Perception of satisfaction with the use of Arabic AI tools).[31]

This research instrument is categorized based on various variables contained in the research model. After determining and designing the instrument, the next step is to collect data and carry out validity and reliability tests.[32]. This testing is essential to ensure that the instrument is valid and consistent, so that it is reliable in its use.

Data Analysis Techniques

Data analysis was carried out quantitatively using descriptive analysis to describe student perceptions, as well as inferential analysis (correlation test) to test hypotheses regarding the relationship between independent variables and dependent variables in *the Technology Acceptance Model (TAM).*[33] The researcher will use SPSS *(Statistical Package for the Social Sciences version 27)* to analyze the data collected from the respondents. The collected data were analyzed descriptively, including frequency, percentage, mean, and standard deviation.[34]

[31] Rosihan Anwar and Nuril Mufidah, 'Penggunaan Kecerdasan Buatan (AI) Dalam Pembelajaran Mahasiswa Kelas Peminatan Penelitian Bahasa Arab', *Arabic of Language and Linguistic Education*, 3.1 (2024), pp. 1–17.

[32] Ferdy Rakhmat Dianova and Najih Anwar, 'Analisis Butir Uji Validitas, Reliabilitas, Tingkat Kesukaran, Dan Daya Pembeda Soal Sumatif Bahasa Arab SD Islam', *Jurnal Bahasa Daerah Indonesia*, 1.3 (2024), p. 13, doi:10.47134/jbdi.v1i3.2863.

[33] Technology Acceptance Model, Technology Acceptance Model, and Perceived Usefulness, 'Penerapan Technology Acceptance Model (TAM) Dalam Pengujian Model Penerimaan Aplikasi MasjidLink', *Semesta Teknika*, 23.1 (2020), pp. 27–38, doi:10.18196/st.231253.

[34] Nur Rahmah and others, 'Pelatihan Teknik Analisis Data Statistik Menggunakan SPSS Pada Mahasiswa Jurusan Pendidikan Bahasa Asing Universitas Negeri Makassar', *Jurnal Hasil Pengabdian Masyarakat*, 4.1 (2024), pp. 29–37.

Result

Respondent Demographics

This section outlines the demographics of the profile of the respondents involved in the study, specifically.

Table 1. Table of Respondent Demographics by Gender

Gender	Frequency	Percent (%)
Man	19	27.10
Woman	51	72.90

The demographics of the analysis by gender in Table 1 showed that female respondents reached 51 people (72.9%), while male respondents amounted to 19 people (27.1%). This indicates that the participation of female students in this study is much more dominant than that of male students.

Table 2. Table of Respondent Demographics by Student Year

Student Year	Frequency	Percent (%)
Year 1	6	8.60
Year 2	21	30.00
Year 3	40	57.10
Year 4	3	4.30

The demographic analysis based on the year of the respondents' study in Table 2 shows that the respondents of the third year study were 40 people (57.1%). The second year respondents amounted to 21 people (30%), the first year 6 people (8.6%), and the fourth year only three people (4.3%). This distribution shows that most of the respondents involved were at an intermediate level in their study program.

Table 3. Table of Respondent Demographics by Tempo of Learning Experience discussing Arabic

Tempo Arabic Learning Experience	Frequency	Percent (%)
1-3 Years	4	5.70
12-15 Years	27	38.60
3-6 Years	6	8.60
6-9 Years	14	20.00
9-12 Years	16	27.10

The demographics analysis is based on the duration of learning experience to discuss Arabic in Table 3. The largest group of respondents, namely 27 people (38.6%), have experience learning Arabic for 12-15 years. Furthermore, there were 19 people (27.1%) who had learning experience between 9-12 years, 14 people (20%) who had studied for 6-9 years, six people (8.6%) for 3-6 years, and four people (5.7%) with 1-3

years of experience. This data shows that the majority of learners have significant experience in learning Arabic.

Table 4. Table of Respondent Demographics by Type of AI tool application used

Types of AI Tools Applications	Frequency	Percent (%)
Al Ansari	1	1.40
Al Maany	24	34.30
Al-Hadi. my	1	1.40
Learn Arabic	1	1.40
ChatGpt	17	24.30
Deepseek	1	1.40
Duolingo	3	4.30
Google Translate	3	4.30
Memrise	1	1.40
Pencil	1	1.40
Reverse	4	5.70
Tashkeel.ai	9	12.90
Tiktok	1	1.40
Translator	1	1.40
Maktabah Syamilah	2	2.90

The analysis was based on the type of AI *tools* application in Table 4. The Al Maany application was used by 24 respondents, 34.3%, followed by ChatGPT, with a difference of 10% with as few as 17 respondents, and Tashkeel.ai, with as few as nine respondents, 12.9%. Other apps, such as Reverso at 5.7%, Duolingo, and Google Translate at 4.3% each, were also used, while other apps had fewer user respondents. This analysis shows a variation in learners' preferences in choosing AI tools for Arabic vocabulary learning.

Table 5. Table of Respondent Demographics based on Ease of Access via *smartphone*

The Arabic AI tools app is easy to access and use	Frequency	Percent (%)
No	3	4.30
Yes	67	95.70
The use of AI tools application 3 times in a row	Frequency	Percent (%)
No	10	14.30
Yes	60	85.70

The demographics analysis based on accessibility and frequency of use in Table 5 of 95.7% of respondents stated that the application of Arabic AI tools can be easily accessed through *smartphones.* This shows the effectiveness of *smartphones* as a medium for learning Arabic vocabulary. In addition, the frequency of using Arabic AI

tool applications was 85.7% of respondents using them in the time bracket of three times a week.

Table 6. Table of Respondent Demographics by Duration of Use

Duration of Use	Frequency	Percent (%)
1 Jam	17	24.30
1-2 Jam	17	24.30
10-15 Minutes	1	1.40
2-3 Jam	6	8.60
3-4 Jam	3	4.30
30 Minutes	26	37.10

The demographic analysis based on the duration of use in Table 6 shows that although it is used frequently, the duration of daily use is relatively short. Most respondents spent 30 minutes daily (37.10%), with the other group spending an hour and 1-2 hours respectively at 24.30%. This statement shows that most learners use AI *tools* for a relatively moderate time frame every day.

Perception of the Use of Arabic Applications on Smartphones

Perception analysis of the use of AI *tools* is critical in the context of digital learning. Therefore, the data in Table 7-9 in detail describes the study of how students assess and respond to the use of Arabic AI tools accessed via *smartphones.*

Table 7. Students' Perception of the Use of AI Tool Applications on *Smartphones*

	Items	STS	TS	N	S	SS	Mean	Std. Deviation
1	I have and use a smartphone in Arabic language learning activities.	0 0%	0 0%	8 11.40%	28 40.00%	34 48.60%	4.37	0.685
2	I found Arabic AI apps and *tools* on smartphones easy to use.	0 0%	1 1.40%	8 11.40%	25 35.70%	36 51.40%	4.37	0.745
3	The content of Arabic applications and *AI tools* on smartphones is appropriate to the student's level/stage.	0 0%	3 4.30%	10 14.30%	28 40.00%	29 41.40%	4.19	0.839
4	*The user interface* of Arabic AI applications and *tools* on smartphones is attractive and easy to	0 0%	2 2.90%	8 11.40%	35 50.00%	25 35.70%	4.19	0.748

	understand.							
5	Arabic AI apps and *tools* on smartphones provide accurate translation/information results.	0 0%	6 8.60%	17 24.30%	28 40.00%	19 27.10%	3.86	0.921
6	The Arabic AI apps and *tools* on smartphones have functions that match what I need.	0 0%	2 3%	13 18.60%	29 41.40%	26 37.10%	4.13	0.815
7	Arabic AI applications and *tools* on smartphones make the process of learning vocabulary more interesting.	0 0%	0 0%	11 15.70%	32 45.70%	27 38.60%	4.23	0.705
		Sum					**4.19**	**0.779**

Table 7 shows an analysis of students' perceptions of the application of *Arabic AI tools in learning Arabic vocabulary. Statement (1) shows an average score of 4.37, with 48.60% stating that they strongly agree with using smartphones* to study. Statement (2) with an average score of 4.37, 51.40% strongly agree that the application of Arabic AI tools is easy to use. Statement (3), with an average score of 4.19, states that the Arabic AI *tools* application material is relevant, but there is a standard deviation of 0.839. Statement (4) with an average score of 4.19, 50.00% agreed that the *user interface* of the Arabic AI tools application was attractive and easy to understand. Statement (5), with the lowest average score of 3.86, of 24.30% indicates a neutral position on translation accuracy. Statement (6), with an average score of 4.13, amounting to 41.40% indicates agreement about the function *of* the application of Arabic AI tools according to the needs of the respondents. Statement (7) shows an average score of 4.23, with 45.70% agreeing that the application of Arabic AI *tools* increases learning motivation. Overall, respondents had a positive perception of the use of Arabic AI *tools* in learning Arabic vocabulary.

Table 8. Students' Perception of Improving Arabic Vocabulary

	Items	**STS**	**TS**	**N**	**S**	**SS**	**Mean**	**Std. Deviation**
8	An Arabic AI app on a smartphone helps me memorize	0 0.00%	3 4.30%	14 20.00 %	29 41.40 %	24 34.30%	4.06	0.849

	new vocabulary							
9	The Arabic AI app on my smartphone makes it easier for me to remember Arabic vocabulary.	0 0%	4 5.70%	15 21.40 %	26 37.10 %	25 35.70%	4.03	0.900
10	Arabic vocabulary improves further after using the app.	0 0%	1 1.40%	13 18.60 %	34 48.60 %	22 31.40%	4.10	0.745
11	I use an Arabic or AI app on my smartphone to find new vocabulary.	0 0%	0 0%	12 17.10 %	32 45.70 %	26 37.10%	4.20	0.714
12	I prefer Arabic AI apps on smartphones rather than referencing physical dictionaries.	0 0%	3 4.30%	10 14.30 %	29 41.40 %	28 40.00%	4.17	0.834
13	Arabic AI applications on smartphones can increase confidence in using Arabic vocabulary.	0 0%	0 0%	20 28.60 %	27 38.60 %	23 32.90%	4.04	0.788
14	I practice Arabic vocabulary in everyday speech	3 4.30%	8 11.40 %	25 35.80 %	19 27.10 %	15 21.40%	3.50	1.087
15	Assignment and test scores improved after using Arabic AI applications.	0 0%	0 0%	16 22.90 %	32 45.70 %	22 31.40%	4.09	0.737
	Sum						**4.02**	**0.831**

Table 8 shows students' perceptions of improving Arabic vocabulary through the application of Arabic AI tools. Statements (8 & 9) respondents assessed "Strongly Agree" on the effectiveness of the application in helping the memorization process, with a mean of 4.06, as well as making it easier to recall vocabulary, with a mean of 4.03. More than 75% of respondents agreed that the Arabic AI tools app also serves as a memorial tool. A survey (10) with the highest average score of 4.10 showed an increase in vocabulary, where 48.60% of respondents stated "Agree" and 31.40% "Strongly Agree". Statements (11 & 12) with an average score of 4.20 and 4.17 showed the students' reliance on Arabic AI *tools* applications to discover new Arabic vocabulary. Statement (13) with a score of 4.04 shows an increase in confidence in the use of Arabic

vocabulary. Statement (14) with an average score of 3.50 shows that the application *of* these Arabic AI tools is more effective in vocabulary acquisition compared to oral practice. Meanwhile, statement (15) with an average score of 4.09 shows the positive impact of the application on academic grades. Overall, the application *of Arabic and* smartphone AI *tools* contributes significantly to vocabulary learning, but more research is needed to attribute these results to oral practice.

Table 9. Students' Perception of User Satisfaction

	Items	STS	TS	N	S	ST	Mean	Std. Deviation
16	I quickly find new meanings and vocabulary uses through an Arabic AI app on a smartphone	1 1.50%	0 0%	5 7.10 %	36 51.40 %	28 40.00%	4.29	0.729
17	An Arabic app on smartphones provides practical interactive exercises for memorizing vocabulary	1 1.50%	5 7.10 %	12 17.10 %	31 44.30 %	21 30.00%	3.94	0.946
18	Interactive User Interface features like quizzes and in-app games make me more motivated to learn.	0 0%	1 2%	14 20%	36 51%	19 27.10%	4.04	0.731
19	I found learning Arabic vocabulary through Arabic AI apps on smartphones easier than other methods.	0 0%	0 0%	9 12.90 %	39 55.70 %	22 31.40%	4.19	0.644
20	I am satisfied with the results of learning Arabic vocabulary through the Arabic AI application on a smartphone.	0 0%	1 1.40 %	15 21.40 %	27 38.60 %	27 38.60%	4.14	0.804
21	Features such as flashcards, quizzes, or games in the	2 2.90%	1 1.40 %	10 14.30 %	33 47.10 %	24 34.30%	4.09	0.897

	Arabic AI app on smartphones help improve my Arabic vocabulary.							
22	I often use quiz content and exercises in Arabic AI apps on smartphones to learn vocabulary.	2 2.90%	2 2.90 %	15 21.40 %	32 45.70 %	19 27.10%	3.91	0.862
	Sum						**4.08**	**0.801**

Table 9 shows a very high level of student satisfaction with the use of Arabic AI *Tools* applications in Arabic vocabulary learning, with a combined average score of 4.08. Statement (16) of respondents showed the highest satisfaction of 4.29 with the app's ability to facilitate the rapid search for the meaning of new vocabulary, making it a key factor in satisfaction. Statements (19 & 20) with average scores of 4.19 and 4.14 showed the perception of ease of learning vocabulary through AI tool applications in Arabic compared to other methods, and satisfaction with learning outcomes affirmed the excellence of user experience and application effectiveness. The statements (18 & 21) with an average score of 4.04 and 4.09 showed that gamification features, such as quizzes and games, were considered to be successful in increasing learning motivation, and interactive features helped improve vocabulary directly. Statement (22) Although the quiz and interactive exercise features were rated effective with an average score of 3.91 for frequency of use, it indicates that these features have not been fully optimally integrated into the student's daily learning routine. Overall, these findings confirm that speed of access, ease of use, and motivational features are the main drivers of satisfaction and effectiveness of Arabic AI tool applications in learning Arabic vocabulary.

Validity Test

The Validity Test is used to assess how valid the research instrument is in measuring the level of accuracy and suitability of the measuring instrument in capturing phenomena from the focus of the research. The results of the validity test of the research variables can be seen in Tables 10-12.

Table 10. Validity Test of variable X

		Variable X							
		P01	**P02**	**P03**	**P04**	**P05**	**P06**	**P07**	**TotalX**
P01	Pearson Correlation	1	.634**	.585**	.514**	.407**	.407**	.512**	.706**
	Sig. (2-tailed)	<,001	<,001	<,001	<,001	<,001	<,001	<,001	<,001
	N	70	70	70	70	70	70	70	70
P02	Pearson Correlation	.634**	1	.676**	.654**	.479**	.517**	.580**	.799**
	Sig. (2-tailed)	<,001	<,001	<,001	<,001	<,001	<,001	<,001	<,001
	N	70	70	70	70	70	70	70	70
P03	Pearson Correlation	.585**	.676**	1	.729**	.541**	.600**	.588**	.841**
	Sig. (2-tailed)	<,001	<,001	<,001	<,001	<,001	<,001	<,001	<,001
	N	70	70	70	70	70	70	70	70
P04	Pearson Correlation	.514**	.654**	.729**	1	.607**	.578**	.715**	.851**
	Sig. (2-tailed)	<,001	<,001	<,001	<,001	<,001	<,001	<,001	<,001
	N	70	70	70	70	70	70	70	70
P05	Pearson Correlation	.407**	.479**	.541**	.607**	1	.777**	.608**	.804**
	Sig. (2-tailed)	<,001	<,001	<,001	<,001	<,001	<,001	<,001	<,001
	N	70	70	70	70	70	70	70	70
P06	Pearson Correlation	.407**	.517**	.600**	.578**	.777**	1	.578**	.806**
	Sig. (2-tailed)	<,001	<,001	<,001	<,001	<,001	<,001	<,001	<,001
	N	70	70	70	70	70	70	70	70
P07	Pearson Correlation	.512**	.580**	.588**	.715**	.608**	.578**	1	.808**
	Sig. (2-tailed)	<,001	<,001	<,001	<,001	<,001	<,001	<,001	<,001
	N	70	70	70	70	70	70	70	70
Total X	Pearson Correlation	.706**	.799**	.841**	.851**	.804**	.806**	.808**	1
	Sig. (2-tailed)	<,001	<,001	<,001	<,001	<,001	<,001	<,001	<,001
	N	70	70	70	70	70	70	70	70

**. Correlation is significant at the 0.01 level (2-tailed).

The results of Pearson's correlation analysis showed that the research instrument for variable X had high and consistent internal validity. The questions asked in the study (P01 to P07) in the context of variable X all stated that the instrument tested was valid. The results of the analysis of the validity of the instruments showed that each instrument was valid; this was evident from the relatively positive and significant *α=0.01, and the connection (X) to the* Total X score system was consistent. The value of the correlation

coefficient of the instrument is valid in the range of correlation coefficient (r=0.706 to r=0.851), indicating that the instrument has an interconnection (con-connection) with another instrument that is measured very strongly to the subject being measured as a whole. What is more, the significance value of *each instrument's 2-tailed Sig.* is *p<0.001, indicating that the instrument is valid with a quality level.*

Table 11. Validity Test of variable Y

		Variable Y								
		P08	**P09**	**P10**	**P11**	**P12**	**P13**	**P14**	**P15**	**TotalY**
P08	Pearson Correlation	1	.813**	.655**	.554**	.436**	.602**	.487**	.548**	.814**
	Sig. (2-tailed)	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001
	N	70	70	70	70	70	70	70	70	70
P09	Pearson Correlation	.813**	1	.687**	.622**	.437**	.611**	.548**	.630**	.856**
	Sig. (2-tailed)	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001
	N	70	70	70	70	70	70	70	70	70
P10	Pearson Correlation	.655**	.687**	1	.561**	.415**	.659**	.492**	.697**	.814**
	Sig. (2-tailed)	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001
	N	70	70	70	70	70	70	70	70	70
P11	Pearson Correlation	.554**	.622**	.561**	1	.550**	.654**	.448**	.710**	.797**
	Sig. (2-tailed)	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001
	N	70	70	70	70	70	70	70	70	70
P12	Pearson Correlation	.436**	.437**	.415**	.550**	1	.628**	.176	.471**	.641**
	Sig. (2-tailed)	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001
	N	70	70	70	70	70	70	70	70	70
P13	Pearson Correlation	.602**	.611**	.659**	.654**	.628**	1	.431**	.717**	.832**
	Sig. (2-tailed)	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001
	N	70	70	70	70	70	70	70	70	70
P14	Pearson Correlation	.487**	.548**	.492**	.448**	.176	.431**	1	.597**	.693**
	Sig. (2-tailed)	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001
	N	70	70	70	70	70	70	70	70	70
P15	Pearson Correlation	.548**	.630**	.697**	.710**	.471**	.717**	.597**	1	.846**
	Sig. (2-tailed)	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001
	N	70	70	70	70	70	70	70	70	70
TotalY	Pearson Correlation	.814**	.856**	.814**	.797**	.641**	.832**	.693**	.846**	1
	Sig. (2-tailed)	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001
	N	70	70	70	70	70	70	70	70	70

**. Correlation is significant at the 0.01 level (2-tailed).

The results of Pearson's correlation analysis show that the Variable Y measuring instrument has a very high internal validity. Each question item from P.08 to P.15 proved valid because it was able to show a positive and significant Pearson Correlation coefficient (r) (α=0.01) when associated with the total score (Total Y). The validity of the question item is also supported by the correlation value of the measurement of all question items, P.08 to P.15, where on P.12, the correlation r=0.641 is obtained, and on P.09, r=0.856, which indicates a strong to powerful relationship with the overall measurement construct. This is derived from the *Sig. 2-tailed* significance value for all items, which shows p<0.001. This confirms that statistically, the validity of the question item is very high.

Table 12. Validity Test of variable Z

		Variable Z							
		P16	**P17**	**P18**	**P19**	**P20**	**P21**	**P22**	**TotalZ**
P16	Pearson Correlation	1	.256*	.441**	.257*	.302*	.229	.274*	.514**
	Sig. (2-tailed)		.032	.000	.032	.011	.056	.022	.000
	N	70	70	70	70	70	70	70	70
P17	Pearson Correlation	.256*	1	.423**	.494**	.487**	.587**	.638**	.779**
	Sig. (2-tailed)	.032		.000	.000	.000	.000	.000	.000
	N	70	70	70	70	70	70	70	70
P18	Pearson Correlation	.441**	.423**	1	.630**	.606**	.503**	.582**	.795**
	Sig. (2-tailed)	.000	.000		.000	.000	.000	.000	.000
	N	70	70	70	70	70	70	70	70
P19	Pearson Correlation	.257*	.494**	.630**	1	.592**	.399**	.367**	.699**
	Sig. (2-tailed)	.032	.000	.000		.000	.001	.002	.000
	N	70	70	70	70	70	70	70	70
P20	Pearson Correlation	.302*	.487**	.606**	.592**	1	.405**	.405**	.726**
	Sig. (2-tailed)	.011	.000	.000	.000		.001	.001	.000
	N	70	70	70	70	70	70	70	70
P21	Pearson Correlation	.229	.587**	.503**	.399**	.405**	1	.810**	.791**
	Sig. (2-tailed)	.056	.000	.000	.001	.001		.000	.000
	N	70	70	70	70	70	70	70	70
P22	Pearson Correlation	.274*	.638**	.582**	.367**	.405**	.810**	1	.821**
	Sig. (2-tailed)	.022	.000	.000	.002	.001	.000		.000

	N	70	70	70	70	70	70	70	70
Total Z	Pearson Correlation	.514**	.779**	.795**	.699**	.726**	.791**	.821**	1
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	
	N	70	70	70	70	70	70	70	70

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

The results of Pearson's comprehensive correlation analysis indicate that the Variable Z measuring instrument has high and consistent internal validity. All question items P.16 through P.22 were proven to be valid because they showed a positive and significant Pearson Correlation coefficient (r) at a level *of* α=0.01 when correlated with a total score of Total Z. The correlation coefficient ranged from r = 0.514. P16 to r = 0.821 P.22, which confirms the existence of a strong to powerful relationship between each item with the Z Variable construct measured as a whole. Thus, all question items P16 to P22 effectively measure the exact dimensions and are suitable for use in this study.

Reliability Test

The Reliability Test is used to assess the consistency and stability of research instruments in producing stable data. The results of the research reliability test can be seen in Table 13.

Table 13. Reliability Test

Reliability Statistics

Cronbach's Alpha	N of Items
.955	22

The results of the overall reliability test of the research instrument showed a Cronbach's Alpha (α) value of 0.955 for 22 questions. This value is well above the minimum threshold value commonly accepted in social research (α 0.70) and at the same time indicates an exceptional category (α> 0.90). A value of 0.955 indicates internal consistency and very high reliability. This instrument shows a tendency to provide consistent and stable results when applied to the same group of subjects. It is highly reliable and is used to measure research constructs with high confidence.

Correlation Test

The Correlation Test aims to test the relationship and significance of the use of Arabic AI tool applications via *smartphones* in improving Arabic vocabulary. The results obtained are as follows:

Table 14. Correlation Test

Correlations			
		X	**And**
Use of *AI Tools* Applications on Smartphones	Pearson Correlation	1	.846**
	Sig. (2-tailed)		.000
	N	70	70
Improvement of Arabic Vocabulary	Pearson Correlation	.846**	1
	Sig. (2-tailed)	.000	
	N	70	70

**. Correlation is significant at the 0.01 level (2-tailed).

The results of Pearson's correlation analysis above reveal a very strong, positive, and statistically significant relationship between the variables of the use of AI tool applications on smartphones and the improvement of Arabic vocabulary. A positive (+) sign on the coefficient indicates a unidirectional relationship. The value of the Pearson correlation coefficient (r) of 0.846 indicates that the relationship between the two variables is at a degree of very strong positive correlation and unidirectional. This means that the higher the intensity of using AI tools through smartphones by students, the higher the increase in Arabic vocabulary achieved. This study was strengthened with a significance value (*Sig. 2-tailed*) of $p<0.001$, which is much smaller than the significance level (α=0.01). Therefore, H0, stating that there is no relationship, is rejected, and it is concluded that the observed relationship is genuine and has a substantial contribution.

Discussion

This study shows that the involvement and acceptance of Arabic language students at USIM towards the use of *Arabic AI Tools* applications accessed through *smartphones* has a significant impact on improving Arabic vocabulary.[35] The majority of respondents are women from the 3rd year who have been studying Arabic for several years. Most respondents use AI applications such as Al Maany and ChatGPT and utilize these applications moderately and regularly for 30 minutes to 2 hours a day.

Data perception analysis shows that Arabic AI *tools* applications on smartphones are easily accessible, with 95.7% of respondents stating ease of access, and 85.7% using

[35] Rosyawati Ab Rahim and others, 'A Smartphone Applivation for Learning Arabic Vocabulary: A Comprehensive Systematic Review', *International Journal of Modern Education (IJMOE)*, 6.20 (2024), pp. 593–615, doi:10.35631/IJMOE.620043.

them at least three times a week. The average score of perception of ease of use, material quality, interface design, and learning motivation was on a scale above 4 out of 5, indicating a very positive attitude. The statement on translation accuracy suggests that there is a need to be vigilant about the output of Arabic AI *tool* applications, even though these applications are considered adequate for vocabulary acquisition, retention, and academic performance.[36]

The validity and reliability test of the instruments used also showed excellent results. This can be seen from *Cronbach's Alpha* number, which is at 0.955 (22 questions), which means that the internal consistency of this instrument is very high. Each question item of each variable (X, Y, Z) was also significantly valid, with *the Pearson* coefficient r above 0.7 and $p < 0.01$. This means that this instrument is able to measure the exact dimensions with high consistency.

In addition, the results of Pearson's correlation analysis test showed that there was a powerful relationship between the intensity of the use of Arabic-language AI tool applications on smartphones and the increase in Arabic vocabulary. This can be seen from the results of the analysis, showing r=0.846; $p < 0.001$. This means that the existing relationship shows that the longer and higher the frequency and duration of using Arabic AI tools applications, the higher the increase in Arabic vocabulary that students get. This finding is in line with research conducted by Fatmawati, which states that the application of Arabic AI tools not only accelerates the mastery of Arabic vocabulary and writing but also provides varied, contextual, and instant feedback. Other research conducted by Ilham MR[37] Also shows that the use of AI will provide maximum mastery of the linguistic aspects of Arabic, especially in vocabulary enrichment and pronunciation improvement.

In the study (Ilham MR)[38] showed that the use of AI in teaching vocabulary using digital media is very effective compared to traditional approaches, such as PowerPoint, resulting in a significant improvement in the results of *pre-test* and *post-test* learning Arabic vocabulary through digital media. Other research has also shown that AI is

[36] Sirojul Hakiki Ahmad, Hizam Ibtisamah, and Amin Aziz Yek, 'Integrasi Artificial Intelegence Dalam Penerjamahan Bahasa Arab - Indonesia Di Era 5.0', *J-Simbol: Jurnal Magister Pendidikan Bahasa Dan Sastra Indonesia*, 12.2 (2024).
[37] Ilham MR, "The Use of AI Technology Media in Improving Arabic Language Skills at PPM Rahmatul Asri," *Https://Repository.Iainpare.Ac.Id/Id/Eprint/8833/1/2220203888104001.Pdf*, 2024, 1–23.
[38] Ilham MR, 'Penggunakaan Media Teknologi AI Dalam Meningkatkan Kemampuan Berbahasa Arab Di PPM Rahmatul Asri'.

effective in improving vocabulary mastery and listening skills in Arabic by customizing and personalizing learning materials according to the needs and speed of each student. This *hints* that in the future, education will be increasingly involved with gamification and AI-based personalized learning experiences[39]. In Talqis Nurdianto's research on the Basic Competencies of Arabic Language Learning*, the Common European Framework of Reference (CEFR)*[40] also shows that the use of digital technology and AI applications is very supportive in improving Arabic language skills as a whole, including the development of vocabulary and speaking skills.

Conclusion

Based on the results of the study, the use of Arabic AI *Tools* applications accessed through *smartphones* has a significant correlation with improved Arabic vocabulary mastery, satisfaction, motivation, ease of access, and better academic outcomes for Arabic language learners at USIM, with *a value of* $r = 0.846$, $p < 0.001$. The high level of user engagement, especially among female students and third-year students, as well as positive ratings with an average score of > 4.0 for aspects of ease of access, relevance of materials, and attractive interfaces, confirms the positive acceptance and effectiveness of this technology in supporting the learning process. Although there is some caution regarding translation accuracy and oral practice, a valid and highly reliable instrument with *Cronbach's Alpha* = 0.955 reinforces that the application *of AI tools*, such as Al Maany and ChatGPT, facilitates improved Arabic vocabulary, ease of recall, and confidence, in accordance with the latest literature in the field of digital Arabic language learning.

Academically, this research has a positive influence on AI tool applications in language learning, offering a convenient educational alternative that is in accordance with digital habits. This study explains the contribution of smartphone-based learning with AI, showing the importance of the development of AI language learning, not only accelerating digital learning and vocabulary, but also increasing learning effectiveness. Smartphone-based AI learning provides an innovative, dynamic, and easily adaptable approach to language learning needs.

[39] Sana O.I Awad, Yuslina Mohamed, and Rami Shaheen, 'Applications of Artificial Intelligence in Education.', *International Journal Of Languages and Education*, Vol.1, No. (2022), pp. 1–11.
[40] Talqis Nurdianto, *Basic Competencies of Arabic Language Learning Common European Framework Of Reference*, 2020.

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