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# Challenges and Opportunities Associated with AI Chatbots in Language Learning from the Perspective of Users in Saudi Arabia

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**Abstract.** Language learning is a continuous process that requires sustained motivation and support. The emergence of AI chatbots has introduced a new era in which language learning can be practiced individually and independently. While numerous benefits can be realized, this advancement is accompanied by specific challenges. Accordingly, this study explores the opportunities and challenges associated with the use of AI chatbots in language learning in the context of Saudi Arabia. Data were collected using a questionnaire distributed to a random sample (N=202). The findings indicate that AI chatbots are generally perceived positively by language learners. They consider these a revolutionary technology that will open the door for opportunities and provide benefits for those interested in language learning. However, several challenges remain, particularly concerning the credibility and authenticity of AI-generated content. Future research should delve into the issues of users' privacy, ethics and content validity. Moreover, the study's sample size could be expanded in future research for a more comprehensive understanding. Further investigations focusing on specific age groups may also yield deeper insights compared to generalized population studies.

**Keywords:** artificial intelligence; language learning; challenges; opportunities; chatbots

## 1. Introduction

The advent of artificial intelligence (AI) technology has significantly transformed modern life, revolutionizing how individuals, institutions, and organizations function and interact. In particular, AI chatbots have made language learning more accessible and affordable. This technology enhances interpersonal communications and supports customized self-learning (Poncette et al., 2020). As a result, language learning is becoming increasingly ubiquitous, unrestricted by

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time or location. Numerous studies have reported favorable perceptions regarding the use of AI chatbots in language education. In Saudi Arabia, the application of AI is gradually expanding, attracting increasing scholarly and public attention. However, few studies have been implemented to address the possible challenges and opportunities of using AI chatbots in language learning from the perspective of residents in Saudi Arabia. Some studies have explored the broader implications of AI in sectors such as healthcare and higher education (Metwally & Bin-Hady, 2025; Alotaibi & Alshehri, 2023), while only a few have examined the perspectives of Saudi residents on the use of AI chatbots in language learning (Jamshed et al., 2024).

Despite their benefits, AI chatbots present ethical and safety challenges that require careful examination. For instance, there is the issue of ethical considerations and the safety of AI deployment in language learning among ordinary people. At the same time, these issues could act as opportunities if they are appropriately addressed. While prior research has explored the usability of this technology and user attitudes, few studies have highlighted the possible challenges and opportunities of this technology, especially in the context of Saudi Arabia (Crompton et al., 2024). Most current literature focuses on countries such as the United States, Taiwan and Hong Kong (Hwang & Chang, 2023). This study aims to contribute to this by exploring the challenges and opportunities associated with AI chatbots in language learning in the context of Saudi Arabia by addressing the following research questions:

1. What are the challenges language learners in Saudi Arabia may face when using AI chatbots?
2. What opportunities do language learners in Saudi Arabia expect when using AI chatbots?

## 2. Literature Review

AI chatbots have the potential to "promote social good in different real-world scenarios" (Jin et al., 2021, p. 1). Although their benefits may outweigh associated risks, integrating this technology into people's lifestyles and daily activities is imperfect and comes with risks and challenges. These challenges must be acknowledged to ensure responsible and effective use, especially among non-regular users who may not be as cautious as they should be.

### *Theoretical Frameworks of AI Chatbots in Language Learning*

The use of AI chatbots in language learning can be addressed and evaluated by means of the use of theoretical frameworks that can expand our understanding of the situation and shape our analysis (Xiao et al., 2024). One of these theories is connectivism learning theory, which relates to the situation in which technology facilitates the language learning process via AI chatbots. The second framework is control-value theory, whereby learners' emotions are controlled and activities and tasks are effected. The third framework is interaction theory, whereby language acquisition is the center of the learning process by promoting learner interaction with AI chatbots. This study adopted connectivism learning theory as the framework to be followed owing to its close relationship with the subject of this study and its solid establishment in language teaching and learning

associated with using technological devices (Goldie, 2016). Connectivism is a "learning process that occurs when knowledge is actuated through the process of a learner connecting to and feeding information into a learning community" (Kop & Hill, 2008, p. 3). Moreover, universal communities and societies are framed nowadays by emerging technologies.

***Challenges and Threats of AI Chatbots in Language Learning***

Morals and ethics are primary considerations among human beings that shape their duties and control their behavior. Many organizations and institutions follow a precise protocol to adhere to ethics and morals. These ethical issues are significant, and it is crucial that they are followed and respected in the use of AI chatbots, as they may pose threats to human behavior and lead to the mistreatment of users (Hwang & Chang, 2023). In addition, ethics regarding AI chatbots may significantly impact biased decisions, especially in healthcare and finance, where sensitive data is dealt with. In language learning, ethics and morals relating to AI chatbots may affect the validity and credibility of knowledge and the information provided. Furthermore, Vaccino-Salvadore (2023) argues that the use of AI chatbots in language learning opens the door for new opportunities; however, she warned that ethical considerations are to be addressed. She conducted an exploratory study with regard to using ChatGPT in language learning with a focus on ethics and morals. She concluded that ethical concerns associated with AI chatbots are one of the primary considerations to be addressed. Personal data, moreover, is one of the main focus areas regarding the functioning of AI chatbots. This means that data privacy and security measures are a prime concern in preserving users' privacy and safety. Any threats to this data may result in severe consequences for both individual users and organizations. Thus, it is strongly recommended that rigorous and transparent data measurement policies be deployed and that data protection guidelines be adhered to. For example, personal data stored in AI chatbots may be used without users' permission for reasons such as improving chatbot services and conducting further research (Kasneci et al., 2023). This is a serious aspect that needs to be addressed. The privacy of minors is another critical concern that AI chatbots should consider.

In their language learning journey, underage users may access inappropriate age-related content that is unsuitable for them (McCallum, 2023). Thus, a policy and regulatory guide needs to be created and followed by AI chatbots. According to Robertson (2023), Open AI has created a regulatory policy for minor users in response to concerns of the Italian government to ensure the privacy and safety of minor users in Italy. This regulatory guide must be applied to all users regardless of location.

In addition, AI chatbots can be exploited in a way that spreads misinformation and manipulates the public, mainly owing to their profound ability to engage with users. This is a salient consequence if not dealt with and controlled correctly. For instance, language learners cannot verify whether the information provided by AI chatbots is human-generated or machine-generated (Cotton et al., 2024). Unlike human-generated information, the issue with machine-generated information is its accuracy and whether self-taught language learners should accept it.

Therefore, verification measures and protocols to ensure the accuracy and authenticity of information input ought to be implemented.

Furthermore, AI, in general, is likely to replace humans in the job market, which may affect public opinion regarding its benefits and undeniable potential. This socioeconomic impact will have to be addressed by policymakers for the sake of clarity and to assuage the public's concerns. AI needs a transparent and holistic regulation framework to ensure that providers adhere to the above ethical concerns. In doing so, confidence and trust on the part of the users are assured in terms of the use of personal data, which would positively affect public opinion. However, it can be argued that AI chatbots lack the emotional, social, and cultural context that teachers provide. Therefore, rather than being a threat to the job market, AI chatbots should be seen as a valuable tool to accelerate and support language learning and knowledge transfer. For example, Viktorivna et al. (2022) found that the loss of an authentic learning environment was one of the major concerns of students when using AI chatbots.

Moreover, ambiguous meanings are one of the significant challenges in language learning (Almurayh, 2021). Users may struggle with their inquiries or with understanding the information delivered. This challenge can be addressed by improving natural language processing (NLP) and contextual understanding in AI chatbots. Specifically, language consists of both concrete and abstract concepts (Garcia-Varela et al., 2024). Concrete words are those detached from context (e.g., dog, table), while abstract words are those linked to context (e.g., emotions and opinions). AI chatbots can deal with concrete words more readily than abstract words owing to the complexity of abstract words that need to be placed in contexts involving social and cultural variables. A recent study found that ChatGPT-4 could not generate disambiguated content as well as humans could (Liu et al., 2023). It was even argued that automating ambiguity is unachievable (Birhane, 2021). Consequently, ambiguity in AI chatbots is highly likely, and this aspect should be considered and addressed.

A recent systematic review by Crompton et al. (2024) identified the most frequent challenges associated with AI chatbots (Table 1).

**Table 1: Main challenges of AI chatbots**

| No | Main challenges | Sub-challenges | | |
|---|---|---|---|---|
| 1 | **Technology breakdowns** | Technical malfunctions | Incorrect answers | Connectivity |
| 2 | **Limited capabilities** | Unnatural interactions | Advancements in AI | |
| 3 | **Fear** | Personal data | Artificial world | Unknown |
| 4 | **Standardizing language** | NA | | |

Source: Crompton et al. (2024)

As Table 1 illustrates, technological breakdowns represent a challenging obstacle for users. These can be related to poor connection to the network, technical faults needing expert assistance, or inaccurate input and output that may result in misleading information (Thompson et al., 2018). Another challenge is the limited capabilities of chatbots, particularly the feeling of having unnatural interactions compared to that with humans. In addition, the rapid development of chatbots may hinder users with limited technological ability from becoming familiar with their use (Ericsson et al., 2023). Fear is another obstacle that may slow down users' adoption of chatbots. This includes fear on the part of users regarding their personal data, how AI may store it, and who might have access to it. Furthermore, having a standard language in chatbots that all users can understand is a real technical problem that needs to be addressed (Rowe, 2022). These challenges are among the obstacles that should be considered and dealt with appropriately.

***Opportunities and Future Expectations with Regard to AI Chatbots in Language Learning***

The advent of chatbots has undoubtedly paved the way for promising opportunities with its outstanding capabilities (Table 2). Language learning is one of the areas where chatbots can be enhanced and developed. In terms of language learning, this technology assists learners by providing customized and concise feedback (Belda-Medina & Calvo-Ferrer, 2022). This ability to provide learners with autonomous and constructive feedback is a distinct advantage that leads to learners being more focused. Furthermore, the advantage of receiving timely feedback and instant responses when users engage with AI chatbots is beneficial and an aspect that traditional methods lack (Huang et al., 2022). For instance, a study by Kim (2018) found that AI chatbots also support students' practices outside the classroom. This real-time interaction with users benefits teachers and students, as well as independent language learners (Chen et al., 2020).

**Table 2: Major benefits of AI chatbots**

| No | Benefits | Description | References |
|---|---|---|---|
| 1 | **Timeliness** | The ability of AI chatbots to provide instant and real-time interactions | Wang et al., 2017; Xu & Warschauer, 2020 |
| 2 | **Ease of Use** | The accessibility of AI chatbots via any technological device (i.e. computers, tablets, smart phones etc.) | Chen et al., 2020; Lin & Chang, 2020 |
| 3 | **Personalization** | Topics and content are provided based on users' preferences and input | Jia, 2009; Ruan et al., 2019 |

Source: Chen et al. (2020)

Motivation is another advantage of chatbot use. Their interactive and on-demand content can significantly enhance the learning process, making it more engaging and accessible everywhere and anytime (Hwang & Chang, 2023). The capability of chatbots to support learners with their dynamic and interactive content constitutes a milestone that was not attainable a decade ago. Nevertheless, while engagement is often seen as one of the merits of chatbots for language learning, others consider it an obstacle due to the difficulty of chatbots maintaining repetition and deep learning compared to humans (Luo et al., 2023).

Therefore, this study aims to further investigate the possible challenges and expected opportunities regarding AI chatbots in language learning in Saudi Arabia.

## 3. Methodology

Research encompasses a systematic process of examining a specific topic, resulting in knowledge that emerges from this inquiry (Nunan, 1992). Adopting a proper methodology, depending on the aim and objective of the inquiry, is necessary to engage in such research. The current study aims at exploring the challenges and opportunities associated with AI chatbots in language learning in the context of Saudi Arabia. A quantitative research approach via the use of a questionnaire was the primary method adopted for collecting data. This is owing to the solid representation of extensive numerical statistics linking theoretical concepts to practical implications (Plonsky, 2017).

### *Research Design*

Given the exploratory nature of this study, a descriptive research design was adopted to examine the challenges and opportunities linked to AI chatbot use in language learning. The questionnaire was distributed among people living in Saudi Arabia (Saudis and non-Saudis) to explore their perspectives and opinions. Before distributing the questionnaire, a pre-test was conducted with five participants to identify any possible mistakes and the need for corrections.

***Research Instrument and Data Collection***

The questionnaire was administered among 202 participants who are residents in Saudi Arabia. Age or level of education were not specific, as the sampling was diverse and such categories were not intended. The questionnaire included questions aimed at obtaining information about the participants' background. Because the intended sample was large and diverse, it was necessary to determine whether any variables emerged. The questionnaire included several sections incorporating 35 closed-ended questions. The given responses employed a four-point Likert-type scale to elicit frequencies that could be treated and analyzed statistically (Cohen et al., 2007). At the end of each section, open-ended questions were included to allow participants to express themselves by providing relevant comments and opinions.

The first and second sections collected demographic and linguistic background data. The third section explored the challenges and opportunities associated with AI chatbots and the participants' future expectations. The intended sample was diverse owing to the exploratory nature of the research, and the questionnaire was distributed through social networks, such as WhatsApp. Ethical considerations were thoroughly addressed during the data collection. An institutional review board (IRB) was consulted before collecting the data. All participants were above the age of 18 and consented to participate in the study. Before completing the questionnaire, they were informed of the aim of this study and assured that their responses would be anonymous and stored securely. Data collection spanned one month and led to the gathering of 202 valid responses.

## 4. Results

The majority of the 202 participants, namely 79.2%, were Saudi males, while 20.8% were females. The Saudis represented 85.6% while non-Saudis made up the remaining 14.4%. About 50.5% possessed less than a bachelor's degree, while 49.5% possessed a bachelor's degree or above. Only 32.7% were married. Most participants were bilingual (51.3%) and expressed their favorite learning mode as self-learning (Figure 1):

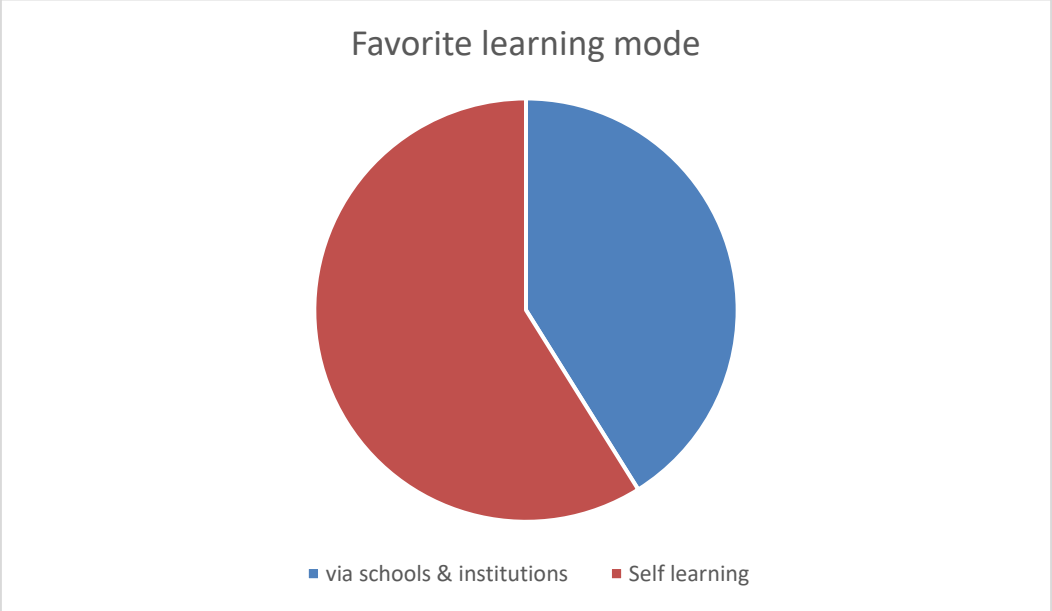


**Figure 1: Favorite learning mode**

Approximately 40.6% of the participants were familiar with AI chatbots (Figure 2), and about 25.7% indicated they were already using them. ChatGPT and Duolingo were among the most frequently mentioned chatbots by participants.

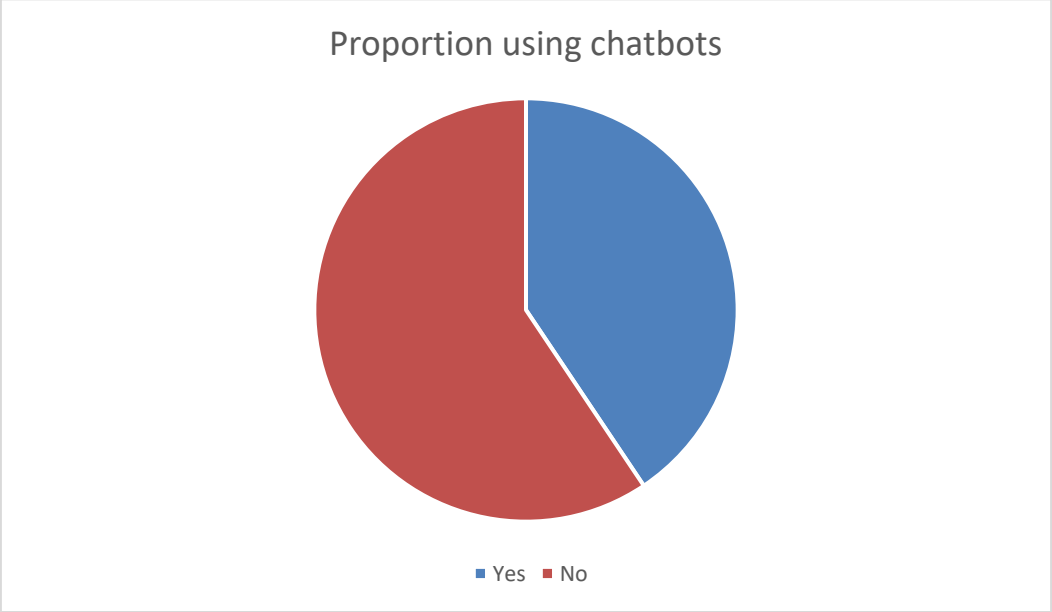


**Figure 2: Proportion using chatbots**

The participants' general perceptions of technology were positive (Figure 3), and nearly 91.6% believed in its credibility and trustworthiness. About 68.8% stated that they were satisfied with using chatbots, while 88.1% revealed that they would recommend them to others.

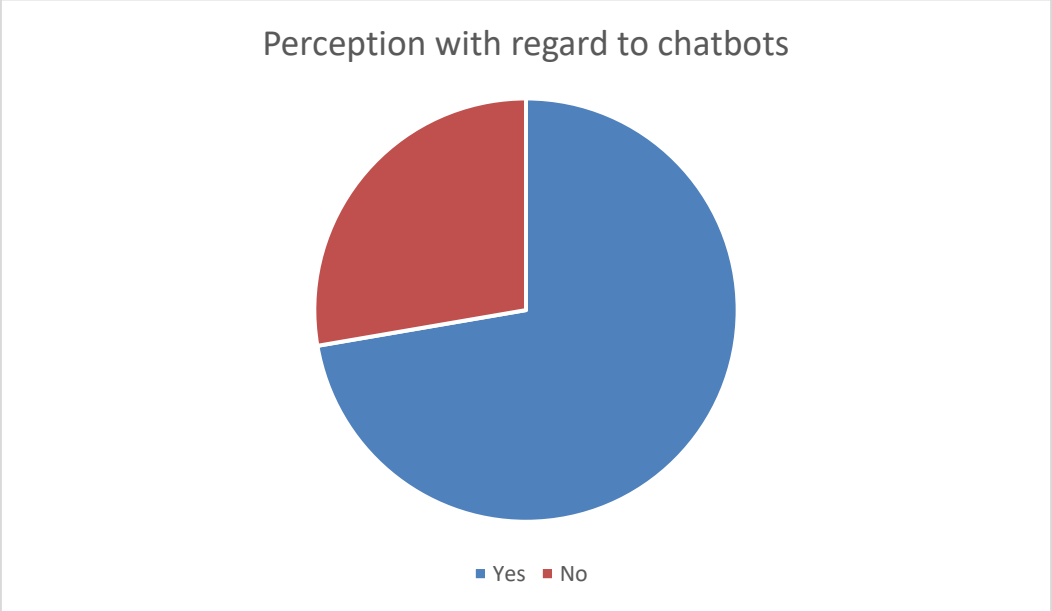


**Figure 3: Perception with regard to chatbots**

The reasons behind the use of AI chatbots varied among the participants. Clearly, the usability and accessibility of AI chatbots (43.6%) were the most frequently mentioned reasons for participants to use AI chatbots (Figure 4). Other reasons for using AI chatbots include self-learning benefits (33.2%), high-privacy characteristics (7.2%), and passion regarding using technology (9.9%).

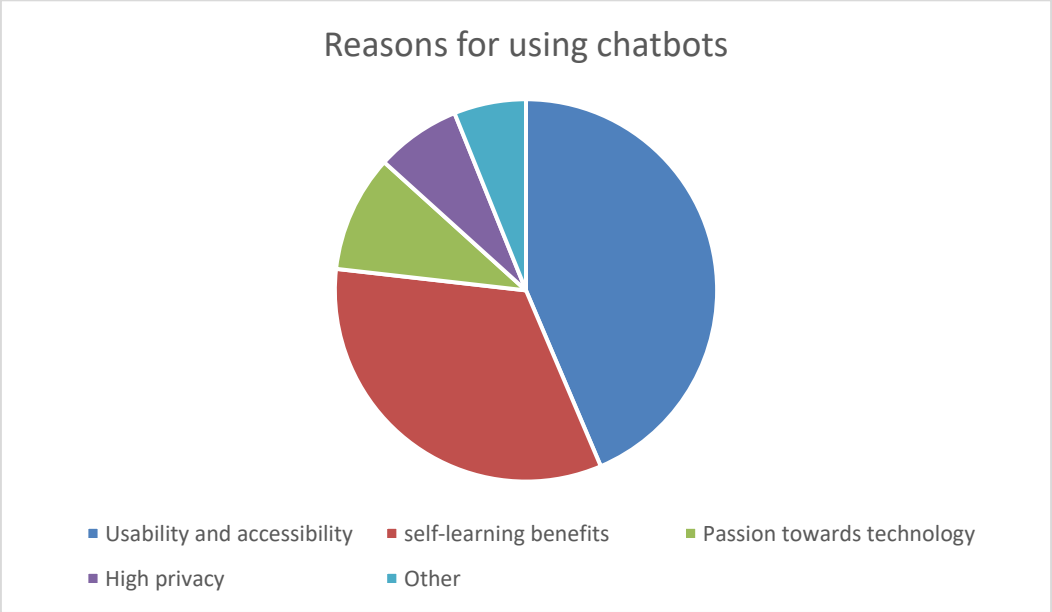


**Figure 4: Reasons for using chatbots**

Most participants (74.3%) did not express fear regarding the use of AI chatbots, citing their potential benefits (Figure 5). However, they indicated that they preferred to use them on their own (68.3%). Thus, they did not plan to exclude AI chatbots regardless of any fears they might have.

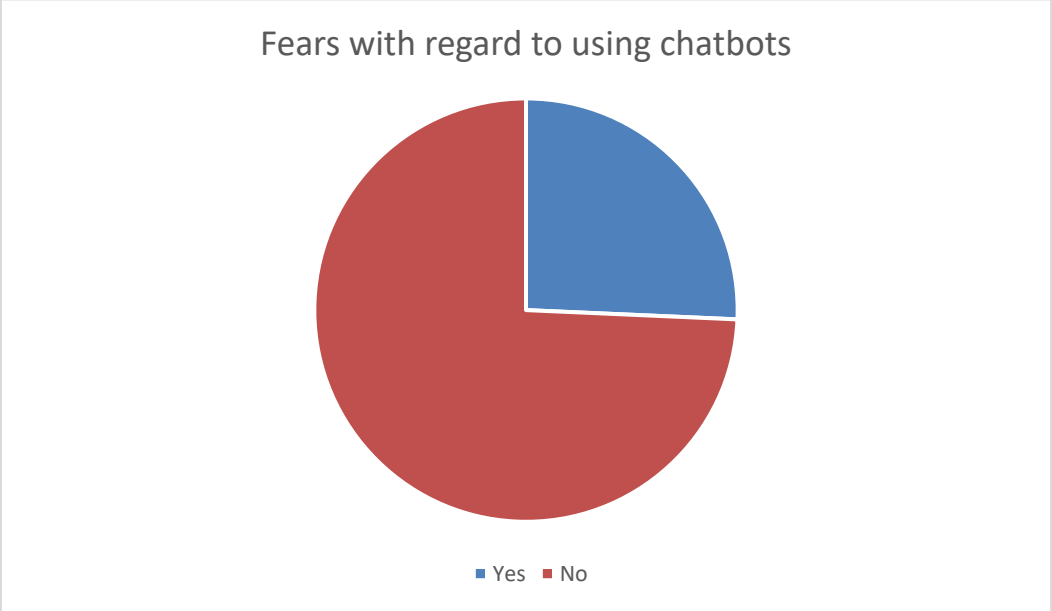


**Figure 5: Fears with regard to using chatbots**

Challenges that may emerge regarding using AI chatbots did not pose a real threat to the participants. They stated that the fact that there was no human contact while using AI chatbots (28.2%), possible leaks regarding personal information (32.2%) and anticipated breaches of privacy (23.8%) were among the top challenges and fears on the part of participants that prevented them from using AI chatbots (Figure 6).

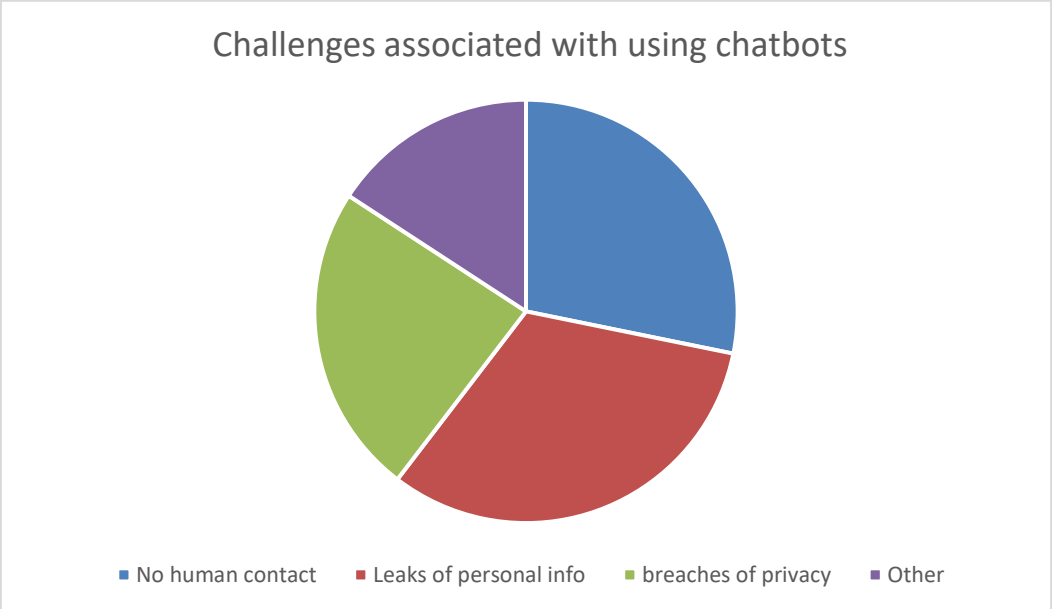


**Figure 6: Challenges and fears associated with using chatbots**

A large majority (76.7%) indicated that fears would not prevent their using AI chatbots. They also expressed opinions that using AI chatbots does not affect them either socially or emotionally. Approximately, 77.7% were willing to continue

using AI chatbots, although the majority did not expect traditional learning modes to be affected (Figure 7).

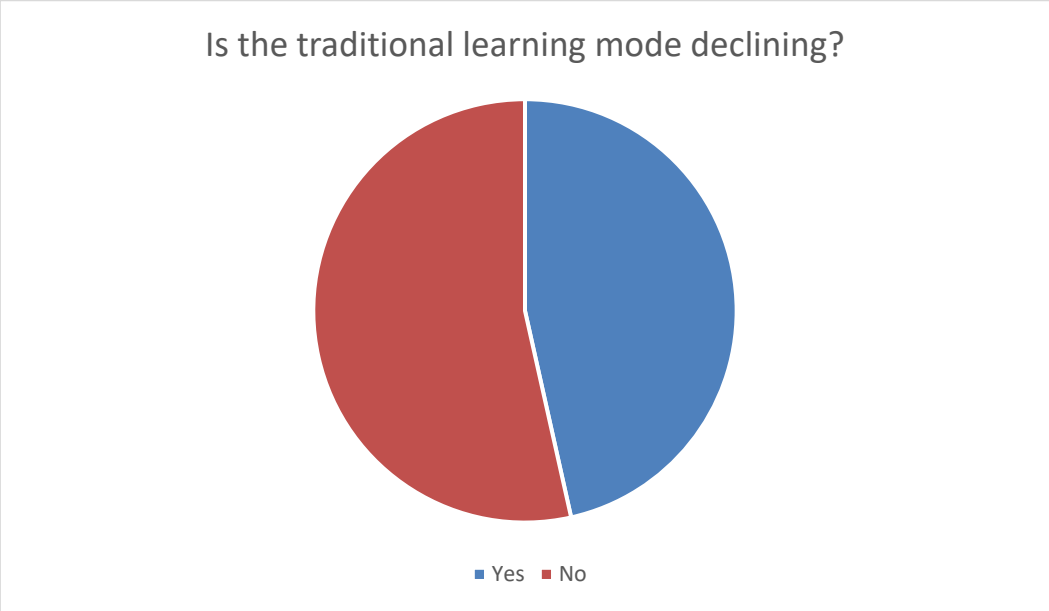


**Figure 7: Is the traditional learning mode declining?**

Most participants predicted a potential positive impact of using AI chatbots (59.9%). Independence was the most frequently mentioned positive impact of using AI chatbots (37.1%). Isolation (22.3%) and courage to make mistakes (28.7%) were among the top possible supportive sources of the impact of using chatbots in language learning. Only a few (1%) stated that using AI chatbots had no impact on them (Figure 8).

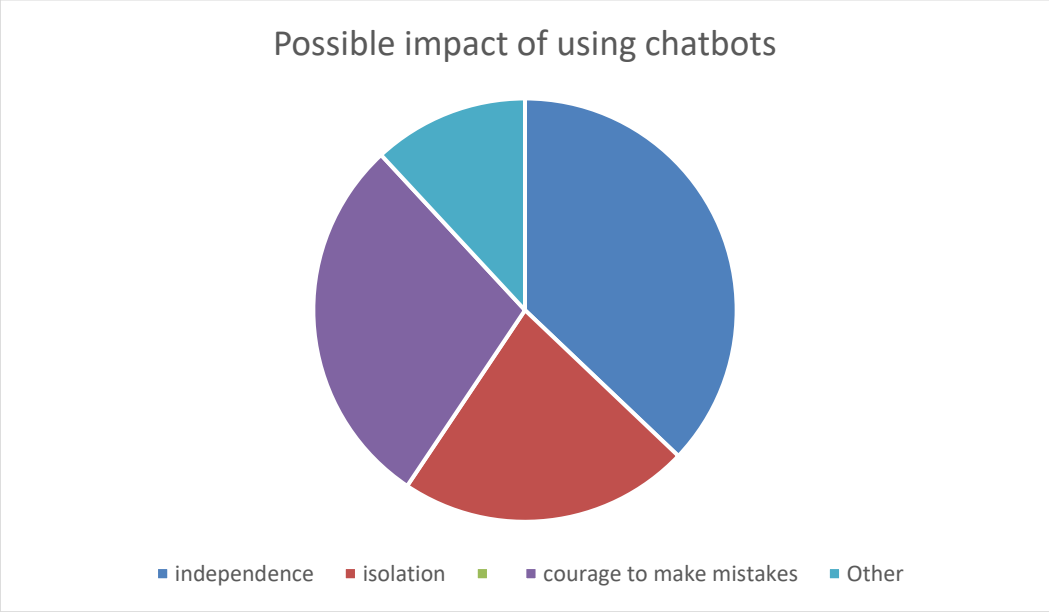


**Figure 8: Possible impact of using chatbots**

## 5. Discussion

This study has enhanced our understanding regarding the opportunities and challenges of AI chatbots in Saudi Arabia, where this technological phenomenon is still emerging. It can be argued that most participants favor using and employing AI chatbots in their language learning journey (Table 3). This is owing to the usability and benefits of AI technology, which makes tasks easier and enables them to be performed more quickly. Moreover, the ability to customize and design the learning process in AI chatbots according to the learners' needs is another benefit that outperforms the traditional learning mode. This is in line with previous studies such as those of Novawan et al. (2024), Crompton et al. (2024), De la Vall and Araya (2023), Huang et al. (2023), and Zhuang et al. (2017). Furthermore, a passion for technology and self learning are seen as a reason for participants using chatbots, especially among the younger generation. This is as expected, especially in a context in which economic and social development is accelerating, such as in Saudi Arabia.

**Table 3: Main benefits of AI chatbots reported by participants**


On the other hand, the participants noted some challenges and obstacles associated with using AI chatbots (Table 4). For instance, ethical issues are one of the participants' main concerns regarding the accuracy of conveyed knowledge and respect for human behavior. This aligns with some previous studies, such as that of Michel-Villarreal et al. (2023). Moreover, privacy and the security of personal data are other challenges associated with AI chatbots that may hinder users' acceptance of chatbots (Crompton et al., 2024). Some participants saw the lack of human contact as a disadvantage, which might indicate a strong tendency towards traditional learning models.

**Table 4: Main challenges associated with AI chatbots reported by participants**


In this study, some participants mentioned privacy as a challenge, while others saw it as an opportunity. This is critical as it may refer to how individuals perceive

chatbots. Language learning via AI chatbots can be seen as an opportunity for those who cannot attend traditional learning establishments for various reasons, such as health barriers, financial status, or location. In Saudi Arabia, schools are everywhere and affordable in that they are free of charge. However, some participants still consider the privacy of AI chatbots to be a benefit that endorses their use. Others are cautious about the possibility of AI chatbots putting users' privacy at risk. This is probably related to the awareness of these users regarding the incidence of hacking personal web data. Thus, privacy remains an important element regarding users, whether as a threat or a benefit. Consequently, this issue needs to be addressed and appropriately considered.

In summary, the findings of this study are contextual in terms of its geography and environment, such as dealing with social status and cultural values (Chang & Kidman, 2023). Context plays a pivotal role in shaping people's perceptions and opinions. While many of the challenges associated with AI chatbots revealed in this study are expected to be addressed and thus solved in the future, the timing and manner of such resolutions will depend on the local context. Therefore, it is recommended that researchers do not generalize or decontextualize the results of this study. Other Gulf countries may be an exception, as they share similar features and characteristics.

## 6. Conclusion

This study explored the challenges and opportunities associated with AI chatbots in language learning in Saudi Arabia. It is evident that AI chatbots offer significant opportunities for language learning. Similar to other studies, it was found that the ability of AI chatbots to provide customized feedback, their usability, and the passion of users with regard to self-learning are the main opportunities noted by the participants. However, challenges associated with using AI chatbots exist and need attention. Ethical issues, privacy, information security, and the lack of human contact are some of the challenges that participants have noted. If these aspects are addressed, AI chatbots would gain trust and credibility in users' eyes. Furthermore, this study could have benefited from a larger sample for a more holistic understanding. Further research should focus on specific age groups, which could provide more insights than a general population study. A focus on possible gender differences could add insights into gender-based phenomena.

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