Arab World English Journal
INTERNATIONAL PEER REVIEWED JOURNAL ISSN: 2229-9327

Arab World English Journal (AWEJ) Special Issue on ChatGPT, April 2024 Pp. 282-291
DOI: https://dx.doi.org/10.24093/awej/ChatGPT.19

Evaluation of the Translation of Separable Phrasal Verbs Generated by ChatGPT

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Received:01/14/2024 Accepted:04/11/2024 Published:04/24/2024

Abstract
Translation is one of the fields that have benefited from the significant growth that Natural Language Processing has witnessed. ChatGPT is one of the prominent products of such development promoted for its capability of producing human-like translation, among many other things. The main aim of this article is to explore the ability of ChatGPT to translate separable phrasal verbs, which can pose a real challenge to translators as one or more words separate their parts. Therefore, the significance of this paper stems from the pressing necessity to evaluate the utilization of such a tool to address such specific translation issues as it attempts to answer the question of to what extent ChatGPT can translate separable phrasal verbs clearly and accurately. This research paper has followed the qualitative method to analyze the accuracy and clarity of the translation of the separable phrasal verbs generated by ChatGPT. The findings revealed that ChatGPT can translate such phrases clearly, yet human intervention is needed to ensure an accurate delivery.

Keywords: Accuracy, Artificial Intelligence, ChatGPT, clarity, machine translation, separable phrasal verbs

Cite as: Alosaimi, B.A.A., & Alawad, N.A. (2024). Evaluation of the Translation of Separable Phrasal Verbs Generated by ChatGPT. *Arab World English Journal (AWEJ)* Special Issue on ChatGPT, April 2024: 282-291. DOI: https://dx.doi.org/10.24093/awej/ChatGPT.19

Introduction

Technology has revolutionized many fields, particularly the translation industry, due to the provision of quick and convenient outcomes. There is no doubt that the use of technology plays a critical role in increasing productivity and the quality level of output (Doherty, 2016). Throughout the time till the present, the translation process has undergone several substantial changes in terms of assisted tools used, ranging from scrolling through hard book copies of dictionaries to look for the meaning of specific words to using machines that offer a complete translation of each part of the sentence. A recent Artificial Intelligence (AI) invention that can be utilized during translation is the Chat Generative Pre-trained Transformer (ChatGPT). However, the quality and accuracy of the ChatGPT translations still need to be examined thoroughly, especially when dealing with common translation issues like translating cultural expressions, idioms, and separable phrasal verbs where machines might not be able to depict their cultural nuances and complexity.

The research aims to find out whether ChatGPT is capable of addressing common translation problems like the translation of separable phrasal verbs. The significance of this study stemmed from the need to conduct a comprehensive evaluation of the use of this AI software for specific translation issues like the translation of separable phrasal verbs. Thus, the main research question is to what extent ChatGPT can translate separable phrasal verbs clearly and accurately. The objective of this research is to find out whether ChatGPT is capable of translating separable phrasal verbs or fails in deducing the meaning as the complete translation of verbs can not be produced by considering each element on its own. ChatGPT translations of English separable phrasal verbs are evaluated here against two main elements: the accuracy of the selected proper Arabic equivalent and the clarity of the generated meaning. This paper introduces major terms and then moves to previous studies on translation, ChatGPT, and phrasal verbs. Then, an assessment of the generated translation is carried out in which the researchers present the data collected and the results reached regarding that issue. Lastly, the conclusion summarizes the main points and draws an overall picture.

Literature Review

Artificial Intelligence

Artificial Intelligence (AI), in general, means "a machine that learns" (Schank, 1991, p.40). Like a human, a machine can learn how to write. For example, when the machine is fed with sufficient data to be used as a guide to perform the requested task. Nowadays, Al has several applications, and it plays a major role in revolutionizing machines, which has led to the transformation of a wide range of industries. Natural Language Processing (NLP) is one of the fields where AI is used to develop algorithms that not only understand human language but can also generate it (Hariri, 2023). One of these AI NLP tools is the Chat Generative Pre-trained Transformer – ChatGPT-, which was a massive milestone in the field of NLP.

ChatGPT

ChatGPT is considered to be important in the Artificial Intelligence field as it uses large-scale language models, advanced Natural Language Processing potential, pre-trained efficiency and undergoes continual development (Segall, 2023). According to Hariri (2023), ChatGPT is a "generative AI model (GAI) based on natural language processing (NLP) techniques, developed by OpenAI" (p.3). ChatGPT is trained on an extensive amount of unlabeled data that allows it to generate natural language text of high quality, unlike other NLP models. ChatGPT is perceived as

a valuable tool today as it has been successfully applied in various applications. One of its applications is the development of Chatbots, which can interact with its users in a natural and human-like way as it can answer their questions and provide them with the information they need. The National Health Service (NHS) created and used such a chatbot to provide health advice to patients. ChatGPT is used for content generation and translation. The Associated Press, for instance, generates financial news articles using ChatGPT. There are also diverse trans-disciplinary communication applications, including simultaneous translation, interactive learning, and coaching that transform communication in several areas. The variety of ChatGPT services enhances the user experience in many fields. Moreover, a study conducted to evaluate the information provided by ChatGPT in the field of orthodontics, and the results show ChatGPT's effectiveness in generating valuable and reliable information (Tanaka et al., 2023).

ChatGPT and Translation

ChatGPT is used to carry out many tasks including translation; thus, ChatGPT is used to develop translation systems that generate accurate translations of texts from various languages. Jiao et al. (2023) investigated the performance of ChatGPT as a translator compared to other machine translation tools, such as DeepL and Google Translate, only to reveal that ChatGPT works competitively with other commercial machine translation tools. Hence, it generates accurate translations for high-resource languages while lagging for low-resource ones. Additionally, in her study, Dalaylı (2023) compared the efficacy and intricacies of English to Turkish translations made by ChatGPT to the translations of an expert who has more than ten years of experience in the field. The study revealed that ChatGPT can produce human-like translations of high quality. However, some robotic and cold sentences were found which indicates that this AI tool still needs some training and development. Moreover, ChatGPT can also be used as a translation evaluator. Lu et al. (2023) investigated the ability of utilizing this AI tool to assess the quality of machine translation (MT). Their work unveiled that ChatGPT can generate MT evaluations at the system and segment levels, yet some limitations are found like unstable scoring.

Previous Studies

To date, research attempts have focused on evaluating the accuracy and capabilities of ChatGPT in rendering terminologies related to specific fields or cultures. A comparison is made by Khoshafah (2023) to assess the outputs of ChatGPT in terms of clarity and accuracy by comparing selected texts to human translation. These texts are sourced from books and websites and extracted from different text genres, such as historical, media, and literary texts in Arabic and English. Although ChatGPT uses enormous amounts of data to produce human-like output, it is suitable for simple texts rather than complicated ones that need human intervention to edit, improve, and ensure the accuracy of the translation, like legal and medical documents. Differences between languages may raise a problem during the translation process and lead to ambiguity and confusion. Arabic word order is considered one of the main issues while translating from Arabic into English using ChatGPT. Moreover, ChatGPT may need to understand grammar rules, sentence structure, and cultural items due to language differences. It is worth noting that this study challenges previous studies that claim ChatGPT can generate precise and accurate translated texts of various types of texts.

Interestingly, ChatGPT can translate from/into many languages of different origins, such as English, French, and Turkish. Therefore, Işım and Balcioglu (2023) have chosen 50 Turkish

pieces of writing from the educational field to measure the performance of artificial intelligence translation. The Turkish language was selected because it is not of Latin origin, and the translation process will be more complex than the languages of Latin origin. It is found that ChatGPT produces a sound output that outperforms other translation software like Google Translate. It is worth noting that it translated 34 out of 50 paragraphs correctly.

Nevertheless, the output needs human intervention, and ChatGPT needs more training to enhance the result and produce a better translation output in the future. However, this method of analysis has several limitations in that it only shows numbers, and no examples are provided to show the type of error. Although many studies were conducted to analyze the performance of ChatGPT and evaluate its output, no research has tackled how ChatGPT handles the translation of separable phrasal verbs.

The structure of separable phrasal verbs may pose a problematic issue during the translation process from one language into another because their parts are separated by one or more words, distancing the allied verbs from their particles. Davies and Gardner (2018) have discussed, counted, and analyzed the separable phrasal verbs, specifically the most recurrences and separated ones. The four best available corpora were used in this study to find and analyze the form and grammatical aspects of separable phrasal verbs to offer linguistic resources for those who need them, like teachers, learners, and researchers. It is worth noting that this paper challenges other previous ones based on theoretical and practical grounds. It is found that a considerable amount of phrasal verbs are separable and prevalent in the language; sometimes it may lead to problematic issues at the lexical and syntactic levels. They require special attention to understand them correctly due to their form and structure complexity.

Method

In an attempt to analyze the translation of the phrasal verbs generated by ChatGPT, a qualitative method was used with a focus on measuring two main elements which are accuracy and clarity. ChatGPT is used as a machine translation tool rained on an extensive amount of unlabeled data that allows it to generate natural language texts of high quality without the need for specific task-related training data.

Participants

In this study, the researchers presented several sentences where more than one word separates the phrasal verb from its particle; thus, the accurate meaning of the verb might need to be clarified. This can create a challenge for human translators as well as machine translation. Thus, ChatGPT is used to test its capabilities in rendering the translation accurately and clearly.

Research Instruments

In this study, “The Ultimate Phrasal Verb Book” (2017) by Carl W. Hart is used to collect a sample of 100 separable phrasal verbs. It is worth noting that this book is a reliable and comprehensive source that presents a list of more than 400 common phrasal verbs for intermediate and advanced levels of English as a second language. Moreover, ChatGPT is a very well-known AI software used for different purposes. One of the services provided by ChatGPT is the generation of an instance translation of any text/word inserted. Hence, a sample of 100 separable phrasal verbs was collected and narrowed down based on their complexity level. Each of these separable phrasal verbs was put into several complicated sentences and analyzed in terms of clarity and accuracy.

Research Procedures

During the analysis, more than 100 separable phrasal verbs were collected. Then, 25 separable phrasal verbs were chosen, which the scholars believe to be more challenging to translate. These phrasal verbs were then put into sentences, where a long object is placed between the verb and its particle. After that, these sentences were inserted in ChatGPT to test their translation capability to generate the correct meaning when the phrasal verbs were not written in the regular sequence. After that, the translations generated by the AI software were analyzed based on their accuracy and clarity. Finally, comments were made to evaluate the translation of the phrasal verbs, suggest a translation in case of ambiguity and inaccuracy, and decide whether ChatGPT is a proper and reliable tool for translating separable phrasal verbs.

Results

This section includes ten examples of separable phrasal verbs arranged in tables along with English sentences and their translation by ChatGPT. After that, the Arabic translations generated by ChatGPT were analyzed in terms of their accuracy and clarity.

Table 1. *Example one*

Inseparable phrasal verb	Original English sentence	Arabic Translation by ChatGPT
Look over	They presented their draft to the professor, who looked it entirely over, nodded, and signed it.	قدموا مسودتهم للأستاذ الذي نظر فيها بعناية، أومأ برأسه، ووقع عليها.

The verb ‘look’ generally means to direct one’s eyes to see, while the phrasal verb 'look over' means "to inspect or examine, especially in a cursory way" (Merriam-Webster, 2023). The original sentence here means that the professor carefully examined the draft to ensure that they have no additional notes. When the Arabic translation provided by ChatGPT is analyzed, it is found that the word 'بعناية’ is added to give the meaning of carefully inspecting the draft. Therefore, it can be said that the meaning was rendered clearly and accurately.

Table 2. *Example two*

Inseparable phrasal verb	Original English sentence	Arabic Translation by ChatGPT
Carry through	He says that Ahmad did not carry the business that the stakeholders have doubts about.	يقول إن أحمد لم يكمل الأعمال التي يشك المساهمون فيها.

The verb "carry" has multiple meanings to transfer, involve, and conduct (Merriam-Webster, 2023). When the verb is followed by a particle-like "carry + through", it refers to completing a process. The original sentence states that Ahmad did not complete the business that the shareholders were concerned about. It can be seen that the translation generated by ChatGPT is correct and considers the particle during the translation process, even though the verb is separated from its particle with a long object.

Table 3. *Example three*

Inseparable phrasal verb	Original English sentence	Arabic Translation by ChatGPT
Put off	The teacher has put the agreed-upon date off.	قام المعلم بتأجيل التاريخ المتفق عليه.

The verb "put" means to place something in a specific position; however, when the verb is joined with the preposition "off", it has to some extent a different meaning and refers to postponing a deadline to a later time (Merriam-Webster, 2023). The English sentence indicates that the teacher has changed the date. Thus, the Arabic translation shows that the meaning of the phrasal verb is correctly reflected in the translation.

Table 4. *Example four*

Inseparable phrasal verb	Original English sentence	Arabic Translation by ChatGPT
Pass out	I passed the confidential document of the ministry out to the concerned party.	قمت بتسليم وثيقة سرية من وزارة إلى الجهة المعنية.

The verb 'Pass' is used to mean 'to go or proceed' (Merriam-Webster, 2023). When the particle 'out' is added, the meaning of the verb is changed to 'to give something to someone'. The English sentence refers to the fact that the speaker has indeed submitted the confidential document to the other party. ChatGPT translated the phrasal verb into 'تسليم' 'submit' rather than 'يعبر' or 'يتجاوز'. Thus, it succeeded in capturing the meaning even though a somewhat long phrase separated the verb and its particle.

Table 5. *Example five*

Inseparable phrasal verb	Original English sentence	Arabic Translation by ChatGPT
Hold up	They were holding the wedding up, which was supposed to be held three weeks ago.	كانوا يؤجلون حفل الزفاف الذي كان من المفترض أن يُقام قبل ثلاثة أسابيع.

The verb 'hold' means "to take and keep something in your hand or arms" (Merriam-Webster, 2023), while holding something/someone up means 'to delay that someone/ something'. The original English sentence states that the wedding was postponed or put off for three weeks. The intended meaning was accurately rendered in the Arabic translation generated by ChatGPT as "يؤجل" which is the literal translation of delay.

Table 6. *Example six*

Inseparable phrasal verb	Original English sentence	Arabic Translation by ChatGPT
See about	The carpet in my office is filthy. I need to see the maintenance guy about getting it shampooed.	السجادة في مكتبي متسخة. أحتاج لرؤية الفني الصيانة لطلب تنظيفها بالشامبو.

The verb "see" means to visualize something by sight, but when that verb is followed by the particle "about," it means to deal with or to do what is required (Merriam-Webster, 2023). The original sentence states that the speaker looked for the maintenance guy to do what was needed for the filthy carpet. Therefore, the AI software failed to generate the correct translation of the phrasal verb and rendered it as the speaker desired to meet the maintenance guy.

Table 7. *Example seven*

Inseparable phrasal verb	Original English sentence	Arabic Translation by ChatGPT
Take apart	Let us call the mechanic to take the car's engine you left in the garage for ages apart.	دعونا نتصل بالفني لفك المحرك لتلك السيارة التي تركتها في المرآب لفترة طويلة.

The verb "take" means to get, acquire, and catch something, while the phrasal verb "take apart" refers to a different meaning as the addition of the preposition changes the meaning to completely disconnect or separate a part of something (Merriam-Webster, 2023). The meaning of the original sentence states that the speaker tried to seek help to disassemble the engine of the car. It is evident that the translation of ChatGPT is 100% correct, and the chosen word "فك" fits the context of taking the engine apart in the Arabic language.

Table 8. *Example eight*

Inseparable phrasal verb	Original English sentence	Arabic Translation by ChatGPT
Count out	We should count local businesses out of the GDP.	يجب أن نستبعد الأعمال المحلية من الناتج المحلي الإجمالي.

The verb ‘count’ means to calculate several things. When the verb 'count' is joined by the particle 'out,' it acquires a different meaning: to exclude someone/something (Merriam-Webster, 2023). The original sentence states that local businesses should not be included in the GDP. The accurate translation of 'count out' in Arabic is ‘استبعد’ and the AI software used this Arabic verb to render the meaning of the sentence. Thus, the Arabic translation is clear and acceptable.

Table 9. *Example nine*

Inseparable phrasal verb	Original English sentence	Arabic Translation by ChatGPT
Run down	The lady ran the boy down.	السيدة صدمت الصبي.

The verb "run" means to flee, go faster, and function; but when the preposition "down" is added to the single verb "run", it means to hit a vehicle (Merriam-Webster, 2023). The original sentence implies that when the lady was driving her car, she hit the boy. Thus, the translation of ChatGPT is accurate as the correct Arabic translation of run down is "صدمت” and the machine has considered the verb and its particle during the translation.

Table 10. *Example ten*

Inseparable phrasal verb	Original English sentence	Arabic Translation by ChatGPT
Play up	It was his back playing him up.	كان ظهره يسبب له مشكلة.

The verb ‘play’ means “ to take part in a game or organized activity" (Merriam-Webster, 2023). On the other hand, "play up" means to cause a problem or to cause someone pain. The intended meaning of the original English sentence is that the man's back was hurting him. Although the Arabic translation revealed part of that meaning, it is neither quite acceptable nor accurate. In Arabic, the word 'مشكلة' problem cannot be used to refer to pain in this context. Therefore, ChatGPT has failed to generate a clear and accurate translation.

Discussion

This paper has raised an important question in relation to the evaluation of ChatGPT output in terms of accuracy and clarity; thus, the results reached after testing several excerpts show that the use of ChatGPT in translating phrasal verbs succeeded to some extent in rendering the meaning clearly and accurately. To explain more, 80% of the tested phrasal verbs were translated acceptably. For instance, example nine shows that the AI software could detect the accurate meaning of the verb and its particle, although the meaning of the verb differs from the phrasal verb. When the particle "down" is added to the verb "run", the meaning of the verb has changed;

thus, ChatGPT considers this addition during the translation process. However, the AI software has failed to translate 20% of the selected sample. For example, excerpt 6 shows how poorly ChatGPT translated "see about", which does not fit the context or paint a clear picture of the intended meaning to the audience.

Translation software is used heavily by millions of users, including translators and non-translators, and is considered a questionable topic regarding accuracy and clarity. This paper has conducted a thorough investigation to reach a valid result and fill the gap in analyzing the translation of English phrasal verbs into the Arabic language while considering two crucial elements: clarity and accuracy. It is equally important to mention that this paper has also shed light on improving AI NLP tools. The results of the current study are aligned with the findings of Işım and Balcioglu (2023), in which both studies highlighted the efficiency of AI software outputs, yet human intervention in the form of post-editing is needed to reach a high-quality outcome. The findings are also consistent with that of Dalaylı (2023) as both studies revealed that ChatGPT still needs some training and improvement to be able to produce high-quality human-like outputs. Moreover, this study is limited to the translation of the separable form of phrasal verbs, which is the most problematic and complex type, as discussed by Gardner and Davies (2018), who emphasized the complexity of the structure of separable phrasal verbs that require special attention during the process of translation to ensure accurate delivery.

Conclusion

With the advent of the digital era, AI tools are perceived as one of the most valuable software. This is due to the accuracy of the detailed answers they generate when receiving an inquiry. Surprisingly, Al tools have proven to be efficient in various fields, including language processing and translation. Since translating separable phrasal verbs can be challenging for human translators, this paper has attempted to analyze the translation of separable phrasal verbs generated by ChatGPT in terms of clarity and accuracy. It is important to note that clarity and accuracy were the main elements used to evaluate the translation of separable phrasal verbs. The current paper revealed that although there are some minor limitations to the accuracy of the translation, ChatGPT was able to render the meaning of such phrases clearly. Therefore, it is recommended that human intervention is needed whenever ChatGPT is used for translation purposes. It is strongly advised that translators should focus on sharpening their editing skills to keep up with fast-paced changes in the field.

Funding
This research is not funded.
Acknowledgments
Not applicable.
Conflicts of Interest
The authors declare no conflict of interest.
Authenticity
This manuscript is an original work
Artificial Intelligence
AI and AI-assisted technologies were not used.

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