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Strategies of Translating Euphemistic Expressions from Arabic into English: A Comparative Study of Artificial Intelligence Models with Human Translation(*)

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استراتيجيات ترجمة التعابير الملطفة من العربية إلى الإنجليزية: دراسة مقارنة لنماذج الذكاء الاصطناعي مع الترجمة البشرية

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الملخص

يستخدم التعبير الملطف لتخفيف التعبيرات أو الكلمات الوقحة، وتعد ترجمة العبارات الملطفة مهمة صعبة للغاية بالنسبة للمترجمين البشريين، وهي أكثر صعوبة بالنسبة لتطبيقات الذكاء الاصطناعي، وعند مراجعة الأدبيات السابقة وجد الباحثان أن جميع الدراسات السابقة تقريبًا تركزت حول دراسة كفاءة ودقة وتماسك ترجمة الذكاء الاصطناعي مقارنة بالترجمة البشرية، ورغم ذلك فإن هذه الدراسات لم تتناول الاستراتيجيات المستخدمة في كلا النوعين من الترجمات، وعليه فإن هذه الدراسة تهدف إلى التعرف على الاستراتيجيات التي تستخدمها نماذج الذكاء الاصطناعي مع الترجمة البشرية عند ترجمة التعبيرات الملطفة من العربية إلى الإنجليزية، كما أنها تهدف إلى تقييم كيفية تأثير هذه الأساليب على دقة الترجمة لكل من المترجمين البشريين ونماذج الذكاء الاصطناعي في كلا اتجاهي الترجمة (من العربية إلى الإنجليزية ومن الإنجليزية إلى العربية)، وقد استخدم الباحثان بعض العبارات الملطفة المأخوذة من القرآن الكريم والأحاديث النبوية وبعض الدراسات السابقة، وقاما بإدخال هذه التعبيرات في نماذج الذكاء الاصطناعي، وتمت مقارنة نتائج نماذج الذكاء الاصطناعي هذه بالترجمة البشرية باستخدام استراتيجيات الترجمة الخاصة لبيكر (2013)، كما قام الباحثان بتحليل البيانات التي تم جمعها كميا، وقد كشفت نتائج الدراسة أن أكثر الاستراتيجيات استخداماً من قبل الترجمة البشرية هي الترجمة من خلال كلمة أكثر عمومية والترجمة من خلال استراتيجيات الاستبدال الثقافي، في حين أن الترجمة باستخدام استراتيجية الكلمات المستعارة تستخدم في الغالب من خلال نماذج الذكاء الاصطناعي، وأظهرت النتائج أيضًا أن المترجمين البشريين يتفوقون على نماذج الذكاء الاصطناعي فيما يتعلق بالاستبدال الثقافي، كما خلصت الدراسة إلى أن اتجاه اللغة يلعب دورًا حاسمًا في نتائج الذكاء الاصطناعي، حيث يؤدي أداءً أفضل عند الترجمة من الإنجليزية إلى العربية.

الكلمات المفتاحية: التعبير الملطف؛ نماذج الذكاء الاصطناعي، الاستراتيجيات، ترجمة جوجل، مقاييس روج، مقاييس بيرت.

Strategies of Translating Euphemistic Expressions from Arabic into English: A Comparative Study of Artificial Intelligence Models with Human Translation

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Abstract

Euphemism is used to soften rude expressions or words. Translating euphemisms is a very challenging task for human translators and will be more difficult for AI applications. Almost all previous studies have clustered around studying the efficiency, accuracy, coherence and cohesion of AI translation in comparison to human translation. However, these studies have not tackled the strategies used in both types of translations. Consequently, this study aims to identify the strategies utilized by AI Models with human translation when translating euphemistic expressions from Arabic into English. Additionally, it aims to evaluate how these methods influence the translation accuracy of both human translators and AI models in both directions of translation (Arabic to English and English to Arabic). The researchers have utilized some euphemistic expressions taken from the Holy Quran, Prophetic Hadiths, and some previous studies. These expressions have been inputted into AI models. The outcomes of these AI models are compared to Human translation, using Baker's (2013) translation strategies. Researchers have analysed the collected data quantitatively. The results revealed that translation by a more general word and translation by cultural substitution strategies were mostly used by human translation whereas translation using a loan word strategy is mostly used by AI models. The findings also showed that human translators outperform AI models regarding cultural substitution. It has been found that the direction of language plays a crucial role in AI outcomes, as they perform better when translating from English into Arabic.

Keywords: Euphemism; AI models, Strategies, Google Translate, Rouge, and Bert scores.

Introduction

Language is the means of communication between people. Most people are aware of their conduct, so they use very polite and soft language when dealing with others. Such norms, traditions, and customs govern human beings living in such a community; euphemism is strictly associated with social tact. Almost every community has its way of life, talk, worship, and so on. Interpersonal communications are expected to have such standards of politeness and social consideration. Euphemism is used either to avoid or, at least, decrease the potential disagreement that certain words may involve in a particular communicative situation. Euphemism plays a fundamental role as a linguistic means to soften communication and sustain harmony in interpersonal communication. Al-Shawi (2013) stated that "the cultural awareness of source and target languages is necessary to translate euphemisms accurately as an indirect communication." (p.123). Fernandez (2005) believes that euphemisms are considered a purely lexical phenomenon utilized to substitute words and expressions believed inappropriate for polite linguistic usage.

Translation is a very challenging task for a professional human translator. In this study, the researchers explored the outcome of AI applications in terms of the strategies used to produce accurate translations for euphemistic expressions. Arabic language is a Semitic language spoken by more than 420 million people around the world. This population makes it the fifth most spoken language in the world. Arabic has a very remote culture, so translating euphemisms from/into English becomes an arduous task. Sofer (2002) confirmed that there are vast cultural differences between a Western language such as English and a Semitic language like Arabic. One cannot translate text from these languages without paying attention to these cultural differences. So translating euphemisms by using artificial intelligence (AI) is a difficult task that must be explored and used carefully.

Euphemistic expressions are commonly used in Arabic and English languages to convey sensitive or taboo topics more politely and indirectly. However, translating these expressions accurately can be challenging due to cultural and linguistic differences. AI applications are a generative language model that uses pre-training on a large amount of data and then fine-tuning on specific tasks to generate human-like responses. It has been used for

various natural language processing tasks, including language translation. The interactive nature of ChatGPT allows for the customization of translations to suit specific needs and provides feedback on adjustments to improve the accuracy of translations. The study focuses on evaluating the accuracy of ChatGPT models in translating euphemistic expressions from Arabic into English and vice versa. The corpus of euphemistic expressions from both languages was collected from different sources to evaluate the accuracy of the translations generated by AI models.

Conducting research on AI translation of euphemistic expressions from Arabic into English and vice versa is important for enhancing cross-cultural communication, improving language translation technology, promoting cultural understanding, addressing linguistic and cultural nuances that hinder the accuracy of AI production, and contributing to translation studies.

Most of the related studies focused on translating euphemism expressions taken from the Holy Quran, literary works. As far as the researchers know, no study has been conducted on translating euphemisms using AI systems. The current study is a unique attempt to touch this new path-translating euphemism by using Chat GPT and GT. The study aims to investigate the strategies that Chat GPT and GT use when rendering euphemistic expressions.

It aims to answer the following questions:

1- What are the strategies that AI models (ChatGPT and GT) and human translators use when rendering euphemistic expressions?
2- To what extent does the utilization of these strategies affect the outcome accuracy of the AI models and human translators regarding language direction?
3- What are the most common translation problems that can be noticed from the analysis of euphemistic expression translation by AI models and human translators?

Literature Review

Etymologically, *euphemism* comes from the Greek word *Euphemia* which refers to the use of 'words of good omen'; it is a compound of meaning 'good, well'. A euphemism sometimes has a metaphorical sense, as in the

substitution of the word "sleep" for "death", Encyclopaedia Britannica, (2020:1). Shi (2023) defined Euphemism as "a kind of appropriate expression that people hope to find in communication and exchange, which not only enables both parties to complete the communication but also makes both parties feel that the communication is pleasant.

Chia and Hao (2013) define Euphemism as "a word or phrase or communication style, which is used in a specific context to soften or conceal something unpleasant. By doing so, euphemism prevents offensiveness, since it no more carries the negative mark of the direct designation"(p.46). Nowadays, with the increasing number of catastrophes starting from Covid19 pandemic to earthquakes in Turkey and Morocco etc., researchers noticed that many people worldwide use such euphemistic terms in their comments on such death cases on their Facebook pages, Twitter, and other social media, in their natural communications. They always use euphemistic jargon to avoid embarrassment in these situations.

Some words in such cultures are considered offensive and must be avoided or replaced to be used gently. In Arabic, such words related to specific subjects such as death, sexual intercourse, body parts, bodily functions, and practices must be used carefully. Al-Husseini (2007,) stated, "Societies differ in what topics are taboo because such topics which are forbidden reflect the particular customs and views of the society. Therefore, certain topics may be considered taboo in certain societies, but they can be acceptable" (p. 327). Euphemistic expressions play a crucial role in communication, particularly in cross-cultural contexts. The translation of euphemisms from Arabic to English and vice versa presents unique challenges due to cultural and linguistic differences. AI has been increasingly utilized in translation. Traditional euphemism is a subsidiary form of language that is connected to taboo topics such as birth, illness, death, sex, and bodily functions. The use of taboo language can elicit feelings of crudeness, primitiveness, coarseness, and impoliteness if expressed directly. However, the purpose of euphemism is to convey a sense of refinement and politeness. Stylistic euphemism, on the other hand, does not address taboo subjects directly. Instead, it serves to demonstrate courtesy and foster cooperation amid communication. These stylistic euphemisms are commonly observed in the realms of politics, war, commerce, education, and advertising. Euphemisms can take either a

syntactic or lexical form. From a semantic perspective, euphemisms can be categorized into two broad types: positive and negative euphemisms. Positive euphemism amplifies and exaggerates the significance of the euphemized subjects, portraying them as more exceptional than they truly are. On the contrary, negative euphemisms devalue and diminish the importance of the subjects in question. (Abdalla, 2009; Al-Mizgagi & Al-Rawhani, 2020)

Challenges in Euphemistic Translation

Euphemistic expressions are deeply rooted in cultural and social contexts, making their translation complex. Cultural nuances and sensitivities must be carefully considered when translating euphemisms, as direct translations may lead to misinterpretations. The challenges of translating euphemisms, however, are further compounded by the inherent nature of euphemisms and similar linguistic devices that tend to be heavily influenced by culture and the literal meaning which in so many cases do not align with the intended meaning. Euphemisms or euphemistic expressions are generated within a culture that possesses its own set of beliefs and values, which are manifested through aspects such as religion, taboos, traditions, prohibitions, and regulation of social practices and hierarchies. It is important to note that a subject that may be considered taboo in one culture may not necessarily be taboo in another. Likewise, the experiences and knowledge of one society may differ from those of other societies. These disparities in meta-linguistic factors shape and inform the language peculiarities of a particular culture over time. Moreover, they also determine how members of that culture comprehend, employ, interpret, and respond to culturally loaded linguistic expressions. Abdalla (2009) listed some difficulties in translating euphemisms:

1- Difficulty in recognizing that an expression constitutes a euphemism in the ST,
2- difficulty in understanding the linguistic genealogy (form) of the euphemistic expression in the ST,
3- difficulty in understanding the cultural genealogy of the euphemistic expression in the ST,
4- difficulty in finding an equivalent (formal or functional) equivalency in the TL, and

5- difficulty in determining what to do when the 'deceptive' content of the euphemism in the ST, if not revealed in the TT, would harm the members of the TL community. (p.40)

The translator faces such challenges in determining euphemisms in the source text, which can be difficult (Shehab et al., 2014; Al-Shawi & Mahadi, 2017). A translator may not recognize a word or phrase as a euphemism, resulting in the translated text not having the same effect as the original (Al-Masri, 2009). Understanding the cultural context is crucial for deciphering the meaning of a euphemism. The translator must have a functioning knowledge of the original culture, including religion, social norms, politics, and history. The translator must mentally immerse themselves in the source culture to analyze the euphemism's structure, intended meaning, communicative function, and the relationship between sender and receiver. It is not to this end, that once a euphemism has been correctly located in its cultural and linguistic context, the translator faces the challenge of finding an equivalent in the target language. Equivalencies for euphemisms are not readily available due to cultural and linguistic differences. In some cases, equivalent expressions can be found when there is commonality in cultural experiences, such as death. In other cases, there may be functionally equivalent expressions without semantic equivalence, allowing for a gloss translation. However, there are instances where neither functional nor semantic equivalency exists, requiring the translator to create a new expression, borrow a foreign expression, or omit the euphemism. The success of translation depends on the translator's ability to analyze the expression culturally, symbolically, and contextually. It assumes knowledge of both the translator's own culture and the other culture. However, there is a difficulty when the hidden meaning of the expression is ideologically loaded and serves the source culture's interests but harms the target culture. These issues are related to human translators, it is a very nice idea to check the level of AI in handling euphemisms. In the current study, AI carried out the entire process of rendering euphemistic expressions. AI interpretation technologies are used in various industries, as well as in translation. However, published works are scarce on AI translation in euphemisms translation. The development of AI systems for euphemistic translation necessitates continuous refinement and adaptation to account for evolving language usage and cultural shifts.

Many researchers discussed such topics related to translating euphemisms, such as Mohammed (2007), Al-Hamad and Salman (2013), Alotaibi (2015), Anber and Swear (2016), Alahj and Omer (2017) Abed and Mohammed (2020) and Sahari (2023). The knowledge and competence of the translators in handling sociocultural differences as well as the employment of effective strategies, are necessary tools for dealing with the problems of translating euphemistic expressions. Anber and Swear (2016) investigated the strategies used in two translations of "*A Grain of Wheat*". They found translators employed omission and literal strategy frequently which may not express euphemistic words functionally. Quranic euphemistic expressions are investigated by many translators concluding that Islamic concepts and culturally bound items are very challenging, thus the loss of meaning is unavoidable (Al-Dulaimi, 2012; Alqahtani, 2018). Al-Dulaimi (2012) stated, "There are many English translations which fail to give the functional equivalence of certain euphemistic expressions in the Glorious Qur'an" (p. 446). Alahj and Omer (2017) found the process of rendering euphemistic expressions into English is challenging for the diversity of linguistics and culture of SL and TL. Similarly, Abed and Mohammed (2020) examined the strategies used by Iraqi students of translation for translating euphemisms from English into Arabic and vice versa. They found that literal translation was the most common strategy used in translating Arabic and English euphemistic expressions for death and lavatory. These students used to render euphemistic expressions into English, while translating into Arabic they mostly used substitution.

Strategies for Translating Euphemistic Expressions

It is worth mentioning that in this study the researchers do not deal with the translation strategies from the angle of architectures of AI in generating translations. They deal with translation strategies from the angle of word rendering. Baker's (1992) taxonomy of translation strategies as cited in (Aguado-Giménez & Pérez-Paredes, 2005) will be used. These strategies are as follows:

1- Translation by a more general word (superordinate).
2- Translation by a more neutral/less expressive word.
3- Translation by cultural substitution.
4- Translation using a loan word.
5- Translation by paraphrase using a related word.

6- Translation by paraphrase using unrelated words.
7- Translation by omission.
8- Translation by illustration.

AI-based Machine Translation

Recently, there has been a substantial and growing body of literature exploring the impact of employing machine translation, in general, and artificial intelligence, in particular, in the translation process. Several studies have delved into a comparative analysis between human and machine translation, including works by Maghsoudi and Mirzaeian (2020), and Awadh and Shafiull (2020), Li, Nawi and Kang (2023), Moneus and Sahari (2024). Li et al. (2023) endeavoured to develop a human-machine translation model based on AI translation, aiming to gain a clearer understanding of the differences in translation quality across various methods. The results indicated that the AI-based human-computer translation model could enhance the efficiency and accuracy of language input. Maghsoudi and Mirzaeian's study (2020) assessed the impact of machine translation output on students' performance. The findings suggested that machine translation has improved to the point where it can effectively compete with human translation. Awadh and Shafiull's study (2020) aimed to explore the challenges faced by Yemeni translation students when translating neologisms from English into Arabic and subsequently compared their translations with machine translation (MT) outcomes. The results revealed that accurately translating neologisms proved to be challenging for most Yemeni translation students, as well as for machine translation. However, it was noted that students produced more acceptable translations compared to machine translation.

Several studies tackled more specialized aspects of machine translation, specifically examining the incorporation of artificial intelligence tools like ChatGPT in learners' translation efforts across diverse texts. Sahari, Al-Kadi, and Ali (2023) conducted a study assessing the influence of ChatGPT on translation in an Arab context. Their investigation encompassed the perspectives of translation teachers and students. The outcomes indicated widespread satisfaction among participants with ChatGPT. Notably, the majority of students expressed a preference for ChatGPT over Google Translate, while most teachers leaned towards favouring Google Translate. The findings also suggested that ChatGPT, as a recent AI-driven technology in translation, proved more beneficial for mechanical aspects of writing and

editing translated content than for tasks requiring nuanced judgment, such as fine-tuning and double-checking. In a separate study conducted by Khasawneh (2023), the focus was on exploring the potential application of artificial intelligence (AI) in enhancing cross-cultural communication through translation. The research indicated that AI-based translation technology had an important role in facilitating cross-cultural communication. Siu (2023) discussed technical facilities available in artificial intelligence (AI) for translation, with a specific emphasis on neural machine translation (NMT) and large language models (LLMs). The study brought to light the immense potential of AI to augment human translation through NMT and LLMs, emphasizing the importance of strategic development and application with human guidance and oversight for optimal outcomes.

Other research has explored the impact of machine translation on various aspects of language learning. For instance, Yang, Wei, Li, and Zhai (2023), Alm and Watanabe (2022), Yoon and Chon (2022) and Mahdy, Samad and Mahdi (2020) have delved into this area. Yang et al. (2023) conducted a study that closely replicated Lee's (2020) work, focusing on how machine translation affects English as a Foreign Language (EFL) writing. The results of their study align with Lee's findings, suggesting that machine translation can enhance EFL writing proficiency, particularly in improving lexical expressions. Alm and Watanabe (2022) offered insights into the utilization of machine translation tools by university students across different proficiency levels in language studies for Second Language (L2) writing. Their findings emphasized the importance of employing machine translation effectively and critically, considering the unique contexts and expectations of L2 writing in various language courses. Yoon and Chon (2022) explored the use of machine translation (MT) by L2 adolescent learners in correcting errors made by MT. The results highlighted that correcting mistranslated sentences and verb tense posed significant challenges. Additionally, the study identified guessing from context and literal translations as the most frequently employed error correction strategies to address MT errors.

Furthermore, many studies used corpora in their studies such as Mohammed (2022) examined the extent of the benefit of the usage of corpora by translation trainees. He collected that data using thinking-aloud protocols and computational observation and the participants were given a

questionnaire to find out their perceptions toward the use of corpora in their translation projects. He found that the trainees employed various kinds of corpora in their translation projects. He also found that the trainees have a very positive perception of the progress in their translation. Furthermore, another study by, Mohammed (2023) dealt with Islamic media discourse translation. It scrutinised the process and product of Islamic media discourse translation to define the problems Yemeni translators faced and the strategies that they utilized to have a communicative, target-reader-friendly translation. He used a parallel corpus of Islamic media texts. He found that the translators have espoused various strategies in their translations, such as transference, functional equivalence, transposition and foreignization, among others.

Evaluation of Machine Translation

Several research papers have addressed the evaluation of machine translation results and their comparison with human translation outcomes. In a recent study by Chang (2022), the focus was on investigating how second language (L2) learners can assess the accuracy of machine translation output, whether generated by Machine Translation (MT) or Post-Edited Machine Translation (PEMT). The results indicated that students employed various MT tools to enhance their evaluation of MT accuracy. Strategies included cross-verifying MT output using multiple MT tools, consulting dictionaries to verify word meanings and usages through example sentences, and utilizing search engines to confirm word definitions, translations, and collocations.

Ahrenberg (2017) presented a straightforward and descriptive framework for evaluating translations, which was applied to two versions of a British opinion article: one translated by a human (HT) into Swedish and the other by a machine (MT). The analysis of these translations focused on intrinsic and extrinsic characteristics. Intrinsic aspects included fundamental statistical elements like length, with a primary emphasis on translation procedures and differences in word order. The extrinsic dimension considered the purpose and context of the translations. The findings indicated that the machine translation (MT) exhibited similarities to the source text in terms of length, information flow, and structure, surpassing the human translation (HT) in these aspects. However, it was noted that post-editing of the MT output could produce a readable text but might not attain the level of quality achieved by human translation.

Banat and Abu Adla (2023) conducted a study to assess Chat GPT-3 proficiency in translating specialized Arabic content into English and to compare its performance against human translation. The researchers outlined the methodology for evaluating machine translation, emphasizing the use of two diverse metrics: Rouge, and Bert scores. In their investigation, they introduced Rouge and Bert scores as evaluation metrics to test the accuracy of machine-generated translations and draw comparisons with human-generated translations. The BERT Score metric was employed to measure the similarity between contextual embeddings of machine translation output and human translations. Specifically, a pre-trained BERT model generated embeddings for each euphemistic expression in both machine and human translations. On the other hand, ROUGE, a set of metrics traditionally used for assessing text summarization and machine translation quality, operated on the principle of comparing a generated summary or translation to a set of human summaries or translations and assessing the overlap between them. The study findings revealed that GPT generally produced comprehensible translations but fell short in capturing nuances and cultural context. Despite this limitation, the researchers noted that GPT-3 demonstrated a relatively high level of accuracy when translating specialized religious text, yielding scores comparable to human translations in certain instances.

Most of the surveyed studies chiefly dealt with the employment of MT and very few dealt with AI models regarding the translation between Arabic and English languages. Furthermore, the corpora they used were clustered around Islamic and legal texts (see, Mohammed, 2022, Mohammed, 2023, and Moneus and Sahari, 2024). The current study used a different corpus-euphemism that is not – as far as the researchers know- being investigated. It investigated the ability of AI models to render euphemisms between Arabic and English by human translators and AI models and it also scrutinized the strategies used in the process of translations.

Methodology

Research Design

This study used the quantitative as well as qualitative approach. The researchers utilized the frequencies and the percentages to analyse the data. Also, they interpreted that data qualitatively by analysing the translated euphemism expressions by both human translators and AI models.

Participants

Table (1) The participants' demographic information

		N	%
Age	20-25 years,	4	50.0
	26- to 30 years	2	25.0
	More than 30 years.	2	25.0
Gender	Male	3	37.5
	Female	5	62.5
Qualifications	Bachelor	4	37.5
	Master	1	25.0
	PhD	3	37.5

Table (1) provides information on the distribution of participants based on their age, gender, and qualifications. majority of individuals fall within the 20-25 years age group, with 4 individuals representing 50% of the total. There are 2 individuals each in the 26-30 years and more than 30 years age groups, representing 25% each. Five females (62.5%) and 3 males (37.5%) in the sample. The highest number of individuals have a Bachelor's degree (4 individuals, 37.5%), followed by those with a PhD. The data shows that there is a higher representation of females compared to males in the sample. This could be due to various factors such as the field of study as it was clear that females almost enrol in the Humanities arena. The majority of individuals fall within the younger age group (20-25 years), which could indicate that this age group is more likely to participate in tests. Regarding the qualifications, Bachelor's degree holders are the most workers in the field of translation. This could suggest that the sample represents a diverse group with varying levels of education and expertise.

Procedures

The researchers collected the expressions from many sources such as the Prophetic Hadiths, literary works, Wikipedia, etc. Then they inputted these texts into AI models to explore to what extent these systems can translate euphemistic expressions and what strategies they almost adopt. 70 expressions from different texts were given to nine human translators. Also, the accuracies of AI models and humans were measured by five judges to assess the translations, using a Five-point scale that includes five options as shown in the following table.

Table (2) Five-point scale of global quality assessment of translation

Rank	Description
1	This is a totally unacceptable translation.
2	This is a poor translation. It would require major improvements before it could be submitted to an employer.
3	This translation is marginally adequate. It has several errors and would require a moderate amount of work to prepare it to be submitted to any employer.
4	This is basically a good translation. It does have some minor errors, but they could be eliminated quite easily.
5	This is a very good translation. It contains no errors concerning the norms of the TL and it is a functionally acceptable translation of the source text.

Adopted from Zou (2014).

Then the quality of the outcomes of these Models was compared to that produced by human translation. To do that, the researchers submitted it to human validators as well as the BLEU application. BLEU Score is a metrics that measure the similarity between two sets of text, and it was found to be suitable for comparing the outcomes of AI models to those of human translations. Finally, the researchers used the results of the analysis to identify the most important translation problems that can be found in the translation of euphemistic expressions by AI models and human translators.

Data Analysis

The collected data was analysed using the means and frequencies of the strategies and the effect of these strategies on the outcome of AI models and human translation. In Arabic culture, the speaker always uses soft words to address death-related issues. To go with the trends and norms of these circumstances, translators are recommended to use such techniques to disguise the euphemistic-related issues to express them indirectly. These expressions must be translated in a proper way that goes hand in hand with the culture of the target language. The researchers inputted these texts to check how the AI models work on these expressions and what strategies are used in dealing with translating euphemistic expressions.

Findings

Q1. What are the strategies that AI models (ChatGPT and GT) and human translators use when rendering euphemistic expressions?

Table (3) Ranking of the most used strategy by human translators

No	Strategy used	Human		Rank
		Fre.	%	
1	Translation by a more general word (superordinate).	216	38.6	1
2	Translation by paraphrase using a related word.	172	30.7	2
3	Translation by paraphrase using unrelated words.	106	18.9	3
4	Translation by cultural substitution.	22	3.9	4
5	Translation by illustration.	15	2.7	5
6	Translation by a more neutral/less expressive word.	11	2.0	6
7	Translation using a loan word.	9	1.6	7
8	Translation by omission.	9	1.6	7
Total		**560**	**100**	

The table shows the ranking of the most used strategies by human translators. Translation by a more general word (superordinate) is found to be the most used strategy, with 216 repetitions accounting for 38.6% of the total, followed by 'translation by paraphrase using a related word' with 172 repetitions, accounting for 30.7% of the total. While 'translation using a loan word and translation by omission' are ranked in the last level, each with 9 repetitions, accounting for 1.6% of the total.

Generally speaking, it can be seen that translators tend to use strategies such as translation by a more general word and paraphrasing using related words more frequently than other strategies such as cultural substitution or translation by omission. This could be due to these strategies being more effective in accurately conveying not only the meaning but also the euphemistic notion from one language to another while maintaining clarity and coherence in translation.

Table (4) ranking of the most used strategies by AI models

No	Strategy used			Rank
		Frequency	%	
1	Translation by paraphrase using a related word.	85	60.71	1
2	Translation by a more general word (superordinate).	33	23.57	2
3	Word-for-word	18	12.86	3
4	Translation by paraphrasing using unrelated words.	3	2.14	4
5	Translation by cultural substitution.	1	0.71	5
	Total	**140**	**100**	

From Table (4) the most used strategy by AI models is "Translation by paraphrase using a related word" with a percentage of 60.71%. This strategy is ranked first in terms of usage. The second most used strategy is "Translation by a more general word (superordinate)" with a percentage of 23.57%. This strategy is ranked second in terms of usage. The least used strategies are "Translation by paraphrasing using unrelated words" and "Translation by cultural substitution" with percentages of 2.14% and 0.71% respectively. These strategies are ranked fourth and fifth in terms of usage. Shockingly, AI models did not use these strategies:

1- Translation by illustration,
2- Translation by a more neutral/less expressive word,
3- Translation using a loan word, and
4- Translation by omission.

Instead of these strategies, it was found that AI models- especially Google translate- used the strategy "Word-for-word" with a percentage of 12.86%. which ranked third. AI models primarily rely on the translation by paraphrase using related words as their main strategy for translating euphemistic expressions, followed by translation using more general words and word-for-word translation. The less common strategies involve paraphrasing, using unrelated words, or cultural substitution.

Q2. To what extent does the utilization of these strategies affect the outcome accuracy of the AI models and human translators regarding language direction?

Table (5) The accuracy of human translations in translating Euphemistic expressions from Arabic into English

Range	Human		Google		Chat	
	Fre.	%	Fre.	%	Fre.	%
totally unacceptable	48	17.1	10	28.6	4	11.4
a poor translation	17	6.1	4	11.4	1	2.9
marginally adequate	33	11.8	9	25.7	5	14.3
good translation	96	34.3	10	28.6	12	34.3
Very good translation	86	30.7	2	5.7	13	37.1
total	**280**		**35**		**35**	

Table (5) revealed the accuracy of humans compared to Google Translate and Chat GPT in translating euphemistic expressions from Arabic into English. From the data, it can be observed that Chat GPT had a higher

accuracy rate in translating euphemistic expressions compared to Human and Google. For example, in the category of " Very good translation ", Chat GPT had an accuracy rate of 37.1% while humans had 30.7 and Google had 5.7%. Similarly, in the category of "good translation", both human translations and Chat GPT had the same rate of accuracy 34.3%. Overall, Chat GPT had better translation compared to human translation and GT.

Table (6) The accuracy of human, Google and Chat GPT translation from English to Arabic

Range	human		Google translate		Chat GPT	
	Fre.	%	Fre.	%	Fre.	%
totally unacceptable	16	5.7	4	11.4	4	11.4
a poor translation	33	11.8	2	5.7	2	5.7
marginally adequate	45	16.1	8	22.9	5	14.3
good translation	130	46.4	13	37.1	8	22.9
Very good translation	56	20.	8	22.9	16	45.7
toatal	**280**	**100**	**35**	**100**	**35**	**100**

From the table, we can see that Chat GPT has the highest percentage of good and very good translations compared to Human and Google Translate. This indicates that Chat GPT is more accurate in translating from English to Arabic compared to Human and Google Translate. In terms of marginally adequate translations, Google Translate has the highest percentage, followed by human and then Chat GPT. Overall, the table highlights the importance of using human translators for accurate translations from English to Arabic. While machine translation tools like Google Translate can be useful for quick and basic translations, they are not as reliable or accurate as human translators when it comes to more complex or nuanced language.

Table (7) Comparing the means of the accuracy of the human translation according to the demographic variables

	Age	Mean	Std.d	Qualification	Mean	Std.	Gender	Mean	Std.
from Arabic into English	20-25	3.62	0.11	Bachelor	3.65	0.12	Male	3.55	0.12
	26-35	3.70	0.30	Master	3.73	0.26	Female	3.68	0.16
	+35	3.59	0.14	PhD	3.55	0.12			
	Total	**3.63**	**0.15**	**Total**	**3.63**	**0.15**		**3.63**	**0.15**
from English to Arabic	20-25	3.63	0.21	Bachelor	3.57	0.20	Male	3.40	0.51
	26-35	3.51	0.28	Master	3.77	0.08	Female	3.65	0.19
	+35	3.44	0.71	PhD	3.40	0.51			
	Total	**3.56**	**0.33**	**Total**	**3.56**	**0.33**		**3.56**	**0.33**

The table compares the means of accuracy of human translation from Arabic into English and English into Arabic based on demographic variables. Age group 26-35 has the highest mean accuracy (3.70), regarding the qualification, master's degree holders have the highest mean of accuracy (3.73). For gender, females have a slightly higher mean accuracy (3.68) compared to males (3.55). Overall, there are variations in translation accuracy based on demographic variables such as age, qualification, and gender for both translation directions analyzed in the table in both directions.

Table (8) The total comparison of means between Humans and AI in translating euphemistic expressions

Group Statistics					
Mode		**N**	**Mean**	**Std.**	**Sig**
from Arabic into English	Human	8	3.6321	.15229	.612
	AI	2	3.7000	.22223	
from English to Arabic	Human	8	3.5551	.33077	
	AI	2	3.2714	.78792	.700

Based on the table above, it can be observed that there is no significant difference in the means between Humans and AI in translating euphemistic expressions from English into Arabic and from Arabic into English. The mean for Human translation is 3.6321 with a standard deviation of .152. While the mean for AI translation is 3.7000 with a standard deviation of .222. The p-value is .612, which indicates that there is no significant difference between the means of Human and AI translations for the construct of transating Eupemistic from Arabic into English.

Also, there was no significant difference between human and AI models in translating euphemistic expressions from English into Arabic as the p-value is .700, which indicates that there is no significant difference between the means of Human and AI models.

It can be concluded that there is no significant difference between the means of Human and AI translations for both language directions, but there slight – but not significant)when it comes to translating euphemistic expressions from English into Arabic. This suggests that AI may perform better in translating euphemistic expressions from Arabic into English compared to translating them from English into Arabic.

BLEU Scores

This metric was used to compare the outcomes of human translations with those of both ChatGPT and Google Translate.

Figure (1) Comparing the outcomes of ChatGPT and Google Translate with that of Humans from Arabic into English.

From Figure (1), it can be concluded that the translation of Chat GPT is close to that of humans in several cases. the accuracy of GT was 29.07 while that of ChatGPT-3 was 41.10. which means ChatGPT translated the euphemistic expressions better than that of GT. analysing the euphemistic expressions individually reveals that ChatGPT is closer to that of humans in the case of word count.

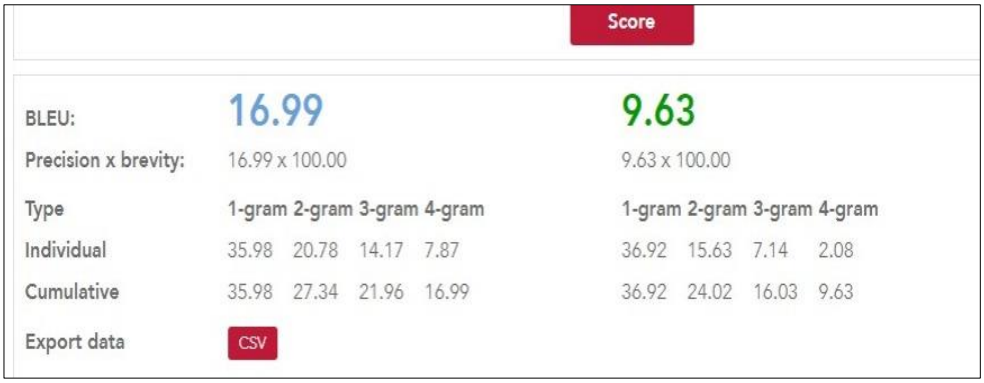

Figure (2) Comparing the outcomes of ChatGPT and Google Translate with that of Humans from English into Arabic

Figure (2), the data analysis of Figure 2 showed that the translations of Chat GPT were at the weakest level. In this figure, Google Translate performed better than Chatgpt. Unfortunately, both GT and ChatGPT could not properly render the euphemistic expressions. Regarding the length of the sentences both GT and ChatGPT translations have longer sentences 1.16 and 1.13 respectively.

Table (9) the Bleu scores for each euphemistic expression and the length ratio

	Arabic into English				English into Arabic			
	Google Transalte		Chat GPT		Google Transalte		Chat GPT	
euphemistic expressions	Score	Length	Score	Length	Score	Length	Score	Length
1	6.85	0.97	7.18	0.71	0.56	0.18	3.53	0.55
2	30.96	1.11	51.95	0.68	7.35	1.18	22.42	1.09
3	36.88	0.93	59.46	1.07	21.36	1.67	59.46	1.33
4	56.55	0.94	66.54	1	100	1	7.99	2
5	13.2	0.53	100	1	7.99	2	100	1
6	47.59	1	91.93	1.08	22.59	1	22.59	1
7	24.65	1.69	49.01	1.15	7.99	4	50	2
8	6.41	0.7	5.26	0.9	37.99	1.5	100	1
9	23.91	2	51.29	1.78	16.19	0.75	4.19	0.25
10	48.46	1.05	33.19	0.8	11.6	0.6	15.78	0.4
11	16.07	1.64	6.37	1.56	22.59	1.5	7.99	2
12	8.96	1.19	6.96	1.44	39.76	1	39.76	1
13	9.15	0.94	93.06	1	15.62	1.4	19.3	1.2
14	11.45	1.58	18.71	1.5	4.37	0.83	4.37	0.83
15	36.16	1.15	72.72	1.08	15.97	1	7.99	1
16	35.53	0.73	13.55	1.09	17.97	1	19.36	0.83
17	11.74	0.78	32.26	0.89	15.97	1	19	1
18	42.89	0.67	31.95	1.33	5.67	1	17.75	1.11
19	100	1	13.49	1.8	14.32	1.33	6.84	1.44
20	22.09	1.33	17.97	1	2.84	1.56	8.3	1.22
21	50	1.14	100	1	7.99	1	7.99	1
22	70.71	1	37.99	1.5	25.21	1.2	27.78	1
23	100	1	42.89	0.67	30.21	1.2	9.65	1.2
24	4.06	3	11.04	4	35.64	0.88	4.99	1.25
25	100	1	100	1	14.79	0.8	24.88	0.8
26	14.79	0.8	10.68	1	30.21	1	16.23	1

	Arabic into English				English into Arabic			
	Google Transalte		Chat GPT		Google Transalte		Chat GPT	
euphemistic expressions	Score	Length	Score	Length	Score	Length	Score	Length
27	48.3	0.82	51.28	0.86	100	1	6.74	1.29
28	14.79	0.8	8.12	1.2	11.38	0.33	22.59	1
29	42.89	0.67	45.18	1	5.34	2.5	19	2
30	70.71	1	19	2	100	1	31.95	1.33
31	4.19	0.25	45.78	0.75	50	1	37.99	1.5
32	37.99	1.5	37.99	1.5	28.64	0.71	27.48	0.86
33	4.06	3	2.38	4.5	70.71	1	70.71	1
34	37.99	1.5	5.34	2.5	54.75	0.83	17.97	1
35	100	1	30.74	1.17	4.88	0.64	16.81	0.91
total	**36.86**	**1.15**	**39.18**	**1.36**	**27.38**	**1.16**	**25.13**	**1.13**

Table (9) shows that the performance of ChatGPT is better than that of GT. The length ratio of the translated sentences of ChatGPt was longer this means that Chat GPT employed the expansion strategy more than GT. Regarding the direction of the language, both ChatGPT and GT performed well when translating from Arabic into English but they were weak regarding translating from English into Arabic.

Q3. What are the most common translation problems that can be noticed from the analysis of euphemistic expression translation by AI models and human translators?

Euphemistic expressions play a crucial role in communication by softening potentially offensive or sensitive expressions. Cultural differences can pose obstacles for both AI and human translators when dealing with euphemisms, euphemisms are deeply rooted in cultural norms and values, making them perplexing to translate accurately across languages In the translation of euphemistic expressions, both AI models and human translators encounter such challenges. AI models almost struggle with understanding the nuanced cultural and contextual meanings embedded in euphemisms, leading to inaccurate translation and also making AI resort to literal translation strategies. It is a matter of fact that human translators face difficulties in capturing the intended fragility and sensitivity of euphemistic expressions, as direct translations may not convey the intended tone or politeness such as ‘ هلو عليه التراب’ was translated as ‘Pour the dirt on him’ or ‘put on him the dust’

which does not convey the meaning to the addressees especially those who do not know the burying the dead person such as in countries like India or Japan. Euphemisms often rely on context for their interpretation, making them characteristically ambiguous. AI models face difficulty in understanding the implied context of euphemistic expressions, resulting in translations that lack the intended meaning or tone.

Euphemisms frequently involve idiomatic language that is specific to a particular language or culture. Euphemisms are commonly used to maintain politeness and adhere to social conventions. Translating these expressions requires a deep understanding of social norms and etiquette specific to each language and culture, so in many cases, what is considered offensive in SL, is not necessarily offensive in the TL. So here the translator- let them be human or AI models must be acquainted enough with the norms of the languages involved in euphemism translations AI models in the current study were found to struggle to navigate the intricacies of euphemistic language related to sensitive subjects, potentially producing translations that are inappropriate in the TL as in Arabic ‘ لم يقربنى إلا هنة واحدة ولم يصل منى إلى شئ’ the euphemisms expression here was wrongly translated as a brief moment or one moment closer … but ‘هنه واحدة’ means one time with a weak action’ here ‘weak action’ can be added as an expansion strategy. Overcoming these challenges requires a deep understanding of the language peculiarities in both Arabic and English and from AI the advancements in natural language processing technology that can better understand context, cultural nuances, and social conventions across languages. All in all, it can be stated that human translators struggle to capture euphemisms' fragility and sensitivity, while AI models still struggle to understand cultural meanings.

Discussion

This study sets out with the aim of comparing the accuracy of humans, Google Translate, and ChatGPT when translating euphemistic expressions from Arabic into English. On the question of the strategies used by AI models (ChatGPT and GT) and human translators when translating these expressions, the study reveals that the most used strategies by human translators are translation by a more general word (superordinate) and translation by paraphrasing using a related word. AI models primarily rely on translation by paraphrase using related words as their main strategy for translating

euphemistic expressions, followed by translation using more general words and word-for-word translation. It seems possible that this result is because human translators and AI-based translation tools understand the language in different ways. Human translators' comprehension of the language depends on their understanding of both the culture and the context of that language. Consequently, they prefer to start with general words which coincides with the culture of euphemistic expressions. On the other hand, AI models like Google Translate and ChatGPT rely on the huge datasets that they have in their algorithms. Therefore, these models prefer to select related words from the numerous instances of paraphrased expressions they have in their datasets. These findings confirm the results shown by Al-Shawi (2013) in which he insisted on the importance of the culture to translate euphemisms accurately. They also support the results of Anber and Swear (2016) when they assured the strategy of literal translation in the translation of euphemistic expressions.

Regarding the second research question that inquires about the effect of these strategies on the accuracy of the translation made by the AI models and human translators regarding language direction, the results indicate that human translation is the most accurate translation in translating euphemistic expressions from Arabic into English. This result can be explained in terms of the human translator's deep understanding of the intended meanings of euphemistic expressions, which often require an understanding of the cultural and situational context that AI models may lack. Regarding the AI models, ChatGPT has a higher accuracy rate in translating euphemistic expressions, with a very good translation. This suggests that human translators and Chat GPT may have a better understanding of cultural nuances and context. This difference in accuracy could be justified by the fact that euphemistic expressions often involve cultural nuances and context that may make it difficult for machine translation algorithms like Google Translate to accurately capture these features. Chat GPT and Humans, on the other hand, may have a better understanding of these nuances and context, allowing them to provide more accurate translations. When translating from English into Arabic, ChatGPT produces the best translations, compared with human translation and Google Translate. A possible explanation for this might be that ChatGPT has a larger number of linguistic patterns in English than what both human translators and Google Translate may have. This feature enables ChatGPT to better understand and generate accurate translations.

According to the demographic variables, it was found that there is no significant difference between human translations for both language directions, but there are slight differences when it comes to translating euphemistic expressions from English into Arabic. This result may be explained by the fact that euphemistic expressions, in both Arabic and English, are characterized by their different cultural and contextual nuances. Therefore, human translators may have different interpretations of these expressions, leading to variations in the translations. Regarding the word count and the length ratio, ChatGPT performed better in terms of word count and length ratio, which might ascribed to the employing of the the expansion strategy more than GT. Regarding the direction of the language for AI tools, both ChatGPT and Google Translate performed well when translating from Arabic to English, but they were less effective at translating from English to Arabic. This result could be attributed to the complex grammatical structure and cultural nuances of the Arabic language, compared to the English syntax, making it harder for the AI models to generate accurate translations from English into Arabic.

These results are consistent with those of other studies which suggest that human translators can produce more accurate translations compared to machine translation (Awadh and Shafiull, 2020). These results do not match those observed in Yang, et al. (2023), Alm and Watanabe (2022), and Yoon and Chon (2022) where the authors assured the appropriateness and accuracy of machine translation.

Regarding the third research question, both human translators and AI models face challenges in capturing the intended fragility and sensitivity of euphemisms, this finding is in alignment with Al-Kaabi et al (2024) who found that ChatGPT requires real-world knowledge and nuanced linguistic skills. In the current study, AI models were found to struggle to understand the tinge of cultural and contextual meanings embedded in euphemisms, leading to inaccurate translations and resorting to literal translation strategies. Human translators performed better than Chat GPT and GT, but they face difficulties in capturing the intended tone or politeness of euphemisms, as almost all the human translators employed direct translations which could not convey the intended tone or politeness. Translating these expressions requires a deep understanding of social norms and etiquette specific to each language and culture. Overcoming these challenges requires a deep understanding of language peculiarities in both Arabic and English.

Conclusion, limitations, and Suggestions for further studies

The purpose of the current study was to identify the strategies used by human translation and AI models in the translation of euphemistic expressions from Arabic into English. It also aims to compare the impact of these strategies on the translation accuracy of human translators and AI models in the two translation directions. The results indicate that human translators primarily use the strategies of translation by a more general word and cultural substitution, while AI models predominantly employ the strategy of using loan words. In addition, the findings reveal that human translators excel in cultural substitution compared to AI models. It has also been observed that the direction of translation significantly affects AI performance, with better outcomes when translating from English to Arabic. The results of this study indicate that training programs are needed for human translators to emphasize cultural substitution techniques. Moreover, AI translation tools are not fully capable of effectively translating all types of texts. In the case of euphemistic expressions, for example, human translators demonstrated superior performance, particularly when translating from Arabic to English.

Pedagogical Implications

Out of the findings of this study, a lot of important and practical implications can emerge. The first implication is related to the translation strategies, mentioned in this study. Students should receive more practice on these strategies to enhance their ability to translate, not only euphemistic expressions but also any other cultural language elements. Another important practical implication is that syllabus designers can integrate these strategies along with AI translation activities, into the syllabus of translation courses. A third implication lies in the fact that students should be trained in various methods of assessing translation quality. This will enhance students' ability to assess both human and AI translations. Finally, artificial intelligence specialists in computer science departments should be encouraged to evaluate the AI translation tools and identify their limitations to enhance the effectiveness of these tools in the translation process.

Limitations and Suggestions for further studies

Finally, several important limitations need to be considered. First, the study is limited to the translation of euphemistic expressions, taken from specific sources like the Holy Quran and Prophetic Hadiths. Second, the AI

models used in this study are limited to ChatGPT and Google Translate. We may have different findings from other AI tools. A third limitation lies in the fact that the analysis is based on Baker's (2013) translation strategies. Other strategies might reveal different aspects of translation performance.

Expanding research is needed to cover a wider variety of euphemistic expressions from different types of texts. Another possible area of future research would be to evaluate the performance of a wider range of AI models, other than ChatGPT and Google Translate. Finally, more research is required to explore and include other translation strategies that can be used in both human and AI translations.

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