



Quality Assessment of Rental Contracts Translations Generated by Google Gemini between Arabic and English

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Keywords

1. Rental Contracts
2. Google Gemini
3. postgraduate translation students
4. quality assessment of translations

Abstract:

The study aims to evaluate the quality, capabilities, and limitations of Google Gemini in translating rental contracts. To achieve the objectives of the study, a mixed-methods approach with a convergent parallel design was used, utilizing a descriptive analytical framework. A sample of 30 postgraduate translation students as well as 4 professional translation experts from various universities in Sana'a City were selected to ensure a more valid and reliable evaluation. The data collection instruments included two meticulously designed translation tests between Arabic and English, a closed-ended questionnaire, and semi-structured interviews. The questionnaire was administered to postgraduates to solicit their opinions on the accuracy, fluency, clarity, and conformity of Gemini-generated translations of rental contracts, while the translation test was administered to student participants to evaluate linguistic, contextual, and stylistic difficulties using a five-level assessment rubric. The study revealed that Gemini-generated translations of legal texts could be a useful first draft that needs to undergo a human post-editing process. The study emphasizes the importance of improving AI-assisted translation technologies to better translate legal documents between Arabic and English.

تقييم جودة ترجمة عقود الإيجار بين العربية والإنجليزية باستخدام برنامج جوجل جيمناي

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الكلمات المفتاحية

1. عقود الإيجار
2. جوجل جيمناي
3. طلاب الدراسات العليا في الترجمة
4. تقييم جودة الترجمة

المخلص:

هدفت الدراسة الحالية إلى استكشاف الأهمية الجوهرية لتقييم جودة ترجمة الأدوات المدعومة بالذكاء الاصطناعي، مثل "جوجل جيمناي" وقدراتها وجوانب قصورها، عند ترجمة عقود الإيجار. ولتحقيق أهداف الدراسة، تم استخدام المنهج المختلط بتصميم متقارب متواز، حيث اعتمدت الدراسة على إطار عمل وصفي تحليلي يجمع بين الأساليب الكمية والنوعية. اشتملت عينة الدراسة على 30 طالباً وطالبة من طلبة الدراسات العليا في الترجمة، وأربعة (4) خبراء في الترجمة، تم اختيارهم بشكل قصدي من جامعات مختلفة في مدينة صنعاء. واشتملت أدوات جمع البيانات في الدراسة على اختبارين بين العربية والانجليزية ترجمة صُمم بعناية فائقة، واستبانة، وكذلك مقابلات شبه منظمة. استخدمت الاستبانة في قياس آراء الطلاب حول دقة مخرجات ترجمة "جوجل جيمناي" وسلاستها ووضوحها، بينما تم وضع اختبار الترجمة لتقييم الصعوبات اللغوية والسياقية والأسلوبية باستخدام مقياس تقييم خماسي. أظهرت الدراسة نتائج مفصلة وشاملة تصف قدرات وإخفاقات "جوجل جيمناي" في ترجمة عقود الإيجار بين اللغتين العربية والإنجليزية، وقيمت قدراته وجوانب القصور فيه ومجالات التحسين بناءً على استجابات الطلاب وجودة الترجمة. أوصت الدراسة بأن ترجمة "جوجل جيمناي" قد تكون مفيدة كمسودة أولى ولكنها تحتاج إلى تدخل بشري لتتقحها، وشددت على ضرورة تعزيز تقنيات الترجمة المساعدة بالذكاء الاصطناعي في المجال القانوني

1. Introduction

The act of translating refers to converting content written in one language into another. Having understood the source text thoroughly, the translator should be able to express its content in the target language while considering the cultural connotations, idioms and other linguistic differences between both languages (Hatim & Munday, 2004). It is often said that translation is an unfinished job and will continue to remain incomplete. This sheer fact then entails unabated post-editing and revision (House, 2014). It is difficult to develop an understanding of the totality variable; other factors are likely to affect the meaning of a source text (Nord, 2018). Translating texts between languages is significant to know the law, culture, beliefs, and customs of any country. Translators who attempt to translate texts need to consider the factors which may affect the quality of the translation, such as education, linguistics, power, force, elegance, pragmatic impact, and the background of knowledge (Venuti, 2012). Moreover, the language, according to Noam Chomsky (1957), can be found in several discussions; his view on language is presented in "Syntactic Structures". According to Finocchiaro (1964), a language can be defined as a system of arbitrary vocal symbols by means of which the members of a speech community can communicate, interact, and transmit their culture. Language thus plays a role in building understanding between people and nations in modern times of globalization (Crystal, 2003). Friedman & Hagerty (2003) stated that rental contracts usually contain provisions addressing the length of the lease and the obligations of the landlord and tenant.

When translating legal texts between two languages, depending on machine translation without human editing, a significant problem arises (Gaspari et al., 2014). Many translators, especially recent translation graduates, utilize AI tools to carry out translation tasks, but they often ignore post-editing and revision; this can lead to a translation that conveys meanings not intended by the ST (Hutchins & Somers, 1992). The widespread use of the internet and the

growing influence and reach of globalization are putting pressure on the need for quality translations (Venuti, 2012). Translators now have to deal with challenges that only have to do with linguistic differences but also cultural divergences to ensure that translations can be unambiguous for the target readership.

According to Google (2024), technology is advancing rapidly, and most translators and users have embraced its complete presence in several texts, including specialized tools such as Google, ChatGPT, Cobots, CRM, and Google Bard (now called Gemini). According to Google AI (2024), Gemini is still under development, and its ability to translate legal contracts is consistently enhancing.

2. Statement of the Problem

Machine translation tools like Gemini can be used to translate legal documents between Arabic and English. Though these systems generate translations that are characterized by contextually simple and incomprehensible as well as by structurally weak sentences, and poorly worded translations (Koehn, 2020). Therefore, for accuracy, consistency, and conformity to legal principles, translation machines require human knowledge, experience, and caution. Translations produced by machines should be reviewed, edited, and verified by legal professionals or certified translators who appreciate the meaning of legal terms when translating legal contracts. Machine translation concerns include lexical ambiguity, common phrases, and syntactic variations (Canfora & Ottmann, 2020).

With the advent of AI translation applications, it has been noticed that novice translators apparently depend on using such applications, mistakenly believing them to be the best solution for producing high-quality translations. Therefore, this study attempts to investigate the quality assessment of translations generated by Google Gemini and involve postgraduate students in the process. Specifically, it aims to examine Google Gemini's capabilities in dealing with the peculiarities associated with legal texts in terms of lexical choices and sentence structures. Friedman & Hagerty (2003) clarified that what

is written on the paper of the rental contract safeguards the rights of both parties, so they have to read it carefully to know their limitations to protect their rights. It is important to note that the lease may be influenced by laws, local regulations, or terms agreed upon by the renter and landlord. As a result, the parties must have a clear and unambiguous understanding of the content of the contract, which in turn requires that the contract be translated in a clear and unambiguous manner.

3. Objectives of the Study:

This study aims to:

1. Investigate Gemini-generated translations of rental contracts between Arabic and English.
2. Identify the problems (and their potential causes) that face Google Gemini when translating rental contracts between Arabic and English.
3. Suggest some suitable strategies for enhancing the effectiveness and reliability of using Google Gemini to translate rental contracts between Arabic and English.

4. Questions of the study:

1. What are the problems of Google Gemini-generated translations of rental contracts between Arabic and English?
2. What are the potential causes of the problems facing Google Gemini when translating rental contracts between Arabic and English?
3. What are the suitable strategies for enhancing the effectiveness and reliability of using Google Gemini to translate rental contracts between Arabic and English?

5. Significance of the Study

The translation of legal documents between Arabic and English presents a set of challenges due to the subtleties of law, lexical issues, cultural considerations, and issues within the target language. Presently, machine translation tools such as Google Gemini are not oriented towards the law in the specific jurisdictions for which they provide translations, resulting in issues of compatibility between the legal nature of the translated document and the underlying legal systems

governing it. Accordingly, machine translation tools used for legal translation could be inconsistent, and there are “shortcomings in the MT related to legal formula” (Giampieri, 2023, p.1). This study seeks to assess the quality and consistency of Google Gemini’s translations of legal contracts involving distinct Arabic and English documents, highlighting any limitations and how machine-powered legal translation could be improved. The data translations of rental contracts are generated by Google Gemini, with postgraduate students participating in the input process. Although translation has been approached from different perspectives, this study aims to contribute new insights in terms of both concepts and applications to the existing body of translation studies. This can be useful to researchers, as it addresses a common concern among translators.

This study attempts to investigate the increasing reliance of novice translators on AI tools, like Google Gemini, and whether such tools produce accurate and contextually appropriate translations. This study also attempts to find out the pros and cons of machine translation in the application of legal terminologies; stylistic, contextual, and linguistic issues; and cultural content captured in this study.

This study is significant since it sheds light on the quality assessment of Google Gemini when translating rental contracts. Human revision and post-editing of the translated documents are essential to provide accurate legal translations. Third, it will, hopefully, be helpful for translators, educators, and legal professionals to understand when and how to use AI tools in challenging translation situations. It is noteworthy that translators recognize positive and negative aspects of frequently using AI tools to translate texts between two languages.

6. Scope and Limitations of the Study

This study is limited to evaluating how well Google Gemini translates rental contracts between Arabic and English. The analysis is based on a small corpus of selected contracts from the Translation Unit at Community Center for Translation & Language Teaching

(CCTLT), Sana'a University. Only postgraduate translation students from universities in Sana'a city were selected to participate in the study.

8. Literature Review

This section discusses the theoretical and empirical background as well as the previous studies that are of relevance to the present study.

Translation is the process of rendering a speech, a discourse, a text, or an expression from one language to another. It is a serious issue among people to know each other. Hence, without translation, the world would remain disconnected (Newmark, 1988, p. 5). Machine Translation is a developing field and utilizes computational algorithms for translating text or auto-generated speech across multiple languages (Hutchins & Somers, 1992). Over time, numerous methods have been developed for implementing machine translation; these include Rule-Based Machine Translation (RBMT), which relies on grammatical rules and a lexicon for translating text into another language. In order to utilize this method, a set of grammatical rules must first be created, detailing how to translate different word types and grammatical constructs from a source to a target language. Next, Statistical Machine Translation (SMT) represents another kind of machine translation using statistical models to provide translations of text. The translations of text produced by SMT are based on the statistical models derived from a series of provided educational data and are created as a result of evaluating the text once at each stage of the translation process to determine the most likely translation for both the source and target languages. There has been a high success rate using MT with many different language pairs (Koehn, 2010). As part of the process of determining the most likely resulting translation, statistical models of evaluation are applied to both the original and the resulting translation while the statements are being modified. Finally, in Example-Based Machine Translation (EBMT), a database of previously translated sentences or phrases provides the basis for generating a translation when the

database encounters a new source sentence. The example-based engine then retrieves this new sentence by matching it with the most similar example(s) found in the EBMT database and generates the new translation by modifying the retrieved examples. According to Forcada & Neco (2009), EBMT performs well when translating sentences or phrases that are similar to those it has seen previously, but it may struggle with complex or unfamiliar sentences. Finally, Neural Machine Translation (NMT) is a recent approach to depth learning. After developing the in-depth text collection in parallel, the NMT model learns to show the original language directly in the target language (Bahdanau et al., 2014). "Neural machine translation is a recently proposed approach to machine translation. Unlike the traditional statistical machine translation, the neural machine translation aims at building a single neural network that can be jointly tuned to maximize the translation performance" (p.1). This method improved the quality and flexibility of the translation compared to previous methods (Manning et al., 2020).

The world has witnessed the most recent development of AI translation tools. Russell & Norvig (2016) stated that:

AI focuses on creating intelligent agents that can do tasks autonomously, perceive, and respond to their environment. An intelligent agent is a system that senses its environment with sensors and responds with actuators. Learning, reasoning, problem-solving, and adapting to situations are characteristics of human intelligence that are often exhibited by AI systems (p. 35).

AI involves creating and using computer systems that can do tasks that usually need human intelligence. The goal of artificial intelligence is to develop smart machines that can sense their surroundings, think, learn, and make decisions or take actions to reach specific goals. These machines aim to replicate human thinking skills, including problem-solving, recognizing patterns, understanding natural language, and making decisions (Nilsson 1998). These systems excel at processing natural language, identifying speech and

images, and playing games like chess and go. Nilsson (1998) asserted that narrow AI systems are extremely specialized and devoid of general intelligence. Second, General AI is when the AI system eventually reaches human-level intelligence. A General AI tool should be able to comprehend something, learn new things, and utilize that knowledge for an infinite number of tasks and domains. General AI is the pursuit of an AI system that can exhibit the ability to think and behave like a human regardless of whether the system is capable of reasoning, creativity, or change. There is continuing debate among scientists regarding whether General AI will be achieved (Russell & Norvig, 2016).

The Gemini series offers three key models: Gemini Pro, Gemini Nano, and Gemini Ultra. According to Pichai and Hassabis (2023), Gemini Pro is the most qualified and ready to complete some complex tasks like content generation, translation, and reasoning since it is pre-trained on as significantly more text and code data. Further, the models show remarkable efficiency and flexibility, enabling cross-platform performance and delivering reliable outcomes even in resource-constrained situations.

For Šarčević (2012), although it is a powerful language model, Gemini Pro still encounters significant challenges in translating legal texts. These challenges arise from the unique characteristics of legal language, which encompass the intricacies and specialized vocabulary, together with the inherent subtleties present in legal documents, pose considerable barriers to accurate translation and interpretation, particularly for language models (Rossi & Chevrot, 2019). Legal system, jurisdiction, and specific laws can also be pertinent to legal terminology interpretation. Therefore, these contextual differences are not easy for a language model to understand (Šarčević, 1997).

Machine translations of rental contracts between Arabic and English are problematic; this is due to the fact that the legal systems, linguistic structures, and cultures differ widely. Still other issues include the complexity of several dialects of the Arabic language, poor

formatting, and idioms that may be difficult to translate accurately (Newmark, 1988). Numerous studies have shown that, due to a significant lack of human oversight, machine translations do not provide the standard of accuracy necessary for legal documents that may have dire legal consequences. Some scholars aptly remarked that these challenges, paired with the continual changes and updates to rental legislation, and the common user assumption that the machine translation is accurate. As noted, the use of qualified human translators who are able to produce accurate and contextually appropriate legal renditions is essential for delivering accurate and appropriate legal documents that include one or more of the aforementioned rental agreements. Previous empirical studies have investigated machine-powered translations to assess their quality. Perhaps the most recent study is the one conducted by Abdelaal & Al Sawi (2025) who assessed the quality of Neural Machine Translator (Google Translate) vs. Language Model Based Translator (ChatGPT). They examined sixteen machine translations of legal texts from a variety of settings—including contracts, court filings, and international conventions—and compared them to the 'gold standard' of expert legal translations. The findings revealed that both tools display high levels of efficiency, but neither could achieve the same level of accuracy or stylistic nuance as expert human translators. Although ChatGPT performs better than Google Translate in fluency and contextual awareness, both tools have difficulty in producing domain-specific translations (e.g., the use of "shall" to express all obligations). It was concluded that human editing will always be required to ensure that legal documents are valid and consistent with the appropriate terminology.

Farghal et al. (2024) investigated the effectiveness of Google Translate, ChatGPT, and Gemini in rendering legal texts (e.g. partner agreements) between Arabic and English. The study employed a combination of qualitative and quantitative analysis methods, using several indicators of broadcast quality. The findings show that the three tools have achieved good results, but ChatGPT often surpassed both

Google Translate and Gemini in terms of translation accuracy and semantic accuracy, with fewer post-post publications. Google Translate is generally competitive in terms of control and validity, but it can face certain difficulties. Gemini often does not cater to the overall quality of translation compared to the other two, and in certain aspects, it is comparable to Google Translate. The recommendations stressed the need to choose automated translation systems depending on accuracy, fluidity, and conservation values, especially in specialized areas such as legal translation.

7. Methodology

The current study used a mixed-methods approach in an attempt to provide a multifactored assessment of the challenges facing Google Gemini when translating legal contracts between Arabic and English. To ensure validity and reliability of our qualitative assessment, a sample of postgraduate students from various universities in Sana'a City were selected to take two translation tests and respond to a closed-ended questionnaire designed purposefully for this study. Furthermore, semi-structured interviews were conducted with 4 competent professors selected from CCTLT, Sana'a University, ARasheed University, and An-Nasser University.

The mixed-methods approach is used with a convergent parallel design, employing a descriptive analytical framework and combining both quantitative and qualitative techniques for analysis of the data. Both descriptive and numerical data were analyzed using SPSS.

In this connection, our study is limited to Google Gemini's translations of rental contracts sourced from the Translation Unit at CCTLT. In order to fully examine the quality of the data translations between Arabic and English, a qualitative analysis was performed. This approach has the benefit of looking into the complexity of the translated texts, which brought to the surface more understanding of the pros and cons of the tool. The questionnaire measured students' opinions on accuracy, fluency, clarity, and conformity of Google

Gemini-generated translations, while the translation test evaluated linguistic, contextual, and stylistic difficulties using a five-level assessment rubric.

9. Results and Discussions

This section presents a thorough analysis and discussion of the results obtained from the AI-powered translations of the selected legal contracts as well as those obtained from the translation test and the closed-ended questionnaire administered to the participants, and the semi-interviews held with the four university professors. In sub-section 9.1, we present the analysis of the results obtained from the translation test as well as a quality assessment of the data translations generated by Google Gemini. In sub-section 9.2, we provide and discuss the results of the closed-ended questionnaire administered to the postgraduate translation students to explore the reasons behind these problems. And finally, in sub-section 9.3 a discussion is provided of the results of the interview conducted through WhatsApp with four translation experts.

9.1. First Instrument (Translation Test)

The translation test is a fundamental tool used to fulfil the first objective of the study. It is designed to identify the problems of translations generated by Google Gemini when translating rental contracts between Arabic and English. This instrument will also help us to identify the potential causes of those problems and then suggest suitable strategies. They will be presented with some examples of both acceptable and unacceptable answers. The selected answers are the ones that best illustrate and reflect the real nature of Gemini translation and the participants' post-editing. The translation test includes 20 items in Arabic and 20 items in English; every item was translated by Gemini and then revised by postgraduate translation students, with some items being discussed based on their respective statistical outcomes:

9.1.1. Analysis of the First Test: Gemini's Translation (English – Arabic)

Most of the items assessed from Google Gemini's translation of the lease contracts were found to be suitable and appropriate. The mean score for the

first item below was 2.39 (79.7%), a score that surpasses the test value of 2.25 and thus is statistically significant.

ST	TL
This Lease Agreement ('Agreement') is made on this Tuesday, 0/0/2024, corresponding to 0/0/1444 AH, between the two undersigned parties.	أبرم عقد الايجار هذا (المشار إليه فيما بعد بـ "العقد") في يوم الثلاثاء من شهر _____ سنة 1445 الموافق 2024/0/0م بين الطرفين الموقعين أدناه وهما.

The majority of the items reviewed for lease agreement translations, under Google Gemini's translation service, were generally considered to be acceptable. The rated score of 2.52 (84%) indicates that you can expect that translations produced by Gemini can, with some mediation from humans, be considered reliable.

ST	TL
Party A hereby acknowledges that it has received from Party B an amount of 1500 US dollars in advance.	يقر الطرف الأول أنه استلم من الطرف الثاني مبلغ وقدره 1500 دولار أمريكي مقدماً.

The same can be said of the following item, which also rated for a mean score of 2.52 and a percentage of 84%. Also, due to the fact that the mean score of the item was higher than the test value (2.25), there was evidence that the translation was acceptable.

ST	TL
Party A is not entitled to evict the Second Party during the Agreement Term unless the former agrees to do so.	لا يحق للطرف الأول إخراج الطرف الثاني خلال مدة العقد إلا إذا وافق الطرف الثاني بذلك.

Again, the same observation holds true for the item below, which scored 2.52 (84%) and therefore was considered agreeable. These consistently high scores indicate that Google Gemini's initial translations, along with low human review of the original translations, are very effective when applied to rental agreements.

ST	TL
When leaving, it shall remove any additions/repair any damage caused to the Apartment, returning it in as good condition as existed at the starting date.	على الطرف الثاني حال خروجه أن يزيل كل ما أحدثه في العين المؤجرة ولا يتحمل الطرف الأول أي غرامة وإعادة العين المؤجرة إلى حالتها الأصلية كما استلمها عند بدء الإيجار.

9.1.2. Postgraduate Students' Revision and Post-Editing of Gemini's Translation (English – Arabic)

The item "This Lease Agreement ('Agreement') is made on this Tuesday, 0/0/2024, corresponding to 0/0/1444 AH, between the two undersigned parties" received a mean score of 2.54, representing 84.7%. This score was statistically significant. These findings demonstrated that Gemini's translation was successfully improved by the postgraduate students' revision and post-editing efforts (PEEs), producing a version of a proper translation.

Regarding the item "Party A hereby acknowledges that it has received from Party B an amount of 1500 US dollars in advance," it achieved a statistically significant mean score of 2.62 (87.3%). This further confirms that the postgraduate students' revision and post-editing of Gemini's translation for this item were valid as well.

Likewise, the item "Party A is not entitled to evict the Second Party during the Agreement Term unless the former agrees to do so" obtained a mean score of 2.57 (85.7%). Due to the fact that the mean score of this item was higher than the test value (2.25), this indicates that the postgraduate students' revision and post-editing of Gemini's translation for this item were appropriate. Postgraduate students' work ensures that the translation of the components of these lease agreements meets a potential standard, thereby confirming that the human element is important during the translation process.

9.1.3. Analyzing Translated Terminology and its Impact on Gemini and Postgraduate Students' Review and Post-Editing

Google Gemini provided two primary translations: "عقد" 70%, the most popular option, suggesting a broad legal contract interpretation; "اتفاقية" 30%, which might be more appropriate for diplomatic, commercial, or organizational settings. Postgraduate students tended to use more precise legal terminology, relying on their education and experience, as evidenced by their preference for other options: 75% of them selected "عقد" and 25% did "اتفاقية". 25% of postgraduate students

who assessed these translations retained the term “اتفاقية” as part of the translated texts, which supports the notion of the human influence being impactful.

As regarding “Agreement Term,” the Google Gemini’s translations were “مدة العقد” (73%) and “مدة الاتفاقية” (23%), terms used very often but with a minor variance in formal tone and context. The rest of the options were less common and varied in wording, for example, “المدة الزمنية” (4%). Postgraduate students reviewed a more focused preference, with “مدة العقد” (70%) and “مدة الاتفاقية” (24%), but they also introduced more precise terms like “مدة” (4%) and “مدة العقد المتفق عليه” (2%), both of which emphasize the validity agreement aspects of the contract term. This comparison highlights how postgraduate students’ understanding refines Gemini’s broader suggestions by selecting terminology that better fits legal usage and clarity, emphasizing the essential role of expert human judgment in ensuring accuracy in legal translation.

Regarding the rendering of the legal term “hereby acknowledges,” there was variation on the part of Google Gemini in terms of wording and placement, with “يقر” being the most frequently chosen option (86%), followed by “يعترف” (8%) and “يقوم” (6%). The postgraduate students, on the other hand, were quite consistent, with a vast majority selecting the fuller, formal phrase “بموجب هذا العقد يقر” (80%), which has a traditional legal style and the correctly positioned language. As for the lower percentages of “يعترف” (6%) and “يقر” (14%), there is still some wiggle room. It seems that human translators function better by considering when legal idioms strictly follow conventions, and even being overly formal and clear, which in many instances, would not matter in legal documents.

Google Gemini often rendered “When leaving” into “عند المغادرة” (63%), with the other two alternatives “تسليم الشقة” (20%) and “عند إخلائه” (17%) being much less frequent. In contrast, postgraduate students provided a wider range of context-specific translations, including “عند مغادرته” (64%), which is a more personalized

form, as well as terms that specify the reason or condition for leaving, such as “عند انتهاء صلاحية” (12%), “عند الإخلاء” (14%), and “في حال تم الإخلاء” (10%). When students provide a tailored translation to the definitive legal context (contract, eviction, special case, etc.), they try to exploit the meaning of contract to furnish details that AI fails to provide, thus guaranteeing accuracy and relevance in the end product.

9.1.4. Analysis of the Second Test: Gemini’s Translation (Arabic -English)

With regard to the item below, it obtained a mean score of 2.69 (89.7%). The high mean score and the statistical significance of this item suggest that the translation fulfilled the required legal responsibility item. The evaluators also judged the translation as clear and accurate enough to convey the liability conditions expressed in the original.

ST	TL
يتحمل الطرف الثاني كافة أي شغب المسؤولية عن داخل الصالة او جوارها.	The Second Party shall bear all responsibility for any disturbances occurring inside or near the hall.

Similarly, the following item had a mean score of 2.64 (88%). The study demonstrated that the general intention of terms regarding changes to the reservation was appropriately anticipated, and Gemini showed the capability of handling items that contained conditional/temporal statements.

ST	TL
في حالة تأجيل الحجز على اشعار الصالة الطرف الثاني لمدة لا تقل عن اسبوع من تاريخ الحجز.	In the event of a postponement of the reservation, the Second Party shall notify the First Party at least one week prior to the date of the occasion.

The following item obtained the highest score, reaching a mean score of 2.78 (92.7%). The statistical significance indicates that this translation, albeit brief, was clear, direct, and very well-received. This strongly suggests that Gemini’s performance with straightforward rules or prohibitions is highly commendable.

ST	TL
يمنع تركيب مكبرات الصوت خارج الصالة.	It is prohibited to install loudspeakers outside the hall.

In contrast, the item below received a considerably lower mean score of 1.48 (49.3%). While the result was statistically significant, the score was below the test value, meaning that the translated phrase was not acceptable. This discrepancy between the current item and the prior ones indicates that Gemini struggles with commonplace culturally nuanced or religiously grounded phrases that have potential, but typically covert, meanings that cannot be conveyed through a translation without the intervention of a person who is fully aware of the context and culture-specific meaning.

ST	TL
وعلى هذا تم الاتفاق والله ولي التوفيق.	In accordance with the afore-mentioned terms, this contract is made with the full consent of both parties.

9.1.5. Postgraduate Students' Revision and Post-Editing of Gemini's Translation (Arabic-English)

In relation to the item, “اتفق كل من (الطرف الأول) إدارة صالة ----- للمناسبات والاحتفالات ويمثله ----- مع (الطرف الثاني) ----- حامل بطاقة ----- صادرة من ----- على تأجير القاعة للطرف الثاني”

it received a mean score of 2.54 (84.7%). This score was statistically significant, indicating that the postgraduate students' revision and post-editing of Gemini's translation were successful in conveying the intended meaning and formal tone of the original Arabic item.

In the matter of the item, “يلتزم الطرف الثاني بدفع 30% كحد أدنى من قيمة الحجز كعربون مقدم” it achieved a higher mean score of 2.66 (88.7%), which also went well above the test value, with the scores proving that a financial obligation produced by the clause was successfully maintained through student intervention, and an improvement in the clarity and accuracy of the translation.

With regard to the item “يلزم الطرف الثاني بأشعار المدعويين بعدم اصطحاب الأطفال حيث سيتم منع أي طفل من الدخول إلى الصالة ويمنع إطلاق الرصاص داخل الصالة” the mean score was 2.54 (84.7%). This statistically significant finding states that the edits made by the postgraduate students were slight. That means authentic aids with clarity

and presentation in the use of the source language were not used more by the students. Post-editing ensured that the clause's behavioral and safety instructions were translated and they retained their legal force, just as Gemini did, though to a lesser extent.

The item “يحق للطرف الثاني إلغاء الحجز واسترجاع العربون”

”المدفوع للصالة خلال 48 ساعة من تاريخ الحجز”

also obtained a mean score of 2.66 (88.7%). The high rating, alongside statistical significance, suggests that the cancellation and refund conditions were well conveyed in the translation, but not like Gemini's translation. This implies that the postgraduate students may lack sufficient expertise in translating Arabic rental agreements into English.

9.1.6. Analyzing Translated Terminology and its Impact on Google Gemini and Postgraduate Students' Review and Post-Editing

The study examined the edits made by postgraduate students and the outcomes from Gemini's automated translation system, conducting a comparative analysis of translation variants for contractual terms between Arabic and English. In addition to the original percentages to show what they are being compared to, they also provide an overview of common trends/preferences based on their own experience. For instance, the Arabic expression “للمناسبات والاحتفالات” was most frequently translated as "for Events and Celebrations" by Gemini, with 72% of instances favoring this rendering while 12% of instances being translated as "Events and Celebrations for Hall" and 16% as "Hall for Events and Celebrations." 12% of the postgraduate students translated it as "Hall for Events and Celebrations", 71% as "For events and celebrations", and 17% as "Events and celebrations hall." This demonstrates a strong preference for clarity and noun-first structure. For the expression “كعربون مقدم” respondents' preferences were more. Gemini indicated that 15% chose “as a down payment,” 75% chose “as a deposit,” and 10% chose “as a deposit in advance.” If we look at the revisions submitted by students, the percentages are slightly different: 14 % chose “as a down payment,” 73

% chose “as a deposit,” and 13% chose “as a deposit of.” The variation, however, suggests some nuance in understanding legal and financial terms, while still revealing a slight preference for formal language and legalese in machine translations.

In the case of “كتأمين لأي اضرار”, both Gemini and postgraduate students favored the phrase “a security deposit of two hundred dollars to cover any damage.” Specifically, Gemini rendered 87% of instances into this phrase and 13% into “a deposit as a guarantee.” Postgraduates showed different agreement, with 61% of them choosing “a security deposit,” 22% selecting “insurance,” and 17% opting for “a deposit as a guarantee.” The data suggests consensus around “security deposit” as the most accurate and widely understood term in legal and rental contexts.

The translation of “تأجيل الحجز” yielded more varied results. Gemini exhibited the output: 51% of instances as “In the case of a postponement of the booking”, 31% as “If the second party wishes to postpone the booking”, 6% as “shall postpone”, and 12% as “wishes to cancel”. The postgraduate students' results were obviously different in that 42% chose “wishes to cancel”, but 24% chose “rescheduling of the reservation”, and 17% opted for “postponing the booking” or “wishes to postpone”. The data above indicates that postgraduate students appear to interpret the term more flexibly and pragmatically, perhaps suggesting that their actual dealing with legal documents during their academic experience/education had a bearing on their decisions.

With respect to the closing statement “وعلى هذا وتم الاتفاق والله ولي التوفيق”, Gemini generated “Thus, it is agreed. And may God grant us success” in 65% of cases while 35% were rendered into “Upon this, agreement has been reached.” Among postgraduate students, 50% used the former phrase, 35% retained the formal religious phrasing, and 15% added “In

witness whereof” to enhance legal tone. This indicates variation based on stylistic preferences, but neither students nor Gemini preserves the culturally significant invocation at the end of the agreement.

To sum up, the analysis of the preferred translations of “للمناسبات والاحتفالات” and “كعربون مقدم” established both differentiating factors in the nature of preferences. The analysis showed an overwhelming preference for rendering “للمناسبات والاحتفالات” into “for Hall Events and Celebrations,” with Gemini and postgraduates opting for this translation in, respectively, 72% and 71% of the overall cases, which undoubtedly reflects the translation as both direct and noun-first in nature. In contrast, “كعربون مقدم” demonstrated a more varied distribution but either way resolving preference for particular structures used in “للمناسبات والاحتفالات”. This indicates that effective and consensually established translations in professional or academic settings needs clarity in intended and established perspectives in meaning and expected or anticipated expressions in meaning, thus the structures in both preferred language and contexts reveal established patterns of language with clear preferences whether they be linguistically preferred or the only options someone would use in a certain academic disciplinary context.

9.2 Second Instrument (The Questionnaire)

To answer the second question of the study, a questionnaire was designed to identify the causes of the problems facing Google Gemini when translating rental contracts between Arabic and English and to suggest suitable strategies for enhancing the effectiveness and reliability of using Google Gemini to translate such texts. The mean scores and standard deviations were used.

9.2.1. Analysis of the First Domain: Gemini’s Capabilities and Performance

No	Items	Mean	St. D.	%	Rank	Tendency
1	Google Gemini is a useful tool for quick and basic translation needs.	4.13	0.97	82.6	2	High
2	Google Gemini can accurately capture the nuances and cultural context of a language.	2.97	1.12	59.4	12	Medium
3	Google Gemini is improving rapidly and becoming more reliable over time.	3.50	0.98	70	4	High

No	Items	Mean	St. D.	%	Rank	Tendency
4	Google Gemini can never fully replace the understanding and creativity of a human translator.	2.72	0.99	54.4	16	Medium
5	The translations of Google Gemini accurately convey the meaning and intent of the source text.	4.22	1.09	84.4	1	Very High
6	The translations of Google Gemini demonstrate grammatical correctness and proper sentence structure	3.19	0.85	63.8	8	Medium
7	The translated documents by Google Gemini are clear, concise, and easily understood.	3.31	1.03	66.2	6	Medium
8	The formatting, numbering, and structural elements of Google Gemini are preserved in the translation.	3.44	0.87	68.8	5	High
9	The translations of Google Gemini appropriately adapt cultural references and legal concepts.	3.50	0.84	70	3	High
10	The translated documents by Google Gemini comply with the legal requirements of both Arabic and English languages.	2.88	0.97	57.6	13	Medium
11	Google Gemini provides accurate translations of legal documents between Arabic and English.	3.22	1.09	64.4	7	Medium
12	The ideal translation process combines the efficiency of Gemini with the expertise of a human.	3.16	1.01	63.2	9	Medium
13	Google Gemini's translation of legal documents has helped in bridging the language gap between Arabic and English effectively.	3.03	1.03	60.6	11	Medium
14	Google Gemini's translations of legal documents are reliable and trustworthy.	3.06	1.04	61.2	10	Medium
15	Google Gemini is always used for translating legal documents between Arabic and English.	2.72	0.88	54.4	15	Medium
16	Google Gemini accurately captures the legal terminology and nuances when translating legal documents between Arabic and English.	2.87	1.00	57.4	14	Medium
Total Mean of the First Domain		4.24	0.65	84.8	-	High

It is clear from the mean scores and standard deviations regarding postgraduate students' responses to the statements about Gemini's capabilities and performance, that the total mean of the first domain (i.e. Gemini's Capabilities and Performance) was 4.24, which indicates a high tendency of agreement among postgraduate students' responses. In terms of the mean scores of postgraduate students' responses regarding Gemini's capabilities and performance, they ranged from 2.72 to 4.22. Generally, this shows that only one item demonstrated a very high tendency, "The translations of Google Gemini accurately convey the meaning and intent of the source text," whereas four items exhibited a high

tendency and the other eleven items reflected a medium tendency.

As can be seen from the above table, the fifth statement and the first statement ranked the first and the second, respectively, with the former obtaining a very high tendency and the latter a high tendency. By contrast, the fifteenth and fourth statements obtained the penultimate and last ranks, respectively, with a medium tendency of agreement for both statements.

9.2.2. Analysis of the Second Domain: Gemini's Limitations and Problems

No	Items	Mean	St. D.	%	Rank	Tendency
1	Translators find that Google Gemini's translations of	2.78	1.07	55.6	4	Medium

	rental contracts lack accuracy and fail to capture the legal nuances between Arabic and English					
2	Google Gemini is a threat to the profession of human translators.	2.25	0.84	45	5	Low
3	Google Gemini has significant errors or mistranslations in legal documents when using Google Gemini's translation services.	2.97	1.06	59.4	3	Medium
4	Translators have encountered significant issues or mistranslations in rental contracts when using Google Gemini's translation services.	3.25	1.16	65	2	Medium
5	Relying solely on Google Gemini for translating rental contracts potentially leads to legal complications or misunderstand.	3.91	0.96	78.2	1	High
Total Mean of the Second Domain		3.03	0.65	60.6	-	Medium

It is clear from the mean scores and standard deviations to identify postgraduate students' responses regarding Gemini's limitations and problems, that the total mean of the second domain was 3.03, with a medium tendency of agreement among postgraduate students. As for the mean scores of postgraduate students' responses regarding Gemini's limitations and problems, they ranged from 2.25 to 3.91. Generally, only one item obtained a high tendency, with three items receiving a medium tendency and one item getting a low tendency.

It can also be noted that the fifth and the fourth statements obtained the first and the second ranks, respectively, with the former receiving a high tendency of agreement and the latter a medium tendency. In contrast, the first and second statements obtained the penultimate and last ranks, respectively, with a low tendency of agreement for both statements.

9.2.3. Analysis of the Third Domain: Gemini's Potential and Improvement

No	Items	Mean	St. D.	%	Rank	Tendency
1	Google Gemini should be used as a supportive tool for human translators, rather than a replacement.	4.31	0.89	86.2	3	Very High
2	Google Gemini has made communication across different languages more accessible and convenient.	3.88	0.94	77.6	7	High
3	Google Gemini should be continuously developed and refined to improve its accuracy and capabilities.	4.31	0.73	86.2	2	Very High
4	Providing context-specific examples and guidelines for translating rental contracts enhance the reliability of Google Gemini's translations.	4.16	0.84	83.2	5	High

N o	Items	Me an	St. D.	%	Ra nk	Tend ency
5	The translated documents of Google Gemini maintain consistency and appropriateness of legal terminology.	3.25	0.91	65	8	Medium
6	Implementing a comprehensive terminology database specific to rental contracts would improve the accuracy of translations by Google Gemini.	4.28	0.72	85.6	4	Very High
7	Incorporating machine learning algorithms to analyze and learn from user feedback improve the effectiveness of Google Gemini in translating rental contracts.	4.03	0.74	80.6	6	High
8	Incorporating human review and validation of rental contract translations generated by Google Gemini to ensure accuracy and quality.	4.50	0.62	90	1	Very High
Total Mean of the Third Domain		4.09	0.54	81.8	-	High

The mean scores and standard deviations to identify postgraduate students' responses regarding Gemini's potential and improvement clearly show that the total mean score of the third domain, Gemini's Potential and Improvement, was 4.09 with a high tendency; it means that the total tendency of postgraduate students' responses regarding this domain was high. Regarding the mean scores of students' responses regarding Gemini's Potential and Improvement, they ranged from 3.25 to 4.50, with four items receiving a very high tendency while three items obtaining a high tendency and only one item exhibiting a medium tendency. The data also showed that the eighth and third statements obtained the first and the second ranks, respectively, with the former receiving a very high tendency and the latter a high

tendency as well. By contrast, the second and fifth statements obtained the penultimate and last ranks, respectively, with the second statement having a high tendency of agreement among the participants and the fifth receiving a medium tendency.

9.3 Analysis of the Third Instrument (the Interview)

To answer the third question of the study, an interview consisting of seven open-ended questions was conducted with four translation experts selected from different universities. The questions were intended to solicit the experts' opinions and views towards the reliability of Google Gemini in translating legal texts between Arabic and English languages.

Generally, some experts presented a practitioner's perspective with hands-on familiarity, while others offered more theoretical or observational viewpoints, with caution about Google Gemini's role in legal translation. Regarding Google Gemini's strengths and weaknesses, all the experts agreed that AI tools, including Gemini, have improved in terms of speed and general contextual understanding. Further, all of them stressed the struggles of AI with culture-specific terms, complex legal sentence structures, and jurisdictional nuances. Some experts made some generalizations about Gemini's limitations without comparing it the engine to other translation tools. All the experts were aware of the limitations of AI for dealing with legal nuance, but one expert had offered a more detailed critique due to their greater experience with tools.

When asked about the notions of accuracy and cultural context in legal translations, some of the experts mentioned that Gemini performs reasonably well on general texts but struggles with specialized, jurisdiction-specific concepts. Moreover, they recommended future improvements focus on the legal systems' contextual peculiarities and idiomatic legal language, while others repeatedly stressed that culture-specific and complex structures hinder AI accuracy. Additionally, they noted that, although much progress has been achieved in the field of AI, AI applications cannot yet fully grasp the subtlety of legal discourse.

Regardless of this, all experts highlighted that cultural and contextual factors constituted the primary hurdles preventing AI tools from generating perfectly accurate translations; other experts offered more suggestive, forward-looking recommendations, and one of the interviewees implicitly included more limitations to present.

In relation to the question whether AI is a support tool to or a replacement of human translators, some experts envisioned AI tools (including Gemini) as support tools assisting in preliminary translation or document triaging, but not as tools replacing human agents. In addition, potential integration with legal management systems was suggested. Others agreed that human translators were irreplaceable, emphasizing the creative, evolving nature of human language. They also mentioned that the way language works and its unpredictability can hold back full AI autonomy. It was clear that two of the experts emphasized the need for human oversight, but some viewed it as more of a philosophical requirement, while others considered AI to be a practical helper.

In terms of suggestions for future improvement, some interviewees mentioned a few things that could be improved upon, including better handling of legal terminology, jurisdiction-specific tailoring, consistency of legal terminology, and an increased number of customization options based on the legal system. Others suggested enhanced cultural nuance handling and improved connotation interpretation, particularly in Arabic-English translations. However, all of the experts focused on cultural and legal sensitivity, but again, one interviewee provided more concrete and system-level enhancements.

A comparison between the accounts provided by the experts indicated different levels of experience, a breadth of background experience in legal translation, and varying points of possible perspectives on the capacity of AI translation tools, including Google Gemini. For example, some experts were primarily experts in legal translation and have practical experience in using AI, AI-assisted

tools, CAT software, and other machine translation systems, while others had no such direct experience and only used an AI tool on a limited basis and occasionally for some evaluation purposes, and not in production. Two experts agreed that there are limits to AI and the translation of legal text. At the same time, they agreed on AI's limited capacity to translate culture-specific texts, legal terms/concepts, and other legal and cultural complex issues. The experts unanimously agreed that Google Gemini struggled with the metrics of precision and nuance associated with legal language, while it provided better contextual understanding and efficiency of work process. Some experts offered more targeted, solution-based suggestions, for example, to tailor translations to particular legal systems and to improve consistency with terminology, whilst other experts had more focus on the linguistic and cultural limitations that AI is still overcoming.

Although the professional interviewees had different viewpoints towards the capacity of AI translation tools, they all highlighted the importance of human intervention. All the authorities agreed that AI could help facilitate workflows and process large document sets, but the prevalence and changeability of human language, particularly in legal settings, warranted a human expert's oversight to ensure accuracy and legal validity. In summary, the authorities suggested that AI has scope as a complement in the context of legal translation but could never replace professional translators' refined judgement.

In terms of the translation test findings, Google Gemini reliably generated translation test results that were suitable for rental agreements. Even after postgraduate students humanly post-edited it, the overall quality was still well below the recognized requirements for professional legal translation. This quantitative evidence highlights that although AI provides speed, machine translation is currently unable to achieve the necessary accuracy and reliability on its own due to the inherent linguistic, cultural, and legal complexities of such documents.

In response to the questionnaire, postgraduate students recognize the limitations of the AI tool and value its advancements when processing legal materials due to cultural sensitivity and the need to prevent potentially dangerous errors. They saw AI as a tool, not a substitute for human translators, and agreed that human control needed to be maintained in high-stakes legal situations.

The expert interviews validated the quantitative and qualitative data, further enhancing these conclusions. AI is commonly perceived as a powerful tool by many in the legal field, but they also agree that AI lacks knowledge of what is culturally or jurisdictionally relevant. For this reason, AI tools tend to struggle with the translation of certain terminology into other cultures due to their inability to interpret some forms of complex or technical language (e.g., legal documents). However, the experts have identified many ways in which AI can improve and better translate documents through the use of customized resources such as legal phraseology. They have also identified the need for legal professionals to supervise and guide the AI's use of these resources, and they recommend that AI be improved through increased knowledge and experience in the area of legal translation and through greater sensitivity and awareness of culture and law.

To sum up, the findings of all three instruments converge on a clear understanding that Google Gemini, in its current form, is a suitable tool for a first pass for the translation of rental contracts between Arabic and English. In addition, it serves as a valuable tool for efficiency in general translation and can assist in preliminary stages.

Unlike the previous studies, the present study strengthens the current knowledge and understanding of the limitations of general-purpose MT in processing the complexity and nuance of specialized Arabic-English legal texts, and updates the understanding by evaluating Google Gemini, a state-of-the-art MT tool, and providing a different viewpoint on the study by involving student translators. The study is also a reminder that, although technology is evolving rapidly, the importance of human knowledge and expertise in achieving

accurate and reliable legal translations cannot be replaced. It also offers useful information for MT developers and translator training courses.

10. Conclusion

The results and evaluation of the study data lead to one clear conclusion. Google Gemini can effectively serve as a machine translation tool, as it is capable of generating an initial first draft of a rental contract in Arabic and English. Nonetheless, it is still not truly an automated legal translation service. Its value is seen in its speed and the way it can convert a basic transfer of language. Generally, Gemini's translations would be considered satisfactory but do not meet the standards of accuracy related to the law, contextual meaning, and certain stylistic norms. Noticeably, substantial improvement was made after human post-editing, which speaks to the necessity of legal human involvement. Legal translators understand legal systems, the meaning and implications of the terms used, and the exact phrases needed for a document. They are needed to deal with the many weaknesses of AI-generated content. Therefore, the optimal use of AI in this field would be a combination of both AI and human input. AI can effectively assist professionals in producing documents quickly and efficiently. Professionals will assist in checking for quality control and authenticity before issuing translated legal documents such as rental agreements as a result of using AI for translation purposes.

11. Recommendations

Based on the issues concerning this study and the root causes of those issues, the positives of human aid, the researchers made the following recommendations to help improve Google Gemini and other similar AI-based tools for translating Arabic-English rental agreements. The first recommendation is to implement a review and post-editing process for any AI-produced legal translation by a qualified human legal translator or a qualified human post-editor. This is an essential requirement of quality control. Second, the study recommends focusing on teaching translators how to render legal terms, how to post-edit AI outputs more particularly, and how to identify and correct minor mistakes in terminology, context, and

style. These are the main objectives of professional development and educational projects. Third, university programmers have to develop and make use of glossaries and term bases tailored to the legal domain. Legal translation agencies and practitioners are recommended to develop and maintain validated lists of rental contract terms in both English and Arabic. Such lists should be used in conjunction with AI tools and incorporated, where possible, into customized AI models. Fourth, the importance of pre-editing strategies should be emphasized for raw source texts. Finally, customization of AI tools should be facilitated by the developers of AI translation tools. They should focus on the organization's ability to customize the features of the model, like training it on legal text in the field, while also including user-defined glossaries and a style guide.

12. Suggestions for Future Studies

The findings discussed offer insights that could be useful for enhancing AI-assisted translation technologies in the legal field. Among them is the evaluation of different large language models in legal translation. Other more current models, like ChatGPT, DeepSeek, Qwen, or even some legal-specific AI models, could be examined in terms of their performance with different legal document types and language pairs. More sophisticated error classification systems could be applied. Another significant focus is the investigation of how the legal translation output quality is affected by prompt formulation, or prompt engineering. To measure the accuracy of translations based on different types of prompts (i.e., by the type of domain, tone, style, or by use of legal definitions), systematic studies into the effects of the various ways of formulating prompts can be carried out.

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