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A Comparative Study of Accuracy in Human vs. AI Translation of Legal Documents into Arabic

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Abstract
This study investigates the comparative accuracy of human and AI-generated translations of legal documents into Arabic, focusing specifically on the performance of ChatGPT against human translations. This study employs a comparative research design, where a corpus of words 20,000 words from legal texts, including contracts and agreements, translated by both AI and professional human translators. The research aimed to assess three primary dimensions: correct legal terminology usage, clarity of expression, and adherence to the Arabic legal framework. Through a structured evaluation process, key findings revealed that human translations significantly outperformed AI-generated versions in all assessed criteria. Human translators demonstrated superior mastery of legal terminology and clarity in complex legal constructs, as well as adherence to formal legal standards and cultural differences inherent in Arabic legal contexts. While AI tools like ChatGPT show promise in producing contextually relevant translations for simpler texts, they often fall short in capturing the precise legal terminology and complex constructs required for effective legal communication. This research highlights the continued necessity of skilled human translators in the legal field and suggests a hybrid approach that leverages AI tools to augment human expertise in translation processes.

Keywords
translation accuracy, human translation, AI translation, legal documents, Arabic language, translation evaluation, corpus analysis

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1.Introduction

In today's globalized world, translation is a service for which the demand will always exceed supply (Kit & Wong, 2008), and the demand for accurate and efficient translation of legal documents has grown significantly, particularly in multilingual legal systems and cross-border transactions. Legal translation demands precise conveyance of the message's content while maintaining its form and the unique characteristics of the target language (Alwazna, 2013), as even the slightest error can lead to significant misinterpretations and legal consequences. Traditionally, legal document translation has been the responsibility of professional human translators, who ensure precision in language, tone, and legal terminology while adhering to the standards of the target legal system. However, advancements in artificial intelligence (AI) and machine learning have led to the emergence of AI-powered translation tools, offering a faster and more cost-efficient alternative. In other words, the advancement of artificial intelligence has triggered a paradigm shift in professional translation work, and both individuals and professional translators are increasingly relying on AI for translation tasks (Awadh, 2024).

This study aims to conduct a comparative analysis of human and AI translation in the specific context of legal documents translated from English into Arabic, a specialized field that requires both linguistic accuracy and an understanding of legal implications and consequences (Rahim, 2024), given its direct connection to the law. While AI translation tools have made significant advancements, existing research has primarily focused on general or literary translation rather than the legal domain, where precision and adherence to legal standards are paramount. Moreover, studies comparing AI and human translators in legal contexts, particularly for English-Arabic translation, remain limited. This study addresses this gap by evaluating the accuracy of translations produced by professional human translators and AI-based tools in legal settings.

In particular, it is an attempt to answer the following research questions:

1. How accurate are AI translation tools in translating legal documents into Arabic, compared to professional human translators, in terms of legal terminology, linguistic precision, and adherence to legal standards?

2. What are the key advantages and limitations of AI translation technologies in the context of legal translation into Arabic, and can they potentially surpass or complement human translators in maintaining legal accuracy and clarity?

By answering the above questions, this study contributes to the understanding of AI translation in legal contexts, specifically English-Arabic legal translation, an area not yet fully explored. It highlights the limitations and potential applications of AI tools in legal translation, emphasizing the need for a hybrid approach where AI supports, rather than replaces, human translators. The findings are significant for legal professionals, translation agencies, and policymakers, offering insights into how AI can be integrated into translation workflows while maintaining legal accuracy. Additionally, this study paves the way for future research, including longitudinal studies on AI's evolving capabilities

and investigations into the legal and ethical implications of AI-generated translations in official contexts, such as liability, admissibility, and regulatory concerns.

2. Literature Review

2.1. Legal Translation

The increasing reliance on globalization and international legal frameworks has highlighted the need for accurate legal translations. The translation of legal documents is a complex task that demands both linguistic accuracy and an understanding of legal concepts, particularly when translating into languages like Arabic, which have unique grammatical and syntactical structures. Legal translation is characterized by its specificity and the necessity for cultural and legal context.

One critical aspect of legal translation is the handling of complex legal concepts, which can be defined as terms or ideas that have specialized meanings within a particular legal system and are often deeply rooted in cultural, social, and legal contexts (Soriano Barabino, 2020). These concepts include, but are not limited to, jurisprudential terms, statutory provisions, and legal doctrines that do not have direct equivalents in other languages. Classifying these concepts can be done into categories such as substantive law (e.g. property law, contract law), procedural law (e.g. legal processes, court procedures), and cultural or jurisdiction-specific terms (e.g. terms that are unique to a particular legal system or country). Understanding and accurately translating these complex legal concepts is crucial for ensuring that legal texts are both linguistically precise and legally valid.

As noted by Berūkštienė (2016), legal texts contain specialized terminology that often does not have direct equivalents in other languages. Therefore, translators need to examine the rhetorical structures and grammatical characteristics of legal texts, which fosters a deeper understanding of the meanings and legal implications embedded in contractual clauses (Guo & Yu, 2023). This approach allows translators to effectively navigate the complexities of legal language, ensuring that the intent of the source text is accurately conveyed in the target language. Additionally, it is crucial for translators to consider the social context surrounding legal documents, including the legal system and cultural differences, to enhance the translation and adaptation process (Guo & Yu, 2023).

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2.2. AI Translation Technologies

Recent advancements in AI, particularly in natural language processing and machine learning, have led to the development of translation tools capable of generating translations at unprecedented speeds. In addition, AI translation technologies have revolutionized the way we communicate across language barriers (Rahim, 2024). Developing deep learning algorithms and vast datasets, these tools can provide real-time translations that are increasingly accurate and contextually relevant (Moneus & Sahari, 2024). Research by Yang (2022) noted that the rise of automated translation tools has introduced a new concept, i.e., artificial intelligence translation. This development has led to the emergence of machine translation applications that aim to closely match human translators' performance.

O'Hagan (2016) emphasized that both everyday internet users and organizations working globally require effective translation tools, which has contributed to the rapid rise in popularity of free online automatic translation services like Google Translate and Microsoft Bing Translator. These tools often cater to users prioritizing speed, cost, and convenience over quality, with many not feeling the need for professional translation services. Additionally, computer-aided translation (CAT) has become widespread in commercial translation, as software solutions continue to evolve and reshape social communication within the industry, which remains varied in its technological sophistication (O'Brien, 2012).

Diaz (2023) highlighted the launch of ChatGPT by OpenAI in November 2022, based on the GPT-3 series of large language models. This model has been further refined using supervised and reinforcement learning techniques and is designed for conversational applications such as chatbots and messaging systems, emerging from the GPT-3.5 model trained earlier in 2022. The recent introduction of GPT-4 represents the latest advancement in OpenAI's deep learning initiatives, featuring a multimodal model that can process both text and image inputs, generating text outputs. While GPT-4 may not always match human performance in real-world situations, it demonstrates human-level capabilities across various tasks based on established academic and professional benchmarks (Moneus & Sahari, 2024).

2.3. Previous Studies

The accuracy of AI translation into Arabic has garnered significant attention in recent years. Moreover, previous studies (e.g. Berūkštienė, 2016; Rahim, 2024) highlight the complexities of legal language, which often contains specific terminology and special meanings that can be challenging for AI translation systems. For instance, studies have shown that while AI tools, like Google Translate, have improved in handling general lan-

guage, they still struggle with the precision required in legal contexts. This was evidenced by Rahim (2024), who found that AI translations frequently misinterpreted legal terms, leading to potential legal ambiguities.

Furthermore, the study conducted by Al-Romany and Kadhim (2024) examined the influence of artificial intelligence on machine translation, specifically in contexts devoid of human involvement. Tools such as Google Translator, Bing, Microsoft Translator, Systran Translate, and Amazon Translate gained widespread usage in the realm of Computer-Assisted Translation (CAT). This study aimed to contrast artificial intelligence with human translation, positing a hypothesis regarding the differences between these two approaches. Concerns about the diminishing role of human translators led to machine translation being favoured as the preferred option. Both local and international contracts were analysed through human and machine translation, identifying and assessing various strengths and weaknesses of each method. The findings demonstrated a significant gap between human and machine translation, with human translation proving superior in terms of accuracy and the special nature of legal language. Additionally, the results highlighted the importance of translators' experience and expertise in the translation process.

Tahseen (2024) investigated machine translation errors in rendering English literary texts into Arabic and concluded that machine translation programs such as Google Translate, Reverso, and Bing Microsoft Translation produce unacceptable translations of English literary texts into Arabic. The study noted that such programs often result in meaningless and ambiguous outputs due to their lack of human-like understanding and emotional insight. As a result, human translation is deemed superior, as it employs communicative translation strategies, whereas machine translation primarily relies on semantic translation, leading to significant shortcomings in conveying the intended meaning.

The study by Awadh (2024) examined the challenges faced by human translators and AI applications in translating scientific texts between English and Arabic. It compared the translations produced by both groups and sought solutions to enhance efficiency in scientific translation. Using an analytical-descriptive method, the study assessed the performance of 20 Arab translators and 10 AI applications through a test involving six texts with 18 collocations, phrasal verbs, and abbreviations. The results showed comparable performance for both groups when translating from Arabic to English, while human translators excelled in translating from English to Arabic. Both struggled with certain English scientific terms, facing challenges related to lexical differences and cultural nuances. The equivalence strategy emerged as the most effective approach, achieving the highest success rate among the evaluated strategies.

Moreover, Omar and Salih (2024) conducted a systematic review of machine translation post-editing in the context of English/Arabic translation by examining 60 studies published since the early 2000s. Following the Preferred Reporting Items for Systematic

Reviews and Meta-Analyses (PRISMA) guidelines, the studies were analyzed and categorized according to various metrics to identify key trends and gaps in the research. The review revealed a predominantly prescriptive focus, with much of the research centered on evaluating and improving machine translation software, while relatively little attention has been given to the skillsets and competencies of translators themselves. The study underscored the importance of post-editing as a crucial aspect of digital literacy for Arabic translation students and called for greater emphasis on integrating machine translation education into translation pedagogy.

In another language, the study conducted by Ding (2024) presented a comparative analysis of the translation quality of legal texts between English and Chinese, evaluating Chat Generative Pre-trained Transformer (ChatGPT) and four online Neural Machine Translation (NMT) systems. Both quantitative and qualitative methods were employed to assess the performance of English-to-Chinese (E-C) and Chinese-to-English (C-E) translations. The findings indicated that both ChatGPT and the NMT systems perform satisfactorily in translating legal texts from Chinese to English, with ChatGPT's quality slightly lower, but not significantly different, from the NMT systems. However, for E-C translations, neither ChatGPT nor the NMT systems achieved acceptable standards, although the NMT systems outperformed ChatGPT overall. The study also highlighted that, while the types of errors were similar across systems, ChatGPT produced more frequent and severe errors. These results provide valuable insights for selecting appropriate tools for legal text translation between English and Chinese.

The literature highlights a critical need for a deeper understanding of the comparative accuracy between human and AI translation in specialized contexts, particularly with regard to the subtle differences in the legal language. While AI translation technologies have made significant strides in efficiency and speed, their performance in accurately conveying complex legal concepts remains understudied, especially in the field of legal translation which requires much accuracy. The specialized vocabulary and structure inherent in legal documents necessitate a level of contextual awareness and interpretative skill that AI tools may struggle to achieve.

As the demand for translation services grows alongside global connectivity, the effectiveness of AI-driven translation tools in handling intricate legal terminology and maintaining adherence to legal standards warrants thorough investigation. This study seeks to clarify the potential role of AI in legal translation and determine whether it can complement or even rival human translators in ensuring accurate and effective communication in legal contexts. By evaluating the accuracy of AI translations against those produced by human translators, this research seeks to provide insights that could inform the integration of AI technologies into professional legal workflows, ensuring both clarity and accuracy in legal communications.

3. Method

This study adopts a comparative research design to evaluate the accuracy of AI-generated translations against human translations of legal documents into Arabic. The comparison focuses on assessing how well AI, specifically ChatGPT, performs in the domain of legal translation when compared to translations commonly used in Jordanian courts and official documentation. The comparative design allows for a detailed analysis of the quality, precision, and appropriateness of translations in legal contexts.

In terms of methodology, this research uses a mixed-methods approach that combines both quantitative and qualitative analysis. The quantitative component involves measuring the accuracy of translations through metrics such as terminology correctness, linguistic precision, and adherence to legal standards. These metrics are derived from established Translation Quality Assessment (TQA) frameworks (Moorkens et al., 2018). The qualitative component focuses on a deeper evaluation of the contextual appropriateness and legal clarity of the translations, assessing how well each translation meets the demands of legal texts in the Arabic context. This mixed approach is crucial in Translation Studies as it combines the objective analysis of translation accuracy with subjective assessments of translation quality, allowing for a comprehensive evaluation of AI tools in comparison to human translators.

3.2 Source Texts Data

The data used for this study consists of legal documents, specifically contracts and agreements. These documents were carefully selected to represent common legal texts that are frequently encountered in Jordanian courts and official proceedings. The documents were chosen to cover a range of legal topics, including commercial agreements, employment contracts, and service agreements, ensuring a diverse and comprehensive representation of legal terminology and structures. A total of 20,000 words from various legal documents were chosen for translation. The documents were originally drafted in English and were selected based on their relevance to Jordanian legal practice. We prioritized documents that had been previously submitted in legal cases or other formal proceedings, ensuring the inclusion of texts with legal significance. The selection process aimed to cover a range of common legal scenarios, ensuring that the results would be applicable to real-world legal translation tasks in Jordan.

The legal documents selected for this study were chosen to ensure they are representative of the types of texts commonly encountered in Jordanian legal practice. These include contracts and agreements that are frequently submitted in courts and used in official proceedings. By selecting documents that span a range of legal areas, such as commercial, employment, and service agreements, we aimed to cover a broad range of legal language and terminology. This ensures that the findings from the study are not

limited to one specific type of legal text but can be generalized to a wider range of legal documents. While the study focuses on these particular examples, the diverse nature of the selected texts allows for broader generalizations about the effectiveness of ChatGPT's translation in the legal domain, especially in contexts where precise legal terminology and structure are crucial.

3.3 Target Texts Data

The legal documents were translated into Arabic using two distinct methods:

3.3.1 AI Translation (ChatGPT): ChatGPT is an AI program designed to engage in human-like conversations and assist with a wide range of tasks, including translation (Benbada & Benaouda, 2023). It was selected for this study due to its growing popularity in Jordan, where it is widely recognized for its capabilities, including in the legal domain. For this research, we used the GPT-4 version of ChatGPT to ensure the output reflected the latest advancements in AI technology. Each selected document was input into ChatGPT for translation from English to Arabic. The translation process was carried out in multiple stages to cover the entire 20,000-word corpus. The AI-generated output was then compiled and formatted to match the style of the original legal documents, allowing for a direct comparison with the human translations.

3.3.2 Human Translation: The human translation was sourced from professional translators whose work is officially approved and used in Jordanian courts and legal institutions. These certified translators, experienced in translating legal documents between English and Arabic, were selected based on their expertise in legal language and familiarity with both legal systems. Their translations, vetted for accuracy and adherence to legal standards, served as the benchmark for comparison in this study. For the automated translations, we used ChatGPT version 4 (GPT-4), developed by OpenAI. Known for its advanced language capabilities and trained on a diverse range of multilingual data, including legal language, ChatGPT-4 was chosen for its ability to handle complex text structures and its improved multilingual translation accuracy over earlier versions.

3.4 Quality Assessment Criteria and Process

To objectively assess the translations, one of the authors, who is a researcher from the School of Law, specializing in Arabic legal frameworks and terminology conducted an in-depth evaluation of both the AI and human translations. The evaluation centered on the following key factors:

1. Correct Usage of Legal Terminology: Legal translation demands precision in terms of vocabulary, as legal terms often carry specific meanings that must be accurately conveyed in the target language. The evaluator assessed whether the translations used appropriate and accurate legal terms in the Arabic context.
2. Clarity of Expression: Given that legal documents are intended to be unambiguous, the clarity of expression is critical. The evaluator reviewed whether the translated text was clear and comprehensible, avoiding convoluted or misleading phrasing.
3. Adherence to Legal Standards in the Arabic Legal Framework: It is crucial for translations to adhere to the specific legal norms and standards prevalent in Jordan. The evaluator checked whether the translations complied with these standards, including legal syntax and structural considerations unique to Arabic legal documentation.

The evaluation of the translations was conducted in two phases. In the initial assessment, the School of Law researcher reviewed the translations to assess overall quality and ensure consistency with the established evaluation criteria, checking for significant errors or deviations from standard legal translation practices. In the detailed evaluation, each translation was examined sentence-by-sentence, focusing on the accuracy of legal terminology, phrasing, and the ability to convey complex legal concepts. Comparisons between the AI and human translations were documented in a detailed report, highlighting specific strengths and weaknesses of each method.

4. Results

The comparative study between human and AI-generated translations of legal documents into Arabic yielded several key findings regarding the accuracy, clarity, and legal adherence of each method. Below are the detailed findings, supplemented with specific examples, the common ones seen usually in agreements and contracts, to illustrate the differences and strengths of each approach.

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4.1 Correct Usage of Legal Terminology

One of the primary findings was that human translators exhibited a superior understanding and application of legal terminology compared to AI-generated translations. Human translations consistently employed precise legal terms that matched the context of the original English documents, while ChatGPT occasionally substituted less accurate, more generic terms (see next table).

In one of the contracts, the term "indemnity clause" was translated by human translators as "شرط التعويض", which is the correct legal term in Arabic. ChatGPT, however, rendered this as "بند التعويض", which, while understandable, does not carry the same legal weight or specificity in the Arabic legal framework.

In a legal agreement, the term "breach of contract" was translated by human translators as "إخلال بالعقد", which is the precise legal term used in Arabic legal documents to describe the violation of contractual obligations. ChatGPT, however, translated it as " كسر العقد", which literally means "breaking the contract". While understandable, this translation lacks the formal legal connotation and specificity required in a legal context, as "كسر" is more commonly used in everyday language rather than in legal discourse.

Examples:

Legal Term	**AI Translation (ChatGPT)**	**Human Translation**	**Observations**
Indemnity Clause	بند التعويض	شرط التعويض	"بند التعويض" is the correct legal term, while "بند" lacks the same legal weight as "شرط".
Breach of Contract	كسر العقد	إخلال بالعقد	"إخلال بالعقد" is the precise legal term, while "كسر العقد" is informal and lacks the legal connotation.

4.2 Clarity of Expression

Human translations displayed a higher degree of clarity, particularly in sections involving complex legal language or intricate clauses. AI translations were generally clear in simpler sections but struggled with more sophisticated legal phrasing, leading to occasional ambiguity in the AI output.

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Examples:

Legal Term	**AI Translation (ChatGPT)**	**Human Translation**	**Observations**
"Shall be held liable for any breach of contract"	سيتحمل المسؤولية عن أي انتهاك للعقد	سيكون مسؤولاً عن أي إخلال بالعقد	"إخلال بالعقد" carries the correct legal connotation, while "انتهاك" suggests a broader or moral breach.
"Either party may terminate the contract upon giving written notice"	يمكن لأي طرف إنهاء العقد بعد تقديم إشعار كتابي	يجوز لأي طرف إنهاء العقد بإعطاء إشعار خطي	"بعد تقديم" suggests immediate termination, whereas "بإعطاء إشعار" emphasizes the procedural requirement for notice.

In one section of a legal agreement related to obligations of the parties, the phrase "shall be held liable for any breach of contract" was translated by human translators as "سيكون مسؤولاً عن أي إخلال بالعقد", maintaining the clarity and legal connotations of responsibility. ChatGPT translated this as "سيتحمل المسؤولية عن أي انتهاك للعقد", which, while understandable, introduced a difference that suggests a more physical or moral breach, rather than the specific legal connotation of "breach" in the context of contract law.

In a section discussing the termination of the agreement, the phrase "either party may terminate the contract upon giving written notice" was translated by human translators as "يجوز لأي طرف إنهاء العقد بإعطاء إشعار خطي", which clearly conveys the legal requirement of providing written notice prior to termination. ChatGPT, on the other hand, translated this as "يمكن لأي طرف إنهاء العقد بعد تقديم إشعار كتابي", which, while understandable, introduced a subtle difference in meaning. The phrase "بعد تقديم" suggests the termination happens immediately after the notice is given, which could lead to confusion about the necessary timing and formal procedures required for contract termination.

4.3 Adherence to Legal Standards in the Arabic Legal Framework

The human translations adhered closely to the legal syntax, structure, and formality required in Jordanian legal contexts. This adherence was particularly evident in the formatting and phraseology of contractual clauses, where official documents have specific legal phrases and expressions mandated by local courts and laws. ChatGPT, in contrast, occasionally deviated from these legal norms, reflecting its limitations in understanding region-specific legal standards.

Examples:

Legal Term	**AI Translation (ChatGPT)**	**Human Translation**	**Observations**
Non-Disclosure Clause: "Both parties undertake not to disclose any information"	يعد الطرفان بعدم الكشف عن أي معلومات	يتعهد الطرفان بعدم الإفصاح عن أي معلومات	"يتعهد" is more formal and legally precise, while "يعد" is more casual, which may reduce its formality in legal contexts.
Governing Law Clause: "This agreement shall be governed by the laws of Jordan"	هذا الاتفاق سيكون تحت قوانين الأردن	يخضع هذا الاتفاق لقوانين الأردن	"يخضع" is the correct formal legal term, whereas "سيكون تحت" is less precise and lacks the required legal formality.

When translating a non-disclosure clause, the human translator used the formal legal phrase "يتعهد الطرفان بعدم الإفصاح عن أي معلومات" (both parties undertake not to disclose any information). ChatGPT provided a more casual rendering, " يتعهد الطرفان بعدم الكشف عن أي معلومات" (both parties promise not to reveal any information). While this may suffice in non-legal contexts, the formal tone expected in legal documents was missing, which could lead to issues in official legal settings.

In translating a governing law clause, the human translator accurately rendered the phrase "This agreement shall be governed by the laws of Jordan" as " يخضع هذا الاتفاق لقوانين الأردن", adhering to the formal legal language used in official contracts. ChatGPT, however, translated it as "سيكون هذا الاتفاق تحت قوانين الأردن", which translates to "this agreement will be under the laws of Jordan." While this translation is understandable, it lacks the precise legal formulation and formal tone required in legal documents, potentially undermining its acceptance in a legal context where specific language is mandated for clarity and enforceability.

4.4 Handling of Complex Legal Constructs

One of the most notable differences between human and AI translations was observed in their ability to handle complex legal constructs and conditional clauses. Human translators, due to their deep understanding of legal language and concepts, were able to correctly render these into Arabic while preserving the original meaning. ChatGPT, however, sometimes struggled with clauses and legal differences, occasionally leading to translations that were either incorrect or difficult to interpret.

Examples:

Legal Term	**AI Translation (ChatGPT)**	**Human Translation**	**Observations**
"Neither party shall be liable for any indirect or consequential damages, including but not limited to loss of profits"	لن يكون أي طرف مسؤولاً عن أي أضرار غير مباشرة أو تبعية، بما في ذلك خسارة الأرباح	لا يكون أي طرف مسؤولاً عن أي أضرار غير مباشرة أو تبعية، بما في ذلك على سبيل المثال لا الحصر خسارة الأرباح	The omission of " على سبيل المثال لا الحصر" (including but not limited to) could narrow the legal interpretation of the clause, making it less inclusive.
"If either party fails to perform its obligations under this agreement due to circumstances beyond its reasonable control, it shall not be liable for any damages resulting from such failure"	إذا لم يتمكن أي طرف من الوفاء بالتزاماته في هذا الاتفاق خارجة عن بسبب ظروف السيطرة، فلن يكون مسؤولاً عن أي أضرار	إذا أخفق أي طرف في أداء التزاماته بموجب هذا الاتفاق بسبب ظروف خارجة عن سيطرته المعقولة، فلا يكون مسؤولاً عن أي أضرار ناتجة عن هذا الإخفاق	The omission of "reasonable control" in the AI translation oversimplifies the conditional structure, potentially leading to misunderstandings about the scope of the exemption.

In a contract dealing with limitations of liability, the clause "neither party shall be liable for any indirect or consequential damages, including but not limited to loss of profits" was translated by human translators as " لا يكون أي طرف مسؤولاً عن أي أضرار غير مباشرة أو تبعية، بما في ذلك على سبيل المثال لا الحصر خسارة الأرباح", accurately reflecting the legal language. ChatGPT translated it as " لن يكون أي طرف مسؤولاً عن أي أضرار غير مباشرة أو تبعية، بما في ذلك خسارة الأرباح", which omitted the important legal qualifier " على سبيل المثال لا الحصر" (including but not limited to), potentially narrowing the legal interpretation of the clause.

In a clause addressing liability limitations, the English phrase "If either party fails to perform its obligations under this agreement due to circumstances beyond its reasonable control, it shall not be liable for any damages resulting from such failure" was translated by human translators as " إذا أخفق أي طرف في أداء التزاماته بموجب هذا الاتفاق بسبب ظروف خارجة عن سيطرته المعقولة، فلا يكون مسؤولاً عن أي أضرار ناتجة عن هذا الإخفاق". This translation accurately conveys the conditional nature of the liability limitation while maintaining clarity and legal precision.

In contrast, ChatGPT translated the clause as " إذا لم يتمكن أي طرف من الوفاء بالتزاماته في هذا الاتفاق بسبب ظروف خارجة عن السيطرة، فلن يكون مسؤولاً عن أي أضرار". While this translation is understandable, it oversimplifies the conditional structure and omits the important phrase "reasonable control", which is crucial in legal contexts to define the scope of the exemption from liability. This omission could lead to misunderstandings about the specific circumstances under which liability is waived, thereby affecting the enforceability of the clause in legal settings.

4.5 Handling of Cultural and Legal Differences

Human translators demonstrated a better grasp of cultural and legal differences specific to the Arabic legal system. In contrast, ChatGPT occasionally ignored such cultural or jurisdiction-specific differences, leading to translations that, while technically correct, lacked the necessary legal precision for official use in Jordan.

Examples:

Legal Term	**AI Translation (ChatGPT)**	**Human Translation**	**Observations**
"Heirs and assigns" (Inheritance Law)	الورثة والأوصياء	الورثة والمتنازل لهم	"الأوصياء" refers to "guardians," which changes the meaning of the clause. " المتنازل لهم" refers more accurately to assigns or legal successors.
"The principal grants the agent full authority to act on their behalf in all legal matters" (Power of Attorney)	يمنح الشخص الآخر الحق في التصرف نيابة عنه في الأمور القانونية	يمنح الموكل الوكيل السلطة الكاملة للعمل نيابة عنه في جميع الأمور القانونية	"الحق" (right) is less precise than "السلطة" (authority), which is critical in the legal context of a power of attorney.

In a legal document involving inheritance law, human translators correctly reflected Jordanian legal terminology, rendering "heirs and assigns" as "الورثة والمتنازل لهم". ChatGPT translated this as "الورثة والأوصياء", which introduces confusion as "الأوصياء"refers more commonly to "guardians" rather than legal assigns or successors, altering the legal meaning in a significant way.

In a section discussing power of attorney, the phrase "the principal grants the agent full authority to act on their behalf in all legal matters" was translated by human translators as "يمنح الموكل الوكيل السلطة الكاملة للعمل نيابة عنه في جميع الأمور القانونية". This translation accurately captures the legal concept of "power of attorney" as understood in Jordanian law, reflecting the specific authority and responsibilities involved.

In contrast, ChatGPT translated this as " يمنح الشخص الآخر الحق في التصرف نيابة عنه في الأمور القانونية", which translates to "grants the other person the right to act on their behalf in legal matters". While this translation is grammatically correct, it uses the term "الحق" (right) instead of "السلطة" (authority), which can create confusion about the scope of the agent's powers. In the context of Jordanian law, the distinction between "right" and "authority" is crucial, as it may affect the agent's ability to undertake specific legal actions. The human translation appropriately reflects the precise legal relationship established by a power of attorney, ensuring clarity and adherence to local legal norms.

Key findings indicate that human translators excel in the precise use of legal terminology, clarity in complex texts, adherence to formal legal standards, and understanding cultural and legal nuances specific to the Arabic legal system. While AI translations

are generally accurate, they often misuse legal terms, lack clarity in intricate language, and fail to meet stringent structural requirements. Consequently, despite the growing popularity of AI for general translations, human translation remains crucial for ensuring reliability and accuracy in legal contexts, particularly within Jordanian courts and legal proceedings.

5. Discussion

Based on the findings represented above, there are several key differences between human and AI-generated translations of legal documents into Arabic in accuracy, clarity, legal adherence, and cultural understanding. While the results highlight the advantages of human translators, it is important to acknowledge that AI translation tools, like ChatGPT, are not inherently flawed; rather, they present a different approach that is rapidly evolving.

AI translation tools have made significant shifts in recent years. They can produce translations that are often contextually relevant and grammatically correct, especially in simpler texts. For example, in straightforward clauses, AI-generated translations can provide an understandable rendition of the original text. This capability can serve as a valuable resource for those needing quick translations, whether for personal use or preliminary understanding of a document. However, the study highlights that AI tools frequently fall short in the field of legal language. Legal terminology is precise and context-specific, often requiring a deep understanding of the legal framework and the implications of specific terms.

Despite these limitations, AI translation tools are continuously improving through advances in machine learning and natural language processing. Developers are working to enhance the ability of AI systems to recognize and use legal terminology accurately, reflecting an understanding of context and specificity. As these systems learn from user interactions and vast datasets, their translations are likely to become more reliable, particularly in specialized fields such as law.

AI tools are also increasingly being used as a starting point for legal professionals. Lawyers and translators can enhance AI-generated translations to expedite the initial phases of translation work, identifying areas that require human intervention for accuracy. This collaborative approach can significantly increase efficiency in legal translation processes while allowing human experts to focus on complex and contextually sensitive sections.

While AI translation tools are a promising complement to human expertise, they do not yet replace the need for skilled human translators, particularly in the legal domain. Human translators bring an understanding of legal frameworks, cultural nuances, and

the implications of specific terminology that AI currently lacks. The study's findings emphasize that human translators not only maintain clarity in complex legal language but also ensure adherence to the formal standards and cultural expectations inherent in Arabic legal contexts.

For example, the handling of complex legal constructs, such as conditional clauses, is an area where human translators excel. They can accurately reflect the intended legal meaning, ensuring that critical phrases are not omitted or misrepresented, as seen in the translations of liability limitations. The omission of significant qualifiers by AI tools can lead to misunderstandings that may have serious consequences in legal settings.

This aligns closely with the findings of Moneus and Sahari (2024), who explored concerns regarding the potential decline in the need for human translators due to advancements in AI. They assessed whether reliance on machine translation could ever be feasible in legal contexts, highlighting that while artificial intelligence translation has made significant progress, offering rapid and cost-effective solutions, it still faces numerous limitations.

Human translation, in contrast, offers a deeper understanding of cultural context and the nuances of the text. Skilled human translators excel in accurately conveying the intended meaning and tone of the original document, making them the superior choice in situations requiring high levels of accuracy and cultural sensitivity. Given that legal terminology and concepts can vary widely between jurisdictions, AI translation tools may not always account for these critical differences.

The disparity between AI translation quality in English and Arabic can be attributed to several factors, including differences in linguistic complexity, the availability of training data, and the specificity of legal terminology. English, as a dominant global language, benefits from extensive high-quality datasets, allowing AI models to achieve greater accuracy in translation. In contrast, Arabic poses unique challenges due to its rich morphology, complex syntax, and the coexistence of formal and colloquial variations, making it more difficult for AI to generate precise legal translations. Furthermore, legal Arabic relies on specific terminology and phrasing that may not always have direct equivalents in English, leading to inconsistencies in AI-generated translations. To explore these challenges, multiple AI translation tools, including Google Translate, were tested to compare their performance and highlight recurring issues in Arabic legal translation.

Currently, it is recommended that a skilled human translator with expertise in legal translation be employed to ensure the highest levels of accuracy and quality when translating legal texts. While AI translation relies on algorithms and large datasets for text conversion, it may not fully capture the subtleties and cultural nuances as effectively as a human translator. Thus, while AI translation presents certain advantages, human translation is generally regarded as providing higher-quality outcomes due to its enhanced capacity to convey the intended meaning and cultural context of the original text.

6. Conclusion

While AI-generated translations serve as a valuable and evolving tool for translating legal documents, they are not yet suitable for official use in legal contexts. Their ability to produce quick and comprehensible translations can aid in initial understanding but must be supplemented with human expertise to ensure accuracy and adherence to legal standards. The specialized nature of legal language, along with the cultural and jurisdictional specificities of the Arabic legal system, necessitate a careful, human-led approach that AI has yet to fully replicate. As AI technology continues to improve, it may become a more reliable option for certain types of legal translation, but for now, human translators remain essential in ensuring that legal translations meet the rigorous demands of official use.

This study highlights the need for a hybrid approach, where AI tools and human expertise work together to enhance the translation process in legal contexts. Future research could conduct longitudinal studies to assess how advancements in AI, particularly in natural language processing and machine learning, impact the accuracy of legal translations over time. Further studies may also explore the legal implications of AI-generated translations in official contexts, examining liability issues, the admissibility of AI translations in court, and the potential need for regulatory frameworks governing their use.

Additionally, ethical considerations were carefully addressed in this research. Due to the sensitive nature of legal documents, all texts were anonymized to protect confidentiality, and consent was obtained from all parties involved in the human translation process. The use of AI (ChatGPT) adhered to OpenAI's terms and conditions. However, the study is subject to certain limitations, primarily its focus on legal documents, particularly contracts and agreements, which may not fully represent other types of legal texts. Furthermore, while ChatGPT is widely used in Jordan, the findings may not be generalizable to other AI translation tools. Despite these limitations, this study contributes valuable insights into the strengths and weaknesses of AI translation in the legal field, reinforcing the continued necessity of human oversight in ensuring legal accuracy and contextual appropriateness.

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