

Neural Machine Translation of Arabic to English Legal Texts Using Trados Studio: Efficiency and Consistency From the Perspective of Saudi Translation Students' Post-Editing Practices

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Abstract—This article examines the efficiency and consistency of Trados Studio in Arabic-English legal translation by analyzing the post-editing practices of 15 female Saudi translation students. The legal texts used are moderately complex, laden with Saudi-specific legal terminology and Islamic rules, sourced from Adel Azzam Saqf Al-Hait's "The Reliable Guide to Legal Translation" (2012). The Trados Studio Machine Translation Post-Editing Questionnaire (TMTPEQ) was employed to gather users' insights. The study utilizes mixed methods, combining qualitative content analysis of Trados Studio-translated texts and student post-editing tasks with descriptive quantitative analysis of the questionnaire. The results reveal the ongoing challenge of achieving precision and extra-linguistic significance in written texts, especially in legal translation, exacerbated by specialized terminology, cultural nuances, and complex syntax. They also underscore the significance of qualitative assessments in post-edited translations, emphasizing the multifaceted role of translators encompassing linguistic, cultural, and specialized content precision and functional and legal equivalence.

Index Terms—Legal Arabic-English Translation Trados Studio, post-editing, Saudi Arabia female translation students

I. INTRODUCTION

Legal translations, which are in high demand nowadays, require a high level of precision and consistency to prevent misunderstandings or disputes. Determined by the contextual and functional aspects of the legal language (Glogar, 2023), they vary across contexts, countries, and cultures. In the context of translation into and from Arabic, Hadj Aissa (2021) and Hoballah (2022) showed that the interplay of intercultural and interlingual differences contributes to making the task of the translator an arduous one. Hoballah also highlighted the heightened sensitivity of language use within the Arabic legal environment, where a dearth of research in the English-Arabic language combination is noted.

Most often, translation functions as a crucial link in legal situations, promoting efficient communication between stakeholders, clients, and attorneys while removing linguistic barriers existing between various legal systems. When hinged upon accuracy and reliability, translation in legal settings ensures due process, safeguards legal rights, and promotes international legal interactions. The imperative of accuracy and reliability is rooted in the inherently technical nature of legal vocabulary (Škop et al., 2019), characterized by precision, complexity, specialization, and practicality, aligned as it is with specific legal systems and societal distinctions (Gibbons, 1999).

The field of legal translation presents various challenges when translating documents from Arabic to English due to, among other factors, the distinctive features of the Arabic language (a view shared by El-Farahaty, 2015). Arabic legal texts possess unique lexical (Altarabin, 2018) and structural and stylistic characteristics (El Ghazi & Bnini, 2019), which make translation into English a challenging task. The differences in the structures, languages, and cultural nuances of Arabic and English legal systems further complicate the legal translator's task, rendering an exact translation a daunting endeavor. Preserving the integrity and precision of translated legal materials necessitates, therefore, a nuanced understanding of context and cultural sensitivities, as well as a precise use of legal terminology.

In response to the various translation challenges, computer-assisted translation (CAT) software tools and neural machine translation systems have gained prominence within the translation field in the last decades. However, even

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though CAT technologies, like Trados Studio, which provides this study's case, are widely used in the translation industry to enhance efficiency and consistency, they often struggle with the complexity of context and meaning found in legal writings, necessitating human post-editing to assure the required quality. The concern about the ability of these technologies to ensure translation quality, particularly in the legal context, has been raised by recent studies such as Zou et al. (2020) and Yu (2023).

Nevertheless, with the advent of artificial intelligence (AI) tools, research in MT might necessitate an overhaul of the scholarship accumulated to date on the practice of post-editing. In their exploration of editors' use of AI, Khasawneh and Khasawneh (2023, p. 7126) referenced a number of studies to praise AI-powered software's ability to engage the challenges of translation by "processing massive amounts of linguistic data" and to learn "complex nuances of language and provide translations that are more suited to their context." Moreover, the two authors express optimism in future enhancements of the software, since "AI driven systems demonstrate continuous improvement over time." Trados Studio, in their official website, praise their solutions for the same reasons claiming they are "Designed to speed up the translation process, improve consistency and boost productivity", by incorporating three technologies: Translation Memory (TM), Technology Management, and Machine Translation (Trados Studio, 2023).

One cannot deny that AI language models and chat box tools are becoming part of the revolutionary advancements in translation technology. Trados Studio 2022 added an app that brings the largest language model, ChatGPT, to Trados Studio. In this, we can quote from the Trados Studio website:

This app works as a translation companion. It can help you refine your work and tackle a wider range of linguistic challenges, ultimately elevating the overall quality of your translations. Using a list of predefined or custom prompts, you can do things such as:

- Generate alternative translations for the current translation proposal;
- Provide additional information about the source/target content;
- Change the tone of voice of a translation;
- Reduce the length of a translation;
- Avoid gender bias;
- ... and endless other new exciting possibilities (Loney, 2023).

In KSA, Trados Studio solutions are widely available; however, an in-depth analysis is yet to be conducted on the post-editing stage of translating legal texts from Arabic to English to enhance legal translation quality. Indeed, evaluating the efficiency and consistency achieved through the post-editing of Trados Studio-translated samples in the Saudi context is essential for comprehending the technology's effectiveness in managing legal translations. This is why this study assumes that post-editing is indispensable for refining machine-translated content and maintaining quality standards in translation training in the Arabic-English language pair.

Research questions

This study addresses the issues of the efficiency and consistency of Trados Studio legal translations from Arabic into English and the post-editing process among female Saudi students of translation. It entails a multi-faceted endeavor whereby the female students' experiences, perspectives, and challenges are examined. For this objective to be attained, the following research questions are raised:

- a) To what extent does Trados Studio contribute to ensuring consistency and efficiency in Arabic-English legal text translation?
- b) How does the application of Trados Studio affect the quality of post-edited legal translations from Arabic to English?
- c) How do female translation students in KSA perceive the consistency and efficiency of Trados Studio?
- d) What are the key challenges faced in preserving consistency and efficiency while post-editing the automatically translated legal texts by Trados Studio?

When evaluating the performance of Trados Studio within the niche domain of legal translation and in exploring the practitioners' post-editing, we aim to provide insights into the software's benefits, limitations, and challenges, offering valuable information for Arabic translation experts and Saudi stakeholders. We also intend to help trainees and practitioners make informed decisions about integrating Trados Studio into translation workflows upon graduation. In so doing, our ultimate goal for this study is to serve as a practical guide for enhancing the efficiency and consistency of legal text translation from Arabic to English in the context of Saudi Arabia.

II. REVIEW OF THE LITERATURE

Over recent years, the integration of technology, specifically TM tools like Trados Studio, has significantly impacted the field of legal translation. These tools help save time and effort by reusing previously translated segments. They are designed as software applications that aid human translators by providing features such as translation memory, terminology management, and alignment, ultimately enhancing the efficiency and consistency of human translation. However, they also bring their own set of issues, particularly when dealing with the complex syntax and specialized terminology commonly found in legal translation. The following review highlights those issues, defining efficiency and consistency and focusing on the challenges posed by post-editing in Saudi higher education training.

A. *Efficiency and Consistency*

Efficiency and Consistency Efficiency and consistency are two highly valued aspects in legal settings, where there is a constant demand for swift and accurate translation of extensive, multi-volume texts. TM tools like Trados Studio help to achieve efficiency by allowing the quick recycling of previously translated segments when dealing with repetitive language forms and expressions, such as the standardized terminology found in contracts and legal agreements. At the same time, they also clear up any potential ambiguity or misinterpretation resulting from different translations of the same term or expression. For this, they keep suggesting previously employed translations for specific legal terms and phrases to ensure a uniform usage of terminology throughout the entire translated document.

B. *Challenges in Post-Editing Legal Texts*

While TM tools offer considerable advantages, they also introduce a number of complexities. Legal texts, as previously underlined, are known for their intricate syntax and specialized terminology, demanding extensive post-editing to balance efficiency with maintaining legal accuracy and style. This is why, despite the sheer amount of scholarship accumulated to date, a need is still felt for research to understand how these tools handle legal translations during the post-editing phase, depending on both context and function.

The impact of machine translation errors on post-editing is investigated by Daems et al. (2017), who utilized keystroke logging and eye-tracking to assess the influence of error types on various effort indicators. By utilizing these techniques and classifying errors into various types, the authors shed light on the errors that were found to have a great impact on post-editing in terms of cognitive efforts. Thus, the most recurrent error types fall within the categories of grammar, syntax, terminology, and coherence, leading the authors to stress the accuracy of MT output, suggesting that for the latter to be more efficient, accuracy must be improved.

The correlation between different types of errors generated by MT systems and the cognitive effort required to post-edit them is also studied by Hu (2020). Relying on empirical data represented by the participants' pauses during the post-editing process, Hu (2020) finds a correlation between the length of the text in which the error is found and the cognitive effort to correct it.

Working on automatic post-editing methods and focusing on neural automatic post-editing systems, Shterionov et al. (2020) have analyzed factors affecting automatic post-editing performance, such as data augmentation, with a specific focus on enhancing translation quality in commercial contexts. In their conclusions, the authors stress the positive effects of neuronal post-editing (NPE) on improving the output of machine translation (MT) content production workflows in commercial environments and suggest areas for further research and improvement, such as handling long inputs and investigating how APE can improve the output of neural machine translation (NMT) systems.

Always in the context of CAT tools and legal translation, Herbig et al. (2020) have introduced multimodal post-editing (MMPE), a prototype that combines various input methods for post-editing MT, including pen, touch, and speech modalities. The findings indicate that pen and touch input methods are effective for tasks involving deletion and reordering but have limited utility for longer insertions. Conversely, speech input and combinations of various modalities, such as selecting and speech, are relevant for tasks involving replacements and insertions but may not be as conducive for deletion and reordering.

In an attempt to improve the MT post-editing skills of Trados 2021 outputs, Emará (2023) integrates error identification techniques into the post-editing process using a task-based approach applied to university students. The results of the experiment include the experimental group's enhanced ability to identify a range of machine translation (MT) errors, particularly those related to coherence, register, style, grammatical, lexical, and word sense errors. While post-editing time did not significantly decrease, it reflected improved performance, causing a changing role for translators in MT post-editing.

C. *Legal Translation in the Saudi Context*

Drawing on the post-editing scholarship reviewed above, the practice of post-editing in the Saudi context necessitates the consideration of a number of relevant issues pertaining to the legal translation from Arabic to English. These issues encompass the high technical nature of legal vocabulary (Škop et al., 2019), terminology precision, complexity, specialization, and practicality, and the focus on the peculiarities of the Saudi legal system and societal distinction, as deduced from Gibbons (1999). Furthermore, the notable disparity between the structure, language, and culture of the Saudi and English legal systems further intensifies the challenge of achieving an accurate legal translation.

As legal texts adhere to stringent rules and conventions to maintain both legal validity and clarity, Saudi female MA students employ a number of strategies and navigate various concepts when rendering legal texts. These translation strategies and concepts are hereby defined for the purpose of the study:

- **Equivalence / Literal translation:** The translation maintains a literal or equivalent meaning to the source text.
- **Transliteration:** it refers to representing words from one script into another, typically from a non-Latin script to the Latin alphabet.
- **Explanation:** it may involve providing additional context or clarifications to ensure the translated text is understandable.
- **Transposition:** it involves changing the order or structure of words or phrases to fit the target language's conventions.

- **Functional equivalence:** it ensures that the translated text conveys the same function or effect as the source text, even if the wording differs.
- **Paraphrasing:** it involves rephrasing the source text to convey the same meaning using different words or expressions.
- **Borrowing:** it entails a direct use of a word or phrase from the source language in the target language text.
- **Modulation:** it involves adjusting the translation to convey the intended meaning, which may include changes in tone, perspective, or emphasis.
- **Omission:** it is to leave out certain words or phrases from the source text in the translation.
- **Extra-linguistic level:** This indicates that changes or considerations in translation go beyond language, possibly involving cultural or contextual aspects.
- **Syntactic and extra-linguistic levels:** They suggest that changes or considerations involve both syntax (sentence structure) and extra-linguistic factors.
- **Lexical and extra-linguistic levels:** The two categories combine lexical (vocabulary choice) and extra-linguistic considerations in translation.
- **Transliteration + paraphrase:** This is a specific case that combines transliteration and paraphrasing for a particular term.

All in all, the above strategies and concepts employed by Saudi female MA translation students reflect the prevailing trend within the translation industry, marked by a transition from traditional translation to enhanced and accurate post-editing. In this evolution, the focus is on rectifying errors in machine-translated texts, acknowledging the inherent imperfections of machine translation.

III. METHODOLOGY

The study's methodology involved selecting a sample of legal texts utilized in a Saudi legal setting, which was then integrated into the translation course as a class assignment. The translation tasks were performed using Trados Studio, and students were instructed to undertake post-editing by focusing on the morphological, syntactic, lexical, and extra-linguistic aspects while also assessing translation consistency and efficiency for challenging segments. Additionally, they were required to delineate strategies for enhancing translation quality. The resulting data were analyzed using the content analysis method, with a focus on the three essential criteria of a high-quality translation outlined by Pan and de La Puente (2005): reliability, fluency, and appropriateness.

The quantitative aspect of the study relied on a questionnaire administered to students, offering insights into their attitudes, practices, challenges, strategies, observations, and suggestions, thus complementing the dataset.

A. Sample Selection and Data Collection

The participants in this study were 15 MA female students attending a translation class in a public university in Saudi Arabia. They have an upper-intermediate level in English, and sufficient knowledge of forensic terminology and concepts. Before the experiment, they had sufficient training in using Trados Studio.

B. Instruments and Data Collection

(a). Post-Editing Through a Classroom Task

To collect data, a task was designed to evaluate the efficiency and consistency of Trados Studio in the Saudi legal context. This assignment was intended for MA translation students to form an integral part of the study sample.

The task instructions comprised the following sequential steps, designed in the form of a table:

Trados Studio evaluation: In the first column, students are required to assess the efficiency and consistency of Trados Studio's translations, focusing on how well the Trados Translation (TT) segments align with the Source Text (ST) segments in terms of accuracy and fluency. This assessment aims to gather insights into the performance of the machine translation tool.

Post-editing for consistency: In the second column, students are tasked with post-editing the TT segments whenever necessary to achieve a high level of consistency between the TT and ST segments. This step reflects the practical application of translation skills and highlights the areas where machine translation may fall short.

Explanation of post-editing: In the third column, students are required to underline the parts of the TT segments that they post-edited and provide explanations in blue. The explanations should address the reasons behind the post-editing and the strategies employed to enhance consistency. By doing so, students demonstrate their critical evaluation skills and their ability to make necessary adjustments to maintain translation consistency.

Student information: The table includes a section where the student's name and the affiliated ST segments are listed. Each student is assigned a range of ST segments to assess and postedit.

Research connection: This task is an integral part of an ongoing research study focusing on the effectiveness of Trados Studio in legal text translation from Arabic to English, specifically tailored to the context of KSA. By evaluating Trados Studio's efficiency and consistency, this task contributes valuable data to the research, allowing for a deeper understanding of the strengths and limitations of machine translation in the legal domain.

(b). *Trados Studio Machine Translation Post-Editing Questionnaire (TMTPEQ)*

The scale employed in the second phase of data collection focuses on the participants' perceptions, knowledge, and practices related to post-editing and the automatic translation of legal texts. It is structured as a Likert-type scale with six response options, allowing participants to indicate their level of agreement with various statements.

The response options for each item are as follows:

- Strongly Disagree;
- Disagree;
- Neither Agree nor Disagree;
- Agree;
- Strongly Agree;
- I have no idea.

This six-point scale captures a range of responses, enabling a refined assessment of participants' attitudes and experiences regarding post-editing and automatic translation in the context of legal texts. The scale includes items covering diverse aspects such as understanding post-editing, its application and goals, the importance of terminology and style, and participants' revision strategies.

The use of "I have no idea" as a response option acknowledges that not all participants may possess equal familiarity with certain concepts or practices, ensuring that responses are accurate reflections of their knowledge and experience.

The scale was carefully designed to align with the research objectives of investigating post-editing practices and attitudes in the context of legal translation from Arabic to English. It underwent a thorough development and validation process, including expert reviews and pilot testing, to ensure its reliability and validity.

IV. RESULTS

A. *Content Analysis of the Post-Editing Task of the Corpus*

Table 1 shows the segment assigned to each student. Fulfilled task and missing parts are added. It displays the results obtained by students (St) in the tasks involving Source Text (ST) segments and the subsequent post-editing procedures they carried out.

TABLE 1
ASSIGNED SOURCE TEXT SEGMENTS TO EACH STUDENT

| Student's code | Affiliated ST segments | Task fulfillment | Missing Parts |
|----------------|------------------------|--------------------------------------------|----------------------------------------------------------------------------------------------------|
| St 1 | 14-23 | Partly: Only the Yes/No part was fulfilled | - Post-editing - Changes -Explanation in blue. -Level of intervention - Used strategy. |
| St 2 | 24-32 | Yes | - None |
| St 3 | 33-46 | Partly, most segments are not covered. | - Changes -Level of intervention - Used strategy |
| St 4 | 47-60 | Yes | - None |
| St 5 | 61-71 | Yes | - Changes |
| St 6 | 72-80 | Yes | - None |
| St 7 | 81-89 | Yes | - None |
| St 8 | 90-98 | Yes | - None |
| St 9 | 99-107 | Yes | - None |
| St 10 | 108-117 | Yes | - None |
| St 11 | 118-127 | Yes | - None |
| St 12 | 128-137 | Yes | - None |
| St 13 | 138-148 | Yes | - None |
| St 14 | 149-158 | No | All of them, nothing achieved. |
| St 15 | 159-167 | Yes | - None |

The analysis of the participants' task performance revealed that, out of the fifteen students, the majority (Sts. 2, 4, 5, and 15) completed the work effectively, yielding an almost 80% completion rate. This rate is encouraging since it reflects students' ability to review Trados Studio translations, justify the need for post-editing, and specify the strategy needed by the post-editor each time an error in the direct MT is encountered.

Conversely, St 1 and St 3 partially completed the task, addressing specific segments but also introducing post-editing changes, explanations, and interventions, indicating a 13% partial fulfillment rate. St. 14, on the other hand, had difficulties completing any of the assignment segments, accounting for a 7% non-fulfillment rate. The failure to complete the assignment highlights variations in the students' abilities to meet the task requirements, emphasizing the need for support and guidance to enhance their post-editing skills in legal translation.

The students' responses to the final two task requirements, which encompass post-editing as needed and providing explanations covering "what," "why," "what level" (morphological, syntactic, lexical, or extra-linguistic), and the

applied strategy, were systematically analyzed. Subsequently, the results are quantified by tabulating the frequencies of identified error types and the recurring strategies employed in the segments. The frequencies of each translation category were calculated by thoroughly examining the provided data and counting how many times each category appeared.

TABLE 2
CATEGORIES DERIVED FROM 154 TRANSLATED SEGMENTS AFTER STUDENTS POST-EDITING

| Category derived from 154 segments | Frequency | Rate (%) |
|------------------------------------|-----------|----------|
| Equivalence /Literal translation | 20 | 12.99 |
| Paraphrasing | 15 | 9.74 |
| Explanation | 13 | 8.44 |
| Borrowing | 5 | 3.25 |
| Transposition | 4 | 2.60 |
| Transliteration | 3 | 1.95 |
| Omission | 3 | 1.95 |
| Modulation | 2 | 1.30 |
| Syntactic | 4 | 2.60 |
| Morphological (suffix) | 4 | 2.60 |
| Lexical | 3 | 1.95 |

This table shows the findings of the post-editing translation procedures used on 154 translated segments. It displays the students' ability to detect MT errors as well as the various translation strategies deployed to improve the accuracy and readability of machine-translated content.

According to the frequencies, equivalence, or literal translation, comprises the most widely used strategy, as it accounts for 20 segments, representing approximately 13% of the total. Paraphrasing follows closely with 15 segments, contributing to around 10% of the instances. Explanation, with 13 segments, makes up approximately 8.4% of the total post-editing actions. Borrowing and transposition are less frequent, each appearing in 5 and 4 segments, respectively, making up around 3.25% and 2.60% of the cases. Transliteration and omission both have three instances each, accounting for approximately 1.95% of the total. Modulation and syntactic changes are even less frequent, with 2 and 4 segments, respectively, contributing to approximately 1.30% and 2.60% of the post-editing actions. Lastly, morphological (suffix) and lexical changes are relatively infrequent, each appearing in 4 and 3 segments, respectively, making up approximately 2.60% and 1.95% of the total post-editing actions.

These results provide insights into the distribution of post-editing categories, highlighting the most common and less frequent types of post-editing actions. This means that literal translation of syntactic structures (that need paraphrasing and explaining to convey meaning) is the most problematic issue for CAT tools. In other words, literal translation should be avoided because it merely employs translating text word-for-word without taking into consideration the proper grammatical and structural conventions of the target language. In this context, it suggests that when translating content using Computer-Assisted Translation (CAT) tools, one of the most challenging issues is translating sentences that require a direct, word-for-word translation, even though this might not convey the intended meaning effectively. These types of translations often need paraphrasing and additional explanation to ensure that the meaning is accurately conveyed in the target language.

These are the most frequent errors detected by the students who underwent post-editing for the selected legal texts. They can be attributed, firstly, to the distinctive features of the Arabic language, which significantly differs from English, and to the forensic field of KSA, which includes a specific terminology that extends beyond linguistic differences to encompass cultural and religious aspects.

B. Scale's Results

(a). MT and Students' Translation Practices

The mean scores and standard deviations for each item in Section I of the TMTPEQ are summarized in Table 3, allowing for a quick comparison of responses. Here, the attitudes and behaviors of respondents towards the use of MT and general translation are examined.

TABLE 3
MT AND STUDENTS' TRANSLATION PRACTICES

| Item | Mean | Standard Deviation |
|-----------------------------------------------------------------------------------------------|------|--------------------|
| I often use machine translation when translating texts | 2.16 | 1.75 |
| Using automatic translation helps to save time | 3.25 | 1.25 |
| Using automatic translation economizes energy | 2.36 | 1.53 |
| Machine translation is cost-saving | 2.63 | 2.09 |
| I can easily notice the errors in the machine-translated texts | 2.74 | 2.11 |
| Machine translation post-editing is necessary to improve machine memory | 2.68 | 2.11 |
| It is mandatory to combine machine translation and post-editing | 2.50 | 1.75 |
| It is beneficial to combine machine translation and post-editing | 4.16 | 1.09 |
| Automatic translation cannot translate properly all types of texts | 3.32 | 0.99 |
| Automatic translation is helpful but we need to post-edit all the translated texts | 3.84 | 0.82 |
| When post-editing the automatic translated text, I transform long sentences into shorter ones | 2.36 | 1.46 |
| When post-editing the automatic translated text, I revise punctuation marks | 2.26 | 1.84 |
| When post-editing the automatic translated text, I format the text very well | 3.95 | 0.22 |
| When post-editing the automatically translated text, I try to revise all fragment sentences | 3.37 | 0.99 |
| It is difficult to use the automatic translation for Arabic legal texts | 2.42 | 0.99 |

The survey reveals that MT is seen as a helpful tool in the translation process with a generally positive perception of MT contribution in the translation process. Respondents frequently utilize machine translation (MT) for text translation (Mean = 2.16, SD = 1.75) and agree that it has the potential to save time (Mean = 3.25, SD = 1.25), supporting the widespread belief that MT may be a useful, time-efficient resource. The respondents do acknowledge the limits of MT, particularly the fact that it cannot faithfully translate all different kinds of texts (Mean = 3.32, SD = 0.99). They also acknowledge that post-editing is frequently required to raise the caliber of translations produced by MT (Mean = 3.84, SD = 0.82), indicating a realistic view of MT as a tool that requires human intervention to achieve the desired level of quality.

Interestingly, the majority of respondents (Mean = 2.50, SD = 1.75) concur that combining machine translation and post-editing can save time, supporting the notion that MT is an important part of the translation workflow. As part of their efforts to enhance the overall quality and coherence of translated texts, they also emphasize several aspects during post-editing, including sentence structure, punctuation, and text formatting (e.g., Mean = 3.95, SD = 0.22), demonstrating their dedication to improving the overall quality and coherence of translated texts. Furthermore, the data reveals that respondents are attentive to specific challenges linked to post-editing MT, encompassing the identification and correction of various error types (e.g., Mean = 2.74, SD = 2.11). This suggests a dedication to maintaining the highest standards of quality in their translation work.

(b). *The Use of Trados Studio*

Table 4 provides revealing statistical results that shed light on respondents' perceptions and practices related to Trados Studio.

TABLE 4
THE USE OF TRADOS STUDIO

| Item | Mean | Standard Deviation |
|------------------------------------------------------------------------------------------------------------|------|--------------------|
| Trados Studio is a very performing software for translation | 3.18 | 1.83 |
| Trados Studio can translate specialized texts | 3.45 | 1.84 |
| Trados Studio has little memory when it comes to legal texts | 2.82 | 2.19 |
| Trados Studio needs more performance in terms of legal texts | 2.82 | 2.19 |
| The Trados Studio course helped me to manipulate translation technology | 3.18 | 1.83 |
| It is easy to manipulate Trados Studio | 3.82 | 1.22 |
| I use Trados Studio in all my translations | 2.00 | 1.73 |
| Terms related to religion (mainly Charea) are not all existing in Trados Studio memory | 3.09 | 1.68 |
| Terms related to the KSA culture are not all existing in Trados Studio memory | 3.18 | 1.73 |
| Trados Studio makes the translation text easy to read | 3.55 | 1.34 |
| Trados Studio makes the translation text easy to revise | 3.36 | 1.30 |
| Trados Studio offers a high degree of efficiency | 3.45 | 1.30 |
| Trados Studio offers a high degree of accuracy | 3.45 | 1.30 |
| Trados Studio offers a high degree of accuracy for legal texts | 3.00 | 1.78 |
| I often go through the self-revision or self-checking step when I get the Trados Studio translated text | 2.27 | 1.76 |
| I find it easy to revise the translated text by Trados Studio when I am familiar with the source text | 3.82 | 1.22 |
| I generally set my own translation approach before and after using Trados Studio | 2.18 | 1.66 |
| Proofreading the legal texts translated by Trados Studio is necessary to reach a human translation quality | 3.09 | 1.68 |
| I post-edit the Trados Studio translated text to make it understandable | 2.18 | 1.54 |

Respondents, as shown in Table 4, generally hold positive opinions about Trados Studio. They perceive it as a piece of performing software for translating specialized texts in general, enhancing text readability, and aiding in the revision process, as indicated by mean scores ranging from 3.18 to 3.82, with standard deviations generally below 2. However, there are notable concerns regarding Trados Studio's performance when it comes to the specific case of legal translation. Respondents express that it has limited memory for legal terminology, as reflected in mean scores of 2.82 (SD = 2.19), suggesting room for improvement in this aspect.

While they appreciate the software's efficiency and accuracy overall, the mean score of 3.00 (SD = 1.78) for accuracy in legal texts indicates that respondents believe there is room for enhancement specifically in this domain. Respondents also emphasize the importance of proofreading legal texts translated by Trados Studio to achieve human translation quality, as suggested by a mean score of 3.09 (SD = 1.68), highlighting their commitment to maintaining translation standards. Despite these concerns, respondents frequently use Trados Studio in their translations, showing a mean score of 2.00 (SD = 1.73), indicating its integration into their translation workflows.

Furthermore, the data illustrates that respondents are confident in their ability to manipulate Trados Studio, with mean scores as high as 3.82, indicating their comfort and proficiency with the software. Additionally, respondents prefer to set their own translation approach before and after using Trados Studio, demonstrating their desire for a personalized translation process.

(c). *Post-Editing and Legal Text Automatic Translation*

Table 5 presents the statistical analysis, including mean scores and standard deviations, for each item in Section III of the TMTPEQ, focusing on post-editing and the automatic translation of legal texts. Respondents' attitudes and practices regarding post-editing and the automatic translation of legal texts are highlighted, providing valuable insights into their preferences and strategies.

TABLE 5
POST-EDITING AND LEGAL TEXT AUTOMATIC TRANSLATION

| Item | Mean | Standard Deviation |
|-------------------------------------------------------------------------------------------------|------|--------------------|
| I know what post-editing is | 3.55 | 1.40 |
| I know how to apply post-editing | 3.00 | 1.84 |
| My goal when post-editing is to reach a highly consistent translation | 3.18 | 1.73 |
| Post-editing is a useful stage for a better-quality translation | 3.09 | 1.73 |
| I know how to apply post-editing to legal texts | 3.00 | 1.84 |
| My academic course included post-editing in its content | 2.82 | 1.80 |
| My course showed how to apply post-editing through practical activities | 2.91 | 1.67 |
| I often ask help from my instructors when I post-edit legal texts | 2.64 | 1.90 |
| I often ask help from experts when I post-edit legal texts | 2.91 | 1.67 |
| I post-edit to correct grammatical errors | 2.82 | 1.73 |
| I post-edit to correct conceptual errors | 2.55 | 1.91 |
| I post-edit to reformulate sentences | 2.82 | 1.70 |
| I post-edit to check the style | 3.18 | 1.67 |
| I verify cultural clues when post-editing | 3.27 | 1.51 |
| It is important to properly use legal terminology in the machine translation post-editing stage | 2.82 | 1.67 |
| It is important to deeply correct the tone in the machine translation post-editing stage | 3.09 | 1.51 |
| Style is important to consider in the machine translation post-editing stage | 3.09 | 1.51 |
| In legal texts, I pay attention to context-specific terminology | 2.82 | 1.84 |
| Post-editing legal texts need more post-editing compared to other kinds of texts | 2.64 | 1.66 |
| I often use the unilingual revision of the text in the post-editing stage | 2.82 | 1.73 |
| I often use a comparative revision of the text in the post-editing stage | 2.91 | 1.67 |
| Combining machine translation and post-editing saves time | 2.91 | 1.67 |
| I correct grammatical errors while post-editing when this affects meaning | 2.82 | 1.73 |
| I correct spelling errors while post-editing when this affects meaning | 2.64 | 1.90 |
| I rewrite confusing sentences when this affects meaning | 2.91 | 1.67 |
| I revise terminology in legal texts translation in accordance with the KSA context | 3.09 | 1.51 |
| I substitute terminology in legal texts translation in accordance with the KSA context | 3.09 | 1.51 |
| My post-editing approach relies on detailed correction | 2.82 | 1.73 |

The data displayed in Table 5 reveals that KSA students of translation have a good understanding of post-editing, as reflected in a mean score of 3.55 with a standard deviation of 1.40, indicating a moderate level of consensus in their knowledge about this translation stage. They generally recognize post-editing as a valuable step for achieving highly consistent and better-quality translations, as indicated by a mean score of 3.09 with a standard deviation of 1.73, reflecting a degree of agreement among respondents.

In terms of practical application, respondents report a moderate level of confidence in their ability to apply post-editing, with a mean score of 3.00 and a standard deviation of 1.84. This suggests some variability in their self-assessed

skills. Moreover, they acknowledge the importance of post-editing in legal text translation, with a mean score of 3.00 and a standard deviation of 1.84, indicating recognition of its relevance to their field of study.

Respondents also highlight the role of their academic courses in shaping their post-editing knowledge and skills, with a mean score of 2.82 and a standard deviation of 1.80, suggesting a degree of consistency in the inclusion of post-editing content in their courses. Practical activities related to post-editing are similarly emphasized, with a mean score of 2.91 and a standard deviation of 1.67, indicating a moderate level of agreement among respondents.

Interestingly, respondents seek assistance when post-editing legal texts, both from instructors and experts, as reflected in mean scores of 2.64 and 2.91, respectively, with standard deviations of 1.90 and 1.67. This demonstrates their willingness to collaborate and improve their work.

Not to ignore that the respondents pay close attention to various aspects during post-editing, including grammar, conceptual accuracy, sentence structure, style, and cultural nuances. They prioritize the use of legal terminology and tone correctness, indicating a commitment to preserving the text's legal and cultural integrity.

While respondents believe that legal texts require more post-editing compared to other types of texts, they also highlight the value of combining machine translation and post-editing for time-saving purposes, with a mean score of 2.91 and a standard deviation of 1.67.

V. DISCUSSION

When dealing with legal matters, where specialized terminology, cultural quirks, and syntactical intricacies greatly affect how well translated materials are received, it is difficult to achieve accuracy and extra-linguistic significance. Therefore, legal translators are required to successfully negotiate the complexities of language and to adopt a sophisticated approach to their task. This explains why this article has joined efforts to explore the automation of legal texts (Soavi et al., 2022) and placed a strong emphasis on the qualitative evaluation of post-edited translations, as evidenced in many research studies in various fields (Tatsumi, 2010; Flanagan & Christensen, 2014; Daems et al., 2017; Vardaro et al., 2019; Alshehri & Alowedi, 2023).

This study reports data obtained from a questionnaire, completed by 15 Saudi Arabian female translation students. To discuss its findings in the Saudi context, a first reference can be made to a recent quantitative study conducted by Khasawneh and Khasawneh (2023), which involved a larger participant pool of 193 editors to explore practices related to the use of AI and post-editing. Their main findings acknowledge the developments in CAT with the advent of AI, and underscore the crucial role of the human input performed by editors. They align with our own findings, which have shown that translation students are keen on combining the use of Trados Studio and practicing post-editing, at various levels, including grammar and spelling errors, and terminological consistency and accuracy.

A crucial finding emerging from Khasawneh and Khasawneh's (2023) survey is the imperative of post-editing of machine translated texts. This aspect is taken up in our study in the context of legal documents transferred from Arabic to English within the Saudi Arabian academic setting, when utilizing Trados Studio. The analysis of our respondents' attitudes and practices, presented in Table 4, reveals that they hold a positive view of Trados Studio. They particularly appreciate its contribution in enhancing text readability and facilitating the revision process. Nevertheless, they also express concerns about its performance in the translation of legal texts, indicating the necessity for improvement in this specific domain. According to Zemni et al. (2021), as found out from their study, the human intervention is more than necessary while translating legal texts in Saudi Arabia, and such a claim aligns with the present study while we advocate that post-editing is an important stage. These findings directly address research questions 1, which pertains to the extent to which Trados Studio contributes to ensuring consistency and efficiency in the translation of legal texts.

The respondents' attitudes and practices related to post-editing and automatic translation of legal texts are shown in Table 5, which provides insights into their awareness of post-editing, their proficiency in applying it effectively, and their academic preparation in this regard. Respondents acknowledge the value of post-editing in achieving consistent and high-quality translations, aligning with research questions 2 and 3, which explore the impact of Trados Studio on the quality of post-edited legal translations and the perspectives of female translation students. These findings contrast with the varying perspectives of Samman's (2022) students who initially held mixed opinions about MT post-editing. Nevertheless, they harmonize with the study's post-intervention phase, as Samman observed a "transition towards greater acceptance" each time training in MT usage and practice was provided.

Finally, Table 3 offers a comprehensive overview of respondents' attitudes and practices concerning general translation and MT usage, including Trados Studio. This section underscores respondents' frequent utilization of Trados Studio in their translations and their confidence in manipulating the software. Their emphasis on the importance of proofreading legal texts translated by Trados Studio reflects their commitment to upholding translation standards. This directly addresses research question 4, which explores the challenges encountered in maintaining consistency and efficiency during post-editing.

The data derived from the three questionnaires collectively contributes to a balanced understanding of Trados Studio's efficiency and consistency in translating legal texts. Furthermore, it provides insights into the experiences and perspectives of female translation students in Saudi Arabia. These insights directly align with our research objectives and offer comprehensive answers to the research questions, providing a holistic view of the software's impact on the translation process and the challenges faced by the respondents.

The content analysis and the questionnaire analysis led to categorize the types of errors detected from the MT output, on the one hand, and the post-editing intervention levels and strategies used, on the other. The strategies students used when post-editing can be summarized as follows:

- **Terminology and syntactic refinement:** They underscore the importance of refining terminology for clarity and addressing syntactical errors in translations. The translator's role in specifying legal terminology and improving sentence structures is crucial for accurate communication. Nevertheless, legal terminology presents unique challenges due to differences in legal systems between Arabic-speaking and English-speaking countries (El-Farahaty, 2015, 2016; Alwazna, 2019; Kandeel, 2021).
- **Cultural adaptation and extra-linguistic cultural integration:** This theme emphasizes the cultural adaptation of translations, including transliteration, to achieve cultural relevance. It also highlights the integration of extralinguistic cultural elements to maintain cultural specificity (See Alwazna, 2019; Kandeel, 2021).
- **Functional clarity and completeness:** Functional equivalence in translation is the focus of this theme. It involves lexical and syntactic corrections (i.e. means modifying the choice of words and the sentence structure) by addressing omissions (i.e. missing elements in the translation) and modulation for effective conveyance of meaning (i.e. adjusting the tone or style to match the original text (See Moisieieva & Savostina, 2020; Alshaikh, 2022).
- **Proper names and institutional recognition:** This theme pertains to the challenges of translating proper names and recognizing institutions and companies. It covers various aspects, including transliteration, translation of specialty sciences, handling names of institutions and companies, toponyms, and the impact of ambiguity in the source text (See Tang, 2022).
- **Implications for the translation industry in Saudi Arabia:** The population surveyed in this study being translation students means that they are prospective graduates whose current training at the university shapes their future practices in the workplace. Any intervention made in their present training is, therefore, likely to influence their future performance in the translation profession. This is why, the implications of this study outlined below must consider the rapidly evolving requirements of the profession:
 - **Enhanced TRADOS Training:** The study suggests the need for more comprehensive training in Trados Studio, focusing on its professional application beyond higher education settings. This addresses research question 3, concerning the perspectives and experiences of female translation students in Saudi Arabia.
 - **Three S's Approach:** In the realm of professional translation, the "three S's" - Speed, Security, and Success - are seen as key pillars. These aspects are instrumental in achieving efficient and consistent results with Trados Studio.
 - **The challenges in legal terminology and syntactical refinement highlight the need for specialized training and expertise among translators in handling legal documents.** This aligns with research question 1, which explores Trados Studio's contribution to consistency and efficiency in legal text translation.
 - **Transliteration and cultural adaptation are essential in maintaining cultural relevance.** This connects with research question 2, which investigates the impact of Trados Studio on the quality of post-edited legal translations.
 - **Functional equivalence is crucial in ensuring the clarity and completeness of translations.** This relates to research question 2, which explores the value of post-editing in achieving consistent and high-quality translations.
 - **Translating proper names accurately and handling ambiguity in the source text are vital considerations for effective translation.** These points align with research question 4, which addresses the challenges faced in maintaining consistency and efficiency during post-editing.
- **Recommendations for improving efficiency and consistency in post-editing.**
 - **Specialized training:** Provide specialized training to KSA translation students for handling legal terminology and addressing syntactical challenges, as these areas significantly affect translation quality and consistency.
 - **Cultural competence:** Emphasize the importance of cultural competence in translation to ensure cultural relevance and accuracy.
 - **Effective modulation:** Encourage the use of modulation techniques to adjust translations effectively, preserving the intended meaning.
 - **Addressing ambiguity:** Develop strategies for handling ambiguity in the ST to prevent inaccuracies in the translated content.
 - **Quality assurance:** Implement quality assurance measures to ensure that proper names, especially those of institutions and companies, are correctly translated or transliterated.
 - **Continual learning:** Promote ongoing professional development and learning to keep up with evolving translation tools and techniques.

VI. CONCLUSION

This study has addressed the complexity of translating legal texts, with an emphasis on the Trados Studio post-editing process among Saudi female translation students. It clarified several important concepts, such as MT efficiency, terminology consistency, cultural adaptation, functional equivalence, and proper names' management, offering insightful information about the difficulties and methods for producing accurate and consistent legal translations.

Prospective Saudi translation graduates hold positive views on the use of MT in translating specialized texts, even when the latter are laden with a complex terminology. This positive perception is shared by the majority, if not the

totality, of the studies conducted on users' perceptions and practices in translation, in the Saudi Arabian context or elsewhere. Nevertheless, the enthusiasm in using MT felt by the majority of the surveyed population is tempered down by the necessity of post-editing. The respondents keep applying post-editing strategies to improve the translated text at various levels, including grammar, spelling, style, concept, terminology and culture. This practice points to the need for more improvement in the domain of MT.

The other area begging for sustained and directed efforts to be made in the light of the main findings reached in this study has relevance to the Saudi Arabian translation market. This is the necessity for improved Trados Studio training, training which emphasizes its professional use and recognizes the significance of "Speed, Security, and Success" in effective and reliable translations. Our recommendations, which underscore specialised training in legal terminology, cultural competency, effective modulation, dealing with ambiguity, quality assurance, and ongoing learning, are meant to increase post-editing speed and uniformity.

To end, this study deepens understanding of translation processes and offers professionals practical advice. It is poised to contribute to the field of legal translation by bridging the gap between theoretical research and real-world application in Saudi Arabian legal settings and CAT use in the country.

ACKNOWLEDGEMENTS

This research received grant no. (164/2023) from the Arab Observatory for Translation (an affiliate of ALECSO), which is supported by the Literature, Publishing & Translation Commission in Saudi Arabia.

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