ISSN: 2716-9189 E-ISSN: 2676-1750
Journal of Studies in Language, Culture, and Society (JSLCS). (08) 04, 2025. (PP. 214-234)
Received:26/03/2025 Accepted: 08/11/2025 Published: 31/12/2025

ENHANCING AI LITERACY IN TRANSLATING OFFICIAL DOCUMENTS THROUGH PROFESSIONAL DEVELOPMENT PROGRAMS: A NEEDS ANALYSIS STUDY IN SAUDI ARABIA

Fadiah Abdullah Alshehri [1]
[1] **Princess Nourah bint Abdulrahman University**
faaalshehri@pnu.edu.sa

Abstract: This study investigates the role of professional development programs in enhancing artificial intelligence (AI) literacy among professional translators involved in the translation of official documents in the Kingdom of Saudi Arabia (KSA). As AI-driven translation technologies increasingly permeate high-stakes institutional and governmental contexts, translators are required not only to use such tools efficiently but also to critically evaluate their outputs, and maintaining linguistic accuracy, contextual integrity, and cultural sensitivity in parallel. Grounded in a needs analysis framework, the study adopts a mixed-methods design combining quantitative survey data from 108 professional translators with qualitative insights drawn from semi-structured interviews with 16 translation professionals and educators. The findings reveal that although AI tools are perceived to moderately enhance efficiency, terminological consistency, and textual clarity, translators' general AI literacy remains at an intermediate level. Participants demonstrate partial familiarity with core AI concepts and basic post-editing practices but report significant challenges in handling culturally embedded expressions, maintaining contextual accuracy, and ensuring ethical compliance, particularly in the translation of official and legal documents. These challenges are combined by concerns related to data privacy, algorithmic bias, and the limitations of AI systems in addressing the sociolinguistic specificities of Arabic within the Saudi context. The study further identifies a clear demand for context-driven, practice-oriented professional development programs that go beyond technical training to incorporate ethical reasoning, cultural competence, and critical engagement with AI outputs. Such programs are shown to be essential for bridging the gap between machine efficiency and human expertise, thereby making translators able to optimize AI-assisted workflows without conciliatory professional standards. The study enhances the expanding research on AI literacy in translation by accenting the "Three Cs"—clarity, context, and consistency—from a Saudi-centric empirical viewpoint. It provides actionable implications for curriculum designers, policymakers, and professional organizations aiming to match translator education with Saudi Vision 2030 and the evolving requirements of AI-driven translation contexts.

Keywords:Artificial Intelligence Literacy; Professional Development; Official Document Translation; Saudi Arabia; AI-Assisted Translation; Translator Training; Ethical and Cultural Competence

How to cite the article :

Fadiah Abdullah Alshehri, F-A. (2025). Enhancing AI Literacy in Translating Official Documents through Professional Development Programs: A Needs Analysis Study in Saudi Arabia. *Journal Of Studies In Language, Culture, and Society (JSLCS)8*(4), pp. 214-234.

[1] **Corresponding author :** Fadiah Abdullah Alshehri **Authors' ORCID ID** https://orcid.org/0000-0001-7679-8248

Introduction

Historically, the translation sector has relied on human expertise. However, with the rapid advancement of artificial intelligence (AI) that has revolutionized the field, human contribution is more likely to diminish. As AI systems become increasingly sophisticated—with capabilities extending from pre-translation automation to post-editing refinements (Chen, 2024; Zaki & Ahmed, 2024)—there is a critical need to bridge the gap between human competence and machine efficiency (Budiharjo, 2024; Mellinger, 2017; Omar & Salih, 2024).

This change is especially marked in the translation of official documents, the foundation of good governmental and institutional communication. The latest AI developments have brought a paradigm change to the translation sector (Ekuerhare & Udoka, 2024; Van der Meer, 2020; Zitouni, Alshehri & Idri, 2024), with AI-powered tools promising a lot to deliver greater accuracy and efficiency. Yet, to what degree it is possible to optimize these technologies in the best possible manner depends on the translators' AI literacy themselves. In spite of growing interest in AI applications within other professional fields, the literature has a significant gap regarding how specialized professional training courses can promote AI literacy among translators—particularly within the specific sociolinguistic and regulatory environment of Saudi Arabia (Ng et al., 2021; Ehrensberger-Dow et al., 2023).

Implementing AI-powered translation can even improve the efficiency and accuracy of translating official documents, thus securing the integrity and efficacy of communication in Saudi organizational and government environments. However, effective deployment of AI in translation workflows relies largely on the capacity of the professionals to interpret and use the tools appropriately (Fan, 2024; Hazaea, & Qassem, 2024).

In addition, the advent of AI in the translation sector calls for a re-evaluation of current training practices (Jalalian Daghigh & Shuttleworth, 2024; Reddy, 2025). This is because conventional methods alone might be insufficient to equip translators with the high-level demands of AI-supported environments. Thus, this research highlights the necessity for creating new curricula that integrate theoretical comprehension and actual application of AI technologies in KSA translation programs. These curricula must not just include technical proficiency but also address critical thinking and ethical implications of AI usage (Hassan, 2023; Liu, 2024).

Given these challenges and the evident gaps in both research and professional practice, the present study seeks to establish a coherent framework for enhancing AI literacy among translators in Saudi Arabia. In doing so, it aims to provide actionable insights for the development of targeted professional training programs that can bridge the divide between machine efficiency and human expertise. This study is guided by the following objectives and research questions.

Objectives

- To assess the current level of AI literacy among professional translators in Saudi Arabia.
- To identify the key areas where AI can improve the translation of official documents.
- To design and implement a professional development program aimed at improving AI literacy for the translation of official documents.
- To evaluate the impact of this program on the quality and consistency of translations, particularly focusing on clarity, context, and consistency.
- To identify the specific AI skills and competencies needed for translators to enhance their professional practice.

Research Questions

1. How does the integration of AI tools affect the quality of official document translations in Saudi Arabia?

2. What aspects of AI literacy are most crucial for professional translators working with official documents?

3. How do professional development programs enhance AI literacy among translators in Saudi Arabia?

4. What are the challenges faced by translators in incorporating AI tools, and how can these be mitigated through targeted training?

1. Literature Review

1.1. Artificial Intelligence in Translation

As previously outlined, recent developments in AI have dramatically impacted the translation sector, both as an essential tool and a driver of professional expertise. Early worries about the possible displacement of human interpreters (Charles-Kenechi, 2024; Hassan, 2024) have given way to a more sophisticated understanding of the supplementary nature of the relationship between machine capability and human capability. Modern AI-powered tools-which include sophisticated machine translation (MT) models and complex natural language processing (NLP) strategies- are increasingly used to streamline the efficiency and standardization of the translation process. Nevertheless, as Hernandez and Morris (2023) observe, these tools remain lacking in the complex linguistic, cultural, and contextual understanding that underlies official translations. This limitation is especially evident within the legal sector; as part of the official documents deliver, where Al-Romany and Kadhim (2024) showed that despite the widespread use of AI tools like Google Translator and Bing, human translation will still beat AI-facilitated translation based on precision and legal expertise.

For Lin (2023), the advent of neural network machine translation compels a re-balancing of the relationship between AI and human translation but also the ongoing technical issues that persist despite the dramatic gains made regarding speed. Taking the longitudinal view, Jiang and Lu (2020) assert that the evolution of natural language processing, though essential to the advancement of MT research, is plagued by various issues that block the integration of automated translation within the human translation framework. Also, Wang (2023) provides evidence based on the transformative role played by AI in translation operations but also unmasks ongoing doubts about the capability of machine translation to capture the complex distinctions that are part of professional translation. The findings are further supported by the research undertaken by Mohamed et al. (2024), which calls for an integrative strategy that recognizes the strengths and limitations of AI within the framework of our increasingly globalizing community.

Lee (2023) and Muñoz-Basols et al. (2023), however, are of the opinion that AI can be viewed simply as an auxiliary tool that can expand the array of translation techniques that are available to human interpreters but cannot replace the human factor. The research collectively indicates that though AI has made tremendous gains in various translation fields, there is a wide chasm that has to be covered to reach the degree of cultural and contextual understanding that defines human translation, especially legal and official document translation.

1.2. AI Literacy

At the core of successful and highly efficient translation practices that are based fundamentally upon the use of AI lies the underlying concept referred to as AI literacy. This concept is neither one-dimensional nor linear but instead constitutes a multidimensional competency (Kruse et al., 2023) that contains a wide display of components that stretch from the learning of specific technical competencies (Ng, et al., 2021; Ng, et al., 2023) to the moral aspects (Gupta, et al., 2024; Gunkel, 2012). As indicated by the research findings presented by Wang, Rau, and Yuan (2022), this concept of AI literacy further makes sense if one appreciates that it consists of a sequence of essential components that are necessary for the attainment of this specific competency. Some of the constituent components include awareness, use, analysis, and ethics. Together, these constituents enable individuals to effectively negotiate the complex dynamics that define the relationship between humans and AI. Furthermore, this claim provides further evidence to the argument presented by Lintner (2024), that using comprehensive measures to measure AI literacy will be important to effectively assess the competencies held by the users. The importance of such measurement cannot be overstated because it will be crucial to further the efficacy of translation processes. The need to use such literacy is becoming increasingly important, especially where translations are done on official documents that need maximum clarity and precision. Also introduced are an integration framework presented by Ng et al. (2021), intended to enable the use of AI tools during the translation process that further enhances the ability to critically analyze the underlying assumptions and limits contained within the used systems. At the same time, the research presented by Ehrensberger-Dow et al. (2023) confers an important shift that is taking place within the translation sector where the historical role of the translator gives rise to the role of the facilitator. This shift comes through the integration of the expertise provided by the human factor together with the fast-processing capability provided by AI technology to ultimately deliver translation outcomes that are of greater value.

The evolution of this new competency that one has to learn assumes specific importance if the translation of specific types of documents requires an elevated degree of linguistic, cultural, and contextual precision (Lee, 2024). Also, the need to balance the capability provided through the use of the machine together with the expertise contained within the human factor presents an illustration within the research presented by Škobo and Petričević (2023). This balance will be important to ensure that the artistic and contextual authenticity contained within the translations done to literature pieces will be preserved, an issue that resonates with the problem experienced during the translation of official papers, the main core of the present paper. All in all, the research findings indicate that developing AI literacy encompasses considerably more than simply learning technical competence. It calls for a well-thought-out approach that combines sound judgment with ethical reasoning. The integration is salient to ascertain that the translation techniques expedited through AI persist to maintain the higher standards that are required within high-stakes environments where precision and trustworthiness are the top priority.

1.3. Challenges in Official Document Translation in Saudi Arabia

Official document translation serves as a critical foundation for effective governmental and institutional communication. Nevertheless, the social, cultural, and administrative climate in the Kingdom is full of challenges. Saudi Arabia's unique linguistic, cultural, and administrative landscape exacerbates translation difficulties (Alharbi & BinMasad, 2023). in this, they emphasize the challenges of translating religious and culture-specific legal terms due to differences between Shari'ah-based legal systems and Western frameworks. That is, the issues irregularity are compounded by unique linguistic, cultural, and administrative factors (Charles-Kenechi, 2024; Hassan, 2024). For instance, the complexity of translating legal texts is compounded by the need for a profound understanding of both the source and

target legal systems, to avoid serious misinterpretations if simplified too much, (Piszcz and Sierocka, 2020; Kupriyanova et al., 2023). This situation highlights the necessity for skilled human translators who possess not just linguistic proficiency but also cultural and legal expertise.

To clarify this point, AI tools are not cognizant of context and cultural dimensions of language use as humans do. This leads such systems to commit errors in critical documents of governmental character. Hence, the Saudi Arabian government is attempting to advance translation learning and tools (Alshehri & Alowedi, 2023) since it is alert to these issues. Little is researched, however, on how to ensure that AI performs well and addresses the strict requirements of official translation. Such gaps in AI translation capabilities can lead to significant risks, particularly in scenarios where inaccuracies can have serious consequences Chen et al. (Chen et al., 2016).

One of the challenges one should not deny is ethical issues. investing in AI requires careful consideration of ethical implications and practical challenges, including issues of bias, data privacy, and the necessity for extensive training for human translators to work alongside AI systems effectively (Soysal, 2023). For that reason, strict legislation and regulations should be implemented to guarantee that these technologies assist humans and not deprive them of capabilities.

1.4. Professional Development Programs for Enhancing AI Literacy in KSA

Traditionally, translator training programs may not be keeping pace with the rate of evolution of AI technologies. Recent research has confirmed the effectiveness of specialist professional development programs in developing AI literacy. Kong, Cheung, and Zhang (2021) illustrated that formal AI literacy programs are good at teaching basic knowledge of AI, even without a technical background. To complement these results, Frangou et al. (2024) and Pinski and Benlian (2023) provide proof that empirically tested measurement tools and cross-cultural workshops can effectively enhance technical competence and ethical engagement on the part of translators. These efforts are reflective of the reality that more practical workshops, seminars, and practice sessions in translator training will be required in order to bridge the gap between existing competence and the needs of an AI-supported translation setting.

In Saudi Arabia, where technology encouragement and human capital development are the priorities in accordance with Vision 2030 (Alothman, 2025; Khan &Iqbal, 2020; Mohiuddin et al., 2023), it is crucial to establish systematic professional training programs that can bridge the gaps between existing competencies and sophisticated skills for successful integration of AI (Aldossary, 2023; Alharbi, 2024; Mohiuddin et al.; 2023).

Hence, through the integration of AI tools into translation workflows professionals can develop technical competencies as well as ethical thinking. Kong, Cheung, and Zhang (2021) found that well-designed programs for AI literacy can effectively transfer basic competencies, even to individuals without prior technical expertise. However, the specific linguistic and cultural environment of Saudi Arabia, specifically regarding the translation of Shariah-compliant legal documents and sensitive official cultural documents, requires technically adapted strategies. For instance, Frangou et al. (2024) highlight the importance of cross-cultural training and tested assessment tools in promoting technical competence and ethical sensitivity. For the, this can allow translators to critically evaluate AI-generated content and maintain cultural accuracy.

1.5. Gaps in Current Research and the Need for a Saudi-Focused Study

Despite the growing body of literature on the use of AI in translation, significant research gaps remain, especially in the Saudi Arabian situation. Numerous studies have investigated the general uses of AI in translation in legal, medical, and government fields; however, insufficient attention has been given to the particular issues involved in translating official documents in Saudi Arabia. Most of the available literature has focused either on the technical features of AI tools or on general educational results, commanding the specialized competencies needed for high-stakes translation activities (Krüger, 2023; Ng et al., 2021). In addition, empirical evidence on the long-term impact of AI literacy training on translation quality and ethical standards in official environments is lacking. The gaps identified signal an urgent need for an in-depth needs analysis that evaluates current AI literacy levels and identifies key areas that need to be addressed through professional development.

This current study aims to bridge gaps by (1) assessing the level of current AI literacy within translators in Saudi Arabia, (2) identifying areas where the use of AI would maximize the quality and speed of translations, (3) developing a professional program for raising the level of AI literacy, and (4) measuring the impact of the program upon the quality of the translations. Focusing upon the "Three Cs": clarity, context, and consistency, this study aims to suggest a future project to design a comprehensive model reconciling theoretical foundations with real-world applications and thus promoting a more capable and AI-aware community of translators.

2. Methodology

This study employs a mixed-methods approach to comprehensively assess both AI-aided translation and translation students' literary skills. The use of a mixed-methods approach allows for triangulation of data and thus increases validity and profusion in research findings.

2.1. Participants

The investigation centers on Saudi professionals who work in translation, with a focus on tasks related to English-to-Arabic translation. The participants were recruited from Saudi academic and non academic (professional) institutions, with consideration for participation in relevant experience with AI-supported translation tools. The quantitative aspect of the study involved recruiting a sample with a population of 108 participants who responded to the questionnaire developed by the researchers for this purpose. In addition, a purposive sample with professional translators and translation teachers (N° = 16) took part in semi-structured interviews, providing qualitative information about their experience and perception in terms of AI literacy and the steps involved in post-editing. The investigation focuses on translation professionals who work in translation, with a concentration on tasks related to English-to-Arabic translation.

As for the demographic information of the participants who took part in the survey, Table 1 summarizes them:

Table 1:

Demographic Information

Category	Option	Number of Responses	Total
Years of Professional Translation Experience	< 2 years	12	108
	2–5 years	30	
	6–10 years	20	
	> 10 years	46	
Primary Sector of Work	Governmental	70	108
	Legal	10	
	Corporate/Institutional	25	
	Other	3	
Frequency of AI Tool Usage in Translation Tasks	Daily	40	108
	Weekly	45	
	Monthly	15	
	Rarely/Never	8	

The table presents data on professional translators, detailing their years of experience, primary sectors of work, and frequency of AI tool usage in translation tasks. Out of 108 respondents, 11% have less than 2 years of experience, 28% have 2–5 years, 19% have 6–10 years, and 43% have over 10 years. In terms of primary sectors, 65% work in governmental roles, 9% in legal, 23% in corporate or institutional settings, and 3% in other areas. Regarding AI tool usage, 37% use them daily, 42% weekly, 14% monthly, and 7% rarely or never. This shows that AI use is existent in Saudi reality and training programs can be envisaged.

2.2 Data Collection Instruments

2.2.1 The Questionnaire

The Questionnaire was conceived to assess the skill level of translators in terms of AI, views about AI tools, and barriers and training needs with regard to these technologies. This conforms to research objectives to enhance clarity, context, and consistency—termed the Three Cs—when translating official reports. The scale is 5-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree) unless stated otherwise. It has been carefully crafted to measure systematically quantifiable responses relating to translation performance and participant attitude. The scaled items are preceded by a request that the participants provide demographic details, such as professional years of experience in translation, main area of specialization, and frequency of use of AI tools for translation work. Next, AI literacy is assessed using a series of questions to determine comprehension of basic AI concepts, awareness of differences between neural and rule-based machine translation, and proficiency in setting up AI tools for specific tasks, e.g., legal or government text. Other questions ask how the participants can integrate AI outputs into processes, identify errors in AI-generated translations, and efficiently perform post-editing tasks to improve clarity and accuracy. Also, participants' attitudes towards AI tools and how the tools influence efficiency, consistency, and clarity in translating, and whether they can identify settings where using AI tools would not be appropriate—i.e., in situations where cultural sensitivities need to be considered—are examined. Furthermore, participants' attitudes to AI tools and how these tools impact efficiency, consistency, and clarity in translation, and whether they can identify contexts in

which using AI tools would be inappropriate—specifically in situations that require taking into consideration cultural subtleties—are explored. Finally, participants' training needs are explored by asking about the participants' interest in developing advanced skills in AI tools use, effective utilization of post-editing techniques, and balancing ethical factors involved in using AI. This thorough instrument not only tests basic elements of translation performance but also includes a test for AI literacy. The respondents' answers can serve as background for examining how professional development programs can improve translation practice in high-stakes environments.

2.2.2 Interviews

Qualitative data were gathered via semi-structured interviews with education and translation professionals. The main aim of the interviews was to gain an in-depth understanding into the participants' experiences of AI-assisted translation, the problems faced, and their perception of the efficacy of actual training initiatives aimed at enhancing AI literacy. A semi-structured interview guide was used to direct the responses to areas of interest such as the impact of AI on the quality of translated texts, the importance of the post-editing process, and the inclusion of ethical considerations in AI usage.

The interview protocol was carefully designed to explore the use of AI technologies in the translation industry in Saudi Arabia, with focus placed on the study's four major research questions. This integrative approach can more likely ensure a better comprehension of the impact of AI upon the quality of the translated documents, the critical elements of AI literacy, the role of professional developing schemes, and the challenges faced by translators in Saudi Arabia.

As for the data collection procedures, the questionnaire was administered in a controlled environment to minimize possible distractions and ensure consistency in responses. In terms of the qualitative aspect, interviews were conducted one-on-one, either face-to-face or via secure online environments.

2.3 Ethical Considerations

Ethical guidelines were religiously maintained throughout the study. An informed consent was obtained from all the participants with the assurance of protecting their rights and confidentiality of their answers. The data were also placed in a secure place, and the results were interpreted and published while the participants' anonymity was maintained.

2.4 Limitations

The use of a mixed-methods methodology enables an exhaustive understanding of the research problem. However, some limitations deserve acknowledgment, namely the potential for response bias in self-reported data and the limited applicability of the results beyond the Saudi Arabian context. Withal, the outcomes of the current study are expected to make a significant contribution in informing targeted professional development programs to enhance AI literacy in the context of the translation profession.

3. Results

3.2 Questionnaire Results

3.2.1 Impact of AI Tools on Translation Quality

Items 9, 10, and 11—focusing on efficiency, consistency, and clarity in official document translations— respond to the first research question of the paper. The analysis reveals a moderate positive perception of AI tool integration among Saudi translators. For more details, table 2 clarifies the results.

Table 2:

AI Tools and Translation Quality

Item	Question	1	2	3	4	5	Mean	SD
9	AI tools improve efficiency in translating official documents	10	18	32	28	20	3.28	1.18
10	AI tools enhance consistency in terminology across documents	9	19	31	28	21	3.31	1.20
11	AI tools help maintain clarity in translated texts	10	20	30	25	23	3.29	1.25

Research Question 1 (RQ1) attempts to examine the impact of AI tool integration on the quality of official document translations. The data, derived from items 9, 10, and 11, indicates that respondents moderately agree with the assertion that AI tools enhance the efficiency, consistency, and clarity of translations. As indicated in the mean ratings for the three items—3.28 for efficiency, 3.31 for consistency, and 3.29 for clarity, these values place themselves above the neutral midpoint of the 5-point Likert scale. This, therefore, implies that while there is a general positive disposition towards the use of AI tools in translation, the benefits seen by individuals from their application are not significantly tangible. This can be explained by both the comparatively early stage at which AI is being incorporated in this area and the differences in individual experiences with the tools.

For more clarifications, the study reveals variability in professional translators' perceptions of AI tools, with standard deviations (1.18–1.25). This reflects differences potentially tied to irregular exposure to AI technologies and experience with AI-enhanced workflows. Even though participants granted importance to AI's benefits in improving translation quality, the moderately positive ratings underline room for growth. This can be the first parameter for the need to customize training programs that not only deepen understanding of AI functionalities but also tackle integration challenges. Such training needs to prioritize practical applications like increase in efficiency, control of terminological consistency, and depth of textual clarity. Eventually, designing targeted, pragmatic interventions that align with the unique needs of translators, particularly in Saudi Arabia, balancing theoretical knowledge with actionable strategies to optimize AI's impact remain vital.

3.2.2 Key Components of AI Literacy for Translators

Research Question 2 (RQ2), which outlines the fundamental components of AI literacy that are pertinent for official document translators (Items 1, 2, 3, 6, 7, 12, 13), is addressed by the assessment, which is designed to evaluate fundamental knowledge, practical abilities, and ethical implications. Table 3 lists the essential components, accenting their value in increasing translators' proficiency with AI technologies while guaranteeing accuracy and consistency in their professional work.

Table 3:

Focus on foundational knowledge, awareness, and competencies

Item	Question	1	2	3	4	5	Mean	SD
1	I understand basic AI terminology (e.g., neural networks, machine learning)	10	20	30	25	23	3.29	1.25
2	I am aware of differences between rule-based and neural machine translation.	8	22	32	28	18	3.24	1.17
3	I am aware of differences between rule-based and neural machine translation.	8	22	32	28	18	3.24	1.17
6	I can identify errors in AI-generated translations (e.g., grammar, terminology)	10	20	30	25	23	3.29	1.25
7	I know how to post-edit AI translations to improve clarity and accuracy.	9	21	29	27	22	3.30	1.23
12	I can assess when AI tools are unsuitable for a task (e.g., culturally sensitive content).	11	19	31	26	21	3.25	1.24
13	I adjust AI translations to preserve cultural nuances in Arabic/English texts	9	21	30	27	21	3.28	1.18

Respondents generally exhibit a modest level of expertise, according to the evaluation of Research Question 2, which focuses on the fundamental components of AI literacy in professional translators. In particular, the mean score for understanding core AI jargon (Item 1) is 3.29 (SD = 1.25). this result indicates that translators possess some essential abilities but have a low degree of trust in this area. With a mean score of 3.24 (SD = 1.17), the questions on awareness of the distinctions between neural and rule-based machine translation (Items 2 and 3) indicate a consistent but constrained awareness of these significant distinctions. Furthermore, the mean score for identifying errors in AI-translated text (Item 6) is 3.29 (SD = 1.25), supports the notion that translators feel their role in catching mistakes in machine translation is just moderate. Similarly, self-rated skills in post-editing (Item 7) is raised somewhat, with a mean of 3.30 (SD = 1.23). this underlies that there is a raised edge, but still a modest level of self-confidence in editing AI-created texts in order to enhance their clarity and precision. Finally, the ability to recognize when AI tools would be unsuitable for specific tasks (Item 12) and the skill in adapting translations in order to preserve cultural nuances (Item 13) register means of 3.25 (SD = 1.24) and 3.28 (SD = 1.18), respectively. Taken in total, these results establish that, while there is a core level of AI literacy in translators, there is considerable fluctuation and strong evidence that their skills tip just above the median. These findings, therefore, highlight the need for specific professional training programs aimed at both theoretical and practical application areas in AI tools in the translation process in Saudi Arabia.

3.2.3 Enhancing AI Literacy through Professional Development

The analysis in this section assesses training demands and views of program success in order to answer Research Question 3 (RQ3), which looks into how professional development programs improve AI literacy among Saudi Arabian translators (Items 18–23). These findings are shown in Table 4 along with practical solutions to close skill gaps and improve the operational use of AI training for translators of official documents.

Table 4:

Focus on training needs and the perceived benefit of professional development

Item	Question	1	2	3	4	5	Mean	SD
18	I need training on advanced AI tool features (e.g., customization, APIs)	9	21	30	27	21	3.28	1.18
19	I want to learn strategies for post-editing AI translations effectively	10	20	31	26	21	3.26	1.20
20	I need guidance on using AI to improve clarity in translations	11	19	30	26	22	3.25	1.24
21	I would benefit from training on preserving context with AI tools	10	20	32	25	21	3.25	1.24
22	Training on maintaining consistency with AI would enhance my work	9	21	30	27	21	3.28	1.18
23	Training on ethical AI use (e.g., bias mitigation) is important to me	10	20	31	26	21	3.26	1.20

Research Question 3 looks into professional development program contributions towards enhancing AI literacy among Saudi Arabian translators, specifically training needs and perceived program worth. Analysis of Items 18–23 suggests moderate consensus (means 3.25–3.28, SDs 1.18–1.24) regarding the need for such specialized training, with respondents acknowledging shortages in key areas. For instance, Item 18 (advanced training of AI features, M = 3.28) and Item 19 (post-editing procedures, M = 3.26) reflect the need for technical and editorial training. Similarly, Items 20–21 (messaging clarification and context retention, M = 3.25) and Items 22–23 (ethics and consistency in the application of AI, M ≈ 3.27) mention challenges regarding effective AI integration into expert production pipelines, with responses barely above the midpoint. The restricted variety of means and moderate standard deviations suggest a balanced but cautious recognition of training potential in coping with such challenges. Such findings call for structured professional training programs that unify fundamental AI abilities with realistic, context-oriented approaches—aligned with the study goal of enhancing the quality of Saudi translation. The low confidence levels (as indicated by the means) point out a critical need for interventions that bridge theoretical and practical application, even while respondents see obvious benefits in up-skilling. This will allow translators to amply utilize AI capabilities in official document procedures.

3.2.4 Challenges and Barriers in Using AI Tools

This section takes into account analyzing the difficulties of cultural misunderstanding, context adaptation, obscurity issues, and term consistency in order to answer Research Question 4 (RQ4). this latter outlines the issues translators face when integrating AI tools and looks at mitigation through intentional training (Items 14–17). These results are shown in Table 5, which also highlights operational training approaches for overcoming these obstacles and enhancing the usefulness of AI in official document translation.

Table 5:

Difficulties and barriers in using AI tools

Item	Question	1	2	3	4	5	Mean	SD
14	AI tools sometimes misinterpret cultural references in Arabic documents	10	20	32	26	20	3.24	1.17
15	I struggle to adjust AI outputs to preserve the original context	12	18	30	26	22	3.26	1.20
16	AI-generated translations often lack clarity, requiring significant editing	11	20	30	25	22	3.25	1.24
17	Ensuring consistent terminology with AI tools demands manual effort	10	19	32	27	20	3.29	1.25

Research Question 4 inquires about problems translators encounter when using AI tools and proposes ad-hoc training to serve the Saudi translators' needs. Exponential of Items 14–17 indicates modest agreement (means 3.24–3.29, SDs 1.17–1.25) regarding ongoing challenges. For example, Item 14 (AI misinterpretation of cultural references within Arabic documents, M = 3.24) draws attention to issues with understated localization, while Item 15 (adjusting AI output to maintain context, M = 3.26) draws attention to concerns with maintaining text integrity. Clarity issues in AI-translated documents (Item 16, M = 3.25) and the tiresome process of maintaining consistent terminology (Item 17, M = 3.29) also show double the burden of editing and manual checking to reach professional standards. The middling, clustered scores and constant standard deviations suggest that challenges are actual but not necessarily across-the-board restrictive, and that variability exists in individuals' experiences and tool competence. These findings highlight the necessity of training programs in context-aware AI customized, cultural appropriateness, and post-editing productivity. Interactive workshops and specific training adapted to the Saudi needs, as well as professional development programs could reduce manual correction reliance and enable translators in Saudi Arabia to apply AI tools more effectively, all within the study's goal of maximizing AI integration in high-stakes translation processes.

3.3 Interview Thematic Analysis

Semi-structured interviews with professional translators and educators who work in the translation sector in Saudi Arabia provided newsworthy information about AI use in the translation process. Interview findings revealed multifaceted and intricate topics that are intricately related to the four research questions of this research. A number of themes emerged in the interviews work to shed light on the revolutionary promise and transformative potential of AI technology but also on the abiding issues that come with its implementation into serious and important translation processes. In what follows, the themes derived from the interviewees' answers are analyzed:

3.3.1 Mixed Enhancement of Efficiency, Consistency, and Clarity

Replies to questions 2, 3, 4, and 14 reveal the participants concrete examples or describe specific situations where AI tools have either improved or hindered the translation process. Data shows that many translators see noteworthy benefits in terms of efficiency and consistency due to the use of AI tools for repetitive work. For instance, according to one interviewee, AI "saves time by reusing sentences when stuck". This finding aligns with what Van der Meer (2020) reported highlighting the speed-related benefits afforded by the use of

AI-based translation. Such an improvement in efficiency allows the translator to devote more cognitive effort to more complex activities like style polishing and cultural adaptation.

Although it is common sense that there are functional benefits to be gained with the AI use, the qualitative aspects to translation makes the process hurdled. Several interviewees mentioned the ongoing problems for AI tools with the contextual and subtle nature of language, particularly with regard to culturally specific content. On this, one translator explained that "when poetry or metaphorical language occurs in the source document, it is highly crucial to correct the target document with more care". This view aligns with the academic critiques provided by Zitouni et al. (2024) and Ekuerhare and Udoka (2024) on the basis that the use of AI to produce translations lacks the depth to be able to accurately reproduce the complexity with regard to formal or culturally enriched content.

Under the context of official document translation, the investigative framework led the interviewee to provide specific examples that reflected the strengths and weaknesses related to AI technologies. Questions aimed at eliciting thorough cases that surround the capabilities of AI showed that, while AI speeds the translation process and ensures consistency in repetitive parts, it lacks the precision to tackle the subtleties of language. Therefore, post-editing becomes inevitable to make sure that the final translation meets the standards of clarity and cultural relevance.

The qualitative findings consistently show the dual nature with regard to the role of AI in the quality of translation. The deployment of AI technology proved to be highly effective in streamlining processes and providing an ongoing platform for regular translation work. However, the handling of complex linguistic elements requires immense human involvement to guarantee adhesion to specific standards. Therefore, this thorough review confirms the view that even with the inclusion of AI in certain operational elements of the translation process, human thinking plays the cardinal role in understanding the complex interaction among language, context, and culture.

3.3.2 Technical Proficiency and Ethical Awareness

The analysis of Theme 2 reveals that professional translators possess a moderate level of technical proficiency with AI tools although they at the same time maintain a sound awareness of the ethical dimensions inherent in their use. This theme aligns with RQ2 which is centered on identifying the key components of AI literacy; crucial for late translation practices. For this, the interview questions (Questions = 1, 7, 8, 9, 10) were utilized to prompt consideration of the kinds of AI tools presently being used, the ethical issues that they engender, the competencies felt to be lacking, and self-efficacy among respondents in working with these technologies.

In their responses, participants confirmed their regular usage of AI tools like ChatGPT, DeepL, and Grammarly. They integrate them into daily activities for increased efficiency and consistency. As mentioned by one of the translators: "I use AI tools like DeepL to perform quick translations, but I always double-check everything to make sure it is correct", an example of using these machines daily but with necessary human supervision. Although translators manifested a working familiarity of AI technologies, a number frankly admitted that they still find it difficult to work with these tools efficiently—especially in detecting errors, personalizing outputs, or solving technical issues. This gap indicates that their technical expertise, although existing, is still developing.

At the same time, ethical awareness was a running theme. Data privacy and algorithmic bias were concerns interviewees raised regularly. As one interviewee described, "I don't put private information into the tool; I search for words in specialist dictionaries to keep it private". The respondents attempt to illustrate the need to adjust functional effectiveness with ethical responsibility. This dualism of technical competence and ethical awareness goes hand in hand with the pluralist model of AI literacy proposed by Kruse et al. (2023) and endorsed by Ng et al. (2021). In this case, successful AI literacy goes beyond technical proficiency to demand critical awareness of AI systems' limitations and biases.

The qualitative findings so far from the research study quite clearly illustrate that translators are largely comfortable and confident with the many different technicalities as well as the intricacies that are necessarily involved in using AI tools to efficiently complete their critical work assignments. It is also apparent, nevertheless, that there is a strong and noticeable need for training that is specifically oriented towards tackling either the functional as well as the ethical aspects of AI adoption across translation workflows. This prevailing reality necessitates the retroactive adoption of holistic professional training programs that provide sufficient scope for large-scale discussion and lengthy debate of such overarching issues as managing error, flexibility in systems, as well as the ethical deployment of AI technologies.

3.3.3 *Demand for Context-Driven, Practical Training Programs*

One of the most common and widely stated ideas that was frequently articulated among the group of translators based in Saudi Arabia was the urgent and increasingly important need for training programs. They expressed their need for practical rather than theoretical programs centered on real-world experience, especially as it relates to AI-assisted translation. In terms of the training programs currently being provided to the respondents, there is a common sense of expressed frustration and non-satisfaction. That is, they perceived these programs as being too theoretical in nature because they do not reflect or do not adequately focus on the existent issues and complexities they face in their daily professional lives. For illustration, “Interactive sessions where we work on real-life assignments with AI tools are more useful than webinars,” clarified one of the participants, who strongly asserted preference for interactive, workshop-style, and collaborative settings with peers, rather than merely being exposed to knowledge through passive methods of conveying information. This specific perspective is strongly supported by the convincing evidence provided in the research undertaken by Kong et al. (2021). Their study emphasizes the practicality and effectiveness of hands-on training in building and strengthening AI literacy specifically in the context of translators.

Arguments for the need of training turn around significant gaps such as advanced post-editing methods, and effective management of terminology, as most pressing and significant. This is because translators need to develop the most exceptionally vital skills being the capability to rectify AI-generated errors within specialist texts. To argue, one of the interviewees’ declared, “I feel unprepared to adapt AI settings for specialist work—this is a skill I need.” This is indeed salient since this skill set includes the crucial ability of properly and suitably correcting mistakes that could be produced by AI when used on specialist texts like official documents.

In addition to the core technical competencies that translators are required to have, there was also a significant focus on the critical evaluation and assessment of AI system output on the one hand, and the significance of ethical considerations —including data privacy and algorithmic bias— on the other. The participants added the necessity for strategies to maintain clarity and contextual fidelity, particularly in high-stakes domains like

official document translation, where precision carries significant legal and cultural orientation. In this, as a participant succinctly put it, “Workshops and peer collaboration would improve our capacity to uphold the accuracy official documents require.” This opinion strongly resonates with the argument posited by Frangou et al. (2024), that any AI literacy programs must be rigorously structured within pedagogical frameworks that reflect the operational realities and sociocultural environments of their intended users. This considered approach enables translators not only to work more efficiently but also to achieve a fine balance with cultural sensitivities and ethical awareness in the outputs they provide. Finally, it is patent that there is a noteworthy need for practice-based training that is guided by the prompt situation in which it is implemented.

3.3.4 Cultural Considerations and Contextual Limitations

Among the qualitative results obtained from this study, a major weakness of AI-augmented translation tools is their inability to handle the cultural and contextual content inherent in the Arabic language, particularly in the socio-linguistic context of Saudi Arabia. All the participants agreed with the difficulty AI poses in handling culturally specific phrases, idiomatic expressions, and contextually charged subtleties, which often occur in official documents. One interviewee noted: "AI has no depth to handle our cultural references; its Arabic outputs are usually in need of long post-editing to avoid misinterpretations". This has been advocated by Wang's (2023) remarks on the cultural insensitivity of natural language processing systems. These issues were most noticeable in the field of legal and governmental texts, where another participant declared: "AI is unable to pick up contextual cues essential to preserving intent—I have to rephrase entire passages in order to get the message legally correct".

The very same issues were supported by quantitative evidence as discussed earlier (c.f. Item 16 ("translations requiring drastic revision") in the scale, mean score= 3.25 and SD= 1.24). This specific data point indicates that translators habitually engage in the manual correction of translations, in an effort to make certain that terminological stipulations are met rigorously, so as to maintain consistency and intelligibility throughout the entire translated work. This finding is supported further by a quote provided by one of the participants, who openly stated: "post-editing is always required." To sum up, this serves to validate the basic observation that the effort required is tremendous and colossal in nature in an attempt to bring AI-produced output up to the high professional levels expected within the translation field.

Moreover, ethical issues were also brought out as a major point of contention by participants, and this is quite evidently discernible in several comments that have been provided. One translator, in fact, stated a point of contention with respect to the "uploading of confidential documents," which is a stark indication of possible data privacy breach that might be caused by such activities. Aside from this urgent point of contention, other participants also registered protest with respect to AI's inability to properly provide consideration of possible variants of the dialect, citing specific issues highlighted by participants who stated that "AI still cannot grasp the context that has cultural background" (as highlighted by a specific participant to note).

4. Discussion

Professional development programs seem, from the study's findings, a pillar for AI literacy development among Saudi translators. Programs for such a purpose are meant to be designed to translators in order to develop the necessary skills and knowledge to effectively apply AI tools in their work. The literature provides clear evidence that training courses with a particular focus on this objective have the capacity to augment translators' skill-set and increase their confidence in using AI technology (Alharbi, 2024; Charles-Kenechi, 2024). Importantly, many programs place heavy focus on the technicalities of using AI technology such as machine translation engines and post-editing software (Jadallah Abed Khasawneh & Khasawneh, 2023; Baya, & Becheri, 2024). However, more programs now see value in including training that covers ethical issues such as biases in algorithms used by AI technology and issues related to privacy of information (Ng et al., 2021).

The findings with regard to RQ1 indicate that professional translators have a fairly positive attitude regarding the benefits of using AI to enhance translation quality. The average efficiency (3.28), consistency (3.31), and clarity scores (3.29) suggest that as translators do recognize the capability of AI technology to streamline translation processes, perceived benefits have remained fairly constrained. The findings agree with those presented by Chen (2024) and Zaki and Ahmed (2024), who argue that modern-day AI technology can boost efficiency but often requires increased human control to ensure quality as evident in the intermediate scores presented in this study. Similarly, Budiharjo (2024) and Mellinger (2017) argue that machine productivity and human ability have traditionally required perpetual innovations; evidenced by intermediate evaluations presented in this study. Likewise, qualitative data reinforce this duality: one translator highlighted AI's practical utility, stating, "It can re-form sentences if I'm stuck and save time". However, others emphasized persistent gaps, such as the need for extensive revisions when poetic or metaphoric language is used in source texts (an interviewee said), aligning with Hernandez and Morris's (2023) concerns about AI's limitations in culturally complex contexts.

As for, RQ2, it probed into the key aspects of AI literacy to show that translators have a moderate level of familiarity with AI technology. The mean scores ranging from 3.24 to 3.30 indicate an elementary understanding of AI-related ideas (e.g., rule-based vs. neural machine translation). However, great variations do exist between professionals. The result confirms that of Kruse et al. (2023), who proposed a multidimensional framework of AI literacy; a view also shared by Ng et al. (2021) who claimed that technical knowledge must be supplemented with critical engagement and ethical considerations. The generally low scores on error detection-related items, post-editing, and cultural consciousness indicate that more comprehensive integration of AI-related training into translation curricula is urgently needed. Interviews confirmed the results as they underscored ethical hesitations. A case in point is a translator who tend to avoid sensitive data input: "I consult professional dictionaries to preserve privacy". These qualitative remarks validate the need for training for both technical skills as well as ethical and cultural awareness, as emphasized by Van der Meer (2020) and Zitouni, Alshehri, and Idri (2024).

The findings regarding RQ3 unambiguously speak in favor of professional training programs. The variables related to the required high-level development of AI skills, post-editing approaches, and strategies with a view to enhancing translation accuracy registered mean scores ranging between 3.28 and 3.25. The findings not merely indicate a medium recognition of training gaps but also indicate considerable scope for curriculum development. This fact is supported by literature; for instance, Kong, Cheung, and Zhang (2021) demonstrate that formal training programs in AI literacy can improve technical capabilities among professionals. In addition, Frangou et al. (2024), as well as Pinski and Benlian (2023),

offer empirical validation through intercultural training workshops and practice training modules that enhance AI literacy and thus facilitate effective application in high-stakes translation scenarios. Qualitative feedback amplifies this urgency too. One participant stressed, “I would learn something through training specifically aiming to teach translations”.

Finally, RQ4 examines barriers to utilizing AI applications effectively. The relatively low mean ratings ranging between 3.24 to 3.29 regarding issues of cultural interpretation difficulties, context wholeness, and the required human intervention indicate that translators find it very challenging to integrate AI into their working practices. Such difficulties find corroboration with the thoughts expressed by Hernandez and Morris (2023) and Wang (2023), who note that despite impressive gains in natural language processing, AI systems still struggle to overcome the complexities of official document translation. Also, Al-Romany and Kadhim (2024)’s results affirm that translations of official documents and legal documents require a level of precision and cultural consciousness that current AI technologies cannot provide without considerable human intervention. Participants’ experiences illustrate this gap: “When AI mis-translates cultural subtleties, I rewrite the output to preserve the original meaning” (a participant declared). Such qualitative evidence aligns with Al-Romany and Kadhim’s (2024) argument that human expertise remains irreplaceable for cultural fidelity, reinforcing the need for hybrid workflows.

In a nutshell, the findings of the four research questions reflect a tangible pattern. On the one hand, it is accepted that AI software enhances translation operations to some degree. Its impact remains fairly limited with considerable inconsistencies between translators regarding perceptions on the other. The remarkable feature of such a situation is that consistent low ratings have been reported for efficiency, literacy, training needed, and issues faced, all accenting a critical requirement to establish professional training programs of specialization. Such programs are vital not merely to refine technical proficiency but to foster cultured, professionalized, and context-appropriate uses of AI in formal document translation. Literature has strictly emphasized these inevitable needs in recent studies (Ekuerhare & Udoka, 2024; Van der Meer, 2020; Zitouni, Alshehri & Idri, 2024). Based on such findings, this study supports the point that machine capability vs. human capability must have a harmonized framework of reinforced literacy training specifically designed to cater to Saudi Arabia's unique sociolinguistic context.

Finally, with the integration of qualitative and quantitative research findings, it can be seen that while AI-based instruments display noteworthy improvements in efficiency, consistency, and readability with respect to translating official documents, their current impact is still limited to some degree. This fact highlights an urgent demand to create specialized training courses aimed at translators to increase their skill level with regard to AI technology. Such training programs should not be limited to technical training but also include considerations of ethics and culture, thus bridging the gap between machine efficiency and human expertise; a demand that is ever more essential in today's fast-changing Saudi Arabian translation scene (Ekuerhare & Udoka, 2024; Ng et al., 2021; Ehrensberger-Dow et al., 2023).

5. Conclusion

In this part, try to remind the reader of the strengths of your main argument(s) via restating the research main conclusions. Make sure that your conclusion is not simply a repetitive summary of the findings, rather try to include your reflections on the research issue investigated to increase the impact of the argument(s) developed throughout the study. This study aims to make a significant contribution to the growing body of research on AI in translation as it focused on the under-explored context of Saudi Arabia. In other words, the study is significant as it highlights a critical need in the Saudi translation industry which is enhancing the capacity of translators to effectively use AI in a context that demands high standards of accuracy and the Three Cs: Clarity, Context, and Consistency. Simply put, AI technology can transform the way we translate, but applying it properly to official documents requires enhancing AI-literacy. This paper demonstrated, through its findings, that many issues exist with applying AI to translation work that is even more prevalent in Saudi Arabia. Focusing on the "Three Cs"—clarity, context, and consistency—this research seeks to make clear a clear route to practice and theory that will translate into a more qualified translation workforce with knowledge of AI. “Three Cs” that make important translations via AI tools, but satisfactory success remains constrained by culture issues, ethics issues, and lack of training. The conflicting opinions regarding efficiency, training, and knowledge indicate a paradox: translators recognize the capabilities of AI but exercise caution because it cannot replicate human capabilities in intricate jobs. This gap indicates that training courses must be revised so that translators can be taught to operate with AI systems rather than merely operate with it.

The study ends with a number of recommendations summarized in:

Comprehensive Training Programs. Design modules that blend technical expertise (such as AI tailoring and post-editing processes) with courses on cultural sensitivity, focusing on intricacies of the Arabic language, including various dialects and Shariah-compliant terminology.

Ethical Frameworks. The discussion includes conversations regarding data privacy, algorithmic unfairness, and doing it right with AI in training to assist Saudi Arabia's Vision 2030 objectives of investing in technology ethically.

Collaborate with government agencies, software developers, and universities to develop instruments to deal with processing the Arabic language and ensure that AI is frequently utilized in government operations.

Keep learning. Design websites and offer learning platforms that provide short courses on emerging trends in AI. This keeps translators current with technology while keeping them sensitive to culture, hence, developing their professional disposition.

Future Plans to continue to make progress, Saudi Arabia must continue to do long-term studies to determine if their literacy initiatives with AI function effectively over time. Saudi Arabia must invest in research to develop AI that obeys domestic laws and government statistics.

To suggest a professional development program, we suggest starting to focus on enhancing AI literacy among Saudi Arabian translators, in the following areas:

An Introduction to AI Tools for Translation: Provide hands-on training in common AI tools (e.g., neural machine translation systems and computer-aided translation tools), accenting their features, limitations, and integration into professional workflows.

AI for Clarity and Context: Train translators to employ AI for drafting while refining outputs to preserve contextual accuracy, particularly in legal and governmental texts.

Uniformity in Translating: Develop strategies to use AI to standardize terms and stylistic features within large volumes of documents using human oversight to maintain quality control.

Ethical and Cultural Competence: Address AI's limitations in cultural adaptation through modules on Arabic linguistic complexities (dialects, Shariah terminology) and ethical practices (bias mitigation, data privacy).

Practical Focus: Moves beyond theoretical constructs to highlight functional skills (e.g., post-editing techniques, bias evaluations).

Context-Specific: Custom-made to Saudi Arabia's sociolinguistic demands, ensuring relevance to official document translation.

Continuous Learning and Tool Adaptation: for translators to stay updated with evolving AI technologies and Arabic-centric NLP advancements.

Practical Workshops: The participants will work with AI technologies to edit sample official documents that will later be peer reviewed and discussed.

References

Aldossary, H. S. M. (2023). *Translation technology and CAT tools: addressing gaps between pedagogy and the translation industry in Saudi Arabia* (Doctoral dissertation, University of Leeds).

Alharbi, B. F., & BinMasad, S. (2023). A Critical Analysis of Saudi Legal Terms and their English Translations. https://awej-tls.org/wp-content/uploads/2023/06/9.pdf

Alharbi, W. (2024). Future Translators' Linguistic and Non-linguistic Competencies and Skills in The Age of Neural Machine Translation and Artificial Intelligence: A Content Analysis. *International Journal of Linguistics, Literature & Translation*, *7*(4).

Alothman, A. T. (2025). Universities as Centers for Boosting Human Capital: A Descriptive Analytical Study of the Realization of Vision 2030 In Saudi Arabia. *Journal of Ecohumanism*, *4*(2), 1585-1592.

Baya, H., & Becheri, R. (2024). *Investigating the Latest Technologies in the Translation Industry and their Impact on EFL Learning* (Doctoral dissertation, ibn khaldoun university-Tiaret).

Budiharjo, B. (2024, December). Artificial Intelligence in Translation: The Menace, Promise, and Response to Technology and Superseded Practice. In *Third International Conference on Communication, Language, Literature, and Culture (ICCoLliC 2024)* (pp. 681-694). Atlantis Press.

Charles-Kenechi, S. (2024). Artificial intelligence in translation studies: Benefits and challenges. Cascades, Journal of the Department of French & International Studies, 2(1), 5-15.

Chen, Y. (2024). Generative Artificial Intelligence Empowering Translation: Current Status, Challenges, and Prospects. *The Educational Review, USA*, *8*(12).

Ding, A.-C. E., Shi, L., Yang, H., & Choi, I. (2024). Enhancing teacher AI literacy and integration through different types of cases in teacher professional development. *Computers and Education Open, 6*, https://doi.org/10.1016/j.caeo.2024.100178

Ehrensberger-Dow, M., Benites, A. D., & Lehr, C. (2023). A new role for translators and trainers: MT literacy consultants. *The Interpreter and Translator Trainer, 17*(3), 393–411. https://doi.org/10.1080/1750399x.2023.2237328

Ekuerhare, A., & Udoka, O. P. (2024). The Effect of Globalization on Language Services and

Translation Strategies. *International Journal of Advanced Multidisciplinary Research and Studies* .4(6):507-516. https://doi.org/10.62225/2583049X.2024.4.6.3467

Fan, D. C. (2024). Conference interpreters' technology readiness and perception of digital technologies. *Interpreting. (6)2, p. 178 - 200. https://doi.org/10.1075/intp.00110.fan*

Frangou, S.-M., Cheung, W. M.-Y., Maasilta, M., Kong, S. C., Keskitalo, P., Wang, L., Lau, C., Lee, J. C., & Gu, M. (2024). Enhancing artificial intelligence literacy through cross-cultural online workshops. *Computers and Education Open, 6*, 100164. https://doi.org/10.1016/j.caeo.2024.100164

Gunkel, D. J. (2012). *The machine question: Critical perspectives on AI, robots, and ethics*. mit Press.

Gupta, A., Atef, Y., Mills, A., & Bali, M. (2024). Assistant, parrot, or colonizing loudspeaker? ChatGPT metaphors for developing critical AI literacies. *Open Praxis*, *16*(1), 37-53.

Hazaea, A. N., & Qassem, M. (2024). Translation Competence in Translator Training Programs at Saudi Universities: Empirical Study. *Open Education Studies*, *6*(1), 20240029.

Hernandez, M., & Morris, C. (2023). Improving Clarity and Accessibility in Public Procurement Documents: An AI–Powered Approach to Plain Writing Compliance (Doctoral dissertation, Acquisition Research Program).

Hussein Al-Romany, T. A., & Kadhim, M. J. (2024). Artificial Intelligence Impact on Human Translation: Legal Texts as a Case Study. International Journal of Linguistics, Literature & Translation, 7(5).

Jadallah Abed Khasawneh, Y., & Khasawneh, M. A. S. (2023). The Use of Artificial Intelligence in Improving Machine Translation Post-Editing; Insights from Translation Editors. *Journal of Namibian studies: History politics culture*, *34*, 7123-7146.

Khan, M. B., & Iqbal, S. (2020). Vision 2030 and the national transformation program. In *Research, innovation and entrepreneurship in Saudi Arabia* (pp. 146-166). Routledge.

Kong, S. C., Cheung, W. M.-Y., & Zhang, G. (2021). Evaluation of an artificial intelligence literacy course for university students with diverse study backgrounds. *Computers and Education Artificial Intelligence, 2*, 100026. https://doi.org/10.1016/j.caeai.2021.100026

Krüger, R. (2023). Artificial intelligence literacy for the language industry – with particular emphasis on recent large language models such as GPT-4. *Lebende Sprachen, 68*(2), 283–330. https://doi.org/10.1515/les-2023-0024

Kruse, O., Rapp, C., Anson, C. M., Benetos, K., Cotos, E., Devitt, A., & Shibani, A. (2023). *Digital writing technologies in higher education: Theory, research, and practice* (p. 526). Springer Nature.

Laupichler, M. C., Aster, A., Schirch, J., & Raupach, T. (2022). Artificial intelligence literacy in higher and adult education: A scoping literature review. *Computers and Education Artificial Intelligence, 3*, 100101. https://doi.org/10.1016/j.caeai.2022.100101

Lee, T. K. (2024). Artificial intelligence and posthumanist translation: ChatGPT versus the translator. *Applied Linguistics Review*, *15*(6), 2351-2372.

Mellinger, C. D. (2017). Translators and machine translation: knowledge and skills gaps in translator pedagogy. *The Interpreter and Translator Trainer*, *11*(4), 280-293.

Mohiuddin, K., Nasr, O. A., Miladi, M. N., Fatima, H., Shahwar, S., & Naveed, Q. N. (2023). Potentialities and priorities for higher educational development in Saudi Arabia for the next decade: Critical reflections of the vision 2030 framework. *Heliyon*, *9*(5).

Ng, D. T. K., Leung, J. K. L., Chu, S. K. W., & Qiao, M. S. (2021). Conceptualizing AI literacy: An exploratory review. *Computers and Education: Artificial Intelligence*, *2*, 100041.

Ng, D. T. K., Leung, J. K. L., Chu, S. K. W., & Qiao, M. S. (2021). Conceptualizin

Ng, D. T. K., Leung, J. K. L., Chu, S. K. W., & Qiao, S. (2021). AI Literacy: Definition, teaching, evaluation, and ethical issues. *Proceedings of the Association for Information Science and Technology, 58*(1), 504–509. https://doi.org/10.1002/pra2.487

Ng, D. T. K., Leung, J. K. L., Su, J., Ng, R. C. W., & Chu, S. K. W. (2023). Teachers' AI digital competencies and twenty-first century skills in the post-pandemic world. *Educational technology research and development*, *71*(1), 137-161.

Omar, L. I., & Salih, A. A. (2024, April). Systematic review of english/arabic machine translation postediting: Implications for AI application in translation research and pedagogy. In *Informatics* (Vol. 11, No. 2, p. 23). MDPI.

Pinski, M., & Benlian, A. (2023, January 1). AI literacy – Towards measuring human competency in artificial intelligence. *Proceedings of the ... Annual Hawaii International Conference on System Sciences/Proceedings of the Annual Hawaii International Conference on System Sciences*. https://doi.org/10.24251/hicss.2023.021

Van der Meer, J. (2020). Translation technology–past, present and future. *The Bloomsbury companion to language industry studies*, *1*, 285-310.

Zaki, M. Z., & Ahmed, U. (2024). Bridging linguistic divides: The impact of ai-powered translation systems on communication equity and inclusion. *Journal of translation and language studies*, *5*(2), 20-30.

Zitouni, M., Alshehri, F., & Idri, N. (2024). 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. *Theory and Practice in Language Studies*, *14*(7), 2251-2262.