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A Comparative Analysis of Cognitive and AI Approaches in English-Indonesian Translation: Manual vs. Automated Methods

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ABSTRACT

This study used a qualitative approach to explore cognitive and AI-driven methods of English-Indonesian translation, focusing on comparing manual and automated processes. It investigated how human translators managed comprehension, reformulation, and production and evaluated the performance of AI tools like Google Neural Machine Translation (GNMT). The study examined vital factors such as linguistic accuracy, cultural adaptation, and handling of idiomatic expressions using qualitative expert reviews. Structural differences between English and Indonesian were highlighted, revealing common translation challenges. The findings showed that while AI systems offered quick translations, human translators provided greater cultural insight and precision. Ultimately, the research suggested that a hybrid model, combining both human and AI methods, would produce the best results, particularly for complex texts.

INTRODUCTION

Over the past few years, AI has made substantial advancements across many fields, including translation. Tools like Google Neural Machine Translation (GNMT) and DeepL gained popularity because they provided fast and easy solutions for translating texts across different languages (Mandal et al., 2020; Tan et al., 2020; Wang & Stockwell, 2024). These tools processed language quickly and effectively, which was helpful when immediate results were needed (Marie et al., 2021). However, they often struggled with complex language pairs like English and Indonesian, which involved significant cultural and linguistic nuances. This is where human translators still played an important role, as they brought cultural awareness that AI lacked (Untara & Setiawan, 2020).

Translating requires more than simply swapping words from one language to another. It was a thoughtful process that involved understanding the meaning behind the words, adapting them to the new language, and ensuring they fit within the cultural and linguistic framework of the target audience (Alwazna,

2017; Hatim et al., 2019). Xiao and Martín (2020) emphasized that human translators must consider tone, style, and context, not just literal word meanings. This was especially important in translations between English and Indonesian, where direct translations often did not capture the whole meaning. Human translators creatively adapted texts, something AI continued to struggle with (Irawan et al., 2020).

The rapid evolution of AI in translation is undeniably impressive, but it is crucial to recognize that technology still cannot fully replace the human element in specific translation tasks. While AI excels at quickly translating large volumes of text, human translators bring an invaluable level of intuition, cultural sensitivity, and creativity that machines cannot replicate. In many cases, translations require more than linguistic accuracy—they must capture the original message's tone, context, and emotional subtleties. For instance, a machine might produce a technically accurate result when translating literature or marketing materials (Sulaiman & Wilson, 2019; Dihia & Zakarya, 2023). Still, without the human touch, the text can feel lifeless or inappropriate for the target audience.

On the other hand, human translators are adept at preserving the original meaning while translating feels natural and relatable in the target language (Aziz & Adika, 2024). Regarding cultural and contextual relevance, human translators also showed a significant advantage. AI tools often translate idiomatic expressions and metaphors literally, resulting in confusion or loss of meaning in the target language. For example, the AI translation of common idioms often led to word-for-word results that did not carry the intended cultural meaning. On the other hand, human translators demonstrated a deeper understanding of cultural context and could adapt expressions to fit the target audience, ensuring the translated text was accurate and culturally appropriate. This highlights the unique ability of human translators to bring contextual awareness into their work, something AI still struggles with. Time efficiency was one area where AI systems excelled. The study found that AI tools could complete translations much faster than human translators, especially for shorter, more straightforward texts. However, this speed advantage often diminished when the AI translations required extensive post-editing to correct errors and improve fluency. While human translators took longer to complete their translations, they generally produced work that needed little to no further editing, particularly in handling cultural nuances and complex language.

Furthermore, integrating AI into the translation process does not need to be viewed as a threat to human translators but rather as a tool that can enhance their work. By automating more straightforward tasks, AI can free up human translators to focus on the nuanced aspects of the text that require their expertise. This collaborative approach allows for speed and quality, ensuring that translations are accurate, culturally relevant, and engaging. The future of translation will likely involve this hybrid model, where human creativity and technological efficiency work hand in hand to produce the best possible outcomes. This study added to the growing body of research suggesting that while AI plays an essential role in modern translation, human input remains indispensable in achieving high-quality results. Despite significant progress in AI

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translation, challenges remained in handling more complex language structures. Xiao and Martín (2020) found that human translators outperformed machines regarding idiomatic expressions, humor, and cultural references, while machines tended to provide literal translations. Marie et al. (2021) also noted that AI systems performed well with simple texts but struggled with more ambiguous or context-dependent language. This suggested that AI tools were valid, but that human expertise remained essential for high-quality, nuanced translations.

This study aimed to bridge the gap by comparing the effectiveness of human and AI translations in English-Indonesian texts. Previous research primarily focused on European languages, leaving a gap in understanding how AI handled non-Western languages like Indonesian (Laviosa et al., 2021). This research filled that gap by directly comparing human and machine translations for this language pair, shedding light on where each method excelled and where improvements were needed. Lastly, the study examined whether combining the two approaches—using AI for efficiency and human translators for cultural and linguistic accuracy—enhanced translation outcomes. This hybrid approach could speed up the translation process while properly handling complex cultural and linguistic nuances. The findings contributed valuable insights to the translation industry, language education, and the development of AI translation technologies. While AI has made impressive strides in translation, it is clear that human translators still play an essential role in ensuring the accuracy, fluency, and cultural relevance of translated texts. The hybrid model proposed by this study offers a balanced approach, allowing AI and human expertise to complement each other for better translation outcomes. As AI continues to evolve, the combination of human creativity and machine efficiency could redefine translation practices, ensuring both speed and quality in professional and educational setting.

This research sought to explore these differences by comparing the effectiveness of AI and human translation methods in English-Indonesian translations. The gap in previous research, which primarily focused on European languages, left a need for more studies on how AI performs with non-Western languages like Indonesian (Laviosa et al., 2021). Indonesian has unique grammatical structures and cultural aspects that make direct translation difficult. By comparing how AI tools and human translators approach these challenges, this study aimed to highlight where each method shines and where improvements are needed. The findings from this study can potentially shape the future of translation practices, particularly in professional and educational settings. As the demand for fast and accurate translations increases, it becomes essential to understand how AI and human translators can complement each other. The study showed that a hybrid approach, where AI tools are used for efficiency and humans for accuracy and cultural adaptation, could provide the best of both worlds. This approach not only improves the speed of translation but also ensures that the cultural and linguistic nuances of the target language are adequately addressed. These insights could be valuable for translation professionals, educators, and developers working to enhance AI translation technologies.

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METHODS

This research adopted a qualitative approach to compare human and AI translation methods for English-Indonesian text comprehensively. Comprehension was designed in two stages (Creswell & Creswell, 2018). In the first stage, several English texts of varying complexity—ranging from simple, straightforward language to more complex content, including idiomatic expressions, cultural references, and metaphors—were selected for translation. These texts were then translated using Google Neural Machine Translation (GNMT) and DeepL to represent the AI-driven approach. Simultaneously, professional human translators with experience in English-Indonesian translation were engaged to produce manual translations of the same texts. For the second stage, a detailed evaluation process was conducted. The translations from both the AI systems and the human translators were reviewed and assessed based on a set of criteria. This included accuracy, fluency, cultural relevance, and the ability to handle idiomatic expressions or context-heavy content.

Further, a panel of bilingual experts reviewed the translations, ensuring a fair comparison by rating each translation on these factors. The feedback was collected, and the results were analyzed to determine where AI translation excelled and human input remained essential. Data from the evaluations were quantitatively analyzed to compare accuracy and efficiency, while qualitative analysis was used to examine how well each method handled complex linguistic and cultural nuances. The study also looked at time efficiency, noting how long each method took to complete the translations, and gathered insights from the human translators about their experience working with complex texts compared to AI tools. This two-pronged approach allowed for an in-depth understanding of the strengths and limitations of AI and human translations, providing the foundation for recommendations on combining the two approaches

RESULTS AND DISCUSSION

The results of this study highlighted significant differences between AI-driven and human translation in the context of English-Indonesian translation. Several key findings emerged through a detailed evaluation of both the output from machine translation tools (Google Neural Machine Translation and DeepL) and the work of professional human translators. These findings are discussed regarding accuracy, cultural and contextual relevance, handling of idiomatic expressions, and time efficiency.

Accuracy and Fluency

When comparing the accuracy of translations, it was evident that human translators consistently produced more reliable translations, especially for complex texts. While capable of accurately translating simple, direct sentences, ALI tools struggled with more intricate grammatical structures. For instance, AI

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systems tended to misinterpret the meaning in sentences with ambiguous subject-verb agreement or tense. In contrast, human translators were able to maintain the intended meaning and context. The fluency of the AI translations, particularly in terms of word order and sentence flow, was often mechanical or awkward. This was more pronounced in complex texts involving multiple clauses or nuanced sentence structures. Human translations demonstrated a natural flow and a better grasp of idiomatic language. The panel of bilingual experts noted that the AI-generated text often required post-editing to correct errors in sentence construction, something rarely needed for human translations.

Cultural and Contextual Relevance

Cultural sensitivity is a significant challenge for AI-driven translation tools. The study found that AI tools struggled to convey cultural references or adjust translations to suit the context of the target language. For example, AI translations often produce literal, nonsensical results when faced with English expressions or metaphors with no direct Indonesian equivalent. An example of this was translating the English phrase "spill the beans," AI translated word-for-word into Indonesian without accounting for its idiomatic meaning, which was confusing. On the other hand, human translators demonstrated a much deeper understanding of cultural context. They could interpret the meaning behind idioms or cultural references and find Indonesian equivalents that accurately conveyed the same idea. In cases where a direct translation was impossible, human translators opted for explanatory phrases that retained the original meaning, ensuring that the translation was accurate and culturally appropriate. This cultural awareness proved crucial in conveying meaning effectively, particularly for texts related to marketing, literature, or content heavy with idiomatic language.

Handling of Idiomatic Expressions and Figurative Language

Another area where the differences between AI and human translations became apparent was the handling of idiomatic expressions and figurative language. AI tools, by their very nature, tend to translate idioms literally, as they are also designed to process language through algorithms without understanding the underlying meaning. This study, it was found that that AI translations of idiomatic expressions were often inaccurate or misleading. For example, AI translations struggled with phrases like “hit the nail on the head,” producing a direct translation that made little sense in Indonesian. On the other hand, human translators could recognize idiomatic expressions and adapt them to the target language. When no equivalent existed in Indonesian, the translators used phrases that carried a similar meaning, preserving the figurative nature of the expression. This ability to adapt idiomatic language was a significant advantage of human translation, particularly in creative and literary texts where figurative speech is often essential to conveying the author's intent.

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Time Efficiency

Time efficiency was another critical point of comparison. AI tools excel in producing translations quickly, especially for straightforward texts, and in this study, they were up to four times faster than human translators. Johnson et al. (2017) reported similar results, highlighting the speed of AI translations. However, the speed advantage of AI is diminished by the need for post-editing to fix errors and ensure cultural accuracy. Kravchenko et al., (2022) and Ye & Dong (2017) also found that while AI tools can speed up translation, their outputs often require significant human revision. In contrast, though slower, human translators consistently produced high-quality translations that needed little to no editing.

One area where AI translation tools outperformed human translators was in speed. AI systems like Google Neural Machine Translation and DeepL could produce translations almost instantaneously, regardless of the length or complexity of the text. This speed made AI tools highly efficient for short, simple texts, especially when large volumes of translation are needed quickly. However, this speed came at the cost of accuracy and cultural relevance, particularly for more complex texts. Human translators took significantly longer to complete translations, especially when dealing with intricate language or texts that required cultural adaptation. On average, the time difference between AI and human translations was approximately three to four times faster for AI. That said, the time saved by AI tools was often negated by the need for extensive post-editing to correct errors and improve fluency, as confirmed by the bilingual panel. In professional settings, this editing process could delay the final delivery of a project, making AI's time advantage less significant.

Hybrid Approach: Combining AI and Human Translation

The results of this study suggested that a hybrid approach—combining AI tools for efficiency and human translators for accuracy—could offer the most effective solution. In cases where speed is essential, AI systems can be used to generate initial drafts of translations, particularly for straightforward or technical texts. Human translators can then review and refine these drafts, focusing on cultural nuances and idiomatic expressions and improving the overall fluency of the text. This approach could balance speed and quality, especially in large-scale translation projects where time constraints are a factor.

Additionally, a hybrid model could allocate more straightforward sections to AI translation when the text contains a mix of simple and complex language. At the same time, human translators focus on the more intricate parts of the text. This division of labor allows for more efficient use of time and resources while ensuring the translation remains accurate and culturally relevant. The potential of this hybrid model was further supported by feedback from the human translators involved in the study, who noted that AI tools

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were beneficial in handling routine or technical language but needed substantial input for creative or culturally rich texts.

Although substantial research has been conducted on using artificial intelligence (AI) in translation, most of these studies focus on European language pairs, such as English-French or English-Spanish, where the grammatical structures and cultural differences are relatively more straightforward for AI to handle. This has left a gap in understanding how AI performs when translating between more diverse language pairs, particularly non-Western languages like English and Indonesian (Kravchenko et al., 2022; Ye & Dong, 2017). With its unique grammatical structures, rich cultural context, and idiomatic expressions, Indonesian presents a challenge for AI translation systems that have not been adequately addressed in existing literature. Moreover, while AI translation has improved dramatically in recent years, there has been limited comparative analysis between AI translation outputs and human translations, specifically for Indonesian language contexts.

The outcomes of this comparative study provide significant insights into the evolving roles of cognitive and AI methods in translation, particularly between English and Indonesian. One notable result is that human translators have a clear advantage over AI tools in accuracy, mainly when translating more intricate texts. Human translators preserve the intended meaning and produce more natural and contextually appropriate translations. This finding aligned with Xiao and Martín (2020), who emphasized that human translators consistently surpass AI tools when dealing with idiomatic expressions, complex grammar, and cultural references. Untara and Setiawan (2020) also stated that while AI is effective for more straightforward tasks, it often fails to handle texts with cultural nuances.

Another important finding is the difference in cultural and contextual relevance**.** AI tools like Google Neural Machine Translation (GNMT) and DeepL struggle with idiomatic expressions and metaphors. For instance, in this study, AI provided a literal translation of the phrase "spill the beans," which confused Indonesians. This mirrors the observations of Marie et al. (2021), who noted that AI tools often struggle with culturally diverse language pairs, producing overly literal translations. By contrast, human translators in this study demonstrated a deeper cultural understanding, adapting expressions to maintain their intended meaning. This supports the work of Hatim et al. (2019), who found that human translators use their cultural knowledge to make necessary adjustments when translating idiomatic phrases for different audiences.

As the study also examined the potential of a hybrid approach, I suggest that using AI for speed and human translators for accuracy could be the most effective method for translating complex texts with cultural nuances. This idea was supported by Laviosa et al. (2021), who argued that AI should complement human translators rather than replace them. A hybrid approach allows for the efficient handling of simple texts by AI while human translators manage more complicated sections requiring cultural or idiomatic adaptation.

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Laviosa et al. (2021) also observed the benefits of combining AI and human expertise in translation workflows, noting that it improves speed and quality.

In addition, previous studies have focused primarily on the technical capabilities of AI tools without fully exploring the critical roles of cultural sensitivity, idiomatic translation, and context-specific meaning in languages like Indonesian (Mutmaina, 2020; Swarniti, 2019). This lack of focus on non-European languages and the failure to account for cultural and idiomatic nuances in AI translation tools form the critical gaps this research aimed to fill. The novelty of this research lies in its detailed comparative analysis of AI-driven and human translation methods within the context of English-Indonesian translation, a largely underexplored area (Boud et al., 2016; Johnson et al., 2017). By focusing on how AI and human translators handle basic grammatical translation and more complex linguistic challenges such as idiomatic expressions, metaphors, and cultural references, this study provided new insights into the limitations and potential of AI tools in non-European language pairs.

Additionally, the study's hybrid approach—exploring the combination of AI and human translation—presents a forward-looking model for the translation industry. It proposes practical recommendations on how these two methods can complement each other, particularly in contexts where speed and cultural accuracy are equally important. This research also addressed the growing need to understand how AI translation tools can be integrated into professional translation workflows, offering innovative insights for translation professionals, educators, and developers of AI translation systems.

The findings of this study reinforced the idea that, at the same time, AI has made remarkable progress in the field of translation (Jiang & Lu, 2021), it still falls short in handling the nuances and complexities of human language, particularly when cultural sensitivity and idiomatic expressions are involved (Chuanmao, & Juntao, 2024). Human translators continue to provide a level of depth and accuracy that AI tools cannot yet replicate. However, the speed and efficiency of AI tools offer undeniable advantages, particularly in scenarios where large volumes of text must be translated quickly. One of the critical takeaways from this research was the potential for a collaborative approach between AI and human translators. Rather than viewing AI as a replacement for human translators, it can be used as a tool to complement their work.

By leveraging the strengths of AI and human translation, the industry can improve the speed and quality of translations, ultimately leading to better outcomes for clients and audiences. This research demonstrated that while AI translation tools such as Google Neural Machine Translation (GNMT) and DeepL excelled in speed and efficiency for simple texts, they struggled significantly with complex linguistic structures, cultural nuances, and idiomatic expressions. Human translators, in contrast, consistently produced more accurate and culturally relevant translations, mainly when dealing with challenging content. This study suggested that combining the strengths of both AI and human translation could offer a balanced approach, maximizing efficiency while ensuring high-quality translations.

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The study also highlighted the importance of context in translation (Gutt, 2014; Dimitriu, 2015). AI tools cannot understand and interpret context like human translators despite their impressive capabilities. This is particularly crucial in creative or marketing content, where the meaning of a phrase often depends on cultural or contextual understanding. As AI continues to evolve, future research could focus on improving its ability to handle these nuances, but human translators remain essential for producing high-quality translations. In conclusion, while AI translation tools have significantly advanced, human translators continue to play a crucial role, particularly in areas that require cultural sensitivity, idiomatic understanding, and nuanced language interpretation. A hybrid approach, where AI enhances efficiency and human translators ensure quality, appears to be the most effective method for achieving optimal translation outcomes.

This study underscores that although AI tools have advanced speed and can process simple texts, they still fall short regarding more complex linguistic and cultural challenges, particularly in translating English and Indonesian. Human translators are essential for ensuring accuracy, depth, and cultural sensitivity. The hybrid approach recommended in this study, which combines AI's efficiency and human translators' expertise, could be a practical solution for translation in both professional and educational settings.

CONCLUSION

This study provided a comparative analysis of AI-driven and human translation methods, explicitly focusing on English-Indonesian translations. The findings revealed clear distinctions between the two approaches, particularly in handling complex linguistic structures, cultural nuances, and idiomatic expressions. While AI translation tools like Google Neural Machine Translation (GNMT) and DeepL proved highly efficient in quickly translating simple, straightforward texts, they struggled with more sophisticated language, such as figurative speech, cultural references, and idioms. In contrast, human translators excelled in maintaining accuracy, fluency, and cultural sensitivity, ensuring that the translated text conveyed the intended meaning effectively in the target language. The research found that AI translation tools were efficient with simple texts but struggled with complex language and cultural nuances. Human translators provided more accurate and contextually relevant translations, especially for idiomatic expressions. Combining AI and human expertise, a hybrid approach was recommended to achieve the best translation outcomes. The research also highlighted that although AI tools significantly outpaced human translators in speed, the time saved was often countered by the need for post-editing to correct errors and adjust for contextual accuracy. This demonstrates that while AI can be an invaluable tool in translation, it cannot entirely replace human translators' expertise and cultural awareness. The study further suggested that a hybrid

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approach, combining AI for efficiency and human translators for quality, could offer an optimal solution, particularly for large-scale translation projects.

Future research could explore several areas based on the findings of this study. First, more research could focus on refining AI translation tools for non-Western language pairs, such as English-Indonesian, by incorporating cultural context and idiomatic meaning into their algorithms. This could involve developing AI models that better understand regional and cultural nuances, improving their ability to produce accurate and contextually relevant translations without requiring extensive post-editing. Additionally, further studies could investigate the long-term integration of AI and human collaboration in professional translation workflows. This could involve testing various hybrid models to determine how best to allocate tasks between AI and human translators for maximum efficiency and quality. Research in this area could also explore the use of AI in specialized fields such as legal, medical, or literary translations, where precision and cultural sensitivity are particularly crucial. Lastly, future research could examine the potential of AI in language learning and education, focusing on how AI tools can assist human translators in training and development. By studying how AI can support the learning process for aspiring translators, further research could help bridge the gap between machine efficiency and human creativity, ultimately improving the quality of translation services.

: https://doi.org/10.47766/jetlee.v5i1.4557

REFERENCES

Alwazna, R. (2017). Translation procedures: How should the translator deal with the source text and the target text during the translation process?. *Babel*, *63*(3), 364-378. https://doi.org/10.1075/babel.63.3.04alw

Aziz, K., & Adika, D. (2024). A Review of Netflix's Indonesian Subtitle Translation in the "Pulp Fiction" Movie. *JETLEE: Journal of English Language Teaching, Linguistics, and Literature*, *4*(1), 1-12. https://doi.org/10.47766/jetlee.v4i1.1642

Boud, D., Keogh, R., Walker, D., Reinhart, C., Wyatt, T., Vygotsky, L., Dewey, J., Young, M. G., Malisius, E., & Dueck, P., Utech, J. L., Maghuyop, A. Z., Sebastien, B., Team, T. E., Education, D. of, Furco, A., Innotech, Perin, D., Hare, R., Piaget, J., Zeidenberg, M., … Dewy, J. (2016). Curriculum Development in Vocational and Technical Education: Planning, Content, and Implementation. *Brooklyn, NY: Workforce Strategy Center*.

Creswell, J. W., & Creswell, J. D. (2018). Research Design: Qualitative, Quantitative, and Mixed Methods Approach. In *Research in Social Science: Interdisciplinary Perspectives*.

Chuanmao, T., & Juntao, D. (Eds.). (2024). *Translating the Future: Exploring the Impact of Technology and AI on Modern Translation Studies*. CSMFL Publications.

Dihia, M., & Zakarya, M. (2023). *Strategies of translating e-commerce terms from English into Arabic, translating "csp, e-commerce beginner guide" as case of study* (Doctoral dissertation, Université Mouloud Mammeri). https://dspace.ummto.dz/handle/ummto/24105

Dimitriu, R. (2015). The many contexts of translation (studies). *Linguaculture*, *6*(1), 5-23.

Gutt, E. A. (2014). *Translation and relevance: Cognition and context*. Routledge.

Hatim, B., Munday, J., Hatim, B., & Munday, J. (2019). Translation shifts. In *Translation*. https://doi.org/10.4324/9780429266348-4

Irawan, I. N., Ansoriyah, S., & Rafli, Z. (2020). Terjemahan Beranotasi Teks Pedoman Pelayanan Perizinan Berusaha Terintegrasi Secara Elektronik (OSS) ke dalam Bahasa Inggris. *JARTIKA Jurnal Riset Teknologi Dan Inovasi Pendidikan*. https://doi.org/10.36765/jartika.v3i2.306

Jiang, K., & Lu, X. (2021). Integrating machine translation with human translation in the age of Artificial Intelligence: Challenges and opportunities. *Big Data Analytics for Cyber-Physical System in Smart City: BDCPS 2020, 28-29 December 2020, Shanghai, China*, 1397-1405.

Johnson, M., Schuster, M., Le, Q. V., Krikun, M., Wu, Y., Chen, Z., Thorat, N., Viégas, F., Wattenberg, M., Corrado, G., Hughes, M., & Dean, J. (2017). Google's Multilingual Neural Machine Translation System: Enabling Zero-Shot Translation. *Transactions of the Association for Computational Linguistics*. https://doi.org/10.1162/tacl_a_00065

Kravchenko, N., Prokopchuk, M., Pozhar, A., Kozyarevych-Zozulya, L., & Rozhkov, Y. (2022). Illocutionary

: https://doi.org/10.47766/jetlee.v5i1.4557

Pragmatic Adaptation Challenge: Ukrainian Translations of English-language Soft Law Texts. *Revista Amazonia Investiga*, *11*(49), 267–276. https://doi.org/10.34069/ai/2022.49.01.29

Laviosa, S., Iamartino, G., & Mulligan, E. (2021). *Recent Trends in Translation Studies: An Anglo-Italian Perspective*. Cambridge Scholars Publisher.

Mandal, K., Ghantasala, G. P., Khan, F., Sathiyaraj, R., & Balamurugan, B. (2020). Futurity of translation algorithms for neural machine translation (NMT) and its vision. In *Natural Language Processing in Artificial Intelligence* (pp. 53-95). Apple Academic Press.

Marie, B., Fujita, A., & Rubino, R. (2021). Scientific Credibility of Machine Translation Research: A Meta-Evaluation of 769 Papers. *ACL-IJCNLP 2021 - 59th Annual Meeting of the Association for Computational Linguistics and the 11th International Joint Conference on Natural Language Processing, Proceedings of the Conference*, 7297–7306. https://doi.org/10.18653/v1/2021.acl-long.566

Mutmaina, I. (2020). Faithful Translation in Sapardi Djoko Damono's Poetry Translated by Harry Aveling. *Buletin Al-Turas*. https://doi.org/10.15408/bat.v20i2.3766

Swarniti, N. W. (2019). The Translation Procedures of Bible Translation. *RETORIKA: Jurnal Ilmu Bahasa*. https://doi.org/10.22225/jr.5.2.1277.187-196

Sulaiman, M. Z., & Wilson, R. (2019). *Translation and tourism*. Springer Singapore.

Tan, Z., Wang, S., Yang, Z., Chen, G., Huang, X., Sun, M., & Liu, Y. (2020). Neural machine translation: A review of methods, resources, and tools. *AI Open*, *1*, 5-21. https://doi.org/10.1016/j.aiopen.2020.11.001

Untara, W., & Setiawan, T. (2020). Problema Mesin Penerjemah Berbasis AI dalam Proses Penerjemahan Buku Inggris-Indonesia dan Solusinya. *Adabiyyāt: Jurnal Bahasa Dan Sastra*, *4*(1), 92. https://doi.org/10.14421/ajbs.2020.04105

Wang, Y., & Stockwell, G. (2024). Training to use machine translation for vocabulary learning. In *Theory and Practice in Vocabulary Research in Digital Environments* (pp. 132-153). Routledge. 10.4324/9781003367543-9

Xiao, K., & Martín, R. M. (2020). Cognitive Translation Studies: Models and methods at the cutting edge. *Linguistica Antverpiensia, New Series – Themes in Translation Studies*, *19*, 1–24. https://doi.org/10.52034/lanstts.v19i0.593

Ye, X., & Dong, M. hua. (2017). A Review on Different English Versions of an Ancient Classic of Chinese Medicine: Huang Di Nei Jing. In *Journal of Integrative Medicine*. https://doi.org/10.1016/S2095-4964(17)60310-8

: https://doi.org/10.47766/jetlee.v5i1.4557