Navigating Disruption: A Survey of the Impact of Artificial Intelligence on the Indonesian Translation Industry

Menavigasi Disrupsi: Survei Dampak Kecerdasan Buatan terhadap Industri Penerjemahan Indonesia

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Abstract

The rapid emergence of artificial intelligence (AI) has introduced significant disruptive forces to the global language industry. While this technological shift is widely acknowledged, its specific impact on the Indonesian translation market, particularly from the perspective of industry practitioners, has remained an under-researched area. This study addresses this gap by employing a mixed-method approach, using an online survey to collect both quantitative and qualitative data from 10 (ten) Indonesian translation agencies and freelancers. The research reveals a paradoxical duality: while AI is widely perceived as a powerful tool for enhancing translation speed and efficiency, this has not translated into a corresponding increase in revenue. The data suggests that AI has compelled a shift in business models towards lower-rate post-editing services, while simultaneously creating new market segments. The findings indicate that the industry is not facing displacement but is undergoing a strategic transformation. Successful practitioners are those who embrace AI as an augmenting tool rather than a threat, specializing in high-value, creative, and culturally sensitive domains where human expertise remains paramount.

Keywords

Artificial Intelligence, Translation Industry, Machine Translation Post-Editing, Hybrid Model, Economic Impact

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Abstrak

Kehadiran kecerdasan buatan (AI) telah membawa disrupsi signifikan pada industri bahasa global. Meskipun pergeseran teknologi ini telah diketahui secara luas, dampaknya secara spesifik pada industri penerjemahan di Indonesia, terutama dari sudut pandang pelaku industri tersebut, masih belum banyak dikaji secara serius. Studi ini bertujuan untuk mengisi gap tersebut dengan menggunakan pendekatan metode campuran, yaitu survei daring untuk mengumpulkan data kuantitatif dan kualitatif dari 10 (sepuluh) agensi penerjemahan dan penerjemah lepas di Indonesia. Penelitian menunjukkan adanya dualitas paradoks: meskipun AI secara luas dianggap sebagai alat yang potensial untuk meningkatkan kecepatan dan efisiensi terjemahan, hal ini tidak diiringi dengan peningkatan pendapatan yang sepadan. Data mengindikasikan bahwa AI telah mendorong pergeseran model bisnis ke arah layanan pascaterjemahan dengan tarif lebih rendah, sambil secara bersamaan menciptakan segmen pasar baru. Temuan ini menunjukkan bahwa industri ini tidak menghadapi ancaman penggusuran, melainkan sedang mengalami transformasi strategis. Praktisi yang berhasil adalah mereka yang merangkul AI sebagai alat yang memperkuat, bukan mengancam, dengan cara berspesialisasi dalam ranah bernilai tinggi, kreatif, dan sensitif budaya di mana keahlian manusia tetap menjadi yang terpenting.

Kata kunci

Kecerdasan Buatan, Industri Penerjemahan, Pascaterjemahan Mesin, Model Hibrida, Dampak Ekonomi

1.   INTRODUCTION

1.1   Background

The language services industry is in the midst of a profound transformation, driven by the rapid and widespread adoption of artificial intelligence (AI). Once the exclusive domain of human linguists, translation work is now increasingly mediated by sophisticated technologies that leverage deep learning and natural language processing. The emergence of Neural Machine Translation (NMT) and generative AI models has provided tools capable of producing increasingly accurate translations in real-time, fundamentally altering traditional practices. This technological shift is believed to have disrupted numerous fields, and the language industry is no exception (Jiang & Lu, 2021).

Globally, the impact of AI on translation has been a topic of extensive

scholarly discussion, with studies examining both the potential challenges and unprecedented opportunities it presents. Research by Benmansour & Hdouch (2023), Jiang & Lu (2021), Hanh (2024), and Falempin & Ranadireksa (2024), for instance, have explored how AI tools can enhance accessibility and affordability, but also how they struggle with nuanced meaning, cultural references, and idiomatic expressions. While this discourse is robust, there remains a critical gap in empirical research specifically focused on the local context of developing economies, like Indonesia. Anecdotal evidence suggests that the Indonesian translation industry is also experiencing this disruption, but there is a lack of concrete, data-driven analysis to understand the perceptions of local practitioners.

This study aims to bridge that research gap by investigating how the presence and widespread use of AI has impacted the Indonesian translation industry. The research delves into the perceptions of industry practitioners, including agency leaders and freelancers, on the effects of AI across four key dimensions: translation quality, speed of work, operational efficiency, and business revenue. Based on these findings, the study seeks to answer two core research questions:

1. How is the presence of AI perceived by practitioners in the Indonesian translation industry?
2. What is the rationale behind these perceptions, and what are the appropriate adaptive responses to this technological shift?

The objective of this paper is to move beyond speculation and provide a nuanced, empirical perspective that can inform the strategic decisions of agencies and the professional development of translators in Indonesia.

1.2 Literature Review

The transformative impact of artificial intelligence on the translation industry is a topic of significant scholarly interest, with a growing body of literature that explores its technological, economic, and ethical dimensions. The evolution of machine translation (MT) provides a crucial backdrop for understanding the current landscape (Bezzaoucha, 2024; Shahmerdanova,

2025).

Shahmerdanova (2025) notes how the field of machine translation has evolved dramatically, moving from early rule-based systems to statistical models and, more recently, to advanced Neural Machine Translation (NMT). This progression has been driven by the rise of new technologies like big data and deep learning, which have enabled AI systems to achieve increasingly accurate and natural-sounding translations (Tieber & Baumgarten, 2024). Tools such as Google Translate, once considered suitable only for casual conversation, now leverage sophisticated algorithms to provide more reliable output, making translation services more accessible and affordable.

However, scholarly consensus (Davenport, 2018) maintains that despite these advancements, AI translation tools still possess significant limitations. These systems, Tieber and Baumgarten (2024) suggest, often struggle with capturing subtle meanings, cultural references, and complex idiomatic expressions, leading to translations that may be grammatically correct but semantically flawed. This is particularly true in highly specialized or creative domains where nuance is paramount. The ongoing limitations of automated systems highlight the continuing importance of the human translator's role, especially for professional documents, legal contracts, or creative materials where high-quality and culturally sensitive translations are non-negotiable.

The discourse surrounding AI's role in the workplace is shifting from a focus on total automation to one of augmentation, a concept heavily promoted by scholars such as Thomas Davenport (2018). This perspective argues that the true value of AI lies not in its ability to replace humans entirely, but in its capacity to enhance human intelligence and capabilities. This approach is exemplified by the "Human-in-the-Loop" model which advocates for a collaborative relationship where AI and human translators work in tandem (Falempin & Ranadireksa, 2024). In this model, AI is utilized to handle repetitive, high-volume tasks, such as generating a fast, initial draft, thereby freeing up human linguists to focus on higher-order cognitive work. This includes refining the text for cultural nuance, ensuring stylistic consistency, and addressing the complex issues that AI cannot yet solve. The viability of this hybrid approach has been advocated by multiple scholars who see it as

a promising solution to address the limitations of AI-only systems while leveraging AI's efficiency (Bankins & Formosa, 2023). This framework posits that the future of the profession lies not in a direct confrontation with technology but in a strategic partnership with it.

The introduction of generative AI presents both significant challenges and opportunities for the translation profession (Benmansour & Hdouch, 2023; Hanh, 2024). On one hand, concerns have been raised about potential job displacement, particularly for tasks that are highly standardized or repetitive. This technological evolution raises profound ethical considerations, including issues related to data privacy, algorithmic biases, and the potential for the propagation of misinformation (Vaughn, 2023). On the other hand, AI is also seen as a catalyst for professional evolution, creating new roles and specializations (Shahmerdanova, 2025). The viability of a career in translation, according to some studies, will depend on the ability of practitioners to adapt and acquire new skills (Shamerdanova, 2025). New job functions such as "tending the machine," which involves new forms of human work like post-editing and AI evaluation, are emerging as a result of this collaboration. These new roles emphasize human expertise in quality control, strategic problem-solving, and creative input, ensuring that the profession remains relevant in an increasingly automated world. The analysis of these socio technical and economic shifts is crucial for understanding the structural and power dynamics in the globalized translation industry.

2. RESEARCH METHOD

This study employed a mixed-method approach, combining a quantitative survey with qualitative, open-ended questions to provide a comprehensive analysis of the research topic. This methodology was chosen to allow for both the statistical identification of broad trends and a deeper, more nuanced understanding of the individual experiences and perceptions of the respondents.

The research utilized an online survey as the primary instrument for data collection. The survey was designed to gather insights from 10 (ten)

leaders of Indonesian translation agencies and freelance translators. To ensure confidentiality, the identities of all respondents and their geographical location were anonymized. The ten leaders of those agencies were chosen for this research for practical reasons: (1) the limited time to collect the data, and (2) the situation faced by those ten agencies are considered representative enough to portray the situation of other translation agencies in Indonesia. Data was collected over a four-day period from February 10 to February 14, 2025.

The survey instrument consisted of a series of 5 (five) questions across five key dimensions of AI's impact on the translation industry, despite the admission that the last question (number 5) inquires more of the overall impression of those respondents over AI in the translation industry rather than an independent question by itself:

1. Quality of translation results.
2. Speed of the translation process.
3. Efficiency of overall operations.
4. Business revenue or volume.
5. Overall perspective on AI's impact.

These five dimensions were deliberately selected, freely following Davenport (2018), because by exploring them, we would have a comprehensive assessment of AI's disruptive impact on the Indonesian translation industry. The rationale behind focusing on these specific areas is rooted in both industry-wide concerns and the core research questions of the study. These five dimensions collectively capture the technological, operational, and economic shifts that define the "AI advantage" in the language service industry.

For the five questions, respondents were firstly asked to provide a quantitative score on a five-point Likert scale (from 1 = *sangat tidak setuju* [strongly disagree] to 5 = *sangat setuju* [strongly agree]). Each quantitative question was followed by an open-ended question that required a brief explanation for the chosen score.

The collected data was subjected to a two-part analysis. For the

quantitative data, descriptive statistics were used to determine the frequency and distribution of scores for each question. This analysis provided a clear picture of the general sentiment regarding AI's impact across the surveyed group. For the qualitative data, a thematic analysis was conducted on the open-ended responses. This involved coding the textual data to identify recurring themes, patterns, and underlying perspectives that explained the quantitative scores. The open-ended questions provided the necessary interpretive lens for the numerical data, transforming the study from a mere tally of opinions into an evidence-based analysis of the industry's structural transformation. The quantitative data showed a mixed-to-positive perception of quality, but the qualitative analysis revealed a strong pattern of *caveats*. Practitioners consistently used terms or keywords or themes that highlighted the limitations of AI and the essential role of human refinement. Table 1 below captures some examples of those recurring patterns/keywords, and their thematic interpretation.

Table 1. Several recurring patterns/keywords encoded in the qualitative data of the research

Recurring Pattern/Keyword	Thematic Interpretation
"***Kaku***" (Stiff/Awkward)	AI-generated translations often lack natural flow and idiomatic expression, requiring stylistic revision.
"***Keakuratannya lagi***" (Its accuracy again)	Human review is mandatory for **validation**, especially for complex terminology, to ensure the AI output is factually correct.
"***Sentuhan manusia***" (Human touch)	The necessity of a creative, culturally sensitive element that AI cannot replicate,

	particularly for specialized content.
"***Menghilangkan* error *dasar***" (Removing basic errors)	AI's primary quality contribution is in pre-editing or spell/grammar check, not complex semantic resolution.

The identification of recurring patterns and keywords ensured that the inferences drawn from the scores were firmly supported by the lived experiences of the Indonesian translation practitioners. This qualitative approach was, once more, essential for providing a rich context to the numerical data and for uncovering the strategic and philosophical considerations that guide practitioners' responses to the technological disruption.

3. DISCUSSION

The analysis of the collected data reveals a multifaceted and often contradictory picture of AI's impact on the Indonesian translation industry. While AI is widely embraced for its ability to enhance workflow and increase output, its effect on revenue and long-term business models is a source of significant concern. The findings from both the quantitative and qualitative data are presented below, illuminating the paradox at the heart of the industry's transformation. Table 2 below shows how AI is perceived by the translators and what impacts it has on the translation industry in Indonesia.

Table 2. Perceptions of AI's Impact on the Indonesian Translation Industry

Perception Statement	Score 1: Strongly Disagree	Score 2: Disagree	Score 3: Neutral/ Agree Enough	Score 4: Agree	Score 5: Strongly Agree
Quality improves due to AI	0	1	6	3	0
AI accelerates the process	0	3	2	4	1
AI improves operational efficiency	0	5	1	2	2
AI increases business revenue	1	6	3	0	0
Overall, AI has a positive impact	1	3	5	4	0

In line with this finding, the discussion will be organized into three main themes that evolve around and summarize the aspects of translation impacted by the emergence and power of AI in the translation industry.

3.1 Perceived Impact on Translation Quality and Speed

The quantitative results on AI's impact on translation quality and speed (row 2) show a predominantly positive perception among practitioners. On a scale of 1 to 5, the median score for AI's effect on translation speed was 4

(*setuju*), with a strong majority of respondents (4 out of 10 or 40%) agreeing with this statement. The score for its impact on quality (row 1) was slightly more cautious, with the median score being 3 (*cukup setuju*), but a majority of respondents still held a neutral-to-positive view. The data indicates that AI is largely seen as a valuable tool for accelerating the translation process and for providing a solid initial foundation for work.

The qualitative responses provide a crucial layer of detail that explains these scores. Practitioners and leaders of translation agencies reported that AI has significantly reduced the time required for research, with one respondent noting that it "*mempercepat* flow *kerja terutama untuk meriset padanan yang tepat*" (accelerates workflow, especially for researching the right equivalent). Another stated that AI can be used to "*memberikan* input/suggestion *terkait* term *dan penyusunan kalimat*" (provide input/suggestions regarding terms and sentence structure), which streamlines the process of thinking and decision-making. The use of AI as a drafting tool means that linguists or translators no longer have to type from scratch, but can instead focus on a more efficient post-editing workflow. The ability of AI to automatically translate repetitive words or find high-match suggestions was also cited as a key driver of efficiency.

Regarding quality, respondents acknowledged that AI has improved to the point where it can "*menghilangkan* error *dasar seperti salah eja*" (remove basic errors like spelling mistakes). However, a critical nuance emerged: AI-generated translations are still often perceived as "*kaku*" (stiff) or lacking in accuracy, especially for complex or specific terminology. Human intervention is therefore considered mandatory to ensure "*keakuratannya lagi*" (accuracy) and to apply the necessary creative touch and context. Speaking from the aspects of accelerating the speed of the translating process and of enhancing the quality of the translation, the data strongly suggests that AI's primary value is in its role as an augmenting tool that provides a powerful starting point, but it cannot yet replace the human eye for quality assurance and nuanced expression.

3.2   The Efficiency-Revenue Paradox

While practitioners are generally optimistic about AI's ability to enhance speed and efficiency, the quantitative data of this research reveals a stark and contradictory finding regarding AI's economic impact on the translation industry. The scores for AI's effect on business revenue show an overwhelmingly negative sentiment, with a median score of 2 (disagree [*tidak setuju*]). A total of six out of ten respondents explicitly disagreed that AI has helped to boost their earnings, and some noted a drastic decrease in revenue.

This apparent paradox—where increased efficiency (speed and accuracy) does not lead to increased revenue—is a central theme of the findings and is clearly explained by the qualitative responses. Practitioners noted that the service model in the translation industry in Indonesia itself is currently undergoing a fundamental transformation. The traditional "new word rate," where translators are paid a fixed price per word, is being replaced by lower-rate models such as Machine Translation Post-Editing (MTPE) and Light Post-Editing (LPE), or even Artificial Intelligence Post-Editing (AIPE). One respondent provided explicit pricing examples, showing that while a new word might be priced at $0.08 USD, a word with 100% similarity (which AI can handle) is paid at only 10% of that rate. Another respondent noted that while the volume of incoming projects has increased, they are now predominantly MTPE projects with rates that are only "50-70% from the normal rate". This proves how the translation industry is struggling to keep up with piling up workload of MTPE or AIPE while at the same time receiving lower revenue from it.

This data reveals a crucial shift in the value proposition of translation services. The efficiency gains delivered by AI are not necessarily being captured by the agencies or freelancers in the form of higher profits. Instead, clients are becoming more aware of AI's capabilities and are demanding lower prices, effectively commoditizing the output. This forces practitioners to accept higher volumes of lower-rate work to compensate, leading to a feeling of a "drastic decline" in income. The efficiency paradox thus exposes a fundamental economic restructuring of the industry, where the labor model shifts from high-rate, manual craftsmanship to lower-rate, high-volume post-

editing.

3.3 Industry Adaptation and Market Bifurcation

Despite the negative economic impact, the overall sentiment regarding AI's presence in the translation industry is not one of defeat. The overall score for AI's positive impact was mixed, with a median score of 3 (neutral, agree enough [*cukup setuju*]), indicating a cautious but not entirely pessimistic outlook. The qualitative data provides insight into this resilience, showing that practitioners are not fighting the technological shift but are instead adapting to it. As one respondent powerfully stated, the approach should be to "Don't fight the Old. Build the New".

This adaptive strategy is manifested in a clear market bifurcation. Respondents observed that AI is indeed "eating into" certain market segments, specifically "*sektor market teks umum*" (general text market sectors) and work like "*buku manual*" (manual books). The work in these areas, characterized by simple and repetitive language, is now easily handled by AI, which excels at automating tasks such as file preparation, quality control, and ensuring terminology consistency across large, non-specialized volumes. The rise of Neural Machine Translation (NMT) has fundamentally transformed the workflow, allowing translation providers to enhance speed and efficiency in handling high-volume, general content.

As a result, agencies and freelancers are being compelled to specialize in more complex and high-value domains. Practitioners reported shifting their focus to specialized fields like "media, legal, and finance" or work that requires a "*sentuhan manusia*" (human touch) and creativity, such as copywriting. This shift confirms the consensus that, in these high-stakes applications, human translators remain a "precious commodity". While AI can accelerate preliminary processes like data mining in fields such as the legal sector, it struggles significantly with conveying subtle cultural context, humor, and specific stylistic choices necessary for authentic communication and effective cross-cultural resonance. Therefore, the contemporary role of the human translator is defined less by raw linguistic skill and more by the application of advanced competencies, including cultural awareness, critical and

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analytical thinking, and decision-making, to navigate the complexities that AI cannot resolve autonomously.

The data confirms the emergence of new job roles that rely on human expertise to supplement AI. Respondents mentioned the birth of new services like "Postediting, AI evaluation, *dll.*". This directly aligns with the "Human-in-the-Loop" model discussed in the literature review, where new forms of work are created around "tending the machine". The industry is not shrinking, but rather restructuring itself into a low-margin, high-volume segment that utilizes AI for efficiency, and a high-margin, specialized segment that relies on human expertise for nuance and creativity. Practitioners who have recognized this shift are already demonstrating a clear path forward by building new business models that are resilient to technological disruption.

4.   CONCLUSION AND RECOMMENDATIONS

The findings of this study provide a comprehensive and data-driven perspective on the complex impact of artificial intelligence on the Indonesian translation industry. The research successfully answered the core questions by demonstrating that AI is perceived as both an accelerator of the translation process and a disruptor of traditional business models. The central paradox identified is that the efficiency gains provided by AI have not led to a corresponding increase in revenue for practitioners, as clients have compelled a shift towards lower-rate, higher-volume post-editing work.

This study concludes that the industry is not facing outright replacement, but a fundamental transformation. AI is compelling a strategic restructuring of the market, with general translation work becoming commoditized and specialized, high-value work becoming the new focus for human linguists. The most resilient and adaptive practitioners are those who embrace AI as a collaborative tool, specializing in domains where human expertise in nuance, context, and cultural sensitivity remains irreplaceable.

Based on these findings, the following recommendations are provided for industry practitioners and researchers:

1. For Practitioners: It is recommended that translators and agencies

adopt a strategy of specialization. Rather than competing with AI on price for general text, practitioners should focus on building expertise and reputation in niche fields that demand high-quality, nuanced work, such as legal, medical, financial, or creative content. Furthermore, the acquisition of new skills in post-editing and AI evaluation is essential for those seeking to thrive in the evolving hybrid model of the industry.

2. For Agencies: Business models and pricing structures must be re-evaluated to reflect the new market realities. Agencies should leverage AI for high-volume, low-margin projects while simultaneously building a brand identity based on providing premium, human-centric services for high-stakes projects. A clear distinction between AI-assisted and purely human translation services is crucial for managing client expectations and ensuring profitability.

3. For Researchers: The findings of this study underscore the need for further research into the long-term economic and social ramifications of this technological shift within the Indonesian context. Future studies could explore the long-term effects on freelancer wages, the ethical implications of data ownership in AI-assisted workflows, and the evolving power dynamics between clients, agencies, and linguists.

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