Exploring Translation Strategies in AI-Assisted Rendition of Banyumasan Javanese *Wayang Kulit* Dialogues into Indonesian and English

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KEYWORDS	ABSTRACT
	Wayang Kulit Banyumasan, a traditional shadow puppet theater from Central Java, presents unique linguistic and cultural challenges when translated into Indonesian and English. The Banyumasan dialect of Javanese is characterized by krama (polite register), idiomatic expressions, and cultural depth, which are difficult for machine translation systems to capture. This paper explores translation strategies in AI-assisted translation of Banyumasan *Wayang Kulit* dialogues, focusing on the script '*Bawor Jadi Ratu*' performed by Ki Kabul Idamanto. Dialogues were translated into Indonesian and English using AI tools (Google Translate, ChatGPT), then compared with human-translated versions. Results show that AI often produces literal and redundant outputs, misinterpreting cultural expressions. Human translators apply strategies such as cultural adaptation, modulation, and equivalence to produce culturally acceptable translations. This study proposes a hybrid approach where AI provides drafts while human translators refine cultural and pragmatic nuances, ensuring both efficiency and accuracy. Keywords: Wayang Kulit Banyumasan, translation strategies, Artificial Intelligence, cultural adaptation, machine translation

Introduction

Wayang kulit Banyumasan as cultural performance

Wayang Kulit Banyumasan is a distinctive form of shadow puppet theater originating from Central Java, particularly in the Banyumas region. It is recognized for its humor, straightforward delivery, and use of the Banyumasan dialect, which contrasts with the more refined Surakarta and Yogyakarta styles. Beyond entertainment, *Wayang* serves as a medium of moral instruction, philosophical reflection, and cultural identity (Brakel-Papenhuijzen, 1992). Brandon (1970) emphasizes that *Wayang* performances integrate narrative,

ritual, and philosophy, while Ricklefs (2008) situates them in the broader Javanese historical context as symbols of resilience and continuity.

Translation challenges in Javanese Krama

A unique aspect of *Wayang* language is its reliance on speech levels (*ngoko, madya, krama*) that encode hierarchy and politeness. The *krama alus* register, often used in dialogues between kings, nobles, and divine characters, is particularly challenging to translate. As Uhlenbeck (1964) notes, Javanese registers are socially embedded, functioning as markers of respect and hierarchy. Errington (1985) further shows that modernization in Java has reshaped but not eliminated the role of these registers in maintaining social order. For translators, expressions such as *sabdo pangandiko* cannot be taken literally as "speech" but must be understood as honorific formulae, requiring adaptation into the target language.

Translation theories and strategies

Translation scholars have proposed multiple frameworks to address such challenges. Nida and Taber emphasize dynamic equivalence, prioritizing the communicative effect on the target audience (Nida. 1969). Vinay and Darbelnet (1995) classify translation strategies into borrowing, calque, literal translation, transposition, modulation, equivalence, and adaptation. Newmark (1981) distinguishes between semantic translation (faithful to the source text) and communicative translation (oriented to the target reader). Baker (1992) expands equivalence across word, grammatical, textual, and pragmatic levels. Pym (2014) highlights the plurality of approaches, positioning translation as negotiation between linguistic and cultural systems.

Later frameworks build on these foundations. Vermeer's Skopos theory emphasizes that translation choices are guided by the communicative purpose (*Skopos*) of the target text (Vermeer, 2004). Venuti introduces the concepts of domestication and foreignization, which are crucial for decisions about whether to retain cultural terms like *Hyang Suksmo* or adapt them for target readers (Venuti, 1995). House (2015) distinguishes between overt and covert translation, clarifying whether texts such as *Wayang* scripts should be presented as culturally marked artifacts or adapted to target norms. Finally, Hatim and Mason stress the importance of discourse and pragmatics, arguing that ideology and register shape how translation should be approached (Hatim, 1990).

AI and Neural Machine Translation

Alongside human translation theories, the rise of Artificial Intelligence (AI) and Neural Machine Translation (NMT) has reshaped the field. Koehn (2020) provides a systematic overview of neural approaches, noting their strengths in fluency and efficiency. Hutchins (2008) and Almahasees (2020) highlight both progress and persistent challenges, particularly when dealing with cultural and symbolic references. Large-scale evaluations such as the IWSLT campaign (Federico, 2014) demonstrate the potential of NMT across multiple languages but also reveal its limitations with less-resourced languages.

In the context of Javanese, AI systems often fail to capture pragmatic and cultural nuance, especially in *krama alus* expressions where meaning is tied to hierarchy and ritualized politeness. This gap highlights the need for hybrid approaches: using AI to generate initial drafts, while human translators refine outputs with strategies grounded in translation theory and cultural competence.

Beyond its contribution to translation studies and AI research, this study plays a strategic role in the preservation of local Javanese culture, particularly Banyumasan Wayang Kulit. As an intangible cultural heritage, Wayang is not only a performative art but also a repository of local wisdom, linguistic identity, and social values embedded in the Banyumasan dialect and its speech levels. However, the limited accessibility of Banyumasan Wayang texts to non-Javanese audiences, both within Indonesia and internationally, poses a risk of cultural marginalization in the digital era.

By examining how AI-assisted translation handles Banyumasan Wayang dialogues and proposing a hybrid translation model, this research contributes to cultural preservation through responsible technological mediation. Rather than allowing AI to flatten cultural specificity into generic outputs, this study positions human-guided AI translation as a means to document, transmit, and revitalize Banyumasan linguistic heritage across languages. In this sense, translation functions not merely as linguistic transfer, but as an act of cultural safeguarding, enabling Wayang Kulit Banyumasan to circulate in global contexts while retaining its local identity.

Research aims

The first aim of this study is to assess the limitations of AI in handling culturally loaded texts such as Banyumasan *Wayang* Kulit dialogues. While machine translation has shown remarkable progress in terms of fluency and speed, it often defaults to literal renderings that overlook the embedded social hierarchy, honorifics, and ritual expressions characteristic of the Javanese

krama register. By examining how AI tools interpret specific terms and speech patterns, this study seeks to highlight where the technology succeeds, where it fails, and why certain cultural nuances remain inaccessible to current computational models.

The second aim is to demonstrate the continued relevance of translation theory in evaluating AI outputs. Classical frameworks such as Nida and Taber's concept of dynamic equivalence, Vinay and Darbelnet's strategies, Newmark's communicative versus semantic translation, and Baker's levels of equivalence provide a solid foundation for diagnosing the strengths and weaknesses of AI-assisted translation. By applying these theories to concrete examples from the script *Bawor Jadi Ratu*, the research illustrates how translation studies offer critical tools for interpreting, correcting, and enriching machine-generated translations, ensuring they remain both accurate and culturally appropriate.

Finally, the third aim is to explore the potential of a hybrid model that combines the efficiency of AI with the cultural sensitivity of human translators. Such an approach recognizes that while AI can accelerate the translation process by generating quick drafts, human translators are indispensable for refining politeness markers, idiomatic expressions, and symbolic meanings that define Banyumasan *Wayang* performances. The proposed hybrid workflow positions AI not as a replacement for human expertise but as a complementary tool that, when integrated with strategic human intervention, can help preserve and disseminate Javanese cultural heritage to wider global audiences without sacrificing authenticity.

Method

This study employs a descriptive qualitative methodology, which is appropriate for examining linguistic and cultural phenomena in translation. The focus is not on quantifying results but on exploring how meaning is transferred, altered, or lost when Banyumasan Javanese dialogues are processed through AI translation systems and compared with human translation strategies.

Data source

The primary data comes from the script *Bawor Jadi Ratu*, a *Wayang* Kulit Banyumasan performance by Ki Kabul Idamanto in Ketileng, Sempor. Chapter 1 of the script was selected because it features dialogues among key characters—Prabu Kresna, Raden Samba, Raden Setyaki, Patih Udawa, Raden Gathotkaca, and Turonggo Desti—that illustrate the use of krama register and politeness

markers. These dialogues are rich in honorifics, idiomatic expressions, and symbolic references, making them suitable for examining translation challenges.

Data preparation

The Javanese dialogues were first transliterated into Roman script to standardize orthography and ensure readability for both AI systems and human evaluators. This step is essential because inconsistencies in Javanese orthography may influence machine translation accuracy. Transliterated texts were then prepared for translation into two target languages: Indonesian (as the national language and culturally proximate) and English (as a global language for dissemination).

AI-assisted translation

Two widely used AI translation tools were selected for this study: Google Translate and ChatGPT-based translation. These represent both traditional neural machine translation (NMT) and advanced large language model (LLM) approaches. Each dialogue was input into the systems, and the raw outputs were collected as baseline translations. These outputs served as the primary data for comparative analysis.

Human translation and comparative analysis

To evaluate AI performance, the same dialogues were translated by the researcher into Indonesian and English, applying established translation strategies. The AI outputs and human translations were then compared line by line. Particular attention was given to whether key terms (e.g., *kawulonuwun*, *sabdo pangandiko*) were retained, adapted, or misinterpreted. This comparative process highlights differences between literal renderings produced by AI and the strategic interventions applied by human translators.

Analytical framework

The analysis was conducted using established translation strategy frameworks:
- Vinay and Darbelnet's model (1995), which includes strategies such as borrowing, calque, literal translation, transposition, modulation, equivalence, and adaptation.
- Newmark's approach (1988), distinguishing between semantic and communicative translation, relevant for balancing fidelity to the source and comprehensibility in the target language.
- Baker's equivalence theory (2018), which addresses equivalence at the lexical, grammatical, textual, and pragmatic levels, crucial for capturing meaning beyond word-for-word correspondence.

These frameworks guided the descriptive analysis of translation choices, enabling a systematic evaluation of how AI and human translators handle cultural nuance, politeness levels, and symbolic meaning in the Banyumasan dialogues.

Results

The analysis of the *Bawor Jadi Ratu* script reveals clear contrasts between AI-generated translations and human-rendered translations when dealing with Banyumasan Javanese dialogues. Four representative cases illustrate the tendencies of AI to favor literal renderings while human translators consistently employ cultural and communicative strategies to preserve meaning, politeness, and symbolic depth.

Case 1: *Kawulonuwun dawuh sabdo pangandiko Kanjeng Romo*
AI Translation:
Indonesian: *Terima kasih atas nyanyian putra Romo*
English: *Thank you for the song of the son of Romo*
Human Translation:
Indonesian: *Hamba tunduk menerima titah Paduka Ayahanda*
English: *I humbly accept Your Majesty's command, Father*

In this case, the AI system misinterprets *sabdo pangandiko* as *song*, reducing a solemn and authoritative expression of command into something trivial and unrelated. The literal lexical rendering strips away the performative weight of the phrase, which in Javanese *krama* denotes not just "words" but "royal decree" or "command imbued with authority." By contrast, the human translation applies cultural adaptation**,** transforming the phrase into *titah* (Indonesian) and *command* (English), which better capture the hierarchical and performative nuance. At the same time, communicative translation is employed to ensure the target audience comprehends the implied politeness and social hierarchy. The addition of deferential forms such as *Paduka* and *Your Majesty* conveys the respect embedded in the original. This case illustrates how AI tends toward literal equivalence, whereas human translators navigate both semantic fidelity and pragmatic appropriateness**,** as outlined by Nida and Taber's concept of dynamic equivalence.

Case 2: *Hyang Suksmo Mustikaning Jagad*
AI Translation:
Hyang Suksmo Mustikaning Jagad (Kept the original phrase unchanged in both Indonesian and English)
Human Translation:

Indonesian: *Yang Maha Suci, Inti Semesta*
English: *The Divine Essence, Protector of the Universe*

Here the AI opted for borrowing, leaving the original phrase untranslated. While this approach maintains surface fidelity to the source, it does little to communicate meaning to target readers who may not be familiar with Javanese cosmology. The expression *Hyang Suksmo Mustikaning Jagad* carries a deeply religious and spiritual connotation, referring to the divine essence that sustains the universe. The human translation applies cultural substitution, rendering the phrase into terms accessible to wider Indonesian and English-speaking audiences while retaining its theological depth. Phrases such as *Yang Maha Suci* and *Divine Essence* resonate with established religious vocabulary in both languages. This aligns with Newmark's communicative translation, ensuring the text conveys the intended spiritual weight to readers unfamiliar with Javanese cosmological terms. The case demonstrates the weakness of AI in cultural mediation and highlights the necessity of human interpretive judgment.

Case 3: *Ri palungguhan iki ingsun ora bakal matur kang pratitis marang jeneng siro kabeh*
AI Translation:
Indonesian: *Saya tidak akan memberitahukan pratitis...*
English: *I will not tell the pratitis...*
Human Translation:
Indonesian: *Dalam sidang ini aku tidak akan menyebut nama kalian secara pribadi*
English: In this trial I will not mention your names personally.

The AI rendering here fails because it retains *pratitis* untranslated, producing outputs that are semantically incomplete and pragmatically incoherent. The term *matur kang pratitis* implies speaking in detail or addressing individuals specifically, but AI systems lacked the contextual awareness to interpret it correctly. The human translation applies modulation, shifting the focus from the obscure lexical item to its functional meaning: *not mentioning names individually*. This adjustment provides the audience with a clear and natural explanation of what is implied in the dialogue. Baker's pragmatic equivalence framework suggests that this shift maintains the communicative effect of emphasizing a general statement rather than naming individuals. As a result, this case highlights the difficulty in negotiating idiomatic and context-dependent expressions that human translators face.

Case 4: *Kawulo tampi tangan kekalih kulo pundi mugi andadosaken jimat radaging yuwono*

AI Translation:
Indonesian: *Aku memberikanmu sebuah karunia...*
English: *I am giving you a gift...*
Human Translation:
Indonesian: *Hamba menerima dua tangan Paduka sebagai pusaka peneguh jagad*
English: I received two of Your Majesty's hands as an heirloom that strengthens the universe

The AI output for this phrase is both redundant and semantically incoherent, repeating the idea of *gift* without capturing the symbolic nature of the expression. In Javanese cultural discourse, *tangan kekalih* (two hands) signifies loyalty, devotion, and sacred commitment, while *jimat radaging yuwono* refers to a metaphoric heirloom that strengthens cosmic balance. The human translation applies equivalence, replacing the symbolic idiom with a culturally meaningful target-language phrase (*pusaka peneguh jagad*), while also employing modulation to shift perspective and emphasize its function as a sacred inheritance rather than a literal "gift." This case shows how human translators integrate cultural knowledge into rendering metaphorical expressions, in line with Vinay and Darbelnet's strategies of equivalence and adaptation. AI, in contrast, lacks symbolic literacy and tends to flatten figurative meaning into generic outputs.

Case 5: *Syukur Bagyo Sewu Kulup. Ora liyo pujo hastuningsun kebat katampio.*
AI Translation:
Indonesian: *Aku bersyukur kepada Tuhan, aku memberimu seribu anak. Tidaklah sendirian untuk berdoa kepada Hastuningsun terlalu banyak.*
English: *I am grateful to God, I am giving you a thousand children. It is not alone to pray to Hastuningsun too much.*
Human Translation:
Indonesian: *Syukur yang berlipat ganda, Anakku. Tiada lain doa restu dari tangan Hamba diterima seketika.*
English: *A thousand blessings, my son. Nothing else but my prayer and blessing be swiftly accepted.*

Here, AI output is incoherent and literal: it interprets *"sewu"* (thousand) as a literal number of children, producing a nonsensical translation. It also fails to render *"pujo hastuningsun"* as "prayer/blessing," instead outputting a disjointed phrase. The human translator applies modulation, shifting focus from the literal number *"seribu"* to the idiomatic meaning "abundant blessing." By employing communicative translation, the human rendering captures the performative intent of Prabu Kresna: offering divine blessing and approval to Gathotkaca.

This demonstrates once again that AI struggles with metaphorical and idiomatic expressions, while human strategies allow for culturally faithful interpretation.

Discussion

The analysis of five dialogues from the *Bawor Jadi Ratu* script demonstrates a clear divergence between AI-assisted outputs and human translations. AI tends to produce literal, redundant, and often incoherent renderings, particularly when dealing with *krama alus* and symbolic expressions. By contrast, human translators employ a variety of strategies that are both culturally sensitive and communicatively effective. This contrast underscores a central problem: while AI excels in speed and fluency, it lacks the cultural competence necessary to interpret the pragmatic and performative functions embedded in Javanese registers.

In the first two cases, the importance of cultural adaptation and substitution became evident. Phrases such as *sabdo pangandiko* and *Hyang Suksmo Mustikaning Jagad* were misread by AI in highly literal terms—sometimes as "song," sometimes left untranslated. Human translators, however, drew on strategies of cultural substitution and communicative translation to render these expressions as formulaic honorifics or divine invocations. This approach is consistent with Venuti's concept of domestication (Venuti, 1995), in which unfamiliar cultural expressions are adapted into forms that are more accessible for the target audience without erasing their symbolic weight.

Recent studies on AI-assisted literary and cultural translation confirm the patterns identified in this research. Studies by O'Hagan (2020) and Kenny and Winters (2021) demonstrate that neural and large language model–based translation systems tend to prioritize fluency and surface coherence, often at the expense of pragmatic meaning and cultural specificity. This limitation becomes particularly evident in texts rooted in oral tradition, ritual language, and hierarchical speech systems, such as Wayang Kulit dialogues.

Similarly, Moorkens et al. (2023) argue that machine translation remains fundamentally limited in interpreting culturally situated discourse, especially in low-resource languages and dialects. Their findings support the present study's observation that AI systems struggle with metaphorical expressions, honorifics, and performative utterances in Banyumasan Javanese. These shortcomings reinforce the necessity of human intervention, not only as post-editors but as cultural mediators who actively interpret and reconstruct meaning.

In this regard, the hybrid model proposed in this study aligns with recent calls for "human-centered AI translation," where technology serves as an assistive tool rather than an autonomous decision-maker (Bai et al., 2022). Such an approach ensures that efficiency gains offered by AI do not come at the cost of cultural erasure, particularly for indigenous and regional languages whose survival depends on sensitive documentation and transmission.

Case three illustrated the value of modulation, where meaning is conveyed by shifting focus rather than reproducing surface forms. The AI output "I will not tell the pratitis" demonstrates its inability to capture the idiomatic force of the original. Human translation, by reframing this as "I will not mention your names individually," achieves communicative clarity while maintaining fidelity to intent. Similarly, in case five, the literal translation of *syukur bagyo sewu* as "a thousand children" reveals the risks of unmediated AI rendering. Human translators instead modulated the expression into "a thousand blessings," which more accurately reflects the symbolic meaning. These examples confirm Hatim and Mason's argument that translation must account for pragmatic and discourse-level meaning (Hatim, 1990).

Equivalence was most visible in case four, where the symbolic gesture of "two hands" was rendered by AI as a meaningless gift. The human version, interpreting it as a sacred heirloom of loyalty, better aligns with Nida's concept of dynamic equivalence and Newmark's communicative approach . The translation here is not a literal transfer but an interpretive act, where meaning is reconstructed to align with cultural and performative significance. In this sense, the human rendering also resonates with House's notion of covert translation (House, 2015), which emphasizes functional correspondence over formal fidelity.

The cumulative findings emphasize that *Wayang* dialogues operate not only as linguistic texts but as cultural performances. As Brandon (1970) and Ricklefs (2008) observe, *Wayang* embeds layers of social and moral philosophy, with *krama alus* serving as an index of hierarchy and respect (Errington, 1985; Uhlenbeck, 1964). For this reason, AI's literalism appears insufficient: it can only transfer lexical items, not the social authority they embody. From the perspective of Skopos theory (Vermeer, 2004), the purpose of translating *Wayang* is not merely to render words but to convey hierarchy, ritual, and symbolic force. This skopos is fulfilled by human translators, who employ adaptation, modulation, and equivalence to ensure that meaning is carried across cultural boundaries.

Taken together, the five cases suggest that AI is best positioned as a supportive tool rather than a substitute for human translation. Neural systems such as Google Translate or ChatGPT can provide initial drafts, offering efficiency and structure. Yet human translators remain essential for refining these drafts, applying strategies that preserve both cultural authenticity and communicative effect. This conclusion echoes Pym's pluralistic model of translation, which views translation as a process of negotiation, and Venuti's call for translators to remain visible mediators between cultures. In the context of Banyumasan *Wayang*, such hybridity ensures that translations are not only faithful to the source text but also resonate with the cultural depth and performative spirit of the tradition.

Conclusions

The translation of '*Bawor Jadi Ratu*' dialogues reveals that AI systems often default to literal renderings, producing incoherent or misleading translations of cultural and symbolic expressions. Human translators, however, apply strategies such as cultural adaptation, substitution, modulation, and equivalence to preserve meaning and cultural nuance. This study concludes that while AI is efficient at generating draft translations, human intervention is necessary for accuracy and cultural appropriateness. In global contexts, Javanese heritage can be preserved through a hybrid model that combines AI for speed with human translators for cultural refinement.

Acknowledgements

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