Critical Review of English-Arabic World Journal
UPT Pengembangan Bahasa (UPB)
UIN Kiai Haji Achmad Siddiq Jember
Available online at:
https://s.id/crewjournal /

DOI
e-ISSN 2828-6626
p-ISSN 2829-3762
Vol 4, No.2, (2025)

A Comparative Analysis of NMT and Human Translation: A Case Study of Fable "The Frog and The Crocodile"

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ABSTRACT

In today's modern technological era, the use of modern technology has become an integral part of human life. One of these application is the use of Neural Machine Translation (NMT). As technology advances, NMT has also become increasingly developed in text translation. However, in some cases such as fable translations, machine translation outputs often contain errors, for instance in cultural adaptation. This occurred because fables contain many moral lessons and strong cultural adaptation conveyed through short stories, which often serve anthropomorphic. The outputs of machine translation and human translation in translating fable will certainly produce some differences. This study aims to compare the differences translation results of the fable story "The Frog and The Crocodile" between human translation and NMT in terms of accuracy, fluency, and cultural adaptation. The method use in this study was qualitative content analysis. The fable story entitled "The Frog and The Crocodile" served as a source of data. The results shows that human translation and machine translation provide several differences in translating fable. The machine translation which used literal translation often losing the nuance and meaning of the story while human translation can provide a better translation results.

Key Words**: **Fable, Human Translation, Neural Machine Translation.

INTRODUCTION

The advent of Neural Machine Translation (NMT) systems, powered by deep learning algorithms, has revolutionized the field of translation by enabling rapid, automated processing of text across languages. In the mid-2010s, and neural machine translation (NMT) took off, thanks to big leaps in deep learning and computing muscle. A key breakthrough was the 2014 paper by Sutskever and his team, which introduced the sequence-to-sequence model using recurrent neural networks (RNNs). Not long after, in 2017, Vaswani and colleagues unveiled the Transformer architecture, which totally changed the game by allowing parallel processing and better dealing with long-distance connections in language. NMT marks a real shift in how machines handle language, relying on deep learning tools like RNNs and transformers to produce translations from start to finish. Unlike the rule-based methods or phrase-based stats, it uses artificial neural networks to tackle the whole process.

Bowker (2019) define machine translation as an area of research and development where computational linguists trying to find ways of using computer software to translating text from one language to another. These systems, such as those based on models like Google Translate produce translations that are often instantaneous and cost-effective. Akhmad Baihaqi (2021) stated that advancements in information and technology also effects translation work over time. The information and technology can process, present, and sharing information. Every language also can be learned by the

help of machine translation. However, despite their advancements, NMT systems frequently struggle with nuanced elements such as cultural adaptation, idiomatic expressions, and contextual subtleties that require a deep understanding of human culture and language. Those limitations can lead to inaccuracies in ambiguous or creative expressions. In contrast, human translation relies on the translator's expertise . cultural knowledge, and interpretive skills, allowing for more nuanced and contextually appropriate outputs.

Human translation involves the process by which individuals transform texts or spoken language from one language into another, relying on their command of languages, understanding of cultural nuances, and cognitive skills. Unlike machine translation, it incorporates subjective decision-making, interpretive insights, and adaptability. Within translation studies, this encompasses a wide range of materials, including literatur, technical documents, legal texts, and audiovisual media. Rather than merely substituting words, it aims to convey underlying meanings, emotional tones, and contextual layers. This perspective was notably developed by Gideon Toury in 1995, who viewed translations as tangible instances for analysis, emphasizing the norms, practices, and cultural factors involved instead of prescribing ideal methods. Translation goes beyond just knowing two languages. It demands skills like self-awareness to check understanding. Nevertheless, human translators often encounter difficulties with idiomatic expressions or cultural subtleties, which can

lead to clumsy wording that mirrors the original text too faithfully.

Jayantini (2024) stated that translating short stories from English to Indonesian is important because it facilitates the cultural exchange, promotes language, enriches literary experiences, and preserves the diversity and richness of literature across cultural differences and languages. When it comes to translating fables, those short, moral-driven stories with talking animals, straightforward plots, and cultural quirks, NMT can manage the basics very well, but it often trips up on subtleties like puns, metaphors, or things specific to a culture adaptation. Fables with their concise narratives brimming with cultural allusions, present considerable difficulties for neural machine translation (NMT). These tales frequently employ repetition, poetic rhythms, and teachings on moralty. In cases where such features are missing from the training data, NMT tends to deliver a straightforward, word-for-word rendition rather than grasping the underlying essence. Moreover, it may neglect the diverse symbolic interpretations of animals in different societies. That said, despite these limitations, NMT proves to be a reliable aid in adapting these stories for translation

The comparative analysis of Neural Machine Translation (NMT) and human translation is essential for understanding the strengths and limitations of each approach. To explore those dynamics, the fable “The Frog and The Crocodile”, a classic story originating from various cultural traditions, serves as an

ideal case study. This short narrative involves anthropomorphic animals engaging in dialogue and moral lessons, incorporating elements like humor, irony, and cultural references that test the limits of automated translation. The purpose of this comparative analysis is to find the advantages and disadvantages of human translation and machine translation in translating fable story. These including the term of accuracy, fluency, and cultural adaptation between human translation and machine translation in translating fable. In addition, this study also analyzing what types of translation methods used in their translation. The findings of this study will contribute to the boarder discourse on integrating NMT into translation workflows and offering insights into fable translations.

METHOD

This study employed qualitative content analysis to investigate variations in translation outputs between neural machine translation and human translation. The method is considered as a comprehensive and systematic analysis of written materials (Leedy & Ormrod, 2001). In order to find the data, the writer investigated the source of a fable story which has been published in learning module book entitled *Penerjemahan Karya Fiksi (BING4330)* by Susilastuti Sunarya & Rahmat Budiman published by Universitas Terbuka. The fable story entitled *The Frog and The Crocodile*. To analyze the data, the fable story was also translated by Neural Machine Translation (NMT), in this case the writer used Google Translate. The outputs of Google Translate was compared to the translation in

the module book. The researcher analyzed the differences between machine translation and human translation results and presented discussion of its quality such as accuracy, fluency, and cultural adaptation.

RESULTS AND DISCUSSION

The following are the outputs of translation compared between machine translation and human translation of the fable story entitled *The Frog and The Crocodile*.

Table 1. The Translation Results

Source Language (English version)	**Target Language** (Indonesian version by human translation)	**Target Language** (Indonesian version by NMT)
Once, there was a frog who lived in the middle of a swamp. His entire family had lived in that swamp for generations, but this particular frog decided that he had had quite enough	Pada zaman dahulu kala, hiduplah seekor katak di tengah sebuah rawa. Seluruh keluarganya sudah hidup di rawa itu selama bertahun-tahun. Akan tetapi, katak istimewa	Dahulu kala, ada seekor katak yang tinggal di tengah rawa. Seluruh keluarganya telah tinggal di rawa itu selama beberapa generasi,_____tetapi katak ini memutuskan bahwa ia sudah cukup basah untuk

wetness to last him a lifetime. He decided that he was going to find a dry place to live instead.	ini memutuskan bahwa dia tidak mau lagi tinggal di tempat yang becek seperti tempatnya sekarang. Ia memutuskan mencari tempat kering untuk tempat tinggalnya.	bertahan hidup seumur hidupnya. Ia memutuskan untuk mencari tempat yang kering sebagai gantinya.
The only thing that separated him from dry land was a swampy, muddy, swiftly flowing river. But the river was home to all sorts of slippery, slithering snakes that loved nothing better than a good, plump	Tempat tinggalnya sekarang hanya dipisahkan oleh sebuah sungai berlumpur dan penuh rawa yang airnya tidak deras. Tapi, sungai itu adalah tempat tinggal banyak sekali ular yang gemar makan katak yang gemuk sebagai	Satu-satunya yang memisahkannya dari daratan adalah sungai yang berawa, berlumpur, dan berarus deras. Namun, sungai itu dihuni oleh segala macam ular yang licin dan melata, yang paling suka makan katak gemuk dan baik hati, sehingga katak itu tak

frog for dinner, so frog didn't dare try to swim across.	santapan makan malam mereka. Maka itu, si katak tidak berani berenang menyebrangi sungai itu.	berani berenang menyebrang.

Table 2. Translation Results

Source Language (English Version)	**Target Language** (Indonesian Version by Human Translation)	**Target Language** (Indonesian Version by NMT)
So for many days, the frog stayed put, hopping along the bank, trying to think of a way to get across.	Maka, selama beberapa hari, katak mondar-mandir di sepanjang tepi sungai, mencari cara agar bisa menyebrangi sungai itu.	Jadi selama berhari-hari, katak itu tetap tinggal di sana, melompat-lompat di sepanjang tepi sungai, sambil mencoba memikirkan cara untuk menyebrang.

The snakes hissed and jeered at him, daring him to come closer, but he refused. Occasionally they would slither closer, jaws open to attack, but the frog always leaped out of the way. But no matter how far upstream he searched or how far downstream, the frog wasn't able to find a way across the water.	Ular-ular yang ada di sungai mendesis dan mengolok-oloknya serta menantangnya untuk mendekat, tapi katak menolaknya. Kadang-kadang mereka merayap untuk mendekat dengan mulut terbuka, siap menyerang. Akan tetapi, katak selalu melompat menjauh. Namun, jalan untuk menyebrang sungai tidak juga ia temukan meskipun sudah berusaha mencarinya ke hulu dan hilir sungai.	Ular-ular itu mendesis dan mengejeknya, menantangnya untuk mendekat, tetapi ia menolak. Sesekali mereka merayap mendekat, rahangnya terbuka untuk menyerang, tetapi katak itu selalu melompat menghindar. Namun, seberapa jauh pun ia mencari ke hulu atau ke hilir, katak itu tak kunjung menemukan jalan menyebrangi air.

Table 3. Translation Results

Source Language (English Version)	**Target Language** (Indonesian Version by Human Translation)	**Target Language (Indonesian Version by NMT)**
The crocodile harrumphed in agreement and sat, thinking, for a while. "Well, if you're afraid of the snakes, I could give you a ride across," he suggested.	Buaya bergumam menyatakan tanda setuju dan duduk sambil berpikir beberapa saat. "Baiklah, kalau kamu takut dengan ular-ular itu, aku bisa memberimu tumpangan untuk menyebrang ," saran buaya.	Buaya itu mendengus setuju dan duduk, berpikir, untuk sementara waktu. "Baiklah, jika kamu takut ular, aku bisa memberimu tumpangan menyebrang," sarannya.
"Oh no. I don't think so," frog answered quickly. "You'd eat me on the way over or go underwater so the snakes could get me!"	"Oh, jangan, tidak usah," jawab katak dengan cepat. "Kamu akan memangsaku dalam perjalanan ke sana atau kamu menyelam sehingga ular-ular itu bisa	"Oh, tidak, kurasa tidak," jawab katak cepat. "Kau akan memakanku dalam perjalanan ke sana atau menyelam ke dalam air agar ular-ular itu bisa menangkapku!"

	menangkapku!"	

From the results of the translation above, it can be seen that there are several differences results of fable translation by human translation and Neural Machine Translation (NMT). The first one is in the first paragraph of Table 1, the term *'for generations'* is translated as *'selama bertahun-tahun'* by human translation, and *'selama beberapa generasi'* by NMT. In order to make the target reader can easily understand, the human translator chose the word *'selama bertahun-tahun'.* The literal translation for that term might confusing the target reader of the fable which is children that more familiar with term '*tahun'* instead of *'generasi'*.

Next in the fisrt paragraph is phrase *"...he had had quite enough wetness to last him a lifetime"*. The machine translation once again used literal translation and translated it to *"...ia sudah cukup basah untuk bertahan hidup seumur hidupnya"* while the human translation chose to translated it to *"...dia tidak mau lagi tinggal di tempat yang becek seperti tempatnya sekarang".* Notice the shift from a positive sentence in the source text to a negative one in the target text. Such alterations are acceptable in translation, as long as the core meaning remains unchanged. This approach is referred to as modulation. Additionally, within Indonesian culture, the term '*becek*' provides a more precise depiction of the condition compared to '*basah'*. Transforming the sentence structure from positive to negative enhances

clarity, whereas the literal renderings produced by machine translation often lead to confusion.

In Table 1's second paragraph, the key discrepancies show up in the opening sentence. Human translator chose to render the phrase *"The only things that separated him from dry land was a ..."* as *"Tempat tinggalnya sekarang hanya dipisahkan oleh..."* to preserve the original context. On the other hand, the machine translation went with "*Satu-satunya yang memisahkannya dari daratan adalah ..."* which could sacrifice some precision. Take the word '*memisahkannya'*, the '*nya'* part points to the frog's home, but readers of the fable might find this confusing because the machine translation doesn't spell it out clearly.

In Table 2, within the first paragraph, the expression *"hopping along the bank*" receives two distinct translations. A human translator renders it as *"mondar-mandir di sepanjang tepi sungai,"* while a machine translation yields "*melompat-lompat di sepanjang tepi sungai".* Although *'hopping along'* accurately corresponds to '*melompat-lompat*' when describing a frog's movement, the broader context here portrays the frog as bewildered and anxious, deeply engrossed in contemplation as it seeks a soluiton. Consequently, '*mondar-mandir*' emerges as the more fitting term to capture the subtle emotional undertones.

In Table 2, the second paragraph highlights how human translations come across as more detailed compared to those generated by machines. Take the phrase *"The snakes hisses..",*

here the snakes are specifically those in the river. Machine translation skipped that detail, rendering it simply as *"Ular-ular itu…"*, whereas the human version expanded it to *"Ular-ular yang ada di sungai…".* Given that this fables is aimed at kids, including a bit more context like '*di sungai'* helps them picture the scene more easily.

In the subsequent section, within the final paragraph, the sentence *"But no matter how far upstream he searched or how far downstream, the frog wasn't able to find a way across the water"* exhibits variations in structural rendering between human and machine translations, though both convey the intented sense accurately. Notably, the human translation alters the original sentence structure, whereas the machine version retains it largely intact.

In Table 3, within the first paragraph, the term '*harrumphed*' has been rendered as '*bergumam'* through human translation and '*mendengus'* via machine translation. While *'mendengus'* accurately captures the literal meaning of '*harrumphed'*, the context of the story suggests that *'bergumam'* is a more suitable choice. This option helps readers grasp the fable more easily, as '*mendengus*' could come across as somewhat unfamiliar or out of place.

Looking at the results from comparing NMT and human translations of the fable "The Frog and The Crocodile", it's clear that machine translation still have a long way to go when it comes to capturing the real spirit of a story. Neural Machine

Translation (NMT) offers speed and efficiency, yet it frequently yields translations that come across as rigid and mechanical, owing to its reliance on literal word-for-word substitutions. This approach overlooks subtle elements such as idiomatic expressions, cultural nuances, and the emotional layers that infuse the source text with vitality. For instance, NMT prioritizes grammatical accuracy over capturing underlying significance, often resulting in outputs that resemble awkward first drafts rather than engaging fables. In contrast, skilled human tranlators excel by adapting the content to preserve its essence, incorporating a fluid cadence and contextual sensitivity that captivates audiences while remaining true to the original.

These insights align with the broader challenges NMT faces in literary translation, where extensive training datasets fail to account for the interpretive artistry essential in genres like fables and analogous works. Ultimately, while NMT has democratized translation, it falls short of replicating the human ability to forge emotionally resonant connections. In addition, the paper entitled “The Use of AI in The Legal Document” by Patrizia Giampieri (2024) also found that machine translation often have mistranslated words, some expressions sound infrequent to a competent targer readers. The research also underlines the importance of human post-editing.

CONCLUSION

Fables are basically tales where animals stand in for people, often called anthropomorphic stories. When translating stories aimed at children, it's essential for translators to truly understand how kids think. If they don't, the. Original tale might not resonate with readers in the target language. This explains why fable translations often involve adjustments to sentence structure. The main approach is to employ clear, uncomplicated language that children can readily understand, while ensuring the content stays suitable and adapts to the local culture.

In translation studies, the notion of *"les belles infideles"* as discussed by Hatim and Munday in 2004, suggests that the most appealing translations are those that deviate somewhat from strict fidelity to the source material. The key advantage lies in crafting a version that reads naturally, as overly literal adherence can result in clunky phrasing that diminishes the narrative's allure.

Based on the comparisons the writer's examined, machine translation typically produces word-for-word renderings, whereas human translation adapt the language to better resonate with the target audience. For fables, such literal approaches fall short, creating a rigid feel that alters the story's essence. Machine tools frequently struggle with elements like tone, style, and cultural subtleties. In contrast, human translators excel at capturing these because they understand their readers' expectations. They often favor more interpretive

translations that prioritize conveying the underlying message over precise wording. Machines, bound by their literal methods, tend to neglect adaptations that align with Indonesian cultural.

Overall, both human and machine translations deliver solid accuracy when it comes to translating fables, but they differ in how they handle meaning and style. Machines are way faster, but they can't replace human translators for these kinds of stories. Looking ahead, blending machine tools and human expertise could really improve how we translate fables, making them more effective.

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