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How the Google Neural Machine Translation (GNMT) Accuracy translate the Indonesian Idioms to English Language

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ABSTRACT

Penelitian ini menguji efektivitas Google Neural Machine Translation (GNMT) dalam menerjemahkan ekspresi idiomatik bahasa Indonesia ke dalam bahasa Inggris. Idiom, yang memiliki makna kiasan yang berakar kuat pada konteks budaya, menghadirkan tantangan yang signifikan bagi sistem penerjemahan mesin karena tidak lagi menggunakan penerjemahan kata per kata secara harfiah. Dengan menggunakan pendekatan deskriptif kualitatif, penelitian ini menilai idiom-idiom bahasa Indonesia yang dipilih berdasarkan tiga parameter utama: keakuratan semantik, koherensi sintaksis, dan ketepatan kontekstual. Temuan penelitian menunjukkan bahwa meskipun GNMT cukup baik dalam mempertahankan struktur sintaksis dan terkadang menangkap esensi semantik dari idiom, GNMT sering kali kesulitan untuk mempertahankan nuansa budaya dan kontekstual yang tertanam dalam ungkapan-ungkapan tersebut. Hal ini menyoroti keterbatasan penting dari sistem penerjemahan mesin saraf dalam menangani bahasa non-literal. Penelitian ini menekankan perlunya model penerjemahan yang peka terhadap konteks dan budaya. Selain itu, penelitian ini berkontribusi pada wacana yang sedang berlangsung dalam linguistik terapan dan penerjemahan mesin, memberikan wawasan yang berharga untuk kemajuan teknologi dan metodologi pembelajaran bahasa.

This study examines the effectiveness of Google Neural Machine Translation (GNMT) in translating Indonesian idiomatic expressions into English. Idioms, which carry figurative meanings deeply rooted in cultural contexts, present a significant challenge for machine translation systems due to their departure from literal word-for-word translation. Using a qualitative descriptive approach, the research assesses selected Indonesian idioms based on three key parameters: semantic accuracy, syntactic coherence, and contextual fidelity. The findings indicate that while GNMT performs adequately in maintaining syntactic structure and occasionally captures the semantic essence of idioms, it often struggles to preserve the cultural and contextual nuances embedded in these expressions. This highlights a crucial limitation of neural machine translation systems in dealing with non-literal language. The study emphasizes the necessity for translation models that are sensitive to context and culture. Additionally, it contributes to the ongoing discourse in applied linguistics and machine translation, providing valuable insights for both technological advancements and language learning methodologies.

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INTRODUCTION

In the rapidly globalizing digital era, the role of machine translation (MT) has evolved from a mere tool of lexical substitution into a sophisticated linguistic system designed to bridge communicative gaps across diverse languages and cultures. Language technology has become a fundamental component of global communication, particularly in domains such as international diplomacy, education, scientific research, media, and commerce (Wong & Huspi, 2023). Among the various innovations in this field, Google Neural Machine Translation (GNMT) stands out as a groundbreaking advancement. Since its launch in 2016, GNMT has leveraged deep learning and artificial neural networks to produce translations with greater fluency, coherence, and contextual awareness. Unlike traditional statistical models that translate word-by-word, GNMT processes entire sentences, enabling it to capture broader semantic and syntactic relationships and generate more natural-sounding translations (Taufik, 2020).

Despite these advancements, certain linguistic features remain persistently challenging for even the most cutting-edge neural models. One of the most prominent is the translation of idiomatic expressions—phrases whose meanings are figurative and cannot be deduced from the literal meanings of their individual words (Farhana et al., 2023). Idioms are deeply embedded in cultural knowledge and communicative practices. They function not only as stylistic elements but also as carriers of values, social norms, and localized worldviews. In the Indonesian language, idioms such as “besar pasak daripada tiang” (literally, “the peg is bigger than the pole”) and “seperti katak dalam tempurung” (“like a frog inside a coconut shell”) convey rich, figurative meanings that reflect local perspectives on economic habits and narrow-mindedness, respectively. These expressions are often culture-specific, making them difficult to translate into English, which may not have direct or equivalent idiomatic constructs (Adawiyah et al., 2023).

This study investigates the accuracy, reliability, and cultural sensitivity of GNMT when translating Indonesian idiomatic expressions into English. Using a qualitative descriptive approach, the research evaluates idiom translations based on three critical dimensions: Semantic Accuracy, which assesses how well the figurative meaning is preserved; Syntactic Coherence, which examines grammatical structure and naturalness; and Contextual Fidelity, which evaluates the extent to which the cultural and pragmatic nuances of the original idioms are retained. These dimensions are not only academically significant but also essential for real-world translation contexts such as education, cross-cultural communication, legal documentation, and multilingual content creation (Putri et al., 2023).

While GNMT has demonstrated notable improvements in handling standard and formal language, the translation of idiomatic expressions continues to expose its underlying limitations. In many cases, idioms are rendered literally, resulting in outputs that are semantically inaccurate, syntactically awkward, or culturally misleading (Sibuea et al., 2023). Such issues may lead to miscommunication, especially among non-native users or in high-stakes translation settings. These recurring challenges signal the need for deeper integration of cultural semantics and discourse pragmatics into the development of neural translation systems.

The urgency of this research lies in its dual relevance to applied linguistics and computational translation studies. From a linguistic standpoint, it provides insight into the nature of idiomatic meaning and the mechanisms of cross-cultural semantic transfer (Ma’shumah et al., 2021). From a technological perspective, it identifies specific weaknesses in GNMT’s current capabilities and suggests directions for model refinement—such as the inclusion of idiom-rich parallel corpora, culturally annotated training data, and context-aware translation algorithms.

Ultimately, this study aspires to contribute to the development of translation systems that go beyond mere lexical equivalence. By recognizing and respecting cultural and contextual specificity, future MT systems can better fulfill their purpose—not just translating language, but authentically conveying meaning across linguistic and cultural borders (Hapsari et al., 2023).

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METHOD

This study adopts a qualitative descriptive research approach, which is suitable for analyzing the nuanced and context-dependent nature of idiomatic expressions. Rather than relying on numerical data, qualitative analysis allows for an in-depth exploration of meanings, sentence structures, and cultural appropriateness in the translation of Indonesian idioms into English by the Google Neural Machine Translation (GNMT) system. The primary data source consists of a curated set of Indonesian idioms that are frequently used in daily conversations and represent culturally rich expressions. These idioms were selected through purposive sampling, aiming to include those that are likely to present challenges in machine translation due to their figurative meanings. The secondary data comprises the English translations generated by GNMT, which were obtained via the Google Translate platform.

The data collection process involved several key steps. First, idioms were identified and compiled from reliable sources such as Indonesian language dictionaries and idiomatic usage references. Each idiom was then translated using GNMT. The results were recorded systematically in a structured table to facilitate comparison and analysis. To evaluate the translations, the study applied three analytical dimensions: Semantic Accuracy, Syntactic Coherence, and Contextual Fidelity. Semantic Accuracy refers to how well the translated text captures the intended figurative meaning of the original idiom. Syntactic Coherence assesses the grammatical correctness and natural flow of the translation in the target language. Contextual Fidelity examines whether the translation preserves the cultural and situational context embedded within the original expression (Zulaika et al., 2022).

To ensure the validity and credibility of the findings, theoretical triangulation was employed. The analysis was cross-referenced with relevant theories in applied linguistics and previous studies on idiomatic translation and machine translation performance. Additionally, some translation results were reviewed through consultations with linguistic experts to ensure interpretive accuracy and contextual appropriateness (Dewayanti & Margana, 2024). Overall, this methodological framework provides a robust foundation for evaluating the capabilities and limitations of GNMT in handling culturally-bound idiomatic expressions, with implications for future development in machine translation and cross-cultural communication.

RESULT AND DISCUSSION

The findings of this study reveal a nuanced picture of the capabilities and limitations of Google Neural Machine Translation (GNMT) in translating Indonesian idioms into English. While GNMT has shown remarkable progress compared to earlier statistical machine translation systems, particularly in fluency, coherence, and sentence structure, it continues to struggle with some of the deeper complexities of idiomatic translation (Zhou, 2024). Idiomatic expressions, with their inherent figurative meanings and cultural contexts, present a significant challenge for neural machine translation systems, which often rely on training data that may not fully capture the richness of such language.

In terms of Semantic Accuracy, GNMT shows competence in identifying and reproducing the intended figurative meanings of various idioms. For instance, the idiom “makan angin,” literally translated as “eating wind,” was accurately translated as “going for a walk,” capturing the essence of leisurely activity. Similarly, “ada udang di balik batu,” which means there is a hidden agenda, was effectively rendered as “there is a hidden agenda” in English, which correctly communicates the idea of concealed motives. These examples indicate that GNMT can effectively process idioms that are widely recognized and included in its training data, suggesting its ability to handle idiomatic expressions that have clear metaphorical meanings widely understood across languages.

However, GNMT encounters difficulties with more complex or culturally specific idiomatic expressions (Sutrisno, 2025). While it can offer a surface-level understanding of many idioms, the system often fails to translate expressions that involve more abstract, culturally-specific meanings. For example, idioms such as “bagai air di daun talas,” which evokes the imagery of instability or indecision, were translated simply as “easily forgotten,” which, although somewhat capturing the fleeting nature of the expression, misses the culturally embedded sense of being unstable or non-committal. Similarly, “seperti katak dalam tempurung,” meaning someone who has a narrow perspective, was translated as “having a narrow perspective,” which conveys the correct literal meaning but loses the vivid,

metaphorical impact intended by the original expression. These examples highlight the challenge of preserving not only the literal meaning but also the cultural nuances embedded in the idioms.

Regarding Syntactic Coherence, GNMT generally excels in producing grammatically correct and fluent English translations (INDAH, 2023). The system consistently adheres to proper sentence structure, with correct subject-verb alignment, appropriate verb tense, and logical phrase construction. This is a marked improvement over previous machine translation models, which often produced (Pratama et al., 2022)awkward phrasing or ungrammatical outputs. In the idioms analyzed, GNMT produced translations that were syntactically sound and easy to understand, reflecting the effectiveness of its neural architecture in managing grammatical consistency. This aspect of the translation process seems to be one of GNMT's strengths, especially when compared to older statistical models that struggled with fluency and coherence.

Despite these successes, Contextual Fidelity remains one of the most significant challenges for GNMT in idiomatic translation. Idioms often carry cultural connotations, emotional tones, and contextual subtleties that are deeply rooted in the source language . GNMT struggles to maintain these contextual elements in its translations. For instance, the idiom "kecil hati," which refers to a feeling of discouragement or a loss of confidence, was translated simply as "feeling down." While this translation is close in meaning, it lacks the specific emotional and cultural nuances of discouragement, suggesting a loss in contextual depth. Similarly, the idiom "macan ompong," which refers to someone who appears fierce but is ultimately weak or harmless, was translated as "toothless tiger," which is technically accurate but loses the specific cultural connotation of an individual who is all show without substance. These examples illustrate the difficulties GNMT faces in preserving the full range of emotional and cultural meanings tied to idiomatic expressions.

Another limitation emerges when translating idioms that involve a psychological or emotional dimension. Idioms such as "tangan panjang" (literally "long hand," meaning someone who steals) or "berat hati" (literally "heavy heart," meaning to feel burdened) demonstrate that while GNMT can often identify the basic semantic meaning, it struggles to retain the deeper emotional resonance of these expressions. In some cases, the translations become oversimplified or overly literal, which compromises the richness and affective quality of the original expression. This highlights the challenge that machine translation systems face in translating idioms tied to emotional or psychological states, which are often shaped by cultural context and societal values.

Overall, the study demonstrates that while GNMT is a powerful tool for translating many idiomatic expressions, it remains imperfect in handling the complex, culturally embedded, and emotionally charged aspects of language. These findings underscore the need for continual advancements in machine translation technology, particularly in the area of context-aware translation. Future developments should focus on enhancing the sensitivity of neural machine translation systems to cultural semantics and integrating more comprehensive, culturally annotated corpora into training datasets. Incorporating pragmatic analysis, emotional tone recognition, and dynamic context modeling could help bridge the current gaps in translating idiomatic expressions. By doing so, machine translation systems like GNMT could become better equipped to handle the full range of linguistic and cultural complexities inherent in idiomatic language.

CONCLUSION

This study has explored the performance of Google Neural Machine Translation (GNMT) in translating Indonesian idiomatic expressions into English, with a specific focus on three evaluative dimensions: semantic accuracy, syntactic coherence, and contextual fidelity. The findings indicate that while GNMT has made considerable progress compared to earlier machine translation models—particularly in terms of grammatical correctness and fluency—it still encounters substantial challenges in interpreting and conveying the figurative and cultural meanings embedded in idioms. GNMT demonstrated a relatively high level of semantic accuracy for idioms that are commonly used and possibly present in its training data, providing translations that effectively communicate the intended meaning. The system also maintained syntactic coherence across all samples, producing grammatically well-formed and fluent sentences. However, in terms of contextual fidelity, the system showed noticeable limitations. Many translations failed to capture the cultural imagery, pragmatic subtleties, or

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emotional undertones of the original idiomatic expressions, resulting in a partial loss of meaning and communicative richness.

These findings underscore the complexity of idiomatic language and the need for translation systems that are not only linguistically competent but also culturally intelligent. For machine translation tools like GNMT to improve their handling of idioms, future developments should incorporate culturally annotated datasets, pragmatic context modeling, and deeper semantic frameworks that account for figurative and affective language. Ultimately, while GNMT can serve as a helpful tool in cross-linguistic communication, its limitations in idiomatic translation affirm the continued importance of human oversight and cultural sensitivity, particularly in contexts where meaning, nuance, and cultural resonance are critical.

REFERENCES

Adawiyah, A. R., Baharuddin, B., Wardana, L. A., & ... (2023). Comparing post-editing translations by Google NMT and Yandex NMT. In *…*. academia.edu. https://www.academia.edu/download/103100829/1084.pdf

Dewayanti, D., & Margana, M. (2024). The impact of contextual understanding on neural machine translation accuracy: A case study of Indonesian cultural idioms in English translation. *... of Language, Education, and …*. https://jurnal.ar-raniry.ac.id/index.php/englisia/article/view/24433

Farhana, B. C. D., Baharuddin, B., Wardana, L. A., & ... (2023). Academic Text Quality Improvement By English Department Students of University of Mataram: A Study on Pre-Editing of Google Neural Machine Translation. *Jurnal Ilmiah Profesi …*. https://jipp.unram.ac.id/index.php/jipp/article/view/1186

Hapsari, R. D., Wardana, L. A., & ... (2023). The Ability of English Education Department Students of University of Mataram to Conduct Post-Editing of Narrative Text for GNMT. *Journal of Classroom …*. https://jppipa.unram.ac.id/index.php/jcar/article/view/4713

INDAH, S. (2023). *AN ANALYSIS OF ACCURACY LEVEL OF GOOGLE TRANSLATE IN ENGLISH-INDONESIAN TRANSLATION*. repository.radenintan.ac.id. https://repository.radenintan.ac.id/28675/

Ma'shumah, N. K., Sianipar, I. F., & Salsabila, C. Y. (2021). Google Translate Performance in Translating English Passive Voice into Indonesian. *… : Journal of Language and …*. https://unars.ac.id/ojs/index.php/pioneer/article/view/1292

Pratama, M. O., Kareen, P., Choo, P., & ... (2022). English-to-Sundanese Translation using Neural Machine Translation: Collection and Analytics. *… , Cyber and …*. https://ieeexplore.ieee.org/abstract/document/10017635/

Putri, B. M. E., Baharuddin, B., & ... (2023). The The Analysis of Post-Editing of Literary Text of Gnmt by Students of English Department University of Mataram. *... Jurnal Linguistik, Sastra …*. https://www.ejournalunwmataram.org/index.php/trendi/article/view/1295

Sibuea, T. F. B., Budi, W., & Jonathan, K. (2023). The Equivalence Problems Produced by Machine Translation on A Literary Text: A Study on The Indonesian Translation of Harry Potter: The Order of Phoenix. *... of Cultural, Literary, and …*. https://ejournal2.undip.ac.id/index.php/culturalistics/article/view/17417

Sutrisno, A. (2025). Inter-sentential translation and language perspective in Neural Machine Translation: insights from ChatGPT as a transformer-based model. *Asia Pacific Translation and Intercultural Studies*. https://doi.org/10.1080/23306343.2025.2485609

Taufik, A. (2020). Pre-editing of Google neural machine translation. *Journal of English Language and Culture*. https://journal.ubm.ac.id/index.php/english-language-culture/article/view/2137

Wong, Y. K., & Huspi, S. H. (2023). A Conceptual Framework for Malay-English Code-Switched Neural Machine Translation. *International Conference of Reliable Information and …*. https://doi.org/10.1007/978-3-031-59707-7_5

Zhou, F. (2024). The Comparison of Translationese in Machine Translation and Human Transation in terms of Translation Relations. *ArXiv Preprint ArXiv:2404.08661*. https://arxiv.org/abs/2404.08661

Zulaika, B. A., Baharuddin, B., & Wardana, L. A. (2022). Students' Ability To Conduct Pre-Editing of Text Procedure for Google Neural Machine Translation. In *Journal of Language*. researchgate.net. https://www.researchgate.net/profile/Baharuddin-Baharuddin/publication/365839899_STUDENTS'_ABILITY_TO_CONDUCT_PRE-EDITING_OF_TEXT_PROCEDURE_FOR_GOOGLE_NEURAL_MACHINE_TRANSLATION/links/64c0c7ac8de7ed28bac30d7a/STUDENTS-ABILITY-TO-CONDUCT-PRE-EDITING-OF-TEX

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