

**COMPARING SEMANTIC RETENTION, PRAGMATIC
EQUIVALENCE, AND CULTURAL FIDELITY IN GROK
AI AND GEMINI BACK-TRANSLATIONS OF
NWOZUZU'S *NKE M JI KA***

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Abstract

The increasing use of Artificial Intelligence (AI) in translation has raised important questions about its ability to preserve meaning in culturally rich literary texts. This study examined the extent to which Grok AI and Google's Gemini AI preserve semantic meaning, pragmatic force, cultural fidelity, and orthographic consistency in the back-translation of selected excerpts from *Nke M Ji Ka* by G. I. Nwozuzu (2013). It also compared the effectiveness of the two systems in handling proverbs, ritual discourse, indigenous religious concepts, kinship expressions, and other culturally embedded elements. Adopting a qualitative descriptive design, selected Igbo excerpts were translated into English by the researcher and subsequently back-translated into Igbo using Grok AI and Google's Gemini AI. The generated texts were then compared with the original Igbo versions using Baker's (1992) Theory of Pragmatic Equivalence as the analytical framework. The analysis focused on the preservation of semantic meaning, communicative intention and cultural significance. The findings reveal that both systems generally preserved basic semantic meaning but encountered considerable difficulties in maintaining pragmatic meaning, cultural fidelity, and orthographic accuracy. Proverbs, idiomatic expressions, ritual utterances, and indigenous religious concepts proved particularly challenging. Grok AI demonstrated stronger lexical correspondence and cultural retention, whereas Gemini AI occasionally achieved better semantic reconstruction but produced more non-standard forms, orthographic inaccuracies, and inappropriate lexical substitutions. The study concludes that although AI translation systems show significant

potential for Igbo translation, they remain limited in preserving the deeper cultural and pragmatic dimensions of literary discourse. Human review therefore remains essential for ensuring the accurate translation of culturally embedded texts.

Keywords: Artificial Intelligence, Back-translation, Pragmatic Equivalence, Cultural Fidelity, Grok AI, Gemini AI

INTRODUCTION

The rapid advancement of Artificial Intelligence (AI) has transformed contemporary translation practices, leading to the widespread use of machine translation systems and large language models for multilingual communication. Recent AI-powered translation technologies have demonstrated significant improvements in fluency, coherence, and grammatical accuracy, making them increasingly useful in education, business, research, and literary translation. Despite these advances, concerns remain regarding their ability to preserve the cultural, contextual, and pragmatic meanings embedded in literary texts.

This concern is particularly relevant to Igbo literary discourse, where meaning is frequently conveyed through proverbs, ritual utterances, indigenous religious concepts, kinship expressions, and other culturally embedded forms of communication. Because such expressions derive much of their significance from shared cultural knowledge and context, their translation requires more than lexical equivalence. The evaluation of translation quality must therefore consider the preservation of semantic meaning, pragmatic force, and cultural significance.

Although recent studies have reported encouraging results regarding AI-assisted translation, research has focused predominantly on major world languages and widely studied language pairs. Comparatively little attention has been devoted to indigenous African literary texts, particularly those written in Igbo. Furthermore, limited empirical research has examined how contemporary AI systems handle culturally embedded meanings in literary discourse through back-translation.

Against this background, this study investigates the performance of Grok AI and Gemini AI in the back-translation of selected excerpts from *Nke M Ji Ka*

(Nwozuzu, 2013). The drama was selected because of its rich use of culturally significant expressions that provide a suitable basis for evaluating the extent to which the two AI systems preserve semantic meaning, pragmatic force, cultural significance, and orthographic accuracy.

The study contributes to ongoing discussions on AI-assisted translation and literary translation by providing evidence from an under-researched African language context. It further offers insights into the strengths and limitations of contemporary AI systems in handling culturally embedded literary discourse.

LITERATURE REVIEW

Conceptual Review

Artificial Intelligence and Translation

In translation studies, AI has become increasingly significant due to the development of machine translation systems and large language models capable of generating translations across multiple languages. These technologies employ computational techniques such as neural networks, deep learning, and natural language processing to analyze linguistic patterns and produce target-language texts.

Contemporary AI systems are capable of producing translations that are often fluent, coherent, and grammatically acceptable (Obeidat et al., 2024). As a result, AI-assisted translation has become widely adopted in academic, professional, and literary contexts. However, scholars have observed that linguistic fluency does not necessarily guarantee the preservation of contextual meaning, cultural significance, or communicative intention.

Back-Translation

Back-translation involves translating a translated text back into its original language in order to facilitate comparison with the source text. The technique is widely employed in translation studies, multilingual research, and cross-cultural communication as a means of assessing translation quality and identifying discrepancies between source and target texts.

Traditionally, back-translation has been used as a verification mechanism for detecting semantic shifts, lexical distortions, omissions, and additions that may occur during translation (Alkodimi et al., 2024). By comparing the back-

translated version with the original source text, researchers are able to identify areas where meaning has been altered, weakened, or lost. The procedure is particularly useful when the objective is to assess whether a translation has successfully preserved the intended message of the source text.

Pragmatic Equivalence

Pragmatic equivalence refers to the preservation of communicative intention, implied meaning, and contextual effect during translation. Unlike semantic equivalence, which focuses primarily on lexical meaning, pragmatic equivalence is concerned with the relationship between what is said and what is intended within a particular communicative context. The concept recognizes that meaning is often influenced by contextual factors, cultural assumptions, and shared background knowledge.

Baker (1992) explains pragmatic equivalence in terms of implicature and communicative intention, arguing that translators must account for meanings that are implied rather than explicitly stated. Successful translation therefore requires more than the transfer of words; it demands the preservation of contextual meaning and communicative function.

The concept is particularly relevant to literary discourse because literary texts frequently rely on indirect communication, figurative language, proverbs, and culturally conditioned expressions. In such cases, literal translation may preserve lexical meaning while failing to convey the intended communicative effect. Consequently, pragmatic equivalence provides an important basis for evaluating the effectiveness of AI-generated translations.

Cultural Fidelity

Literary texts often contain culture-bound expressions whose meanings derive from specific social and cultural environments. Such expressions may include proverbs, ritual language, indigenous religious concepts, kinship terms, and culturally specific metaphors. In this study, cultural fidelity refers to the extent to which a translation preserves the cultural meanings, values, beliefs, practices, and worldview embedded in the source text. Oji (2023) argues that many Igbo cultural expressions resist direct translation because they are rooted in indigenous experiences and cultural practices that may not have exact equivalents in other languages.

Empirical Review

Research on translation has consistently emphasized that successful translation involves more than the transfer of lexical meaning. Scholars increasingly argue that the preservation of communicative intention, cultural knowledge, and contextual significance is essential for achieving meaningful equivalence between source and target texts. This concern becomes particularly important in literary translation, where meaning is frequently conveyed through culturally embedded expressions, figurative language, and context-dependent forms of communication. Consequently, a growing body of scholarship has examined the relationship between language, culture, pragmatics, and translation quality from various perspectives.

Within the Igbo context, studies have demonstrated the central role of culture and pragmatics in meaning construction. Dozie (2020), in his examination of speech acts in Igbo discourse, argues that communication among the Igbo is strongly influenced by communal values, social relationships, and culturally shared expectations. The study reveals that the interpretation of many utterances depends not merely on their linguistic forms but also on the sociocultural contexts in which they occur. This finding underscores the importance of contextual meaning in Igbo communication. Similarly, Ngele et al. (2018), investigating the translation of Igbo proverbs in Achebe's *Things Fall Apart* into English and French, demonstrate that the meanings of proverbs are often shaped by both semantic and pragmatic considerations. The authors observe that literal translation frequently fails to convey the intended communicative force of proverbial expressions because much of their meaning derives from shared cultural knowledge. More recently, Ik-Iloanusi and Mbagwu (2026) examined the communicative features of proverbs used during traditional Igbo events and found that proverbs perform important sociopragmatic functions, including advising, cautioning, persuading, and reinforcing communal values. The study further reveals that the meanings of proverbs emerge from the interaction between language, culture, and context rather than from lexical content alone. Collectively, these studies highlight the significance of context, culture, and pragmatics in Igbo discourse. However, they do not investigate the ability of AI translation systems to preserve such meanings in literary translation.

The preservation of cultural meaning has also attracted considerable attention among scholars of translation. Eke's (2022) study on the representation of African cultural knowledge in translated literary texts demonstrates that translation functions as a medium through which cultural values, indigenous knowledge systems, and collective identities are transmitted across languages. The study further suggests that cultural meanings may be altered, weakened, or reinterpreted during translation. Similarly, Oji (2023) examines the translation of Igbo cultural expressions and argues that many culture-bound concepts resist direct translation because they are rooted in indigenous experiences and sociocultural realities. Consequently, translators often employ adaptive and explanatory strategies to preserve meaning. Relatedly, Anigbogu and Ahizih (2016) observe that literary language serves as an important vehicle for expressing indigenous worldviews and cultural realities, while Inyima (2018) emphasizes the role of literary discourse in the construction and representation of identity. Taken together, these studies demonstrate that cultural meaning occupies a central position in literary translation. Nevertheless, they focus primarily on human translation practices and do not evaluate the capacity of AI systems to preserve culturally embedded meanings in African literary texts.

The question of pragmatic meaning has become increasingly prominent in contemporary translation scholarship. Paronyan (2024) argues that literary translation should seek to preserve the communicative intention and functional effect of the source text rather than merely reproducing its linguistic structure. According to the study, equivalence extends beyond lexical correspondence to include contextual meaning and communicative purpose. A similar position is advanced by Jepri (2025), who maintains that faithful translation requires sensitivity to communicative function, audience interpretation, and contextual relevance. Likewise, Sarmi, Pasopati, Jelita, Siadari, Agil, and Firzatullah (2025) demonstrate that meaning frequently extends beyond the literal wording of a text and depends significantly on contextual interpretation. These studies collectively reinforce the importance of pragmatic considerations in translation assessment. However, they do not specifically examine the preservation of pragmatic meaning in AI-assisted translation involving culturally rich African literary discourse.

In addition to studies on pragmatics and culture, scholars have increasingly explored back-translation as a means of evaluating translation quality and meaning preservation. Alkodimi et al. (2024) investigated the impact of AI-assisted translation and back-translation on literary texts and found that participants who employed AI tools produced more effective translations and back-translations than those who relied solely on conventional methods. The authors further argue that back-translation serves as a useful mechanism for identifying translation errors, assessing translation quality, and revealing cultural nuances that may be obscured during the translation process. Similarly, Li and Tian (2025), in their study of the back-translation of Lin Yutang's *Moment in Peking*, demonstrate that back-translation provides a valuable means of examining how cultural meanings are preserved, transformed, or restored across languages. The study reveals that translators often employ multiple strategies to recover culture-specific meanings that may have been modified during translation. Beyond literary translation, Kimera et al. (2024) explored the application of back-translation in English-Luganda machine translation and found that the technique significantly improved translation quality in a low-resource language setting. Their findings further confirm the usefulness of back-translation as a tool for evaluating meaning preservation and translation performance. While these studies demonstrate the importance of back-translation in translation evaluation, they do not examine AI-assisted back-translation involving Igbo literary discourse.

Recent developments in Artificial Intelligence have generated substantial interest in the performance of machine translation systems and large language models. Obeidat et al. (2024), in a comparative study of Gemini, ChatGPT, and Google Translate, found that AI systems continue to encounter difficulties when translating idiomatic and figurative expressions despite achieving high levels of grammatical accuracy. The study reveals that non-literal language remains a significant challenge for automated translation. Similar concerns are raised by Noriega-Santiáñez and Corpas Pastor (2025), whose comparative evaluation of machine translation systems and large language models shows that literary phraseology remains particularly difficult to translate because it often depends on creativity, context, and cultural interpretation. Likewise, Ostadi and Heidari Tabrizi (2025) report that AI-generated literary translations frequently preserve semantic content while exhibiting weaknesses

in the treatment of culture-specific references and stylistic nuances. Al Maaytah (2026) further observes that high levels of linguistic accuracy do not necessarily result in cultural fidelity, particularly when translations involve context-dependent and culturally embedded meanings. Collectively, these studies indicate that although AI translation technologies have advanced considerably, significant challenges remain in the preservation of pragmatic meaning and cultural significance.

A synthesis of the reviewed literature reveals several important observations. First, scholars consistently acknowledge that successful translation requires the preservation of semantic meaning, communicative intention, and cultural significance. Second, studies on Igbo discourse demonstrate that meaning is frequently shaped by contextual and sociocultural factors rather than by lexical content alone. Third, research on AI translation suggests that figurative language, literary phraseology, and culture-bound expressions continue to present difficulties for contemporary translation systems. Finally, studies on back-translation highlight its effectiveness as a tool for evaluating meaning preservation and translation quality. Despite these contributions, no study has specifically examined the performance of Grok AI and Gemini AI in the back-translation of an Igbo literary text. Furthermore, limited attention has been devoted to the preservation of pragmatic meanings, indigenous religious concepts, ritual discourse, kinship expressions, and other culture-bound elements in AI-assisted translation involving African languages. It is this gap that the present study seeks to address by comparatively evaluating the ability of Grok AI and Gemini AI to preserve semantic meaning, pragmatic force, and cultural fidelity in selected excerpts from G. I. Nwozuzu's *Nke M Ji Ka* (Nwozuzu, 2013) through a back-translation approach.

Theoretical Framework

Baker's Concept of Pragmatic Equivalence

According to Baker (1992), pragmatic equivalence involves the preservation of implied meanings, communicative intentions, and contextual effects in translation. Baker's concept of pragmatic equivalence is particularly relevant to this study because the selected excerpts from *Nke M Ji Ka* contain proverbs, ritual utterances, indigenous religious concepts, kinship expressions, and other culturally embedded forms of discourse whose meanings extend beyond literal

interpretation. The framework provides an appropriate basis for evaluating the extent to which Grok AI and Gemini AI preserve communicative intention and contextual meaning in their back-translations. While the study is anchored on pragmatic equivalence, cultural fidelity and orthographic accuracy are employed as complementary analytical criteria to assess the preservation of culture-bound meanings and adherence to Standard Igbo orthographic conventions.

Methodology

Research Design

This study adopts a qualitative descriptive research design. The design is considered appropriate because the study focuses on the analysis and interpretation of meanings contained in translated texts rather than on numerical measurement. The study evaluates the extent to which Grok AI and Gemini AI preserve semantic meaning, pragmatic force, and cultural fidelity in the back-translation of selected excerpts from *Nke M Ji Ka* (Nwozuzu, 2013).

Source of Data

The data for the study were drawn from selected excerpts of *Nke M Ji Ka* (Nwozuzu, 2013). The excerpts were purposively selected because they contain proverbs, ritual utterances, indigenous religious references, kinship expressions, and other culture-bound elements capable of posing translation challenges.

Data Collection Procedure

The original excerpts were first translated into English by the researcher. The English translations were subsequently submitted separately to Grok AI and Gemini AI for back-translation into Igbo. To facilitate context-sensitive translation, each excerpt was presented to Grok AI and Gemini AI together with relevant contextual information from the drama, including details of the speaker, addressee, situational setting, and communicative intent where necessary. The translations produced by Grok AI and Gemini AI constituted the primary data for comparative analysis.

Method of Data Analysis

Data were analysed qualitatively using Baker's (1992) concept of Pragmatic Equivalence as the theoretical framework. The AI-generated back-translations were compared with the original Igbo text to determine the extent to which semantic meaning, pragmatic intention, and cultural significance were preserved. Particular attention was paid to the translation of proverbs, ritual discourse, indigenous religious concepts, kinship expression, and other culturally embedded elements.

Data Presentation and Analysis

The selected excerpts are analysed comparatively by examining the original Igbo text, the researcher's English translation, and the Igbo back-translations generated by Grok AI and Gemini AI. The analysis focuses on three major dimensions: semantic meaning, pragmatic equivalence, and cultural fidelity. Semantic meaning is assessed by examining the extent to which the AI systems preserve the denotative content of the source text. Pragmatic equivalence is evaluated by determining whether the communicative intention, contextual meaning, and speech function of the original utterance are retained in the back-translated versions. Cultural fidelity is assessed by examining the extent to which culture-bound concepts, indigenous beliefs, ritual expressions, proverbs, kinship terms, and other culturally embedded meanings are preserved. Particular attention is also paid to instances of omission, addition, substitution, semantic distortion, cultural loss, and orthographic deviations where they occur.

CASE 1

Act 1, Scene 1

pp.8

Speaker: Eze

Dialogue

Igbo: Ebe m maara nke ọma na nke m ketere n'ụwa a m lọrọ bụ naanị nke m riri n'ọnu.

Researcher's Translation (English Version): Since I already know that my portion in this world is only what I have eaten in my mouth.

Grok AI Back-Translation (Igbo): Ebe m ma na òkè m n'ụwa bụ naanị ihe m tinyere n'ọnu m rie.

Gemini AI Back-Translation (Igbo): Ma m sị na m maralarị na oke m n'ụwa a bụ sọsọ ihe m tinyere n'ọnu m.

Both AI systems retained the central meaning of the original expression. However, Grok replaced *riri n'ọnu* with *tinyere n'ọnu m rie* (“put in my mouth and eat”), thereby altering the original lexical structure. Gemini introduced an unrecognized form *maralarị* and the dialectal item *sọsọ* in place of the standard expression used in the source text. While these deviations do not substantially affect the semantic meaning, they reduce linguistic fidelity to the original dialogue. Overall, both systems preserve the message, but Grok demonstrates greater correspondence with the source text.

CASE 2

Act 1, Scene 1

pp.9

Speaker: Ugochi

Dialogue

Igbo: Belụsọ chi taa agaghị efo m jekwuru ndị a butere chi ọhụrụ mara nke ha ji.

Researcher's Translation (English Version): Unless morning will not come today, I will go and meet those people who brought a new god to find out what they have got.

Grok AI Back-Translation (Igbo): Ụbọchị na-apụtaghị echi, m ga-eje hụ ndị ahụ wetara chi ọhụrụ ka m mara ihe ha nwere.

Gemini AI Back-Translation (Igbo): A sị na ọwụwa anyanwụ agaghị adi, m gofere gaa hụ ndị ahụ wetara chi ọhụrụ ka m mara ihe ha ji.

Neither AI system successfully reconstructed the original idiomatic opening. Grok rendered it as *Ụbọchị na-apụtaghị echi* (“the day does not appear tomorrow”), which changes both the temporal reference and structure of the source expression. Gemini performed worse by translating “morning” as *ọwụwa anyanwụ* (“east”), thereby confusing a temporal phenomenon with a

geographical direction. In addition, Gemini's use of *gofere* introduces a non-standard lexical item into the sentence. Although both systems retained *chi ohuru*, they neither recovered its contextual significance as a reference to Christianity. Consequently, both outputs exhibit semantic and cultural loss, with Grok showing relatively better retention of the original meaning.

CASE 3

Act 1, Scene 2

pp.12

Speaker: Ibe

Dialogue

Igbo: Ọ bụrụ na nwaanyị a anyị nūrụ maka ya ugbo a bidoro jekwuwe dibia maọbụ arụsị, ikekwe ọ garaghị amụta nwa nwoke ahụ ọ chọrọ.

Researcher's Translation (English Version): Assuming this woman we discussed now had gone to a native doctor or a deity perhaps, she might not have had that male child which she desired.

Grok AI Back-Translation (Igbo): Ọ bụrụ na nwanyị a anyị na-ekwu maka ya ugbo a gara n'ogugu ma ọ bu n'amúsí, ọ ga-abụ na ọ gaghị amụ nwa nwoke ọ chọrọ.

Gemini AI Back-Translation (Igbo): A sị na nwaanyị a anyị nūrụ gbasara ya taa jere na nke dibia afọ ma ọ bu arụsị, maọbụ na ọ gaghị amụ nwa nwoke ahụ ọ chọrọ

Both AI systems failed to preserve key cultural terms in the original dialogue. Grok mistranslated *dibia* as *ogugu* (“numbering”) and replaced *arụsị* with *ámúsí*, a dialectal form referring to a witch rather than a deity. Gemini retained *arụsị* but altered *dibia* to *dibia afọ* (“stomach healer”), which changes the intended meaning. These substitutions distort the religious concepts represented in the original text and weaken the contrast between traditional spiritual consultation and divine intervention. As a result, both semantic meaning and cultural fidelity are significantly compromised.

CASE 4

Act 1, Scene 2

pp.13

Speaker: Chike

Dialogue

Igbo: Ọ buru na nke a bu ihe kpatara o ji maka ya bia, i mara na agwo no n'akirika.

Researcher's Translation (English Version): If this is the reason why she came, know then that a snake is on the thatch.

Grok AI Back-Translation (Igbo): Ọ buru na nke a bu ihe mere o ji bia, mara na agwo di n'elu ulo ahijia.

Gemini AI Back-Translation (Igbo): Ọ buru na o bu nke a kpatara obibia ya, mara mo na agwo no n'elu usa.

Grok translated *akirika* as *ulo ahijia* (“grass house”), thereby replacing the culturally specific image of a thatched roof with a different lexical item. Although the image of a snake remains, the original expression is not fully recovered. Gemini's version contains more serious deviations. The unrecognized word *mo* is inserted into the sentence, while *akirika* is replaced with *usa*, which means “reply” or “long throat” and bears no semantic relationship to the source text. Consequently, Gemini substantially distorts the original imagery. Since the proverb functions as a warning of hidden danger, both systems also fail to preserve its pragmatic force. Grok nevertheless demonstrates stronger semantic retention.

CASE 5

Act 1, Scene 3

pp.17

Speaker: Eze

Dialogue

Igbo: Ụkwu na-aga wam wam marakwa na anya na-aga wara wara wara na-ahụ ya.

Researcher's Translation (English Version): The leg that moves anyhow should know that the eye that moves anyhow sees it.

Grok AI Back-Translation (Igbo): Ụkwụ na-agba ọsọ nke ọ bụla, ya mara na anya na-agba ọsọ nke ọ bụla na-ahụ ya.

Gemini AI Back-Translation (Igbo): Ụkwụ hụrụ ije aghara aghara ga-amara na anya na-agharị agharị na-ahụ ya.

Neither AI system successfully reconstructed the ideophonic expressions *wam wam* and *wara wara wara*, which are essential to the stylistic force of the proverb. Grok replaced them with *nke ọ bụla* (“any one”), producing the awkward expression *ụkwụ na-agba ọsọ nke ọ bụla*. This substitution removes the ideophonic imagery entirely. Gemini rendered the expression as *ije aghara aghara* and *anya na-agharị agharị*, but the latter expression is not meaningful in Standard Igbo. Although both systems preserve the general message that actions are observed, they fail to retain the rhetorical force and cultural flavour of the original proverb. Gemini preserves the warning slightly better, while Grok remains closer to the original lexical structure.

CASE 6

Act 1, Scene 3

pp.17

Speaker: Eze

Dialogue

Igbo: Ebe okwugburu onwe ya nọ, mara na omegburu onwe ya nọ ya.

Researcher's Translation (English Version): Wherever a talkative is, just know that a busy body is there.

Grok AI Back-Translation (Igbo): Ebe onye nkata ọnụ nọ, mara na onye aka abụọ dị ebe ahụ.

Gemini AI Back-Translation (Igbo): Ebe ọ bụla onye okwu nọ, mara na onye nsogbu nọ ya.

Both AI systems failed to reconstruct the original idiomatic expression. Grok translated *okwugburu onwe ya* as *onye nkata ọnụ* (“oral discussant”) and

rendered *omegburu onwe ya* as *onye aka abuo*, which in Igbo commonly refers to an armed robber. This introduces a completely unrelated meaning and results in significant semantic distortion. Gemini's rendering of *onye okwu* (“talker”) and *onye nsogbu* (“trouble maker”) preserves part of the intended meaning, although it does not accurately recover the original expression. Furthermore, Grok's use of *di* instead of *no* for a human referent violates standard Igbo usage. Overall, Gemini preserves the pragmatic message more successfully, while Grok introduces a major semantic shift.

CASE 7

Act 1, Scene 3

pp.19

Speaker: Eze

Dialogue

Igbo: Afa ejirila aka ya ya gbaa onwe ya. Aru!

Researcher's Translation (English Version): Of its own accord, divination has revealed this. Abomination!

Grok AI Back-Translation (Igbo): O bu onwe ya ka afa kowara ya. Alu!

Gemini AI Back-Translation (Igbo): Nkowa akowaala onwe ya, Alusi/Nso ala!

Grok retains the culturally significant term *afa* (divination), thereby preserving an important aspect of the original message. However, it mistranslates *ejirila aka ya gbaa onwe ya* as *afa kowara ya* (“divination explained it”), weakening the metaphorical force of the expression. Gemini performs considerably worse by replacing *afa* with *nkowa* (“explanation”), thereby eliminating the divinatory concept central to the utterance. Although Gemini offers *Nso ala* as an equivalent of *Aru*, it simultaneously introduces *Alusi* (“deity”), which does not occur in the source text. Consequently, Grok demonstrates stronger cultural retention, whereas Gemini substantially reduces the indigenous religious content embedded in the original expression.

CASE 8

Act 1, Scene 3

pp.20

Speaker: Eze

Dialogue

Igbo: Adanne m, ewu ataala m igu n'isi! Ugwu m aruola!

Researcher's Translation (English Version): My mother's first daughter, a goat has eaten shrubs upon my head. My dignity has been debased.

Grok AI Back-Translation (Igbo): Ada nne m, ewu erila ahijia n'isi m. Okike m emebiela

Gemini AI Back-Translation (Igbo): Nwaada nne m, ewu atachila m lafiifi n'isi. Nkwanye ugwu m agwula!

Both AI systems struggle with the culturally embedded metaphor. Grok replaces *igu* with *ahijia* ("grass"), thereby reducing the specificity of the original imagery. It also renders *ugwu m aruola* as *Okike m emebiela* ("my creation is spoilt"), completely altering the meaning of the expression. Gemini similarly fails to preserve the original wording. It substitutes *Adanne m* with *Nwaada nne m*, a form that lacks the cultural specificity of addressing one's mother's first daughter. More seriously, it introduces the semantically opaque word *lafifi* in place of *igu*. Although Gemini's *Nkwanye ugwu m agwula* approximates the meaning of lost dignity, neither system successfully reproduces the metaphorical and cultural force of the original expression. Grok preserves the first part of the proverb better, while Gemini handles the second clause more successfully.

CASE 9

Act 1, Scene 3

pp.21

Speaker: Ogooma

Dialogue

Igbo: Ana m achọ ime ka i mara na ulo agaghị adawa hapu uko.

Researcher's Translation (English Version): I want you to know that a house cannot collapse leaving the kitchen storage rack.

Grok AI Back-Translation (Igbo): Achọrọ m ka ị mara na ụlọ enweghị ike ịdà hapụ ebe a na-edobe ihe n'ekwú.

Gemini AI Back-Translation (Igbo): Achọrọ m ka ị mara na ụlọ agaghị adarị n'ala hapụ ụsa.

The proverb is only partially preserved by both systems. Grok replaces *uko* with *ebe a na-edobe ihe n'ekwú* (“where things are kept in the kitchen”), thereby converting a concise cultural expression into a descriptive phrase. In addition, *ekwú* is incorrect, as the standard term is *usekwu*. Gemini performs worse by substituting *uko* with *usa*, a word unrelated to the source expression. It also introduces the dialectal form *adarị*. Although both outputs preserve the general idea that a house cannot collapse while leaving something behind, the culturally significant proverb is not accurately reconstructed. Grok therefore achieves better semantic and cultural retention.

CASE 10

Act 1, Scene 3

pp.22

Speaker: Ogooma

Dialogue

Igbo: Lee anya Onyekwere ka m gwa gi e-e abughị eziokwu, mba ka ya mma.

Researcher's Translation (English Version): Look Onyekwere let me tell you, a no is better than a yes that is a lie.

Grok AI Back-Translation (Igbo): Lee Onyekwere, ka m gwa gi, mba ka mma karija ehie nke bu ụgha.

Gemini AI Back-Translation (Igbo): Lee Onyekwere ka m gwa gi, 'Mba' ka 'Ee' nke bu okwu ụgha mma.

This case reveals a clear difference in performance between the two AI systems. Grok mistranslates *ee* (“yes”) as *ehie* (“afternoon”), producing the erroneous statement that “a no is better than an afternoon that is false.” This

lexical substitution completely alters the intended meaning. Gemini, by contrast, accurately reconstructs the opposition between *mba* (“no”) and *ee* (“yes”), thereby preserving both the semantic meaning and pragmatic force of the original utterance. Since the proverb expresses a moral preference for honesty over dishonesty, Gemini's rendering successfully maintains the communicative intention, whereas Grok fails to do so. Gemini therefore performs significantly better in this case.

CASE 11

Act 1, Scene 3

pp.22

Speaker: Ogooma

Dialogue

Igbo: A na-agwọ onye ibi ọ na-eto afo, a mara na ya na ajo ọhia akaala agba.

Researcher's Translation (English Version): When treatment is being given to a man with an enlarged scrotum yet his tummy protrudes, it becomes obvious he has an appointment with the evil forest.

Grok AI Back-Translation (Igbo): Mgbe a na-agwọ nwoke nwere nnukwu akpa amụ mana afo ya na-ama, ọ na-aputa ihè na o nwere oku n'ọhia ojọ.

Gemini AI Back-Translation (Igbo): Mgbe a na-agwọ nwaanyi/nwoke akpa amụ na-aza aza m'ọbụ na afo ya na-eto, mara na ọ nwere oge ọ ga-eje n'ajo ọhia.

Both AI systems preserve the general idea that a person's condition has deteriorated despite treatment. However, Grok introduces several semantic distortions. It translates *na-eto afo* as *afo ya na-ama*, where *ama* means "know" rather than "swell," thereby altering the intended meaning. It also renders *akaala agba* as *ọ nwere oku n'ọhia ojọ* ("he has fire in the evil forest"), confusing *oku* ("call/appointment") with *oku* ("fire"). Gemini performs better by preserving the notion of a future encounter with *ajo ọhia*, although it introduces grammatical inconsistencies such as *m'ọbụ* instead of *ma ọ bụ* and unnecessarily expands the original statement. While both systems retain the cultural concept of *ajo ọhia* (evil forest), Gemini achieves stronger semantic and pragmatic equivalence.

CASE 12

Act 1, Scene 3

pp.24

Speaker: Eze

Dialogue

Igbo: Mụ onwe m abụghị eze nke ga-abụ ọ gbupuchaa asụ n'ala ọ kpurukwa ya rachaa.

Researcher's Translation (English Version): I myself am not a king who goes back to lick his spittle.

Grok AI Back-Translation (Igbo): Abụ m eze nke na-alaghachi na-anụ asọ ya.

Gemini AI Back-Translation (Igbo): Mụ onwe m abụghị eze na-agaghachi azụ ịla asọmụ o gburu n'ala

Grok omits a substantial portion of the imagery and reduces the expression to *Abụ m eze nke na-alaghachi na-anụ asọ ya* ("I am a king who goes back drinking his saliva"), thereby losing the emphatic negation contained in the original utterance. Additionally, *na-anụ* is orthographically incorrect in this context. Gemini preserves the negative structure more successfully but introduces the dialectal form *ịla* and the erroneous lexical item *asọmụ* instead of *asụ/asọ*. It also renders *ọ gbupuchaa* inaccurately as *o gburu* (he kills). Although both systems retain the core idea of retracting one's words or actions, the imagery is weakened. Gemini demonstrates slightly better semantic retention because it preserves the speaker's rejection of such behaviour.

CASE 13

Act 1, Scene 4

pp.28

Speaker: Eze

Dialogue

Igbo: O-ji-anya-ahụ-mmụọ-, nnọọ.

Researcher's Translation (English Version): Seer-of -Spirits, welcome.

Grok AI Back-Translation (Igbo): Onye na-ahụ mmuọ n'anya, nnoo.

Gemini AI Back-Translation (Igbo): Onye-na-ahụ-mmuọ-n'anya, nnoo.

Both AI systems successfully recover the intended meaning of the expression. Grok renders it as *Onye na-ahụ mmuọ n'anya, nnoo*, while Gemini translates it as *Onye-na-ahụ-mmuọ-n'anya, nnoo*. The principal difference lies in orthography. Gemini's form contains spelling inconsistencies, including *mmuọ* instead of *mmuọ* and *nnoo* instead of *nnoo*. These errors do not significantly affect meaning but reduce linguistic accuracy. Semantically and pragmatically, both systems preserve the original expression effectively. Grok, however, demonstrates greater orthographic fidelity.

CASE 14

Act 1, Scene 4

Pp. 29

Speaker: Eze

Dialogue

Igbo: A gbakata izu, onye ntị ike anụ ya.

Researcher's Translation (English Version): Too many secret conclaves make the deaf hear.

Grok AI Back-Translation (Igbo): Ọtụtụ nzukọ nzuzo na-eme ka onye ntị chiri nụ iheGrok

Gemini AI Back-Translation (Igbo): *Ka nkata tete a tete na-aba ụba, o ga-eme ka onye ntị chiri nụo ihe a na-ekwu.*

Both AI systems preserve the central meaning of the proverb. Grok translates it as *Ọtụtụ nzukọ nzuzo na-eme ka onye ntị chiri nụ ihe*, which accurately conveys the idea that repeated secret meetings eventually attract attention. Gemini similarly retains the meaning but introduces code-mixing through the expression *tete a tete*, an English/French borrowing absent from the original text. It also uses *nụo* where *nụ* would be more appropriate. While neither system reconstructs the exact wording of the original proverb, both preserve

its communicative intent. Grok performs better because it avoids code-mixing and maintains greater linguistic fidelity to the source text.

CASE 15

Act 1, Scene 4

pp.32

Speaker: Ufere

Dialogue

Igbo: Burunu bugara ala, rịọ ya ka o huo aka n'obi n'ebe lọlọ eze nọ.

Researcher's Translation (English Version): Take it to Earth, and entreat her to withdraw her wrath from the queen.

Grok AI Back-Translation (Igbo): Buga ya n'ala, rịọ ya ka o wepụ iwe ya n'isi eze nwanyị.

Gemini AI Back-Translation (Igbo): Wereduo ya n'ala, rịọ ya ka ọ kpọrọ iwe ya pụọ n'ahụ nwaanyị eze.

This case illustrates the difficulty both AI systems experience with culturally significant concepts. Although Grok retains the lexical form *ala*, the translation does not make explicit the religious significance of *Ala* as the Earth deity. It also renders *lọlọ eze* as *eze nwanyị*, which is culturally inaccurate because *eze nwanyị* in Igbo often refers to a female traditional authority figure rather than a queen. Gemini similarly reduces *Ala* to *ala* and introduces an opaque lexical item *wereduo*. Furthermore, its use of *kpọrọ iwe ya pụọ* is pragmatically inappropriate because *kpọrọ* is normally used when taking a person along rather than removing anger. Most importantly, neither system preserves the religious significance of *Ala* as the Earth goddess and moral custodian in Igbo cosmology. Consequently, both semantic and cultural meanings are substantially weakened, although Grok remains slightly closer to the source text.

CASE 16

Act 1, Scene 4

pp.32-33

Speaker: Ufere

Dialogue

Igbo: Leenu odo anyi ji bia ikpe udo. (**Ọ tũpere odo ghasa n'ala, gbasakwa n'ofọ ya.**) Ala anyi, lee odo, wetere anyi udo. Nke a bu nchara, ihe chara achaa ka anyi na-ari-ọ. Biko aru a nwanyị a mere ma ọ ji ukwu gata ma ọ ji onu kwute maobu anya ka o ji lete, anyi na-akpuchapu ya n'abali a-o!

Researcher's Translation (English Version): see the *odo* we have brought to seek peace. (**He breaks out a little odo and pours it on the floor and also on his ofọ**) Our land, see odo, bring us peace. This one is nchara, what is ripe and mature is what we seek-o. Please this taboo that this woman committed, whether she used her legs to come across it or she used her mouth to express it or used her eyes to see it, we are cleansing it this night-o!

Grok AI Back-Translation (Igbo): Lee odo anyi wetara icho udo. (Ọ na-agbaji ntakiri odo wee wusa n'ala na n'ofọ ya) Ala anyi, lee odo, weta anyi udo. Nke a bu nchara, ihe chara acha ka anyi na-achọ-o. Biko alu a nwanyị a mere, ma ọ bu ukwu ya zutere ya, ma ọ bu onu ya kwuru ya, ma ọ bu anya ya huru ya, anyi na-asachapu ya n'abali a-o!

Gemini AI Back-Translation (Igbo): Hu nzu/odo anyi wetara icho udo. (Ọ gbajiri ntakiri odo kposi n'ala, tinyekwa n'elu ofọ ya) Ala anyi, hu odo, weta udo. Nke a bu nchara, ihe gachara agacha na nke gachara okenye ka anyi na-achọ o. Biko alulu a nwaanyị a ruru, ma ọ bu na ọ kporo ukwu hu ya, ma ọ bu na ọ ji onu kwuo ya, ma ọ bu ji anya hu ya, anyi na-ekpochapu ya n'abali taa o!

Grok preserves important cultural items such as *odo*, *ofọ*, *Ala*, and *nchara*. However, it introduces semantic distortions in several places. It replaces *akpuchapu* ("ritually cleanse/remove") with *asachapu* ("wash away"), thereby reducing a ritual purification act to ordinary washing. Similarly, *zutere* ("met/encountered") is used where the original implies coming into contact with taboo, resulting in a weakened ritual meaning. Furthermore, Grok

changes *wetere anyị ụdọ* to *weta anyị udo*, altering the original structure of the supplication.

Gemini exhibits more serious deviations. It substitutes *odo* with *nzu/odo*, incorrectly treating the two ritual items as interchangeable. It mistranslates *aru* as *alulu*, introduces malformed constructions such as *gachara agacha* and *gachara okenye*, and replaces *akpuchapu* with *ekpochapu*, thereby weakening the ritual significance of purification. The omission of correct forms *o ji* and *ji* (*ọ ji* and *ji*) further reduces linguistic accuracy.

Although both systems preserve portions of the ritual discourse, they neither successfully reconstruct the cultural and religious force of the original text. Grok performs better because it retains more of the ritual vocabulary, whereas Gemini introduces multiple lexical and cultural distortions.

CASE 17

Act 1, Scene 4

pp.34

Speaker: Ufere

Dialogue

Igbo: Eze, ihe niile m ga-agọ, agọchaala m ya, wazie ọji a ka anyị taa.

Researcher's Translation (English Version): Eze, I have exhausted the words of prayer, now break the kolanut and let us eat.

Grok AI Back-Translation (Igbo): Eze, m agwuchaala okwu ekpere, ugbu a gbajie ọji ka anyị rie.

Gemini AI Back-Translation (Igbo): Eze, m kpere ekpere m niile gachaa, ugbu a gbajie ọji ka anyị gwa ya.

Both AI systems preserve the general meaning of the statement but fail to reproduce important cultural aspects associated with *ọji* (kolanut). Grok translates *wazie ọji a ka anyị taa* as *gbajie ọji ka anyị rie*. Although *gbajie* means "break," it is not the culturally appropriate expression used in kolanut rituals, where *waa ọji* is preferred. Similarly, *rie* ("eat") replaces *taa*, the culturally accepted verb associated with consuming kolanut.

Gemini performs less successfully. In addition to using *gbajie*, it renders the final clause as *ka anyi gwa ya* ("let us tell it"), which completely distorts the intended meaning. Consequently, the ritual and communal significance attached to kolanut consumption is lost.

Both systems preserve the surface meaning of the utterance, but neither accurately reconstructs the culturally appropriate expressions associated with kolanut rituals. Grok nevertheless demonstrates stronger semantic retention.

CASE 18

Act 2, Scene 1

pp.37

Speaker: Eche

Dialogue

Igbo: Nne, biko agbakwana m ama.

Researcher's Translation (English Version): Mother, please do not betray me.

Grok AI Back-Translation (Igbo): Mama, biko erapula m.

Gemini AI Back-Translation (Igbo): Nne biko, agbala m ehi/arachila m n'ala.

Neither AI system successfully reconstructs the original expression. Grok translates it as *Mama, biko erapula m*, where *erapula* has no recognizable meaning in Standard Igbo. As a result, the central idea of betrayal is completely lost. Gemini performs even worse by producing *agbala m ehi/arachila m n'ala*, which contains unrecognized expressions *ehi* and *arachila*.

Pragmatically, the original utterance is a plea for loyalty and confidentiality. Both systems fail to preserve this communicative intention because the key lexical item *agbakwana m ama* is not recovered. Consequently, the semantic, pragmatic, and interpersonal force of the original statement disappears entirely in both translations. This case represents one of the clearest examples of translation failure in the dataset.

CASE 19

Act 2, Scene 1

pp.38

Speaker: Ugo

Dialogue

Igbo: Aturū ya na ewu ga-asọ mpi ekwu kaakwa ya aka.

Researcher's Translation (English Version): A sheep that will engage a goat in a battle should better come with fully grown horns.

Grok AI Back-Translation (Igbo): Aturū nke ga-eji ewu lụọ ọgụ kwesiri ibia na mpi zuru oke.

Gemini AI Back-Translation (Igbo): Aturū ga-ama ewu aka n'ọgụ ka mma ka o nwee mpi toro ato.

Both AI systems preserve the general meaning of the proverb, namely that anyone who intends to challenge a stronger opponent must be adequately prepared. However, neither system successfully reconstructs the original proverbial formulation.

Grok translates the expression as *Aturū nke ga-eji ewu lụọ ọgụ kwesiri ibia na mpi zuru oke*. While the general message remains understandable, the phrase *ga-eji ewu lụọ ọgụ* literally suggests "use a goat to fight," rather than "fight a goat" or "compete with a goat." Similarly, *mpi zuru oke* ("complete horns") is a literal rendering that sounds unnatural in the proverbial context. Although the semantic idea of preparedness is retained, the linguistic and stylistic force of the original proverb is weakened.

Gemini renders the expression as *Aturū ga-ama ewu aka n'ọgụ ka mma ka o nwee mpi toro ato*. This version more effectively conveys the idea of confronting or competing with a goat. However, *mpi toro ato* ("well-established" or "fully developed horns") does not reproduce the original proverbial wording and appears to be an interpretive reformulation rather than a recovery of the source expression. Nevertheless, it conveys the notion of maturity and readiness more naturally than Grok's *mpi zuru oke*.

Pragmatically, both systems preserve the warning embedded in the proverb, but neither fully recovers its stylistic and proverbial character. Overall, both outputs achieve partial semantic and pragmatic retention. Gemini demonstrates a slight advantage in naturalness of expression, whereas Grok remains closer to the lexical structure of the English translation.

CASE 20

Act 2, Scene 2

pp.43

Speaker: Ibe

Dialogue

Igbo: Hapụkwanụ nke iji mma, egbe maọbụ ụta eche gị. Onye ike na ndị ike ibe ya ga-ahụ anya taa.

Researcher's Translation (English Version): Forget about his waiting for you with a knife, gun or bow. The powerful man and fellow powerful men will meet today.

Grok AI Back-Translation (Igbo): Hapụ ya iche gị na mma, egbe ma ọ bu ụta. Onye ike na ndị ike ibe ya ga-ezute taa.

Gemini AI Back-Translation (Igbo): Hapụ zị okwu gbasara na ọ na-echere gị jiri mma, egbe ma ọ bu ụta. Dike na ibe ya ga-ezute taa.

Both AI systems preserve the general meaning of the statement. Grok translates *ga-ahụ anya taa* as *ga-ezute taa* ("will meet today"), successfully conveying the intended meaning. However, it weakens the opening clause by rendering it as *Hapụ ya iche gị*, which is less emphatic than the original expression.

Gemini also retains the overall meaning but introduces the malformed expression *Hapụ zị okwu gbasara*. Additionally, it translates *onye ike* as *dike* ("warrior"), thereby narrowing the meaning of the original phrase. The source text refers broadly to a powerful person, whereas *dike* specifically denotes a hero or warrior.

Although both systems maintain the central message, Grok preserves the original meaning more accurately and avoids the lexical distortions present in

Gemini's rendering. Grok therefore demonstrates stronger semantic fidelity in this case.

Discussion of Findings

Semantic Retention

The findings reveal that both Grok AI and Gemini AI were generally able to preserve the basic semantic content of many expressions during the back-translation process. In cases such as Cases 1, 10, 13, 14, and 20, the central message of the original Igbo dialogue remained largely recoverable despite lexical and grammatical variations. However, semantic retention was not always accompanied by linguistic accuracy, as several outputs contained inappropriate lexical substitutions, non-standard constructions, and orthographic deviations. These findings suggest that both systems possess a reasonable capacity for reconstructing denotative meaning but experience greater difficulty when dealing with culturally and contextually embedded expressions.

Pragmatic and Cultural Challenges

The findings indicate that both AI systems encountered considerable difficulty in preserving pragmatic meaning and cultural significance. Expressions functioning as warnings, lamentations, condemnations, appeals, and ritual utterances frequently lost part of their communicative force during back-translation. Cases such as 4, 5, 7, 8, and 18 demonstrate situations in which the implied meaning of the original utterance was weakened or lost. Similarly, proverb-based expressions, including *agwọ nọ n'akịrịka*, *ụlọ agaghị adawa hapụ uko*, and *aturu ya na ewu ga-asọ mpi*, were often translated literally or reconstructed using alternative lexical items that weakened their proverbial force.

The greatest translation losses occurred in expressions containing indigenous religious and cultural concepts. Terms such as *chi ohuru*, *dibia*, *afa*, *Ala*, *odo*, *ofọ*, *aru*, and *oji* were either partially translated, generalized, or reconstructed in ways that diminished their cultural significance. In several cases, the AI systems retained the lexical forms of these concepts but failed to preserve their cultural and religious meanings within the Igbo worldview. Beyond semantic and cultural issues, both systems also produced orthographic and

linguistic deviations, including spelling inconsistencies, dialectal substitutions, code-mixing, and non-standard lexical forms. These findings demonstrate that while the systems can generate intelligible Igbo text, they continue to experience difficulties preserving the deeper pragmatic, cultural, and orthographic dimensions of literary discourse.

Comparative Performance of Grok AI and Gemini AI

The comparative analysis shows that neither system consistently outperformed the other across all categories. Grok generally demonstrated stronger lexical correspondence with the original Igbo text and preserved more indigenous cultural terms. However, it occasionally introduced semantic distortions through inappropriate lexical substitutions. Gemini sometimes achieved better reconstruction of the intended meaning, particularly in straightforward expressions, but produced more non-standard forms, orthographic inaccuracies, and culturally inappropriate substitutions. Overall, both systems performed reasonably well in preserving basic semantic meaning but encountered significant challenges in maintaining pragmatic force, cultural depth, and linguistic fidelity in the back-translation of culturally embedded Igbo expressions.

Conclusion

This study evaluated the ability of Grok AI and Gemini AI to preserve the linguistic and cultural content of selected Igbo expressions from *Nke M Ji Ka* through a back-translation approach. The study found that both systems preserved basic semantic meaning more successfully than pragmatic and culturally embedded meanings. Grok AI demonstrated stronger lexical and cultural retention, while Gemini AI occasionally achieved better semantic reconstruction but produced more non-standard and inaccurate forms. Overall, the study concludes that although AI translation systems show promise for Igbo translation, they remain limited in handling culturally embedded literary expressions. Consequently, human intervention remains essential to ensure the accurate preservation of meaning, cultural context, and communicative intent in literary translation.

Recommendations

The findings of this study suggest the need for human involvement in the translation of culturally rich literary texts. While Grok AI and Gemini AI demonstrated the ability to preserve basic semantic meaning, both systems experienced considerable difficulty in maintaining the pragmatic force and cultural significance of several expressions. It is therefore recommended that AI-generated translations of Igbo literary texts be carefully reviewed by competent human translators, particularly where the texts contain proverbs, idioms, ritual discourse, and indigenous cultural concepts.

There is also a need for developers of AI translation systems to improve the representation of African languages in their training data. The incorporation of larger, culturally annotated Igbo corpora would enhance the systems' ability to recognise and accurately reproduce culture-bound expressions, traditional religious concepts, and other forms of indigenous knowledge that are often inadequately handled in machine translation.

Furthermore, attention should be given to improving the orthographic accuracy of AI-generated Igbo translations. The study identified several instances of spelling inconsistencies, incorrect lexical forms, and orthographic deviations that affected linguistic fidelity. Improving adherence to Standard Igbo orthography would significantly enhance the quality and reliability of AI-generated translations.

Finally, further studies should extend this line of inquiry by examining the performance of other AI translation systems and applying similar analyses to a wider range of African languages and literary texts. Future studies may examine a broader range of culturally significant expressions and dialogue excerpts from the selected text *Nke M Ji Ka*, G.I. Nwozuzu (2013) to provide a broader and more comprehensive assessment of AI translation performance. This would help determine whether the patterns of semantic retention, pragmatic loss, cultural attenuation, and orthographic deviation identified in this study remain consistent across a larger dataset. Such studies would contribute to a deeper understanding of the strengths and limitations of artificial intelligence in the translation of culturally embedded expressions and indigenous literary discourse.

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