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FROM SYNTAX TO SEMANTICS: EVALUATING AI AS A TOOL FOR CROSS-LANGUAGE TRANSLATION

Bhavesh Chhipa

Manipal University Jaipur, India
Email: bhaveshchhipa29@gmail.com

ORCID ID: 0000-0001-9876-8592

Prabhat Dixit

Manipal University Jaipur, India
Email: prabhat.dixit@jaipur.manipal.edu

ORCID ID: 0000-0002-6307-2605

ABSTRACT: Translation is a medium for learning and understanding languages apart from the native language. Translation also helps to communicate with the speakers of non-native languages, thereby facilitating cross-cultural interactions and enhancing mutual understanding. In the present era of artificial intelligence (AI), machine translation and computer-assisted translation have revolutionised the translation field. Currently, people are using artificial intelligence tools to translate content from one language to another. However, using artificial intelligence tools for translation presents numerous benefits, such as increased efficiency and accuracy, along with several challenges, including issues related to context and cultural nuances, which can lead to misunderstandings or misinterpretations in the translated content. The authors of this study used a qualitative approach and interviewed twenty-one academics of Gujarati and Hindi languages working in universities in Gujarat, India. This study aims to qualitatively explore and thematically interpret the perspectives of Hindi and Gujarati language academics on the benefits and challenges of AI-assisted translation from English to Hindi and Gujarati languages. To analyse the data NVivo 15 was used. The results show two main themes: the benefits and challenges of AI translation. Participants highlighted several advantages of AI translation tools, including time efficiency, cost effectiveness, and their usefulness in supporting language learning and accessing academic resources written in non-native languages. In contrast, the participants mentioned concerns about the linguistic limitations of AI systems, particularly in relation to syntactic differences, script variations, semantic ambiguity, and errors in Hindi and Gujarati translations. The study enhances current discourse around the role of AI in multilingual translations.

KEYWORDS: artificial intelligence, algorithms, languages, linguistics, translation, machine translation

1. Introduction

Technology has significantly influenced the advancement of the translation sector. The translation sector has experienced significant transformations, from the inception of machine translation (MT) and computer-assisted translation

(CAT) technologies to the latest incorporation of artificial intelligence (AI). Language professionals have embraced these developments, acknowledging the benefits of this technological advance. Cost-effectiveness, increased speed, and improved precision are key advantages. For example, Google's neural machine translation system, which debuted in 2016, has achieved considerable advancements in producing translations that appear more natural and contextually accurate (Zaghlool & Khasawneh, 2023). The emergence of technology, particularly AI, has also sparked a growing discourse on the substitution of humans (Moneus & Sahari, 2024). There is increasing interest in translations produced by AI-powered technologies and humans (Al-Kaabi et al., 2024).

ChatGPT was launched in November 2022, and it elicited diverse responses throughout society. ChatGPT is an AI-driven chatbot capable of generating genuinely human-like textual content, simulating conversation, composing poetry and music, translating, and producing academic articles in a reasonably short timeframe. Some saw it as a beneficial instrument that might improve productivity, while others have raised concerns about the potential adverse effects that chatbots can have on the translation industry (Muñoz-Basols et al., 2023). In the realm of L2 writing, prior studies have demonstrated that AI-enhanced tools can promote writing proficiency (AbuHussein & Badah, 2025). This information indicates the capacity of AI systems to improve accuracy and fluency, which are critical factors (Badah et al., 2025).

This study focuses on the advancements and challenges associated with the application of artificial intelligence to translate from English to Hindi and Gujarati languages. Hindi ranks as the fourth most spoken language globally, boasting approximately 295 million native speakers. It is widely spoken in India and other nations also, such as Nepal, the United States, and Mauritius, among others. The Hindi language employs the Devanagari script for its written form and integrates a greater number of Sanskrit terms, which contributes to its rich literary tradition and cultural significance in India. More than 120 Indian languages are also written in Devanagari script. The most authoritative and legal documentation in India is in Hindi, accompanied by the secondary language, English (Younas et al., 2021). On the other hand, Gujarati serves as the official language of the Indian state of Gujarat. According to Shastri (2024), in Canada, the third-most common language is Gujarati. This shows the significance of the Gujarati language in India and abroad.

Studies on the use of AI for translation in Indian regional languages lack depth. The authors of this study address this gap by qualitatively exploring and thematically interpreting the perspectives of academics who teach Hindi and Gujarati languages in the universities in Gujarat, India. By analysing the interview data, the authors identify key themes related to efficiency, accessibility, linguistic accuracy, and the professional implications of AI-assisted translation. Consequently, the findings of this study enhance the developing corpus of research evaluating the role of AI in multilingual translation practices and its

implications for regional languages within the Indian context. This study primarily addresses two research questions:

RQ1: What are the benefits of using AI for English translations to Hindi and Gujarati translations?

RQ2: What are the prevalent obstacles in utilising AI for translation from English to Hindi and Gujarati?

1. Method

1.1. Sampling method and interviewees

This research is qualitative research, and authors have interviewed twenty-one academics teaching Gujarati and Hindi languages in the universities in Gujarat, India. Purposive and convenience sampling were used to select participants to fulfil the aims of the study. Purposive sampling is frequently used in translation studies because it guarantees that participants have the necessary knowledge (Saldanha & O'Brien, 2013). Convenience sampling is also the most frequently used sampling methodology because of its simplicity, cost-effectiveness, and ease of implementation, particularly when researchers encounter limitations in time and resources (Stratton, 2021; Golzar et al., 2022). This method entails selecting participants based on their accessibility or ease of interaction, as opposed to using structured or probabilistic methodologies (Raifman et al., 2022; Saunders et al., 2023; Memon et al., 2025).

1.2. Data Collection

The interviews were conducted in person or on a call in November 2025, with an average duration of 35 minutes. All participants gave their permission before participating in the study. The interviews were recorded and subsequently transcribed verbatim for data analysis. The present study complied with ethical standards for human research. The participants were assured of the anonymity of their identities.

1.3. Data Analysis

After conducting the interviews, the authors performed transcription and thematic analysis using NVivo 15. The analysis followed a six-phase thematic analysis framework proposed by Braun and Clarke (2006).

During the initial phase, authors repeatedly read the interview transcripts. The authors did this to familiarise themselves with the data. In the second phase, the authors generated initial codes by identifying meaningful segments of text that reflect the perspectives of the participants. These codes included concepts such as "time efficiency", "cost reduction", "language learning", and "translation errors".

During the third phase, these codes were grouped into broader categories. Later, in the fourth phase, these categories were analysed to develop overarching themes that represent the major patterns in the data. In the final phases, the topics were evaluated and polished to guarantee they accurately reflected the participants' opinions.

Table 1: Coding and Theme Development

Initial Codes	Categories	Themes
Instant translation	Efficiency	Benefits
Saves time	Efficiency	Benefits
Free translation	Cost advantage	Benefits
Language learning	Educational support	Benefits
Script differences	Linguistic limitations	Challenges
Matra and jodni errors	Orthographic issues	Challenges
Job displacement	Professional concern	Challenges
Homonyms	Semantic ambiguity	Challenges
Proofreading	Time-consuming	Challenges

1. Results

1.1. Benefits of AI Translation

Time Efficiency

The interviewees believe that the increase in speed is one of the significant benefits of using AI to translate English into the Hindi and Gujarati languages.

“AI translation saves translators’ time, as AI translates content in seconds, whereas for the traditional translation methods that humans use, people need to wait.” (Interviewee 8)

“If my student needs to translate study material, why will he contact me? It will consume a lot of time. In contrast, Google Translate, ChatGPT, and Gemini can provide translations with just a single click.” (Interviewee 16)

Cost Effectiveness

According to some language academics, cost-effectiveness is also a major benefit of AI translation.

“Nowadays, there is no requirement to hire translators to translate anything. You just need to scan or upload a soft copy of the content and receive the translation without paying a single rupee.” (Interviewee 5)

“Once, one of my students did not have enough money to purchase a Gujarati book. However, the English version was available online for free. He downloaded it, uploaded it to ChatGPT and received the Gujarati version of the entire book without making any payment.” (Interviewee 11)

Language Learning Support

Some participants also believe that AI can play a significant role in learning any language.

“Learning a new language is a hobby for many people. However, there are many obstacles, such as the lack of available teachers, remote locations, and insufficient time, among others. In such cases, artificial intelligence can be very advantageous in learning a language. A learner just needs to separately translate

the words using AI. In the end, a learner will learn a new language. (Interviewee 18)

"Think of a person who lives in a remote village in Gujarat but wants to learn French or any other language. In his village, no language teacher or institution is there, and he has no money to pay for online classes. In such a case, he can use the AI translation tool to learn a language of his choice." (Interviewee 10)

Access to Academic Knowledge

Several participants also admit that AI translation is advantageous for translating the entire research article for further study.

"In academia, academics use many languages other than English to write a research article, for example, French, German, and Bulgarian, among others. If I discover a research article relevant to my study but written in German, what should I do? Should I ignore that study? No. I will upload a copy on the AI-translation platform, and it will provide me with a translated version of the research article." (Interviewee 6)

1.2. Challenges of AI Translation

There are many challenges associated with the use of AI translation tools to translate.

Job Displacement Concerns

Participants in this study are concerned that AI translation tools will replace translators, resulting in job losses for them.

"When people start using AI-translation tools, why would they need translators? Hence, the jobs of translators will be at risk." (Interviewee 18)

"AI-translation tools provide translation in seconds without any payment. To save both time and money, people will use AI for translation. They will use AI instead of translators, diminishing translators' market value." (Interviewee 14)

Syntactic Differences

Several participants admit that AI cannot translate the content in the Hindi or Gujarati language with an understandable meaning due to syntactic differences.

"English is written in Latin script, and Hindi is written in Devanagari script. Due to the difference in scripts, AI cannot properly translate from English to Hindi." (Interviewee 11)

"English is made up of letters, whereas Hindi and Gujarati languages are composed of 'varn (वर्ण)' and 'akshar (અક્ષર)'1. AI tools are mainly programmed and trained in the English language. Hence, these tools are not fully capable of

1In the Hindi and Gujarati languages, letters are called "varn" and "akshar," respectively.

translating the content from English to any regional language of India." (Interviewee 19)

Spelling and Grammatical Errors

The interviewees also highlight the mistakes made by the AI translation tools.

"AI tools cannot generate content even in the English language without spelling and grammatical errors. Then how can we expect a meaningful translation for the regional languages of India? (Interviewee 9)

"English language has spellings, Hindi is made up of 'matra (मात्रा)', and Gujarati is made up of 'jodni (જોડણી)'2. When generating English content, AI tools make spelling mistakes and grammatical errors, and when translating from English to the Hindi or Gujarati languages, AI translation tools make 'matra' and 'jodni' errors." (Interviewee 10)

"While translating from English to Hindi or Gujarati, AI translation tools sometimes also use English words because AI tools have the problem of scarcity of Hindi and Gujarati words. Therefore, the translation is not reliable and meaningful." (Interviewee 13)

Semantic Ambiguity

The participants in this study also stressed that English has many words that have multiple meanings. This ambiguity adversely affects the translations produced by AI tools.

"The English language has many words that have multiple meanings, for example, 'bark' and 'fine', among others. And because of this, the entire translation by AI is adversely affected." (Interviewee 9)

Time consuming

Most interviewees claim that proofreading is necessary after AI-assisted translation. Consequently, translators would require additional time for editing.

"AI translation is not reliable. After using AI translation tools, editing by translators is necessary. But it will consume more time for translators than translating the entire content on their own." (Interviewee 18)

2. Discussion

This section analyses the results of the study's two research questions and correlates them with the findings of previous similar research. The research emphasises both the benefits and challenges of AI-assisted translation. Participants acknowledged the effectiveness and usage of AI translation systems, particularly in academic settings. The results align with previous research demonstrating that AI technology significantly enhance translation productivity (Moneus & Sahari, 2024).

2"Matra" (in Hindi) and "jodni" (in Gujarati) are spellings, just as "spelling" is in English.

However, the research also points out notable linguistic challenges, especially when translating into regional languages. Previous studies of neural machine translation systems identified similar constraints (Popović, 2018; Koehn, 2020). Previous research has pointed out that translations produced using ChatGPT for low-resourced languages occasionally yielded 'hallucinations' or considerable inaccuracy (Lyu et al., 2023; Mohsen, 2024). This occurrence highlights the difficulties associated with translating languages that have limited resources and presence in international linguistic databases.

Furthermore, these findings are in line with Khoshafah (2023), who argues that despite developments, ChatGPT continues to have challenges in thoroughly understanding intricate messages and precisely recognizing terms with cross-cultural significance.

The research also emphasises the significant importance of human translation. The interviewees emphasised the requirement of proofreading to guarantee linguistic accuracy and cultural appropriateness. This corresponds with the results of Castilho et al. (2017), who demonstrated that neural machine translation systems often require proofreading to guarantee quality and coherence. Recent research has assessed the effectiveness of large language models, such as ChatGPT, in translation tasks, indicating that while their performance is excellent, proofreading is necessary (Jiao et al., 2023; Kasneci et al., 2023).

Finally, the findings agree with Badah et al. (2025), who found that although AI systems have robust proficiency in generating precise terminology and organized language, they are inadequate independently for translating culturally and religiously nuanced documents. Human translators, while lacking technical precision, demonstrate a greater understanding of contextual, religious, and cultural nuances, emphasizing their significance in sensitive translation tasks.

3. Conclusion, Limitations and Recommendations

Translation serves as a medium for conveying messages to individuals unfamiliar with the speaker's language. As the entire planet transforms into a global village in the contemporary period, acquiring proficiency in multiple languages is crucial. The usage of artificial intelligence tools makes it easy to translate, to gain knowledge and communicate, to share ideas, thoughts, and feelings.

Nonetheless, there are several benefits and challenges linked to the utilisation of AI tools for translation. A significant benefit of employing AI for translation is time saving. AI tools provide translation within seconds; it is not necessary to waste time translating the content. Thus, it saves time for both translators and students. Another advantage of using AI tools for translation is their cost-effectiveness, as they eliminate the necessity for payment to the translators. Before AI translation tools, people had to rely on translators and had to wait days to weeks. But AI translation tools have removed these obstacles and made translation easy. In addition, AI is also advantageous for learning a new language of preference. According to Eberhard et al. (2026), there are 7,170

languages around the world, and learning a new language is a hobby of many people. However, learners face many obstacles when trying to learn a new language, such as a lack of language teachers or institutions, financial constraints, and remote locations, among others. But today, AI-assisted translation has facilitated the learning of any language.

The writing of research articles is an essential part of academics. According to Kim (2024) research articles can be written in eighteen languages within the domain of Library and Information Science. Previously, researchers were compelled to exclude research articles written in a non-native language, even though those were the most relevant to the study. But AI translation technologies have addressed this issue, facilitating the rapid translation of large articles within seconds. Thus, AI translation tools have also significantly advanced the research domain.

In contrast, the use of AI in translation raises several issues. AI translation tools are programmed and trained using the English language mainly. Therefore, these tools cannot translate the content properly. Using generative artificial intelligence (GenAI), AI tools make spelling and grammatical errors while generating content. Similarly, while translating content from English to the Hindi and Gujarati languages, there are errors such as "matra (मात्रा)" and “jodni (જોડણી)”, and it turns the translation less reliable and improper. A further factor for the inaccurate translation of text by AI technologies is the utilization of homonyms. In the English language, there are numerous words that have the same spelling and pronunciation yet convey distinct meanings. This issue adversely affects the quality of translations, making them meaningless.

In addition, the jobs of translators will be at risk due to the advancement of AI translation tools. The learners will not hire translators to translate anything. And it will completely affect the translation field negatively. The authors recommend that translators edit AI-translated content, as AI translation is still in its infancy. But there is a major problem associated with it. To modify the content translated by artificial intelligence, translators need to dedicate more time compared to translating it on their own.

AI technologies significantly improve translation efficiency and accessibility; however, their limitations in addressing linguistic complexity and cultural nuance highlight the necessity for human proficiency, particularly in literary translation.

The present research highlights the benefits and challenges of using AI translation tools to translate from English to the Hindi and Gujarati, based on the perspectives of academics working in universities in Gujarat. Further research can be conducted to know the perspectives of academicians of other Indian regional languages to examine the pros and cons of translating from English to another Indian regional language. This study used an in-depth interview method to conduct interviews with academics. In the future, researchers can use the quantitative or mixed-method approach for their studies. Because of the scarcity of experts in the Hindi and Gujarati languages, the authors interviewed a small

number of participants. In the future, researchers can conduct the study with more participants to make the findings more generalisable.

REFERENCES:

AbuHussein, H. F., & Badah, A. (2025). The Role of AI-based Writing Tools on L2 Writing Competency: Evidence from Palestinian EFL Learners. *Dirasat Human and Social Sciences*, *52*(5), 6566. https://doi.org/10.35516/hum.v52i5.6566

Al-Kaabi, M. H., AlQbailat, N. M., Badah, A., Ismail, I. A., & Hicham, K. B. (2024). Examining the cultural connotations in human and machine translations: A corpus study of Naguib Mahfouz's Zuqāq Al-Midaqq. *Journal of Language Teaching and Research*, *15*(3), 707–718. https://doi.org/10.17507/jltr.1503.03

Badah, A. M., Khalaf, C. N., Dwaikat, F. J., & AlQbailat, N. (2025). The usage of artificial intelligence in legal translation: Bridging the gap between law and language. *Ampersand*, *16*, 100248. https://doi.org/10.1016/j.amper.2025.100248

Braun, V., & Clarke, V. (2006). Using Thematic Analysis in Psychology. *Qualitative Research in Psychology*, *3*(2), 77–101. https://doi.org/10.1191/1478088706qp063oa

Castilho, S., Moorkens, J., Gaspari, F., Sennrich, R., Sosoni, V., Georgakopoulou, P., Lohar, P., Way, A., Miceli-Barone, A. V., & Gialama, M. (2017). *A Comparative Quality Evaluation of PBSMT and NMT using Professional Translators*. ACL Anthology. https://aclanthology.org/2017.mtsummit-papers.10/

Eberhard, David M., Gary F. Simons, and Alison J. Robinson (eds.). 2026. Ethnologue: Languages of the World. Twenty-ninth edition. Dallas, Texas: SIL Global. Online version: https://www.ethnologue.com/insights/how-many-languages/

Golzar, J., Noor, S., & Tajik, O. (2022). Convenience Sampling. *International Journal of Education and Language Studies*, *1*(2), 72–77. https://doi.org/10.22034/ijels.2022.162981

Jiao, W., Wang, W., Huang, J., Wang, X., Shi, S., & Tu, Z. (2023). Is ChatGPT a good translator? Yes with GPT-4 as the engine. *arXiv (Cornell University)*. https://doi.org/10.48550/arxiv.2301.08745

Kasneci, E., Sessler, K., Küchemann, S., Bannert, M., Dementieva, D., Fischer, F., Gasser, U., Groh, G., Günnemann, S., Hüllermeier, E., Krusche, S., Kutyniok, G., Michaeli, T., Nerdel, C., Pfeffer, J., Poquet, O., Sailer, M., Schmidt, A., Seidel, T., . . . Kasneci, G. (2023). ChatGPT for good? On opportunities and challenges of large language models for education. *Learning and Individual Differences*, *103*, 102274. https://doi.org/10.1016/j.lindif.2023.102274

Khoshafah, F. (2023). ChatGPT for Arabic-English translation: Evaluating the accuracy. *PREPRINT (Version 1)*. https://doi.org/10.21203/rs.3.rs-2814154/v1

Kim, E. (2024). Demystifying multilingual LIS journals in Scopus: Languages, coverage, metrics, and implications. *Journal of Librarianship and Information Science*. https://doi.org/10.1177/09610006241285510

Koehn, P. (2020). Neural Machine Translation. In *Cambridge University Press eBooks*. https://doi.org/10.1017/9781108608480

Lyu, C., Du, Z., Xu, J., Duan, Y., Wu, M., Lynn, T., Aji, A. F., Wong, D. F., Liu, S., & Wang, L. (2023). A Paradigm Shift: The Future of Machine Translation Lies with Large Language Models. *arXiv (Cornell University)*. https://doi.org/10.48550/arxiv.2305.01181

Memon, M. A., Thurasamy, R., Ting, H., & Cheah, J. (2025). Convenience Sampling: A Review and Guidelines for Quantitative Research. *Journal of Applied Structural Equation Modeling*, *9*(2), 1–15. https://doi.org/10.47263/jasem.9(2)01

Mohsen, M. (2024). Artificial intelligence in Academic Translation: A comparative study of large language models and Google Translate. *PSYCHOLINGUISTICS*, *35*(2), 134–156. https://doi.org/10.31470/2309-1797-2024-35-2-134-156

Moneus, A. M., & Sahari, Y. (2024). Artificial intelligence and human translation: A contrastive study based on legal texts. *Heliyon*, *10*(6), e28106. https://doi.org/10.1016/j.heliyon.2024.e28106

Muñoz-Basols, J., Neville, C., Lafford, B. A., & Godev, C. (2023). Potentialities of Applied Translation for Language learning in the era of Artificial Intelligence. *Hispania*, *106*(2), 171–194. https://doi.org/10.1353/hpn.2023.a899427

Popović, M. (2018). Error classification and analysis for machine translation quality assessment. In *Machine translation* (pp. 129–158). https://doi.org/10.1007/978-3-319-91241-7_7

Raifman, S., DeVost, M. A., Digitale, J. C., Chen, Y., & Morris, M. D. (2022). Respondent-Driven Sampling: a Sampling Method for Hard-to-Reach Populations and Beyond. *Current Epidemiology Reports*, *9*(1), 38–47. https://doi.org/10.1007/s40471-022-00287-8

Saldanha, G., & O'Brien, S. (2013). *Research methodologies in translation studies*. Routledge. https://doi.org/10.4324/9781315760100

Saunders, M. N. K., Lewis, P., & Thornhill, A. (2023). *Research methods for business students*. (9th ed.). Pearson Education Limited.

Shastri, **P. (2024, October 26).** Gujarati now third most-spoken Indian language in Canada. *The Times of India*. https://timesofindia.indiatimes.com/india/gujarati-now-third-most-spoken-indian-language-in-canada/articleshow/114638545.cms

Stratton, S. J. (2021). Population Research: Convenience sampling strategies. *Prehospital and Disaster Medicine*, *36*(4), 373–374. https://doi.org/10.1017/s1049023x21000649

Younas, F., Nadir, J., Usman, M., Khan, M., Khan, S., Kadry, S., & Nam, Y. (2021). An artificial intelligence approach for word semantic similarity measure of Hindi language. *KSII Transactions on Internet and Information Systems*, *15*(6). https://doi.org/10.3837/tiis.2021.06.006

Zaghlool, Z. D. M., & Khasawneh, M. a. S. (2023). Aligning Translation Curricula with Technological Advancements; Insights from Artificial Intelligence Researchers and Language Educators. *Studies in Media and Communication*, *12*(1), 58. https://doi.org/10.11114/smc.v12i1.6378

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