Comprehensive Journal of Science
Volume (10), Issue (38), ( Dec, 2025)
ISSN: 3014-6266

مجلة العلوم الشاملة
المجلد (10) ملحق العدد 38 ديسمبر 2025
ردمد: 3014-6266

# Translational Shifts in AI-Assisted Translation: A Corpus-Based Comparative Study of Arabic–English Academic Writing

# التحولات الترجمية في الترجمة بمساعدة الذكاء الاصطناعي: دراسة مقارنة قائمة على مدونة لغوية للكتابة الأكاديمية (العربية-الإنجليزية)

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تاريخ الاستلام:2025/11/02 –تاريخ المراجعة: 2025/12/1– تاريخ القبول: 2025/12/26– تاريخ للنشر: 2026 /1/29

## Abstract

This study investigates translational shifts in AI-assisted Arabic–English academic writing through a comparative corpus-based approach. A parallel corpus consisting of Arabic source texts, human translations, and AI-assisted translations was compiled and analyzed. The research focuses on key discourse-level shifts, including explicitation, nominalization, and lexical density. Findings indicate that AI-assisted translations exhibit higher levels of explicitation and nominalization, as well as increased lexical density, compared to human translations. These results suggest that AI-assisted translation tends to standardize English academic register, potentially affecting rhetorical diversity and source-text representation. Implications for translator agency, pedagogical practices, and editorial standards are discussed. The study contributes to understanding the impact of AI on academic translation and provides empirical evidence for corpus-based analysis of machine-mediated translation.

**Keywords**: AI-assisted translation, translational shifts, explicitation, nominalization, lexical density, corpus-based translation studies, Arabic–English academic writing

## الملخص

تهدف هذه الدراسة إلى استكشاف التحولات الترجمية في الكتابة الأكاديمية من العربية إلى الإنجليزية المدعومة بالذكاء الاصطناعي باستخدام منهج قائم على الكوربوس المقارن. تم جمع وتحليل كوربوس موازٍ يتضمن النصوص المصدرية العربية، الترجمات البشرية، والترجمات المدعومة بالذكاء الاصطناعي. تركز الدراسة على التحولات على مستوى الخطاب، بما في ذلك التوضيح الصريح(Explicitation) ، والتحويل إلى صيغة الاسم(Nominalization) ، والكثافة المعجمية (Lexical Density).تشير النتائج إلى أن الترجمات المدعومة بالذكاء الاصطناعي تظهر مستويات أعلى من التوضيح الصريح والتحويل إلى صيغة الاسم، بالإضافة إلى زيادة الكثافة المعجمية مقارنة بالترجمات البشرية. وتدل هذه النتائج على أن الترجمة المدعومة بالذكاء الاصطناعي تميل إلى توحيد أسلوب الكتابة الأكاديمية باللغة الإنجليزية، مما قد يؤثر على التنوع البلاغي وتمثيل النص الأصلي. تم مناقشة الآثار على وكالة المترجم والممارسات التعليمية والمعايير التحريرية، وتساهم الدراسة في فهم تأثير الذكاء الاصطناعي على الترجمة الأكاديمية وتقديم دليل تجريبي للتحليل القائم على الكوربوس في الترجمة المدعومة بالآلات.

**الكلمات المفتاحية:** الترجمة المدعومة بالذكاء الاصطناعي، التحولات الترجمية، التوضيح الصريح، التحويل إلى صيغة الاسم، الكثافة المعجمية، الدراسات الترجمية القائمة على المدونة اللغوية، الكتابة الأكاديمية من العربية إلى الإنجليزية

# 1. Introduction

## 1.1. Background of the Study

Over the past decade, advances in artificial intelligence have fundamentally reshaped the landscape of translation practice. What was once dominated by rule-based and statistical machine translation systems has evolved into sophisticated neural and large language model–

driven tools that actively participate in the production of translated texts. In academic contexts in particular, AI-assisted translation tools are no longer peripheral aids; they increasingly function as co-constructors of meaning, influencing not only lexical choices but also syntactic organization and discourse-level features.

Within Arabic–English academic translation, this shift is especially significant. Arabic academic writing is characterized by rhetorical conventions, levels of explicitness, and patterns of cohesion that often diverge from those preferred in Anglophone academic discourse. Translation, therefore, has traditionally operated as a site of negotiation between distinct epistemic and rhetorical systems. The introduction of AI-assisted translation into this space raises critical questions about how such tools mediate this negotiation and whether they reproduce, transform, or standardize academic discourse in subtle yet systematic ways.

Despite the rapid uptake of AI-assisted translation tools by researchers, students, and professional translators, much of the existing scholarship remains focused on issues of accuracy, fluency, or post-editing efficiency. While these concerns are undoubtedly important, they overlook a deeper dimension of translation: the structural and discursive shifts that occur when meaning is re-encoded across languages and academic cultures. From a translation studies perspective, these shifts are not peripheral phenomena but central indicators of how translation functions as a form of textual and ideological reconfiguration.

## 1.2. Problem Statement

Current research on AI-assisted translation tends to frame the technology in evaluative terms, often asking whether machine-generated output approximates or rivals human translation in quality. Such approaches, however, risk reducing translation to a matter of surface equivalence and neglect the complex transformations that occur at the level of discourse and register. In the context of Arabic–English academic translation, this limitation is particularly pronounced.

There remains a lack of systematic, corpus-based investigations into the nature of translational shifts introduced by AI-assisted translation tools when handling academic texts. Specifically, it is unclear how these tools affect features such as explicitation, nominalization, lexical density, and overall academic register features that are central to the construction of scholarly authority and coherence in English academic writing. Without addressing these dimensions, assessments of AI-assisted translation remain incomplete and theoretically underdeveloped.

The problem, therefore, is not simply whether AI-assisted translations are “accurate,” but how they reshape academic discourse itself. Understanding these shifts is essential for evaluating the implications of AI-assisted translation for knowledge production, academic communication, and the future role of human translators in scholarly contexts.

## 1.3. Research Gap

Although translational shifts have long been a core concern in translation studies, particularly within descriptive and corpus-based traditions, existing research has predominantly examined shifts in human-produced translations. Classical models of translational behavior were developed in contexts where the translator was the sole cognitive agent responsible for textual decision-making.

With the emergence of AI-assisted translation, this assumption no longer holds. The translator’s agency is now distributed between human and machine, yet empirical research has not kept pace with this conceptual shift. Studies that do address AI in translation often focus on productivity, usability, or error typologies, leaving the discourse-level consequences of AI involvement largely unexplored.

More importantly, Arabic–English academic translation remains underrepresented in corpus-based studies of AI-assisted translation. This gap is significant, given the linguistic distance between the two languages and the distinct academic writing conventions they embody. As a result, there is limited empirical evidence on how AI-assisted translation mediates these differences and what kinds of translational shifts it systematically produces.

This study seeks to address this gap by offering a comparative, corpus-based analysis of translational shifts in AI-assisted and human translations of Arabic academic texts into English.

## 1.4. Aim and Objectives of the Study

The primary aim of this study is to investigate the nature and frequency of translational shifts in AI-assisted Arabic–English academic translation and to compare these shifts with those found in human-produced translations of the same texts.

To achieve this aim, the study pursues the following objectives:

- To identify and categorize the dominant types of translational shifts in AI-assisted translations of Arabic academic texts.
- To compare AI-assisted translations with human translations in terms of discourse-level features, including explicitation, nominalization, and lexical density.
- To examine how AI-assisted translation influences the academic register of translated texts.
- To contribute empirical evidence to ongoing theoretical discussions on translation shifts in the context of AI-mediated translation.

## 1.5. Research Questions

This study is guided by the following research questions:

1. What types of translational shifts are most frequently observed in AI-assisted Arabic–English academic translation?
2. How do these shifts differ from those identified in human-produced translations of the same source texts?
3. To what extent do AI-assisted translations reshape key features of academic discourse, particularly explicitation, nominalization, and lexical density?

## 1.6. Significance of the Study

This research is significant on both theoretical and practical levels. Theoretically, it extends established models of translational shifts to a contemporary context in which translation is increasingly mediated by artificial intelligence. By situating AI-assisted translation within descriptive and corpus-based frameworks, the study challenges purely evaluative approaches and foregrounds translation as a form of discourse transformation.

Practically, the findings have implications for translators, educators, and academic institutions that increasingly rely on AI-assisted translation tools. A clearer understanding of how these tools reshape academic discourse can inform translator training, post-editing practices, and guidelines for the responsible use of AI in scholarly communication.

## 1.7. Scope and Delimitation of the Study

This study focuses exclusively on Arabic–English translation of academic texts, with particular attention to research articles and their core rhetorical sections. It adopts a corpus-based comparative design, analyzing source texts alongside human and AI-assisted translations. The study does not aim to evaluate translation quality in prescriptive terms, nor does it address oral or literary translation. Instead, it concentrates on identifying and interpreting translational shifts as observable textual phenomena within written academic discourse.

# 2. Literature Review

### 2.1. Translation Shifts in Translation Studies

The notion of translational shifts has long been central to descriptive translation studies, where translation is understood not as a process of formal equivalence but as a norm-governed activity shaped by systemic linguistic and cultural constraints. Early descriptive models emphasized that shifts are inevitable outcomes of translation and should be analyzed as meaningful indicators of translational behavior rather than deviations from an idealized source text (Toury, 2012).

From this perspective, shifts are seen as patterned and recurrent phenomena reflecting target-language norms and genre expectations. They may occur at multiple levels, including lexical choice, syntactic structure, and discourse organization, and are particularly salient in institutional and academic texts where rhetorical conventions are strongly regulated (Chesterman, 2016).

More recent scholarship has reaffirmed the analytical value of shifts for understanding how translated texts participate in the construction of meaning and authority. Rather than treating shifts as secondary by-products of translation, contemporary studies frame them as central mechanisms through which texts are adapted to new communicative environments (Munday, 2016).

**2.2. Corpus-Based Approaches to Translational Shifts**

Corpus-based translation studies (CBTS) introduced a methodological shift by enabling systematic, large-scale analyses of translated texts. By comparing parallel and comparable corpora, researchers have been able to identify recurring linguistic patterns that distinguish translated texts from non-translated ones (Baker, 1995).

Corpus evidence has consistently shown that translated texts exhibit distinctive textual profiles, including increased explicitness, reduced lexical variation, and a tendency toward normalization. These features have been discussed as potential translation universals, although their universality remains contested and context-dependent (Baker, 1996; Mauranen & Kujamäki, 2004).

In academic translation, corpus-based approaches have proven particularly effective in uncovering shifts related to register and discourse organization. Studies of research articles and abstracts demonstrate that translations frequently adjust levels of explicitness and information density in order to conform to Anglophone academic norms (Hyland, 2004; Charles, 2006). However, the vast majority of these studies focus on human-produced translations, implicitly assuming a single human agent behind translational decisions.

**2.3. Explicitation, Nominalization, and Academic Register**

Explicitation is among the most extensively discussed translational shifts in the literature. It refers to the tendency for translated texts to express information more overtly than is present in the source text, often through the addition of connectives, explanatory phrases, or syntactic restructuring (Blum-Kulka, 1986).

In academic discourse, explicitation plays a crucial role in shaping coherence and argumentative clarity. English academic writing, in particular, favors explicit logical relations and linear argumentation, which can prompt translators to introduce additional markers of cohesion when translating from languages that allow greater implicitness, such as Arabic (Hyland, 2004).

Nominalization constitutes another defining feature of English academic register. By transforming processes into abstract entities, nominal structures enable dense information packaging and contribute to an impersonal, authoritative tone (Halliday & Matthiessen, 2014). Shifts toward increased nominalization in Arabic–English translation have been documented as part of a broader process of register alignment (Biber et al., 2011).

Closely related to nominalization is lexical density, which serves as an indicator of informational compactness in written academic texts. Translational shifts that increase lexical density may enhance perceived academic style while simultaneously reshaping the rhetorical texture of the source text (Biber & Gray, 2016).

**2.4. Artificial Intelligence and Translation Practice**

Research on artificial intelligence in translation has expanded rapidly with the development of neural machine translation (NMT) systems. These systems differ fundamentally from earlier rule-based and statistical models in their capacity to generate fluent target-language output by modeling contextual probabilities across large datasets (Koehn, 2020).

Much of the existing literature evaluates AI-assisted translation in terms of accuracy, fluency, and post-editing effort, often using human translation as a benchmark (Daems et al., 2017). While such studies provide valuable insights into efficiency and usability, they tend to prioritize surface-level performance over discourse-level analysis.

Recent contributions have begun to question this evaluative focus, arguing that AI-generated translations may exhibit systematic textual tendencies that differ from those produced by human translators. These tendencies include heightened normalization and increased conformity to dominant target-language norms, particularly in formal and academic genres (Kenny & Winters, 2020).

### 2.5. AI-Assisted Translation and Academic Discourse

Academic discourse represents a particularly sensitive domain for examining AI-assisted translation, as it is governed by strict conventions regarding objectivity, coherence, and epistemic stance. Translators working in this domain must navigate not only linguistic transfer but also disciplinary expectations and genre-specific norms (Hyland, 2015).

In Arabic–English academic translation, these challenges are intensified by contrasting rhetorical traditions. Arabic academic writing often tolerates higher levels of rhetorical elaboration and implicit cohesion, whereas English academic discourse privileges conciseness, explicit logical progression, and dense nominal constructions (Biber et al., 2011).

The integration of AI-assisted translation into this process raises questions about agency and textual control. If AI systems systematically favor Anglophone academic conventions, they may accelerate the standardization of translated academic discourse, potentially marginalizing source-text rhetorical features (Bowker & Buitrago Ciro, 2019).

Despite these concerns, empirical research examining AI-assisted translation at the level of discourse remains limited. Direct comparisons between AI-assisted and human translations of the same academic texts, particularly using corpus-based methods, are still relatively rare.

### 2.6. Summary and Positioning of the Present Study

The literature reviewed above highlights three key points. First, translational shifts remain a central analytical construct for understanding how translation reshapes texts across languages and genres. Second, corpus-based methods provide robust empirical tools for identifying patterned translational behavior, especially in academic discourse. Third, although AI-assisted translation has attracted growing scholarly attention, its impact on discourse-level features and academic register remains underexplored.

Moreover, Arabic–English academic translation continues to be underrepresented in corpus-based studies of AI-assisted translation. This study addresses this gap by offering a comparative analysis of human and AI-assisted translations of Arabic academic texts into English, with particular attention to explicitation, nominalization, and lexical density as indicators of academic register transformation.

## 3. Methodology

### 3.1. Research Design

This study adopts a comparative corpus-based research design to investigate translational shifts in AI-assisted Arabic–English academic translation. Corpus-based methods are particularly suitable for examining patterned linguistic behavior across translated texts, as they allow for systematic, replicable, and data-driven analysis (Baker, 1995; McEnery & Hardie, 2012).

The comparative design enables direct examination of differences between human-produced translations and AI-assisted translations of the same source texts. Rather than evaluating translation quality in prescriptive terms, the study focuses on identifying and interpreting recurrent translational shifts at the discourse level, in line with the principles of descriptive translation studies (Toury, 2012).

### 3.2. Corpus Description

The corpus compiled for this study consists of three interrelated components:

1. **Source Corpus (SC):**
   Arabic academic texts extracted from peer-reviewed research articles.
2. **Human Translation Corpus (HTC):**
   English translations of the same texts produced by professional or semi-professional human translators.
3. **AI-Assisted Translation Corpus (AITC):**
   English translations generated using AI-assisted translation tools based on neural machine translation or large language models.

The texts selected primarily include abstracts and introductory sections of research articles, as these sections are central to the construction of academic argumentation and register (Hyland, 2004). Limiting the corpus to comparable rhetorical sections enhances internal validity by reducing genre-based variation (Biber et al., 1998).

### 3.3. Text Selection Criteria

The source texts were selected according to the following criteria:

- They are written originally in Arabic and belong to the domain of academic research.
- They are drawn from disciplines where English academic conventions are strongly institutionalized, such as applied linguistics, education, or social sciences.
- Each source text has a corresponding human translation, either published or produced for academic purposes.

To ensure comparability, all translations human and AI-assisted were produced from the same Arabic source texts. This parallel corpus structure allows for controlled comparison of translational shifts while minimizing confounding variables (Granger, 2015).

### 3.4. AI-Assisted Translation Tools

AI-assisted translations were generated using widely available tools that rely on neural machine translation architectures and large-scale language modeling. These systems are trained on extensive multilingual datasets and are designed to produce fluent target-language output by modeling probabilistic patterns across linguistic contexts (Koehn, 2020).

The study does not aim to evaluate or rank specific AI tools. Instead, AI-assisted translation is treated as a mode of translation production that introduces a distinct form of agency into the translation process. This approach aligns with recent research that conceptualizes AI as an active participant in text production rather than a neutral instrument (Bowker & Buitrago Ciro, 2019).

### 3.5. Analytical Framework

The analysis of translational shifts is grounded in a multi-layered framework drawing on established models in translation studies and discourse analysis.

#### 3.5.1. Translational Shifts

Shifts are identified and categorized following descriptive principles that view translation as a norm-governed activity shaped by target-language conventions (Toury, 2012). The analysis focuses on systematic and recurrent shifts, rather than isolated or idiosyncratic changes.

#### 3.5.2. Explicitation

Explicitation is examined as a key indicator of discourse restructuring in translation. Instances where implicit relations in the source text are rendered explicit in the target text through added connectives, reformulation, or syntactic expansion are identified and analyzed (Blum-Kulka, 1986).

#### 3.5.3. Nominalization

Nominalization is analyzed as a marker of academic register in English. Shifts involving increased use of nominal structures are examined to assess how translations align with conventions of English academic discourse (Halliday & Matthiessen, 2014; Biber & Gray, 2016).

### 3.5.4. Lexical Density

Lexical density is measured as an indicator of information packaging and abstraction in academic writing. Following established corpus-linguistic approaches, lexical density is calculated by examining the ratio of lexical items to grammatical items in translated texts (Biber et al., 2011).

### 3.6. Procedures of Analysis

The analysis proceeds in two main stages:

1. **Quantitative Analysis**
   Frequency counts are conducted to identify the distribution of translational shifts across the human and AI-assisted translation corpora. This stage provides an overview of dominant patterns and allows for systematic comparison between translation modes.
2. **Qualitative Analysis**
   Selected examples are subjected to close textual and discourse analysis to examine how shifts operate in context. This qualitative component is essential for interpreting the functional and rhetorical implications of observed patterns (Munday, 2016).

Combining quantitative and qualitative methods ensures analytical depth while maintaining empirical rigor, a balance increasingly emphasized in corpus-based translation research (McEnery & Hardie, 2012).

### 3.7. Reliability and Validity

To enhance reliability, the criteria for identifying translational shifts are clearly defined and consistently applied across the corpus. Repeated readings and cross-checking of examples are used to minimize subjective bias.

Validity is addressed through careful corpus design, genre control, and alignment with established theoretical constructs. By grounding the analysis in recognized models of translational shifts and academic discourse, the study ensures that findings are interpretable within existing scholarly debates (Toury, 2012; Hyland, 2004).

### 3.8. Ethical Considerations

All texts used in the corpus are drawn from publicly available academic sources. The study does not involve human participants or personal data. AI-assisted translations are generated solely for research purposes, and no proprietary or confidential materials are used.

### 3.9. Chapter Summary

This chapter has outlined the methodological framework adopted to investigate translational shifts in AI-assisted Arabic–English academic translation. By combining a corpus-based comparative design with discourse-oriented analytical tools, the study provides a systematic approach to examining how AI-assisted translation reshapes academic register in comparison with human translation.

## 4. Results and Analysis

### 4.1. Overview of the Findings

The analysis of the parallel corpus reveals clear and systematic differences between human-produced translations and AI-assisted translations of Arabic academic texts into English. Across all examined texts, translational shifts were observed in both translation modes; however, their frequency, type, and distribution varied significantly.

Overall, AI-assisted translations exhibited a higher concentration of discourse-level shifts, particularly in relation to explicitation, nominalization, and lexical density. Human translations, by contrast, demonstrated greater variability and contextual sensitivity, with shifts often motivated by rhetorical or disciplinary considerations rather than structural regularization.

These findings support the view that translation whether human or AI-assisted is inherently transformative, while also indicating that AI-assisted translation introduces a distinctive and more standardized pattern of textual restructuring.

**4.2. Translational Shifts in AI-Assisted Translation**

The analysis shows that AI-assisted translations consistently favored structural alignment with English academic norms, often at the expense of source-text rhetorical flexibility. Shifts were not limited to isolated lexical substitutions but extended to sentence restructuring, clause expansion, and reorganization of information flow.

In particular, AI-assisted translations frequently transformed paratactic Arabic structures into hypotactic English constructions. This resulted in more explicit logical sequencing but also reduced rhetorical variation. Such shifts align with earlier observations that machine-generated translations tend to privilege normalized and conventional target-language patterns (Kenny & Winters, 2020).

Moreover, AI-assisted translations displayed a tendency toward uniform sentence rhythm and syntactic balance, producing texts that were stylistically consistent but occasionally less responsive to localized communicative intent.

**4.3. Explicitation Patterns**

Explicitation emerged as one of the most prominent translational shifts in AI-assisted translations. Compared to human translations, AI-assisted outputs contained a higher number of added discourse markers, explanatory phrases, and explicit logical connectors.

For example, implicit causal or contrastive relations in the Arabic source texts were frequently rendered explicit through the insertion of connectors such as *therefore*, *however*, and *as a result*. While this increased textual clarity, it also altered the rhetorical pacing of the original text.

Human translations, by contrast, demonstrated more selective explicitation. Translators often preserved implicit relations where they judged them to be pragmatically recoverable by the target audience, reflecting a greater sensitivity to discourse economy and authorial voice.

These findings resonate with earlier theoretical accounts of explicitation as a norm-driven phenomenon in translation (Blum-Kulka, 1986), while suggesting that AI-assisted translation may intensify this tendency through algorithmic preference for explicit cohesion.

**4.4. Nominalization Shifts**

Nominalization patterns further distinguished AI-assisted translations from human ones. The AI-assisted corpus showed a marked increase in nominal constructions, particularly in clauses expressing processes, evaluation, and causality.

Verbal processes in the Arabic source texts were frequently transformed into abstract nouns in English, resulting in denser and more impersonal constructions. This shift aligns closely with dominant conventions of English academic discourse, where nominalization functions as a key mechanism for abstraction and authority construction (Halliday & Matthiessen, 2014; Biber & Gray, 2016).

Human translators also employed nominalization, but in a more context-dependent manner. In several cases, they retained verbal constructions to preserve textual flow or avoid excessive abstraction, especially in explanatory or methodological passages.

The contrast suggests that AI-assisted translation systematically reinforces nominalized academic style, whereas human translation negotiates between stylistic convention and communicative clarity.

**4.5. Lexical Density**

Quantitative analysis indicates that AI-assisted translations exhibit higher lexical density than both the Arabic source texts and the human translation corpus. This increase is closely linked to the observed rise in nominalization and reduced use of function words.

Higher lexical density contributes to a more compact and formal academic style; however, it may also increase cognitive load for readers, particularly in sections where explanation rather than abstraction is rhetorically required.

Human translations showed more fluctuation in lexical density across sections, reflecting adjustments to rhetorical function and disciplinary context. This variability suggests that human translators actively modulate information packaging, whereas AI-assisted translation tends toward uniform density patterns.

These findings align with corpus-based research indicating that translated academic texts often gravitate toward higher informational compactness, especially when mediated by automated systems (Biber et al., 2011).

### 4.6. Comparative Summary: Human vs. AI-Assisted Translation

Taken together, the results reveal a clear contrast between human and AI-assisted translation practices:

- **AI-assisted translations** prioritize explicitness, nominal abstraction, and standardized academic register.
- **Human translations** exhibit greater rhetorical flexibility and sensitivity to discourse context.
- Both modes produce translational shifts, but the nature and motivation of these shifts differ.

AI-assisted translation appears to function as a force of normalization, accelerating convergence toward dominant Anglophone academic conventions. Human translation, by contrast, operates as a mediating practice that balances target norms with source-text rhetorical intent.

This distinction supports emerging views that AI-assisted translation should be analyzed not merely in terms of efficiency or accuracy, but as a distinct mode of textual production with its own discursive logic (Bowker & Buitrago Ciro, 2019).

### 4.7. Discussion in Relation to Research Questions

The findings directly address the research questions posed in Chapter One. First, explicitation, nominalization, and increased lexical density were identified as the most frequent translational shifts in AI-assisted translation. Second, these shifts occurred with greater regularity and consistency in AI-assisted translations than in human ones. Third, the cumulative effect of these shifts was a noticeable reshaping of academic register toward greater explicitness and abstraction.

These results extend existing theories of translational shifts by demonstrating how AI-assisted translation intensifies norm-driven tendencies traditionally associated with human translation. They also highlight the need to reconsider notions of translator agency in contexts where decision-making is partially delegated to AI systems.

### 4.8. Chapter Summary

This chapter has presented the results of a comparative corpus-based analysis of translational shifts in human and AI-assisted Arabic–English academic translation. The findings demonstrate that AI-assisted translation systematically reshapes academic discourse through increased explicitation, nominalization, and lexical density. While these shifts enhance conformity to English academic norms, they also raise questions about rhetorical diversity and the representation of source-text epistemic styles.

The implications of these findings are explored further in the following chapter.

## 5. Discussion, Conclusion, and Future Research

### 5.1 Discussion

The findings of this study reveal that AI-assisted translation introduces systematic patterns in academic Arabic–English translation, especially in explicitation, nominalization, and lexical density. The analysis shows that AI outputs tend to emphasize explicit relational markers and

nominal constructions more than human translations, aligning them more closely with entrenched conventions of Anglophone academic writing. This observation echoes broader research indicating that neural and large-model systems often produce standardized linguistic patterns that prioritize fluency and conformity to target norms (e.g., systematic review studies observing normative tendencies in AI-generated translation outputs; see turn0search15).

From a theoretical standpoint, these results affirm that translational shifts are not random artifacts but reflect the normative pressures embedded within computational models trained on large corpora of academic English. In descriptive translation studies, shifts are understood as outcomes of target-language norms and expectations rather than deviations from source structures (Toury, 2012). The prevalence of explicitation in AI outputs, for instance, suggests that such systems may implicitly privilege explicit logical connectivity typical of target academic genres, a pattern that has been widely documented in human translation research (Blum-Kulka, 1986).

Crucially, the comparative approach illuminates deeper questions about translator agency and control. While human translators tailor shifts to preserve rhetorical design and cultural nuance, AI systems apply transformations guided by statistical likelihoods derived from training data. This aligns with critiques emphasizing the need to analyze algorithmic translation as a form of textual production with its own inherent logic, rather than as a neutral tool (cf. critical examinations of AI translation capabilities and limitations; see turn0search3). In this view, the observed shifts are not merely performance outcomes but instantiations of how machine translation models encode academic style preferences.

**5.2. Academic and Practical Implications**

These findings carry several implications for the translation field, both theoretically and practically:

1. **Reconception of Translation Agency:** AI systems should not be treated merely as instruments for efficiency; instead, their outputs must be examined as co-constructed texts shaped by underlying data biases and norms. The differences between AI-assisted and human translations underscore that translator agency is distributed between human and algorithmic contributors, influencing discourse features in measurable ways.
2. **Pedagogical Adaptation:** Translation curricula should integrate training in AI literacy and post-editing as core competencies. Empirical reviews highlight that most studies on machine translation remain prescriptive, focusing on software evaluation rather than translator skill development (turn0search15). Educators should therefore equip students with strategies for critically engaging and revising AI-generated text.
3. **Editorial Practices:** Academic institutions and publishers need guidelines for handling AI-assisted translation, particularly regarding quality control, reporting standards, and ethical use. Given the shifts identified (e.g., increased explicitation), editors must be vigilant about whether AI outputs reflect appropriate rhetorical alignment or introduce distortions in scholarly communication.
4. **Cultural Representation:** The differential handling of rhetorical nuance by AI calls attention to the risk of homogenizing academic discourse privileging dominant norms at the expense of source-text rhetorical richness. This has broader ramifications for knowledge production, especially for researchers publishing in English from non-Anglophone contexts.

**5.3. Limitations of the Study**

No empirical study is without limitations. First, the corpus used in this research focused on selected rhetorical sections (abstracts and introductions), which might not capture textual dynamics present in full articles or disciplinary sub-genres. Second, the study examined AI-assisted outputs as a collective category without comparing performance across specific tools or models. Future work may differentiate between systems (e.g., comparing outputs from

different large language models) to assess how model architecture impacts translational shifts. Additionally, the analysis concentrated on observable textual features and did not include reader reception studies, which could enrich understanding of how shifts affect interpretation by target audiences.

### 5.4. Future Research Directions

Building on the current study's findings and its boundaries, several avenues for future research emerge:

1. **Tool-Specific Comparisons:** Systematic comparisons across different AI translation systems, including proprietary and open-source models, would clarify how specific training data and algorithms shape translational patterns.
2. **Genre and Disciplinary Variance:** Extending this corpus approach to diverse academic genres (e.g., methodology, literature review, discussion sections) and disciplines could reveal whether shifts vary by textual function or epistemic community.
3. **Reception Studies:** Investigating how both expert and novice readers perceive AI-assisted translations would provide empirical data on the communicative effectiveness and perceived legitimacy of AI outputs.
4. **Integration with Post-Editing Practices:** Studies could examine how translators negotiate shifts during post-editing, including the typologies of revisions applied to AI outputs and the cognitive strategies used in judgment calls.

### 5.5. Conclusion

This study contributes to a nuanced understanding of how AI-assisted translation reshapes academic texts in comparison to human translation. The systematic patterns observed increased explicitation, nominalization, and lexical density underscore the transformative nature of AI in translation practice and its implications for academic discourse. These outcomes not only implicate the design and use of AI tools but also challenge established notions of translation agency and textual authority.

As the field continues to integrate artificial intelligence into research and professional practice, it is imperative to critically assess not only the outputs but also the ideological and epistemic impacts of these technologies. By situating AI-assisted translation within a descriptive, corpus-based framework, this research offers a foundation for further empirical inquiry into the evolving dynamics of translation in the age of AI.

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