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POST-EDITING AND ITS MAJOR PROBLEMS IN MACHINE TRANSLATION

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Abstract: Machine Translation Post-Editing (MTPE) has become a standard workflow in the language industry because neural machine translation (NMT) often delivers fluent drafts that still require human correction for accuracy, style, and compliance. However, post-editing is not simply "fixing small mistakes." It introduces major problems such as hidden adequacy errors (omissions/additions), hallucinated content, terminology inconsistency, and high cognitive effort caused by repeatedly diagnosing meaning rather than rewriting freely. Research shows that post-editing time and pauses correlate with cognitive effort and vary depending on error types and context. The standard also formalizes post-editing as a professional process and defines requirements for full human post-editing and post-editor competence, confirming that MTPE is a specialized task rather than casual correction. article explains core MTPE problems, illustrates typical error patterns with examples, and proposes practical controls for safer, faster, and more reliable post-editing.

Keywords: post-editing; machine translation; neural machine translation; adequacy errors; omissions; additions; hallucination; cognitive effort; MQM; ISO 18587

Introduction

Post-editing is the process of revising machine translation output to meet a required quality level. In many organizations, MTPE is used because MT increases throughput and reduces turnaround time, but "faster" is only true when the MT output is reasonably accurate and the task is matched to the right text type. A recurring issue is that modern NMT systems produce very fluent sentences that may still contain semantic errors: wrong word sense, missing information, extra information, or incorrect relationships between participants. These errors are dangerous because fluency creates trust; readers may not notice that the meaning drifted. Research on NMT adequacy errors has shown that omissions and additions can occur in outputs that otherwise look well-formed, which is why post-editors must check meaning, not just grammar. MTPE is also recognized as a professional activity with defined requirements. ISO 18587:2017 specifies requirements for the process of full human post-editing and the competences expected of post-editors, reinforcing that MTPE is not "light proofreading." The central question for MTPE is therefore not whether the sentence sounds good, but whether it is faithful, coherent, consistent, and fit for purpose.

What post-editors actually do

A useful way to understand MTPE is to separate "surface edits" from "meaning repairs." Surface edits include punctuation, capitalization, minor grammar fixes, and small style smoothing. Meaning repairs include correcting mistranslations, restoring omitted content, removing unsupported additions, fixing negation, repairing terminology, and ensuring that

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references (who/what) remain stable across the document. Studies measuring post-editing effort show that different error types lead to different levels of cognitive effort and time, and that lexical/semantic issues often trigger longer processing sequences than minor form edits.) This explains a common post-editor complaint: a sentence may look "almost finished," yet it takes long to fix because the editor must re-interpret the source, compare meaning, and decide the safest correction.

Major problems in MT post-editing

The first major problem is hidden adequacy errors—especially omissions and additions. Consider: Source: "The patient denied chest pain but reported dizziness." MT output: "The patient reported dizziness." The output is fluent, but the denial of chest pain disappears. After such an example, the key point is that omissions can change clinical interpretation and can be missed if the post-editor reads only the target text. Research on MT error impact confirms that mistranslations, omissions, and additions strongly correlate with post-editing difficulty and effort indicators. Similarly, additions can introduce factual claims: Source: "The meeting was postponed." MT output: "The meeting was postponed to tomorrow at 10 a.m. due to bad weather." The added time and cause are not supported by the source. After this example, the important observation is that additions can look helpful while actually creating misinformation; therefore MTPE must include an explicit check for "new facts." Research on critical MT errors emphasizes that meaning deviations can carry health, legal, reputational, or financial implications. The second major problem is hallucination (source-untethered output), which overlaps with additions but is often more severe: the system produces plausible sentences that are not grounded in the source. Work on hallucinations in NMT documents that unfaithful outputs occur and motivates detection and mitigation. For post-editors, hallucination is particularly costly because it requires full retranslation of the segment, not editing. The third major problem is terminology inconsistency and "near-correct" term choices. In technical and institutional translation, one wrong term can invalidate a document even if the rest is fluent. This is why MTPE projects often fail when there is no glossary/term base, or when the MT engine was not constrained by terminology. After noting this, the practical implication is that MTPE is not only linguistic—it is also terminological engineering: building and enforcing controlled vocabulary.

The fourth major problem is register and tone mismatch. MT may translate polite requests as commands, or formal writing as casual, because the model optimizes average patterns. Example: Source: "We would appreciate it if you could provide the documents by Friday." MT output: "Provide the documents by Friday." After this example, the key idea is that meaning is not only propositional; politeness and interpersonal stance are meaning components. In business and customer service, tone errors can damage relationships even when facts are correct. The fifth major problem is structural and discourse coherence: pronouns, references, and sentence connections may be individually fluent but globally confusing. Post-editors often spend significant time repairing coherence across multiple segments, which is one reason sentence-level MT can feel deceptively "finished."

Cognitive effort and "post-editing fatigue"

A defining challenge in MTPE is cognitive effort. Post-editors frequently report that MTPE can feel more tiring than translating from scratch because it involves constant error detection and decision-making under fluency bias. Experimental research supports the idea that post-editing time relates to cognitive effort and varies by error type. Studies also measure effort through pauses and editing events, showing that pause behavior can serve as an indicator of cognitive demand in post-editing. After these findings, the takeaway is that "MTPE speed" cannot be

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assumed: if the MT output quality is low or the text is high-stakes, effort increases and productivity gains may disappear. This is why MTPE is best applied selectively—on content where MT quality is stable and the risk of undetected semantic error is manageable.

Error taxonomies and why they matter in MTPE

A major practical problem is that teams often lack a shared definition of "done." One person edits lightly, another edits heavily, and quality becomes inconsistent. Error taxonomies help by providing a common language for what to fix. The MQM framework (often used for translation quality annotation) offers a structured taxonomy of error types, and MTPE studies have used MQM-style categories to analyze which MT errors cost the most effort. After introducing MQM, the practical benefit is clear: if a team tracks which error types occur most (terminology, accuracy, omission/addition, agreement, word order), they can (a) train post-editors more effectively, and (b) improve MT engines or pre-processing to reduce the highest-cost errors.

Standards and professional expectations

MTPE is increasingly regulated by professional standards. ISO 18587:2017 defines requirements for full, human post-editing of MT output and outlines expected post-editor competence, and it is intended for translation service providers, clients, and post-editors. After this, the implication is that MTPE should be managed as a controlled process: define quality level, define scope (light vs full post-editing), define resources (glossary, style guide), and define review responsibilities. Industry guidance discussing ISO 18587 also frames it as a process-oriented standard for MTPE workflows and professional roles.

Practical controls to reduce MTPE problems

Several controls reduce the major MTPE risks. First, enforce a "source check rule" on high-risk items: numbers, dates, names, negation, units, and domain terms must be verified against the source, because these are common locations for silent semantic errors. Second, use terminology constraints: provide glossaries and, where possible, integrate them into the MT pipeline or CAT tool so the MT output is less likely to drift. Third, adopt a two-pass post-edit: pass one focuses on adequacy (meaning, omissions/additions), pass two focuses on fluency (style, punctuation). This separation helps reduce fluency bias because the editor is forced to compare against the source early. Fourth, use error sampling: periodically annotate a small batch with MQM categories to identify the dominant error types and update guidelines accordingly. Fifth, decide MTPE suitability upfront: high-creativity marketing, legal contracts with strict liability, and culturally dense texts may be better translated by humans first, or require full post-editing with strict review. Research on critical errors and risk makes it clear that "acceptable MT" depends on stakes and consequences.

Conclusion

Post-editing is a central skill in modern translation workflows, but it comes with major problems that can erase productivity gains if not managed correctly. The most serious issues are hidden adequacy errors (omissions/additions), hallucination-like additions, terminology drift, and register mismatch—often masked by high fluency. Empirical research shows that cognitive effort varies by error type and can be measured through time, pauses, and editing behavior, which explains why post-editing can feel more demanding than translating from scratch in some conditions. Standards such as ISO 18587 formalize MTPE as a professional process with defined competence requirements, encouraging consistent quality definitions and workflows. When

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MTPE is guided by clear quality targets, terminology resources, adequacy-first checks, and structured error feedback, it can be both efficient and safe; without these controls, it can become fast, fluent, and wrong.

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