

Lexical Evolution in the Age of Artificial Intelligence: A Comparative Literature Study of English and Indonesian

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ARTICLE INFO

Keywords:

Artificial Intelligence;
Comparative Linguistics;
Lexical Evolution; Lexical
Borrowing, Semantic Shifts

Article history:

Received 22 February 2025

Revised 20 May 2025

Accepted 25 June 2025

Available online

30 June 2025



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DOI: <https://doi.org/10.32734/wt6fcr57>

ABSTRACT

This qualitative comparative literature study investigates the lexical evolution driven by artificial intelligence (AI) technologies within English and Indonesian linguistic contexts. Focusing on AI-related vocabulary, such as machine learning, prompts, and fine-tuning, the research critically analyses how these terms emerge, adapt, and shift semantically across both languages. English, identified as a global language, serves predominantly as a lexical innovator and supplier of new technological terms. In contrast, Indonesian demonstrates dynamic lexical negotiation through processes of borrowing, semantic adjustment, and selective localisation. The analysis highlights that these linguistic responses reflect deeper cultural, ideological, and social considerations, wherein borrowed terms often undergo subtle semantic shifts influenced by local perceptions of technology and digital interactions. The study explores hybrid linguistic practices that have arisen, particularly in digital communication, reflecting users' strategic linguistic choices rooted in cultural identity, technological authority, and social contexts. This hybridity highlights the complexities of language use in the digital age, reflecting the negotiations between global integration and cultural authenticity. This research sheds light on broader implications regarding globalisation, linguistic sustainability, and sociocultural identity, suggesting that future research should further investigate empirical data to enhance our understanding of how communities actively navigate linguistic changes amid technological advancements.

How to cite:

Mukti, M.A.P. & Fauzi, E.M. (2025). Lexical evolution in the age of artificial intelligence: A comparative literature study of English and Indonesian. *Humanities & Language: International Journal of Linguistics, Humanities, and Education*, 2(2), 098-104.

1. Introduction

In recent years, the presence of artificial intelligence (AI) in our daily lives has grown tremendously. From intelligent assistants on our phones to AI-powered chatbots on websites, these technologies are transforming the way we communicate, access information, and even perceive language itself. What was once considered the domain of science fiction —machines that could "understand" and "generate" human language—is now an everyday reality. As a result, language itself is evolving, adapting to keep pace with this technological shift.

One of the most visible effects of AI on language is the development of new vocabulary. Words like *machine learning*, *chatbot*, *deepfake*, *algorithm bias*, and *prompt*

engineering have become part of everyday conversations, particularly among English speakers. In Indonesian, similar terms have either been adopted directly, such as “AI” and “*model bahasa*”, or translated and adjusted to local linguistic contexts, for instance, “*pembelajaran mesin*” or “*pengguna AI*”. These lexical changes are not just cosmetic; they reflect more profound shifts in how we conceptualise knowledge, automation, and even communication itself.

Language scholars have long observed that technology is one of the most potent drivers of linguistic change. As David Crystal (2001) famously argued, the internet has not only created new forms of written communication but has also influenced vocabulary, grammar, and discourse patterns. With the rise of generative AI, such as ChatGPT, this process is accelerating. AI does not just add new words; it changes how we use existing ones. For example, the word *prompt*, once a fairly neutral term, now refers to a specific input given to an AI model, carrying with it a whole new set of meanings and implications.

The process of lexical change is not uniform across languages. English, as a dominant global language and the default medium of technological innovation, often becomes the source of new terms. In contrast, languages like Indonesian may adopt these terms through borrowing, code-switching, or semantic adaptation. This raises intriguing questions for comparative linguistics: How do different languages respond to the same technological phenomena? What determines whether a word is borrowed, translated, or resisted altogether? What can this reveal about the relationship between language, power, and technology?

This study aims to explore these questions through a comparative literature analysis of English and Indonesian. Using a qualitative approach based on existing journal articles, previous research, and language documentation, this paper will examine how AI-related vocabulary has evolved in both languages, the factors influencing these changes, and how speakers of different linguistic communities engage with them. By focusing on two linguistically and culturally distinct contexts, this study aims to illuminate the broader patterns of lexical innovation in the digital age.

In an era where technology and language are becoming increasingly intertwined, understanding how new words emerge and spread is more important than ever. Language is not just a tool for communication; it is a mirror of the society that uses it. As AI continues to shape our digital and social environments, the evolution of vocabulary becomes a powerful lens through which we can observe the changing dynamics of culture, identity, and knowledge.

2. Literature Review

The study of language change has long occupied a central place in linguistic inquiry, particularly in the field of comparative linguistics. Scholars have emphasised that language is not a closed system but a dynamic one constantly shaped by cultural, technological, and social influences. Within this context, technological innovation has historically been one of the strongest catalysts for the emergence of new vocabulary and the evolution of semantic structures (Crystal, 2003). The rise of artificial intelligence represents a profound turning point in this process, introducing an entirely new semantic field and redefining how languages adapt to digital realities.

Several studies have examined how English, as a global lingua franca and the primary language of technological discourse, naturally serves as a source of lexical innovation. This is especially true in the realm of AI, where terms like machine learning, neural networks, and language models are not only coined in English but also

disseminated globally through software, academic publications, and media platforms (Kachru, 1990). English's status as a "donor language" in this global exchange gives it a unique influence over how other languages absorb and adapt these emerging terminologies.

Conversely, in languages such as Indonesian, the process of lexical absorption often involves a mix of borrowing, calquing (loan translations), and code-switching. Researchers like Sneddon et al. (2010) note that Indonesian has historically been open to lexical borrowing, especially from Dutch, Arabic, and now English. In the context of AI, Indonesian speakers frequently incorporate English-derived terms, such as AI, big data, and deep learning, either directly or with minimal phonological and morphological adjustments. Some efforts at localisation are evident, such as the use of *pembelajaran mesin* for machine learning, yet these translations often coexist with their English counterparts in real-world discourse, leading to a form of lexical hybridity.

This linguistic hybridity is particularly visible in digital communication platforms, where Indonesian speakers may seamlessly alternate between languages, adopting whichever term seems most efficient or socially appropriate. Such practices align with what Myers-Scotton (1993) refers to as the "markedness model", in which speakers choose words based on their pragmatic function within a specific interactional context. In the realm of AI discourse, English terms are often perceived as more authoritative or "technical," while Indonesian equivalents may be seen as more accessible but less precise.

Additionally, studies on semantic shift reveal that the meaning of borrowed AI terms can change subtly when embedded in a different linguistic and cultural context. For example, the term "bot" in English originally refers to an automated script or software agent, but in local Indonesian usage, it may be conflated with spam accounts or scam-related digital behaviour. This type of semantic narrowing or broadening illustrates how cultural context influences the interpretation of technological vocabulary (Haspelmath & Tadmor, 2009).

Furthermore, the literature also suggests that socio-technological domains, such as education, journalism, and e-commerce, act as primary sites for the diffusion of AI-related terminology. Research by Darvin and Norton (2015) highlights how access to digital tools affects linguistic capital, reinforcing the dominance of English terms in high-tech environments while encouraging mixed-language usage in more general contexts. This creates an ongoing tension between linguistic inclusivity and technological precision.

Although numerous studies have explored loanword phenomena and digital language contact in general, a significant gap remains in comparative research specifically examining the lexical impact of AI across languages. This paper seeks to fill that gap by comparing how English and Indonesian respond to the same technological pressures through the lens of vocabulary, translation practices, and language ideology.

The current body of literature suggests a multi-layered and complex process of lexical evolution driven by AI. While English often serves as the lexical originator, languages like Indonesian engage in creative adaptation and negotiation, resulting in diverse and culturally specific expressions of technological modernity. Understanding this phenomenon is not only a linguistic concern but also a sociocultural one, highlighting how language reflects the ways communities engage with change, innovation, and global influence.

3. Method

This study employs a qualitative research approach, grounded in a literature analysis. Rather than relying on field observations or survey data, the research focuses on interpreting a diverse body of scholarly sources—such as journal articles, conference papers, linguistic corpora, and expert commentaries—that examine language change in relation to artificial intelligence (AI). The aim is to understand how AI-related vocabulary has developed and evolved in both English and Indonesian, and how these languages respond differently to similar technological influences.

At the heart of this study is a comparative linguistic perspective, which seeks to uncover both parallel trends and unique divergences in the way each language incorporates new AI-related terminology. Terms such as "prompt," "fine-tuning," and "machine learning" in English, and their equivalents or adaptations in Indonesian, like "*perintah masukan*," "*penalaan ulang*," and "*pembelajaran mesin*," serve as key lexical units for analysis. The study not only lists these terms but also explores the processes and motivations behind their formation, adoption, and dissemination.

The research follows a series of methodological steps designed to ensure clarity, depth, and academic rigour:

- a. **Literature Selection:** A curated selection of academic literature was compiled from reputable databases, including Google Scholar, JSTOR, ScienceDirect, and national platforms such as SINTA for Indonesian sources. The scope of literature spans from 2010 to 2025, focusing on publications that specifically address the themes of language contact, lexical borrowing, digital communication, and the sociolinguistics of AI terminology.
- b. **Cross-Linguistic Comparison:** After gathering the relevant literature, the findings were systematically categorised and compared across English and Indonesian. This step enabled the study to identify similarities in lexical trends, such as the prevalence of loanwords, as well as differences, including how each language community chooses to localise or retain foreign terminology. The comparison also highlights sociocultural attitudes toward language purity, prestige, and technological authority.
- c. **Contextual Interpretation:** The analysis is interpreted through several theoretical lenses, including language contact theory (Weinreich, 1953), language ideology (Woolard & Schieffelin, 1994), and technological determinism in linguistic change (Postman, 1993). These frameworks help explain why specific AI-related terms become widely adopted in one language but are resisted or rephrased in another. They also allow the study to go beyond structural analysis and address questions of power, identity, and access to knowledge.

Although this research does not employ statistical tools or participant interviews, it provides a rich, conceptual understanding of lexical evolution shaped by technology. The strength of the method lies in its ability to bring together diverse findings, draw connections across languages and cultures, and offer meaningful interpretations of how AI is reshaping the vocabulary we use.

4. Findings and Discussion

4.1. Emergence and Adoption of AI-related Vocabulary

This study's literature analysis has shown a clear and consistent pattern regarding the adoption of AI-related lexical items in both English and Indonesian. English, acting

as the primary language of global technological discourse, consistently emerges as the source language, generating original terms that rapidly proliferate through scholarly articles, mass media, and digital communication platforms. Terms like "prompt," "fine-tuning," "tokenisation," and "machine learning" illustrate a robust lexical innovation process rooted firmly in the technological advancements from English-speaking contexts.

Indonesian, on the other hand, demonstrates a nuanced yet active response to these lexical innovations. Rather than developing entirely indigenous terms, Indonesians typically engage in lexical borrowing, semantic shifting, or loan translations (calques). For instance, machine learning is widely adapted into Indonesian as *pembelajaran mesin*, while more abstract terms such as prompt often remain untranslated in technical communities but occasionally appear as *perintah masukan* in localised documentation (Sneddon et al., 2010). Such adaptations suggest strategic selection based on practicality, comprehensibility, and cultural acceptance.

4.2. Critical Discussion on Lexical Borrowing and Cultural Identity

Lexical borrowing, although practical and efficient, raises critical questions about linguistic power dynamics and cultural identity. The pervasive presence of English-origin AI terms reflects deeper asymmetries in knowledge production and technological authority. According to Kachru's (1990) "Three Circles of English," this lexical dominance highlights the imbalance between "Inner Circle" countries (native English-speaking contexts) and "Expanding Circle" countries like Indonesia, where English is learned primarily as a foreign language. The dominance of English-based AI terminologies indirectly reinforces the association of English with modernity, authority, and innovation.

Moreover, the selective localisation of specific terms reveals ideological stances toward linguistic purism and cultural integrity. As argued by Woolard and Schieffelin (1994), linguistic ideologies influence how societies negotiate language change. Indonesian exhibits a dynamic tension between openness to global linguistic trends and the preservation of linguistic heritage. The coexistence of terms like AI and *kecerdasan buatan* reflects an ongoing negotiation between practicality (global comprehension) and cultural authenticity (local identity preservation).

4.3. Semantic Shifts and Conceptual Nuances

Another critical finding from the literature concerns semantic shifts that accompany the integration of AI vocabulary. English AI terms, initially precise and technical, often experience subtle transformations when transferred into Indonesian usage contexts. Terms may acquire broader or narrower semantic fields based on local usage practices. For example, the term "bot," which in English has a neutral technological connotation, has undergone a negative semantic shift in Indonesian popular media and social discourse, commonly associated with deception, scams, or unethical digital manipulation. This reflects not only linguistic change but also local sociocultural attitudes toward technology and digital interaction.

These semantic nuances highlight the significance of cultural context in understanding technological vocabulary. Haspelmath and Tadmor (2009) emphasise that loanwords are not just borrowed; they are actively reshaped by receiving cultures. Thus, semantic shifts highlight local agency and demonstrate how languages and cultures negotiate and contextualise technological concepts.

4.4. Hybrid Language Practices and Digital Communication

The analysis also reveals a growing phenomenon of linguistic hybridity, particularly evident in online platforms and professional contexts where English and Indonesian interact fluidly. Myers-Scotton's (1993) "markedness model" offers insight into these mixed language practices, explaining how speakers strategically switch languages depending on the communicative context and perceived social advantages. English-based terms are frequently used in technical or authoritative contexts, while Indonesian counterparts are more commonly found in educational or explanatory contexts aimed at broader audiences.

This hybridisation is not merely linguistic convenience; it signifies broader socio-technological transformations. Digital spaces function as linguistic laboratories where the acceptance, modification, and eventual assimilation or rejection of terminology can occur rapidly. The linguistic hybridity observed is thus a reflection of complex identity negotiations within the digital society, balancing global technological integration with local cultural affirmation.

4.5. Implications and Future Directions

The findings of this comparative analysis offer profound implications for future research and policy-making. Linguistic adaptation to technological innovation is not purely linguistic; it encapsulates critical questions about education, technology accessibility, cultural policy, and linguistic inclusivity. Policymakers, educators, and linguists should carefully consider the implications of continued lexical borrowing, ensuring linguistic developments align with broader goals of cultural sustainability and knowledge equity.

Future studies should investigate how communities in Indonesia consciously respond to language changes driven by AI and whether deliberate linguistic policies can promote a balance between global integration and cultural identity. Additionally, incorporating primary data, such as corpus analyses or field surveys, could further deepen our understanding of how AI lexical integration functions in everyday language use.

5. Conclusion

This comparative study highlights the profound impact of artificial intelligence on lexical evolution in contemporary English and Indonesian. Through qualitative literature analysis, it is evident that English consistently serves as a global lexical innovator, disseminating new terminology associated with technological advancements. Indonesian, meanwhile, negotiates its linguistic landscape by selectively adopting, translating, and reshaping these terms, creating a complex interplay between global trends and local linguistic identity. Semantic shifts observed in borrowed terms highlight the crucial roles of cultural contexts, reflecting localised perceptions of technology's place within society. Furthermore, the emerging hybrid language practices, particularly in digital communication environments, illustrate dynamic processes wherein linguistic choices function as markers of identity, social alignment, and technological competence.

In the broader sociocultural context, the phenomena explored reveal critical tensions between globalisation and cultural preservation, technological innovation and linguistic sustainability. Policymakers, educators, and language communities face ongoing challenges in navigating these tensions, ensuring that technological integration does not erode linguistic heritage while still maintaining global connectivity and communication efficiency. Future research should therefore expand into empirical

explorations, perhaps incorporating primary corpus studies or field-based observations, to provide deeper insights into language users' practical experiences and attitudes toward AI-driven lexical change. Ultimately, the evolution of language amidst rapid technological development is not simply a linguistic issue but a societal one, intimately connected with questions of power, identity, and equitable access to knowledge in the global digital era.

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