

EXPLORING THE EARLY SCHOLARLY LANDSCAPE OF CHATGPT: AN ALTMETRIC AND SCIENCE MAPPING PERSPECTIVE

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ABSTRACT

The extraordinary dissemination of ChatGPT since its release to the public has sparked intensive conversations across a variety of fields, including those that are intellectual, sociological, and policy-oriented. As a result of the inherent temporal lags that are present in scholarly publishing, conventional citation-based measures frequently fail to adequately capture the early impact of quickly innovating technology. Through the utilization of altmetrics and scientific mapping methodologies, this study provides an innovative and all-encompassing analysis of early research trends associated with ChatGPT. This study investigates geographical distribution, source titles, fields of research, subject clusters, and user engagement patterns on social media platforms. It does so by drawing on publications that are indexed in major scholarly databases and which are correlated with Altmetric Attention Scores (AAS). Scientific researchers emerged as the most active disseminators of related academic content, according to the data, which indicate that the fields of information and computing sciences, biological and clinical sciences, and education are the most prominent in early ChatGPT research. Researchers, libraries, publishers, and politicians who are interested in understanding the early intellectual and societal footprint of major language models might benefit from the study which gives timely insights by integrating altmetric indicators with science mapping.

Keywords: ChatGPT, Altmetrics, Science Mapping, Bibliometrics, Large Language Models, Research Trends.

Introduction

Artificial Intelligence (AI) has rapidly evolved over the past decade, resulting in breakthrough applications in healthcare, education, corporate analytics, and information management. Recent advancements have highlighted large language models (LLMs) for their capacity to produce coherent, contextually aware, and human-like prose. ChatGPT, a conversational large language model, has become one of the most prominent and frequently debated AI systems, eliciting immediate academic attention following its launch.

The rapid adoption of ChatGPT in academic discourse poses a methodological issue for study assessment. Conventional bibliometric metrics, especially citation counts, accrue gradually and are thus inadequate for reflecting early-stage research dynamics. In this context, altmetrics—alternative indications sourced from social media, news platforms, blogs, and reference management tools—provide a significant supplementary method for evaluating initial attention and engagement. Altmetrics, when integrated with scientific mapping methodologies, provide a comprehensive understanding of evolving research landscapes.

This work seeks to deliver a fresh, journal-ready examination of initial research trends on ChatGPT by amalgamating altmetric indicators with science mapping techniques. The current work provides an organized and interpretive synthesis, in contrast to previous descriptive accounts, aimed at publication in a Scopus-indexed journal.

Review of Related Literature

The application of bibliometric and scientometric techniques to assess scientific output has a longstanding legacy in information science. The constraints of citation-based measures in reflecting immediate research interest have led to the creation of altmetrics. Altmetrics quantify several types of online involvement, encompassing references on Twitter, Facebook, blogs, news outlets, and academic social networks.

Prior research has shown moderate to high connections between altmetric markers and subsequent citation impact, especially for developing and transdisciplinary subjects. Science mapping approaches, including co-word analysis, co-citation analysis, and research field clustering, have significantly improved researchers'

capacity to visualize intellectual frameworks and thematic development. Recent literature emphasizes that the amalgamation of altmetrics with science mapping is particularly beneficial for swiftly evolving subjects, such as pandemics, climate change, and artificial intelligence.

Despite the expanding corpus of AI-related research, comprehensive and methodologically cohesive studies examining the first academic impact of ChatGPT are scarce. This study fills this gap by providing a novel synthesis based on altmetric data and field-based mapping.

Objectives of the Study

The main objectives of this study are to:

- Examine the early geographical distribution of scholarly attention to ChatGPT research.
- Identify the most influential source titles contributing to early ChatGPT discourse.
- Analyze the distribution of ChatGPT-related publications across major fields of research.
- Map thematic clusters emerging from the early literature on ChatGPT.
- Explore patterns of user engagement and dissemination on social media platforms.

Data Sources and Methodology

Data Collection

Publications pertaining to ChatGPT were located through keyword-based searches in prominent scientific databases, concentrating on titles and abstracts. Only publications possessing a Digital Object Identifier (DOI) and corresponding altmetric data were added to guarantee reliability and traceability. Altmetric Attention Scores and platform-specific references were obtained utilizing established altmetric aggregation techniques.

Analytical Framework

The study adopts a mixed-methods scientometric approach comprising:

- Descriptive analysis of altmetric indicators
- Geographic mapping of attention patterns
- Field-of-research classification
- Science mapping and cluster analysis using co-occurrence techniques

This integrated framework enables both quantitative measurement and qualitative interpretation of early research trends.

Results and Analysis

Geographical Distribution of Attention

Early altmetric data show that scholars are interested in ChatGPT study all over the world, with a strong presence in the most technologically advanced research ecosystems. Early adopters include the US, UK, Japan, and a number of European countries. This is because they already have strong infrastructures for AI study. Participation is also rising in emerging economies like India and Brazil, which suggests that AI research is becoming more open to people around the world.

Source Titles and Publication Venues

The analysis of source titles suggests that high-impact multidisciplinary publications and preprint platforms are crucial in disseminating early ChatGPT research. Prestigious journals draw significant media and societal attention, but preprint servers allow for the quick dissemination and discussion of preliminary findings. This dual-channel dissemination strategy speeds up information dispersion during the early stages of technological innovation.

Fields of Research Distribution

ChatGPT-related publications cross several domains, demonstrating the multidisciplinary character of LLM research. Information and computing sciences receive the most focus, followed by medicinal and clinical sciences, language and communication studies, and education. This distribution illustrates both the technological basis of ChatGPT and its broad application potential.

Science Mapping and Thematic Clusters

Science mapping study reveals numerous notable theme groups. These include:

- (i) AI and machine learning fundamentals,
- (ii) medical writing and clinical decision assistance,
- (iii) scientific publishing and research ethics,
- (iv) teaching and evaluation procedures, and
- (v) societal and philosophical ramifications.

The clustering identifies both potential and issues regarding ChatGPT adoption across disciplines.

Social Media Engagement Patterns

Altmetric data show that scientists are the most active users of ChatGPT-related publications on social media, followed by science communicators and practitioners. Twitter emerges as the most popular site for scholarly discourse, underlining its significance as a real-time channel for academic interaction and public participation.

Discussion

The findings show that using altmetrics and scientific mapping combined can provide a more sophisticated view of early research trends that typical bibliometric approaches alone cannot. The prevalence of interdisciplinary clusters suggests that ChatGPT is more than just a technological breakthrough; it is a socio-technical phenomena that influences research practices, ethics, and education.

The prevalence of preprints and policy-oriented talks indicates a trend toward speedier, more open scholarly communication. At the same time, issues about authorship, transparency, and academic integrity highlight the importance of clear norms and responsible AI use.

Implications for Stakeholders

For researchers, the study focuses on emerging thematic areas with high exposure and growth potential. Librarians and information professionals can use altmetric findings to help them construct collections and assess research impact. These findings may be used by publishers and editors to improve editorial policies governing AI-assisted writing. Policymakers can use the evidence to develop ethical and regulatory frameworks for AI use in education and research.

Conclusion

This paper presents a novel, holistic analysis of early ChatGPT research trends utilizing altmetrics and science mapping methodologies. By attracting immediate scholarly and popular attention, this study provides timely insights into the changing conceptual landscape around massive language models. The findings support altmetrics' relevance as a supplemental tool to traditional bibliometrics, particularly in fast-moving and transdisciplinary study domains. Future research could build on this work by including longitudinal data and comparison analysis with succeeding generations of AI models.

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