

How Artificial Intelligence is Driving Competition in General Search Engines

Dr Christophe Carugati

AI drives competition in general search engines. Premature regulation of AI features risks disrupting this competitive process. Competition authorities should intervene only when justified, ensuring that actions are evidence-based, proportionate and necessary.

1. Introduction

Artificial Intelligence (AI) is driving intense competition in general search engines. From AI startups like OpenAI and MistralAI to tech giants like Microsoft, firms leverage Generative AI to challenge Google Search's dominance. This shift has transformed user expectations, from retrieving a list of search results to receiving direct, comprehensive answers. However, this evolution from search to answers is only the beginning of a transformation in general search engines.

Fierce competition among AI developers accelerates innovation, producing almost weekly breakthrough AI models¹. New models, such as DeepSeek's R1² (which enhances reasoning) and OpenAI's Computer-Using-Agent (CUA)³ (which acts as a digital agent), are rapidly shaping search services through innovative AI features like OpenAI's Operator⁴ and Google's AI Mode

¹ Asha Sharma and Ashley Llorens, Introducing Azure AI Foundry Labs: A Hub for the Latest AI Research and Experiments at Microsoft, *Microsoft Blog*, 19 February 2025 (accessed 18 March 2025). Available at: <https://azure.microsoft.com/en-us/blog/introducing-azure-ai-foundry-labs-a-hub-for-the-latest-ai-research-and-experiments-at-microsoft/>

² DeepSeek-R1, *GitHub* (accessed 18 March 2025). Available at: <https://github.com/deepseek-ai/DeepSeek-R1>

³ Computer-Using Agent, *OpenAI*, 23 January 2025 (accessed 18 March 2025). Available at: <https://openai.com/index/computer-using-agent/>

⁴ Introducing Operator, *OpenAI*, 23 January 2025 (accessed 18 March 2025). Available at: <https://openai.com/index/introducing-operator/>

Experiment⁵. Simultaneously, advances in AI chips and model efficiency are lowering costs and response times, reducing entry barriers for competitors⁶.

Yet, competition authorities worldwide are closely monitoring these developments to safeguard competition⁷. The Australian Competition and Consumer Commission (ACCC) has examined AI's impact on general search⁸, while the UK's Competition and Markets Authority (CMA) is assessing potential conduct requirements for AI features in Google Search⁹.

Against this backdrop, this analysis explores competition dynamics in general search, potential concerns, and policy recommendations for competition authorities considering regulating AI features in general search services.

2. Competition in General Search Engines

General search engines crawl, index, and rank information to deliver relevant search results. Their market dynamics are shaped by AI-driven ranking algorithms, economies of scale that enable global reach at near-zero marginal cost, and strong network effects. As these engines continuously learn from user interactions, data feedback loops further enhance their relevance and efficiency¹⁰. However, AI models are reshaping these market dynamics.

⁵ Robby Stein, Expanding AI Overviews and Introducing AI Mode, *Google Blog*, 5 March 2025 (accessed 18 March 2025). Available at: <https://blog.google/products/search/ai-mode-search/>

⁶ Tim Bradshaw, How 'Inference' Is Driving Competition to Nvidia's AI Chip Dominance, *Financial Times*, 11 March 2025 (accessed 18 March 2025). Available at: <https://www.ft.com/content/d5c638ad-8d34-4884-a08c-a551588a9a28>

⁷ For market studies, see Christophe Carugati, Generative Artificial Intelligence, *Digital Competition* (accessed 18 March 2025). Available at: <https://www.digital-competition.com/generativeai>

⁸ Australian Competition and Consumer Commission, Digital Platform Services Inquiry Interim Report - September 2024, 4 December 2024 (accessed 18 March 2025). Available at: <https://www.accc.gov.au/about-us/publications/serial-publications/digital-platform-services-inquiry-2020-25-reports/digital-platform-services-inquiry-interim-report-september-2024>

⁹ CMA, Strategic Market Status Investigation into Google's General Search and Search Advertising Services Invitation to Comment, 14 January 2025 (accessed 18 March 2025). Available at: https://assets.publishing.service.gov.uk/media/678524823ef063b15dca0f04/Invitation_to_Comment.pdf

¹⁰ For a comprehensive assessment of digital markets, see Jason Furman et al, Unlocking Digital Competition Report of the Digital Competition Expert Panel, March 2019 (accessed 18 March 2025). Available at: https://assets.publishing.service.gov.uk/media/5c88150ee5274a230219c35f/unlocking_digital_competition_furman_review_web.pdf

While data access remains crucial, AI models acquire information differently from traditional general search engines. Instead of relying on web indexing and ranking, they use training datasets and real-time grounding from public and private sources, such as news publishers¹¹. Although access to large index data, such as Google's or Microsoft's index, can enhance performance, as seen in Microsoft Bing Copilot's reliance on its own index¹², developers can also build high-performing AI-powered search functionalities using alternative smaller indexes. For example, PerplexityAI uses its own index data¹³, while Anthropic's Claude and MistralAI's Le Chat reportedly rely on Brave's index¹⁴.

Unlike general search engines, which retrieve search results at near-zero marginal cost, AI models generate direct answers with positive marginal costs. Indeed, they incur significant training and inference costs to train and generate responses, respectively. However, these costs are steadily declining over time¹⁵.

Furthermore, AI models are efficient and relevant in providing information without the strong network effects and data feedback loops that benefit traditional general search engines¹⁶.

For a deep passément of online platforms, see CMA, Online Platforms and Digital Advertising Market Study Final Report, 1st July 2020 (accessed 18 March 2025). Available at: <https://www.gov.uk/cma-cases/online-platforms-and-digital-advertising-market-study>

¹¹ For an example of a partnership between a model developer and news publishers, see Global News Partnerships: Le Monde and Prisa Media, *OpenAI*, 13 March 2024 (accessed 25 March 2025). Available at: <https://openai.com/index/global-news-partnerships-le-monde-and-prisa-media/>

¹² Jordi Ribas, Building the New Bing, *Microsoft Blog*, 21 February 2023 (accessed 25 March 2025). Available at: <https://blogs.bing.com/search-quality-insights/february-2023/Building-the-New-Bing>

¹³ Introducing PPLX Online LLMs, *PerplexityAI*, 23 November 2023 (accessed 25 March 2025). Available at: <https://www.perplexity.ai/fr/hub/blog/introducing-pplx-online-llms>

¹⁴ Kyle Wiggers, Anthropic Appears to Be Using Brave to Power Web Search for its Claude Chatbot, *Tech Crunch*, 21 March 2025 (accessed 25 March 2025). Available at: <https://techcrunch.com/2025/03/21/anthropic-appears-to-be-using-brave-to-power-web-searches-for-its-claude-chatbot/>

¹⁵ Tim Bradshaw, How 'Inference' is Driving Competition to Nvidia's AI Chip Dominance, *Financial Times*, 11 March 2025 (accessed 18 March 2025).

¹⁶ Academics and competition authorities are still studying the relevance of network effects and data feedback loops for model development. For instance, see CMA, AI Foundation Models Technical Update Report, 16 April 2024 (accessed 18 March 2025). Available at: https://assets.publishing.service.gov.uk/media/661e5a4c7469198185bd3d62/AI_Foundation_Models_technical_update_report.pdf

The OpenAI's "memory" feature to improve model performance suggests that data feedback loops matter. Memory And New Controls for ChatGPT, *OpenAI*, 13 February 2024 (accessed 18 March 2025). Available at: <https://openai.com/index/memory-and-new-controls-for-chatgpt/>

While OpenAI's ChatGPT (400 million users¹⁷) has not yet reached Google Search's scale (over a billion users¹⁸), it already competes in delivering direct answers, wielding significant competition pressure on Google Search.

Finally, AI developers leverage breakthrough models to reshape user interactions. Unlike traditional general search engines, which refine search results through ranking algorithm improvements, AI model developers continuously bring innovative search functionalities through model advancements. For example, reasoning models deliver nuanced answers that facilitate in-depth research, while agentic models automate tasks, enabling users to make reservations with minimal effort.

3. Competition Concerns

Despite intense competition in general search engines, competition authorities, particularly the UK CMA under its digital competition regime, have raised concerns that AI could reinforce dominance in general search services. In response, the CMA is considering imposing conduct requirements on Google Search, including:

- Mandating data sharing (e.g., web index, click, and query data) on fair and reasonable terms to enable competitors to improve search quality and AI-driven search services.
- Preventing self-preferencing, ensuring Google does not prioritise its AI-powered search responses over rival offerings.
- Restricting data usage, preventing Google from using data crawled for search purposes to train AI models.
- Decoupling crawling for AI model training from search crawling, prohibiting Google from tying the two processes.

¹⁷ OpenAI's Weekly Active Users Surpass 400 Million, *Reuters*, 20 February 2025 (accessed 20 February 2025). Available at: https://www.reuters.com/technology/artificial-intelligence/openais-weekly-active-users-surpass-400-million-2025-02-20/?utm_source=chatgpt.com

¹⁸ Robby Stein, Expanding AI Overviews and Introducing AI Mode, *Googe Blog*, 5 March 2025 (accessed 18 March 2025).

- Ensuring fair terms for content creators, particularly news publishers whose material is used in search results or AI-generated overviews¹⁹.

Many stakeholders, particularly news publishers, support these measures, fearing AI features will divert traffic and diminish their content's visibility²⁰.

However, these interventions could significantly distort competition at a time when AI is driving innovation in search.

Indeed, such measures might first hinder AI model development. AI developers rely on model differentiation, which depends on training and grounding datasets. Mandatory data-sharing could reduce incentives for differentiation from competing AI model developers, while restrictions on data usage and crawling could limit Google's ability to innovate and compete with them.

Second, they might limit AI feature deployment. AI-powered search features, such as OpenAI's ChatGPT, compete directly with traditional general search engines. Users increasingly expect similar AI features from general search engine providers. Preventing Google from integrating AI enhancements could reduce product improvement in general search engines.

Lastly, proposals to regulate how AI features use publisher content must align with existing copyright laws. The UK government is already considering copyright reforms to facilitate AI-driven innovation, including allowing broader use of copyrighted materials for training purposes²¹. Any intervention should remain consistent with these evolving legal frameworks and not create a specific regime designed for only one general search engine provider.

¹⁹ CMA, Strategic Market Status Investigation into Google's General Search and Search Advertising Services Invitation to Comment, 14 January 2025 (accessed 18 March 2025).

²⁰ Responses to SMS Investigation into Google's General Search and Search Advertising Services, CMA, 27 February 2025 (accessed 19 March 2025). Available at: <https://www.gov.uk/government/consultations/sms-investigation-into-googles-general-search-and-search-advertising-services>

²¹ UK Government, Copyright and Artificial Intelligence, 17 December 2024 (accessed 19 March 2025). Available at: <https://www.gov.uk/government/consultations/copyright-and-artificial-intelligence/copyright-and-artificial-intelligence>

4. Policy Recommendations

With digital competition regimes expanding regulatory powers, competition authorities are shifting from reactive to proactive enforcement to address potential competition risks before they materialise. However, premature intervention can distort rather than protect competition. Traditionally, authorities act in response to market failures through antitrust investigations, merger reviews, or sector-specific competition rules. In contrast, proactive enforcement risks addressing hypothetical harms that the market might self-correct. In this context, intervention should be desirable when justified and designed to minimise market distortion.

Firstly, competition authorities should rely on evidence-based policymaking. Authorities should continuously assess market and regulatory developments through market studies. Given the rapid evolution of AI, they should reassess prior analyses of competition in general search engines to reflect the latest advancements.

Secondly, they should apply proportionality principles. Conduct requirements should not disproportionately impact the competition process by altering market dynamics and consumer welfare. Thus, they should carefully assess both the potential positive and negative effects of the envisaged requirements on the ability and incentive to develop and deploy products and services for consumers.

Lastly, they should assess the necessity of intervention. Intervention should be a last resort only when no less restrictive measures can address potential competitive concerns. Thus, they should first consider whether ongoing market and regulatory developments may naturally mitigate risks over time.

About

Digital Competition

Digital Competition (<https://www.digital-competition.com/>) is a research and strategy consulting firm for businesses, law firms, and government agencies dedicated to promoting open digital and competition policies that foster innovation. Led by Dr. Christophe Carugati, a passionate and impartial expert in digital and competition policy, the firm combines expertise in law, economics, and policy to deliver cutting-edge research, strategic consulting, think tank initiatives, tailored training programmes, and impactful conferences. Digital Competition is committed to addressing the most pressing challenges in the rapidly evolving landscape of digital and competition policies. This analysis was conducted independently and did not receive any funding.

This paper is part of our Generative Artificial Intelligence Hub (<https://www.digital-competition.com/generativeai>). We offer research on competition issues raised by Generative AI.

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Dr. Christophe Carugati



Dr. Christophe Carugati (christophe.carugati@digital-competition.com) is the founder of Digital Competition. He is a renowned and passionate expert on digital and competition issues with a strong reputation for doing impartial, high-quality research. After his PhD in law and economics on Big Data and Competition Law, he is an ex-affiliate fellow at the economic think-tank Bruegel and an ex-lecturer in competition law and economics at Lille University.