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Two Sides of the Digital Advertising Coin: Putting Hypernudging into Perspective*

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ABSTRACT: Digital advertising markets have evolved into a complex system with multiple interdependent actors interacting across the supply and demand chains. Google has emerged as a systemic actor in the digital advertising ecosystem. The company's presence within each layer of the digital advertising value chain, combined with the opacity and complexity of the market mechanisms, creates dependency challenges for business users. Google is also a choice architect that shapes users' experiences on its platform's business domains, including the experiences of the ads they are exposed to. Therefore, the company is uniquely positioned to hypernudge users towards specific market outcomes; it has the ability to steer within markets whilst following its economic imperatives.

Positioning digital advertising by Google within the hypernudging framework provides a new lens for studying its potential for influencing digital advertising market dynamics and individual users. Hypernudging refers to one of the most sophisticated data-driven nudging processes that allow for dynamically personalised user steering, where (when executed perfectly) the right user is reached with the right message, by the right means, at the right time, as many times as needed. By examining local search advertising on Google Maps and multi-channel integrated advertising campaigns, this article shows that both could constitute a form of hypernudging.

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As the welfare effects of hypernudging are inconclusive, these processes are not considered to be intrinsically problematic. However, with potential intermediation bias at play, hypernudging may lead to dangers of systemic market manipulation and limitation of consumer choice. Once consumer harm is present, some forms of hypernudging may fall within the realm of competition law relevant practices. Competition authorities may examine biased market intermediation as exclusionary abuse; by the same token, by focusing on direct harm to consumers, they may explore the exploitative abuse route.

However, as it is Google's systemic position on the advertiser- and user- sides of the market that is the source of hypernudging, effects felt on both sides are not only inseparable, they are mutually reinforcing. Thus, only once we zoom out and take a holistic view of these both sides, the full picture of the impact of hypernudging emerges, requiring one to potentially step outside the realms of the traditional competition law assessment.

KEYWORDS: hypernudging; digital advertising; AdTech; market power; competition.

1. Introduction

Digital advertising has changed the way advertisers interact with their customers and become one of the most pivotal funding models for content and services online[1]. In this business model, the intermediary platform matches and connects advertisers and publishers with the desired users' audience[2]. These markets are dynamic and innovative in nature, with technological developments facilitating the emergence of new types of techniques and intermediaries for a more potent delivery of ads. This contribution centres around Google – a company that has uniquely positioned itself as a systemic player within each layer of the digital advertising value chain. The God's eye view over digital advertising market dynamics, combined with deep knowledge of users' preferences and needs, puts the company in a powerful position to influence the respective market actors' experiences.

[1] David J. Teece, "Business models, business strategy and innovation", *Long Range Planning* 43, no. 2-3 (2010): 172-194.

[2] Jean-Charles Rochet, and Jean Tirole, "Platform competition in two-sided markets", *Journal of the European Economic Association* 1, no. 4 (2003): 990-1029; David S. Evans and Richard Schmalensee, *Matchmakers: The new economics of multisided platforms* (Harvard Business Review Press, 2016).

This article examines Google's local search advertising services by positioning them within a hypernudging framework, which provides a new lens for studying Google's potential influencing of digital markets, as well as its (individual) users. Hypernudging refers to one of the most sophisticated data-driven nudging practices that allows for dynamically personalised user steering, where (when executed perfectly) the right user is reached with the right message, by the right means, at the right time, as many times as needed[3]. This may be a cause for concern, as by shaping users' perception of (market) realities, hypernudging can be used to subvert autonomous choice and manipulate users into outcomes inconsistent with their true preferences. When it is done in a large-scale, systemic manner, the market manipulation dangers appear. However, market manipulation concerns may not be plausible without Google being positioned to control the interactions on both sides of the market. As the user- and advertiser-facing sides are intricately entwined, the power to hypernudge individuals is dependent on the platform's ability to steer within markets. Thus, it is Google's market position in combination with these markets that gives the platform the power to hypernudge individuals by way of compounding data flows and opaque algorithmic management.

The current research on digital advertising does not take into account platforms', such as Google, role in steering users towards transactions, and how that contributes to further cementing their market position on the user- and advertiser-facing sides of the market. Addressing this gap in research is relevant for competition law, as it is a stepping stone for an in-depth analysis of whether the effects of hypernudging would fall under the current scope of European competition law, and assessing whether the scope should be broadened would this not be the case.

This article proceeds by firstly providing an overview of Google's ad tech stack and different types of digital advertising, highlighting the company's structural position within the digital advertising value chain. Secondly, different types of digital advertising are evaluated in light of the hypernudging framework, which places focus on the company's power to

[3] Karen Yeung, "'Hypernudge': Big Data as a mode of regulation by design", *Information, Communication & Society* 20, no. 1 (2017): 118-136; Marjolein Lanzing "Strongly recommended revisiting decisional privacy to judge hypernudging in self-tracking technologies", *Philosophy & Technology* 32, no. 3 (2019): 549-568; Stuart Mills, "Personalized nudging", *Behavioural Public Policy* (2020): 1-10; Autoriteit Consument & Markt, "Guidelines on the protection of the online consumer ACM. nl." (2020), 7.

influence the user. The scope of this article is limited to examining local search advertising on Google Maps as a potential form of hypernudging, as well as integrated advertising campaigns that combine different types of ads to steer the user towards the same pre-determined goal. Finally, it will assess the challenges of hypernudging through the lens of both the market and the user, highlighting the entwinedness and reinforcing qualities of both sides of the market, concluding with competition policy considerations.

2. Google's role in the digital advertising ecosystem

"Almost every ad flying through online ad ecosystem touches Google in some way" as the company holds a strong position within each stage of the digital advertising value chain[4]. This section will introduce Google's ad tech stack, which highlights its structural position in the digital advertising ecosystem. Furthermore, it will explain types of advertising, which can be deployed separately or as part of the integrated advertising campaign, and in turn lay down the context for assessing different digital advertising solutions as a form of hypernudging (see section 3).

2.1. Google's Ad Tech Stack

Digital advertising has evolved into a complex system with multiple interdependent market actors interacting across the supply and demand chains. The series of companies and technologies that get an advertiser's message in front of the right consumer at the right time, in marketing terms, comprise the Ad Tech stack. The intermediation value chain can be divided into supply and demand sides. On the supply side: there are publishers that offer space on their websites or apps for ad placement; Publisher Ad Servers – tools that publishers use to manage their ad inventory. The technology is mostly integrated into publisher's webpage to accept the advertising and place it in the right place at the right time; Supply Side Platforms (SSPs) – the technology that interfaces with the Demand Side Platform (DSP) that determines the price and allocation of the digital ad inventory through sequential or real-time auctions. On the demand side: there are advertisers that are interested in serving ads to web users; Advertiser Ad Servers – tools that advertisers use to manage their ad campaigns. It provides the

[4] Gerrit de Vynck and Naomi Nix, "How Google's ad ecosystem works", *Bloomberg*, October 24, 2019, https://www.bloomberg.com/news/features/2019-10-24/how-google-s-ad-ecosystem-works.

functionality that stores ads and delivers creative content to publishers when needed; DSP – the platform that advertisers use to organize and buy digital inventory. The digital advertising ecosystem further includes Ad Exchanges (digital marketplaces for ad inventory), Ad Networks (a pool of ad inventories from a large number of publishers that can be sold to advertisers directly) and Data Management Platforms[5].

Over the past years, the digital advertising ecosystem has become more concentrated. On the supply side, most market players point out that they perceive Google and Facebook to hold a duopoly in the supply of display advertising[6]. Nevertheless, Facebook accounts for around 50% of the market share of display supply, and sells display ads within its own self-contained system, which is separate from Google's ad tech stack[7].

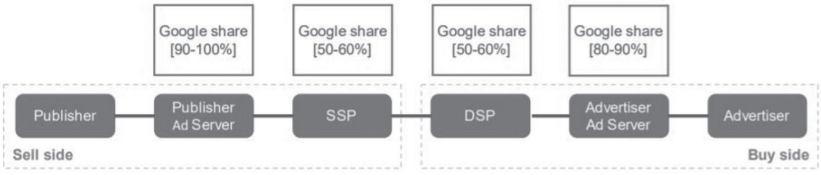

Figure 1: Google's roles in advertising intermediation[8]

Publisher ad server – Google Ad Manager.

SSP - Google's Ad Exchange ("AdX").

Advertiser ad server – Display & Video 360.

DSP – Google's DoubleClick Bid Manager (DBM).

Ad Exchange – Google AdX, recently integrated with Google Ad Manager.

Ad Network – Google AdSense, which is accessed through Google Ads program, which enables advertisers to create ads that will appear on relevant Google's SERPs and Google's network of partners sites.

As Google holds a strong position within each level of the value chain, it is also becoming a one-stop-shop for publishers and advertisers in the

[5] For a thorough explanation, see Niklas Fourberg et al., *Online advertising: The impact of targeted advertising on advertisers, market access and consumer choice*. Luxembourg: European Parliament, 2021, 21-26.

[6] Fiona M. Scott Morton and David C. Dinielli, "Roadmap for a digital advertising monopolization case against Google", *Omidyar Network* (2020): 4.

[7] Competition and Markets Authority (CMA), *Online platforms and digital advertising: Market study final report*. London: Competition and Markets Authority, 2020, paragraph 63.

[8] Ibid, 20.

market[9]. The company offers a selection of highly integrated ad tech products and services that provide an attractive proposition to business users, which no longer need to search beyond Google's offerings. By becoming a one-stop-shop, Google is slowly evolving into a "walled garden" for digital advertising – a term used to describe a closed ecosystem in which all the operations are controlled by the ecosystem's operator[10]. By locking market actors into an increasingly closed Google's digital advertising ecosystem, the platform exercises and reinforces its power through its internal policies[11]. For instance, a recent privacy-related move for phasing out third party cookies on Google Chrome by 2022 has raised concerns over the platform further entrenching its data dominance and *de facto* excluding rivals[12].

Google's scale and its integration of high quality services and technologies offers data advantages that cannot easily be replicated by competitors. From advertisers' perspective, Google's ability to target (and gather user data) across different services and devices offers a reduction of transaction costs with the promise of effectively reaching the right consumer[13]. In addition, the contemporary developments in marketing campaigns show a shift towards consumer-centric programmatic advertising, highlighting the key role these data advantages play in effective advertising campaigns. Google's ad tech stack offers programmatic properties to different types of digital ads. Programmatic advertising "describes the automated serving of digital ads in real-time based on individual ad impression opportunities"[14]. Its goal is to connect people with the right messages at the right time, while doing so in a large-scale automated manner[15]. The cornerstone feature of

[9] Scott Morton and Dinielli, "Roadmap for a digital advertising monopolization case against Google", 10.

[10] Pierre de Poulpiquet, "What is a Walled Garden? And why it is the strategy of Google, Facebook and Amazon ads platform?", accessed 24 June, 2021, https://medium.com/mediarithmics-what-is/what-is-a-walled-garden-and-why-it-is-the-strategy-of-google-facebook-and-amazon-ads-platform-296ddeb784b1.

[11] "Community", Google Ads Help, Google, accessed 16 June, 2021, https://support.google.com/google-ads/thread/9261457?hl=en.

[12] Fourberg et al., *Online advertising*, 43.

[13] Damien Geradin and Dimitrios Katsifis, "An EU competition law analysis of online display advertising in the programmatic age", *European Competition Journal* 15, no. 1 (2019), 71.

[14] Oliver Busch, "The programmatic advertising principle", in *Programmatic advertising: The successful transformation to automated, data-driven marketing in real-time*, ed. Oliver Busch (New York: Springer, 2016), 8.

[15] Ibid, 4.

programmatic advertising boils down to granularity – the ability of the system to fully consider individual impression ad opportunities together with their general parameters, specific recipients and specific advertising environment in real-time[16]. It is noteworthy that while programmatic advertising is mostly associated with display ads, it may also be used for search ads, especially in integrated advertising campaigns[17].

While business users may find Google's services convenient, or even essential, there are concerns within the industry over the lack of transparency regarding the pricing structures and auction results[18]. The opacity of the market on both supply and demand sides, as well as the growth of the garden walls, may be further reinforced by Google's complementary products. For instance, Google Analytics holds the highest market share in the web analytics market[19]. It provides tools to track the performance of advertisement campaigns, measuring the app and web interactions together[20]. This allows advertisers to get a full grasp on the effectiveness of their campaigns, as the latest version of Google Analytics allows seeing conversations from YouTube video views together with conversations from Google and non-Google paid channels, and organic channels like Google search. Even though Google Analytics provides immense efficiencies to market actors, it may also lead to less transparency, and mistakes may take time to be detected. This is because it is difficult to compare results between Google and other providers, leading to challenges in assessing the accuracy of data regarding the effectiveness of the advertising campaign[21].

2.2. Types of digital advertising

Having established that Google holds a sustained systemic position within each layer of the digital advertising value chain, it is important to

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[16] Ibid.

[17] Australian Competition and Consumer Commission (ACCC), *Digital platforms inquiry: Final report*. Canberra: Australian Competition and Consumer Commission, 2019, 123.

[18] Dina Srinivasan, "Why Google dominates advertising markets", *Stanford Technology Law Review* 24, no. 1 (2020), 114; CMA, *Online platforms and digital advertising*, paragraph 21; ACCC, *Digital platforms inquiry*, 160. Geradin and Katsifis, "Online display advertising", 60.

[19] Analytics 35.78%, Google Universal Analytics 25.71%, Google Global Site Tag 10.88% followed by Facebook Analytics 7.23%, see: "Web analytics software market share", Datanyze, accessed 24 June 2021, https://www.datanyze.com/market-share/web-analytics--1.

[20] "Meet the next generation of Google Analytics", Analytics Help, Google, accessed 24 June 2021, https://support.google.com/analytics/answer/9164320?hl=en#zippy=%2Creleases.

[21] On lack of transparency: CMA, *Online platforms and digital advertising*, paragraph 8.233.

explain the different types of ads that reach users online, which will serve as context in the assessment of digital advertising as a form of hypernudging. There are three types of digital advertising: search advertising, display advertising and classified advertising[22]. Generally, business users do not consider them as substitutes, but they nevertheless exhibit complementary properties[23]. The advertisers may set-up separate campaigns on Google Search Network (GSN) and Google Display Network (GDN), respectively. Both are company's own closed networks of websites that advertisers can run their ads on[24]. For the purposes of this article, the stronger focus is placed on (local) search advertising, where Google holds a dominant market position on both advertiser- and user-facing sides of the business. However, it is noteworthy that the auction mechanisms that determine the placement of the ads and pricing structures offered by the GSN and GDN are very similar. Furthermore, advertisers may also opt for integrated advertising campaigns, either by using the Display Expansion on Search campaigns[25], thereby remaining within a closed Google's network, or buying ads programmatically via Google's advertising technology, which allows advertisers to buy inventory from publishers or ad exchanges outside of it[26].

Search advertising

Search advertising is a format of advertising where an advertiser pays for its ads to usually appear next to the results from consumer's search on services with a search function such as Google Search[27]. Search engines allow users to find specific information on the Internet and by typing their query into a search query box, users reveal their intentions and provide valuable

[22] Fourberg et al., *Online advertising*, 16.

[23] CMA, *Online platforms and digital advertising,* paragraph 5.375; Autorité de la concurrence, Opinion no. 18-A-03 of 6 March 2018 on data processing in the online advertising sector, paragraphs 178-182.

[24] Fourberg et al., *Online advertising*, 22-23.

[25] "About display expansion on search campaigns". *Ads Help, Google,* accessed June 29, 2021, https://support.google.com/google-ads/answer/7193800?hl=en&visit_id=637411381689972010-1940902750&rd=1.

[26] Ryan Skeet and Jessica Maunder, "GDA vs. DV360: Comparing Google's display platforms", Merkle, accessed June 30, 2021, https://www.merkleinc.com/emea/blog/where-should-you-run-your-display-activity-a-comprehensive-comparison-of-googles-display-platforms.

[27] CMA, *Online platforms and digital advertising*, paragraph 2.44.

information to advertisers[28]. This type of advertising is used as a means to drive consumers to take a particular action such as clicking on a link[29].

The search-advertising ecosystem consists of a number of actors that intermediate the interactions between advertisers and users. Google and/or its close partners play the key roles within this chain. For most advertisers willing to place search ads, Google Ads is the natural starting point. The advertiser will set up a campaign within the Google Search Network which allows the ad to be shown on Google sites (e.g. Google Search, Google Maps, Google Play) but also within the search results of Google search partners[30]. Each time a user conducts a search, Google runs an algorithmically curated auction to determine which ads should be presented to the user. Advertisers choose keywords they want to advertise on, input the text and how much they are willing to pay for a click on the ad[31]. Once relevant search is conducted, Google's algorithm ranks ads based on the three main factors: advertiser's bid, the quality of ads (how relevant and useful the ad and the webpage it links to are to the user), and the expected impact from advertiser's ad extensions and other ad formats[32]. The company's system relies on a Generalized Second Price (GSP) auction mechanism, meaning that advertisers do not pay what they bid for – they pay just enough to beat the bid of the next ranked ad; advertisers are usually charged a standard pay-per-click rate (PPC), meaning that they only pay if a user has clicked on the ad[33].

From the publishers' perspective – websites, such as blogs or newspaper websites – Google offers AdSense intermediation services for the placement of ads to help to manage and monetize their services[34]. Such websites often have a search function embedded and once a user searches through

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[28] Francesco Ducci, *Natural monopolies in digital platform markets* (Cambridge University Press, 2020), 47.

[29] CMA, "Online platforms and digital advertising", paragraph 2.46.

[30] "About the Google search network", Google Ads Help, Google, accessed June 30, 2021, https://support.google.com/google-ads/answer/1722047?hl=en.

[31] Jack Nickas, "How Google's ad auctions work", *The Wall Street Journal*, January 19, 2017, https://www.wsj.com/articles/how-googles-ad-auctions-work-1484827203.

[32] "How the Google ads auction works". *Ads Help*, *Google*, accessed June 30, 2021, https://support.google.com/google-ads/answer/6366577?hl=en.

[33] Nickas, "Google's ad auctions"; Siva Vaidhaynathan, *The Googlization of everything (and why we should worry)* (University of California Press, 2011), 15. Other pricing structures: cost-per-impression (CPI), cost-per-view (CPV) or cost-per-action (CPA).

[34] "Difference between AdSense and Google Ads", AdSense Help, Google, accessed 16 June, 2021, https://support.google.com/adsense/answer/76231?hl=en&ref_topic=1319753.

it, the website delivers search results together with the search ads[35]. Every time a user clicks on the advertisement on search results page, both Google and the publisher will receive a commission. With a European market share above 80%, Google comfortably maintains a dominant position in the online search intermediation market[36].

Display advertising

Display advertising refers to ads that appear on a publisher's website or an app, usually on a side window or another designated space on the webpage[37]. In contrast to search ads, users are exposed to display ads not because they were looking for similar items or services on the relevant website, thereby revealing their intention, but to raise brand awareness among consumers[38]. Display advertising includes social media, video and banner advertisements[39]. Currently, over 80% of display ads are bought programmatically[40].

Classified advertising

Classified advertising refers to advertising where advertisers directly purchase advertising slots to list specific products or services on a publisher's website[41]. There is a wide range of platforms focused on specific sectors, such as recruitment, ecommerce or consumer finance, that provide advertisers with the ability to list specific products and services and for the users the functionality to compare these listings[42]. Examples of specialised online outlets that offer classified ads include Gumtree or Craiglist[43].

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[35] Press release, "Antitrust: Commission fines Google €1.49 billion for abusive practices in online advertising", IP/19/1770, 20 March 2019.

[36] *Google Search (AdSense)*, AT.40411, C(2019) 2173 final, paragraphs 234-236.

[37] Scott Morton and Dinielli, "Roadmap for a digital advertising monopolization case against Google", 4.

[38] Geradin and Katsifis, "Online display advertising", 54; Daniel Bitton et al., "Competition in display ad technology: A retrospective look at Google/Facebook and Google Admob", CPI Antitrust Chronicle (2019): 2.

[39] Fourberg et al., *Online advertising*, 17. Examples: Video – Youtube, Social Media – Facebook, TikTok, Banner – on publishers' website or within the app.

[40] Geradin and Katsifis, "Online display advertising", 61.

[41] Fourberg et al., *Online advertising*, 18.

[42] CMA, *Online platforms and digital advertising*, paragraph 2.54.

[43] Stigler Center for the Study of Economy and the State, *Stigler Committee on digital platforms: Final report* (Chicago, IL: Chicago Booth, 2019), 178.

3. Digital advertising as a form of hypernudging

The first section of this article has showed that from the business users' perspective, Google is a systemic actor within the digital advertising ecosystem. However, Google is concomitantly a choice architect that organizes users' experience on its services. By showing ads to the users, the platform, following its economic imperatives, may steer them towards specific outcomes. This section will evaluate digital advertising through the lens of hypernudging framework, which focuses on Google's power to influence user behaviour. The scope of this article is limited to local search advertising on Google Maps, where Google has a sustained and sizeable market share indicating market power. Moreover, given Google's unique position to deploy integrated advertising campaigns across its many business domains, this section will also consider the more holistic hypernudging opportunities.

3.1. Introduction to hypernudging

Hypernudging is built on the insights of linkages between the behavioural economics-grounded theory of the nudge and information systems (IS) literature[44]. The nudge theory facilitated the development of behavioural interventions with the goal to allow public bodies to encourage citizens to make better decisions as judged by themselves[45]. It incorporated rich behavioural economics research, which established that market actors' behaviour is influenced by environmental and cognitive constraints – they are boundedly rational[46]. In complex decision-making environments, people tend to rely on a limited set of mental rules of thumb (heuristics), which simplify complicated tasks of assessing probabilities and predicting values. While in the majority of cases such decision-making leads to desired outcomes, it may also result in systemic mistakes in judgement (biases)[47]. When assessing decision information, individuals use two dis-

[44] Yeung, "Hypernudge"; Lanzing "Strongly recommended"; Autoriteit Consument & Markt, "Guidelines"; Mills "Personalized nudging." Tim-Benjamin Lembcke, Nils Engelbrecht, Alfred Benedikt Brendel, and Lutz Kolbe, "To nudge or not to nudge: Ethical considerations of digital nudging based on its behavioural economics roots" (2019): 2.

[45] Ibid, 3.

[46] Simon, Herbert A. "A behavioural model of rational choice". *The Quarterly Journal of Economics* 69, no. 1 (1955): 99-118.

[47] Amos Tversky and Daniel Kahneman, "Judgment under uncertainty: Heuristics and biases", *Science* 185, no. 4157 (1974): 1124-1131; Daniel Kahneman, *Thinking, fast and slow* (Macmillan, 2011).

tinct cognitive systems: automatic and reflective, former being described as associative, heuristic, and intuitive and latter referring to rule-based, analytical and reflective processes[48].

The nudge has been originally defined as "any aspect of the choice architecture that alters people's behaviour in a predictable way without forbidding any options or significantly changing their economic incentive"[49]. Choice architecture refers to a decision-making environment[50]. As people's decision-making is affected by their cognitive and environmental limitations, the choice architect may harness their cognitive boundaries and influence how people behave by arranging their decision information, decision structure and decision assistance[51]. Practical applications of the nudge theory have shown that something as simple as framing options or setting a default may have a significant impact on pension savings[52], organ donations[53] and more[54]. Despite the acclaimed practical implementations of nudging, the theory has been ridden with libertarian paternalism and ethical critiques[55]. However, such *normative* discussion is outside the scope of this article, which focuses on nudging as understood in a *descriptive* sense[56].

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[48] Daniel Kahneman and Frederick, "A model of heuristic judgment", *in The Cambridge handbook of thinking and reasoning*, eds. Keith J. Holyoak and Robert G. Morrison (Cambridge: Cambridge University Press, 2005), 267-293; Keith Frankish, "Dual-process and dual-system theories of reasoning", *Philosophy Compass* 5, no. 10 (2010): 915.

[49] Richard Thaler and Cass R. Sunstein, *Nudge: Improving decisions about health, wealth, and happiness* (Penguin Books, 2009), 8.

[50] Cass R. Sunstein, "Nudging and choice architecture: Ethical considerations", *Yale Journal on Regulation* (2015): 8.

[51] Robert Münscher, Max Vetter and Thomas Scheuerle, "A review and taxonomy of choice architecture techniques", *Journal of Behavioural Decision Making* 29, no. 5 (2016): 514-519.

[52] Jonathan Cribb and Carl Emmerson, What happens when employers are obliged to nudge? Automatic enrolment and pension saving in the UK, IFS Working Paper W16/19 (November 2016) 10.

[53] "When push comes to shove: Nudge theory and organ donation", *DRG*, https://decisionresourcesgroup.com/blog/push-comes-shove-nudge-theory-organ-donation.

[54] The Behavioural Insights Team, Publications, accessed 16 June 2021: https://www.bi.team/our-work/publications/.

[55] See, among others: Daniel M. Hausman and Brynn Welch, "Debate: To nudge or not to nudge", *Journal of Political Philosophy* 18, no. 1 (2010): 123-136; Cass R. Sunstein, *Why nudge? The politics of libertarian paternalism* (Yale University Press, 2014); Mark White, *The manipulation of choice: Ethics and libertarian paternalism* (Springer, 2013).

[56] Marijn Sax, *Between empowerment and manipulation: The ethics and regulation of for profit health apps* (Proefschrift-aio.nl, 2021), 39.

With digitalization and technological developments, people's decision-making increasingly occurs online. Building upon the insights from the nudge theory, the IS research introduced the concept of digital nudging – a technique used by a choice architect to intentionally influence users' inputs and decisions via digital interface design[57]. While digital nudging can largely be viewed as a digital representation of the nudge, the unique characteristics of online environments, such as personalisation or automated real-time adjustment possibilities distinguish it from the analogue[58].

Hypernudging is one of the most sophisticated forms of digital nudging that allows for dynamically personalised user steering, where the aim is to reach the right user, with the right message, by the right means, at the right time, as many times as needed. This process may be visualised as a staircase: it is no longer about a single step placed by the choice architect to steer the user, but multiple steps that might come in different shapes, at different times, all with the goal to gently push them towards a specific outcome. As the design of these "steps" is informed by the deep knowledge about users' preferences and characteristics, the choice architect is able to lead them in a way that is not experienced as forced.

The argument of this article is unravelled by evaluating digital advertising as a form of hypernudging whilst placing it within the consolidated hypernudging framework. The framework consists of cumulative criteria based on behavioural economics-informed nudge theory, the Human-Computer Interaction (HCI) literature on digital nudging, and unique elements of hypernudging, as coined in the interdisciplinary law and informatics literature. Each criterion will be explained and compared with the features of local search advertising and integrated advertising campaigns, illustrating weaker to strong hypernudging opportunities via digital advertising.

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[57] Marcus Weinmann, Christoph Schneider, and Jan Vom Brocke, "Digital nudging", *Business & Information Systems Engineering* 58, no. 6 (2016): 435.

[58] Tim-Benjamin Lembcke, Nils Engelbrecht, Alfred Benedikt Brendel, Bernd Herrenkind, and Lutz M. Kolbe, "Towards a unified understanding of digital nudging by addressing its analog roots", in *PACIS*, 2019, 7. Sofia Schöbel et al. "Understanding user preferences of digital privacy nudges – A best-worst scaling approach". *Proceedings of the 53rd Hawaii International Conference on System Sciences*, 2020, 3919.

Basis		Hypernudging criterion
Behavioural economics grounded nudge theory	1.	Aspect of choice architecture
	2.	Does not prohibit options
	3.	Does not significantly change economic incentives
	4.	Intentional
	5.	Use of psychological insights
HCI digital nudging literature	6.	Delivered via digital interfaces
HCI personalised digital nudging literature and hypernudging as coined in the interdisciplinary law and informatics perspective	7.	Personalised
	8.	Dynamic
	9.	Predictive

Table 1: Consolidated hypernudging framework

3.2. Leading consumers with(in) Google Maps app

Google Maps is arguably the most popular and far-reaching maps service of all time[59]. For centuries, cartography science has been used to graphically represent geographical areas[60]. The advent of the digital technologies promoted an alternative configuration of mapping, which adopted the features of digital platforms, such as programmability, modularity and openness to multiple forms of participation[61]. The idea behind setting up Google Maps was to add a geographical dimension to Google's capital accumulation strategy of collecting data of users with Google services and monetizing these data through advertising-side of the business[62]. More and more pieces of data are now being tagged with geographic references, and online maps not only help users to navigate through the world, but also through this wealth of information[63]. Currently, the service includes information about, but not limited to, relevant business outlets, discounts

[59] Timothy Erik Ström, "Journey to the centre of the world: Google Maps and the abstraction of cybernetic capitalism", *Cultural Geographies* 27, no. 4 (2020): 561, 565.

[60] Eric Gordon, "Mapping digital networks: From cyberspace to Google", *Information, Communication & Society* 10, no. 6 (2007): 885, 886.

[61] Jean-Christophe Plantin, "Digital traces in context| Google maps as cartographic infrastructure: From participatory mapmaking to database maintenance", *International Journal of Communication* 12 (2018): 489, 490.

[62] Craig M. Dalton, "For fun and profit: The limits and possibilities of Google-Maps-based geoweb applications", *Environment and Planning* 5 (2015): 1029, 1038.

[63] Sé Bastien Caquard, "Cartography I: Mapping narrative cartography", *Progress in Human Geography* 37, no. 1 (2013): 138.

and customer reviews, with the underlying goal of providing users with the desired information within a one-app ecosystem[64]. Google Maps is also slowly morphing into a service of discovery, contributing to Google's ability to position itself as the "co-pilot" of users' decisions offline[65].

With the rise of smartphones, Google Maps has become an essential app for millions of users[66]. Google Maps Application Programming Interface (API) is used to power so many applications that it constitutes a *de facto* standard for online maps. Google's domination in contemporary popular cartography is driven by the company's position as the world's number one online search-engine, as well as default navigation app on its Android operating system, which captures 86% of smartphones globally[67].

Advertising services on Google Maps currently feature local search ads and promoted pins that primarily target the user based on their location information[68]. Local search ads refer to the top two results that show up after the user poses a query on the app and are accompanied with a purple "Ad" tag. Promoted pins are purple location pins designed to stand out from the ordinary red pins and are accompanied with a business logo. They are basically a local version of paid search ads and are used to increase physical footfall – consumers are targeted directly based on their searches for the business type, as well as the product or service that they are trying to find[69]. The advertiser is charged a standard PPC[70].

Local search advertising on Google Maps app is a subtype of search advertising for which the advertiser would generally use Google Search Network[71]. Considering Google's sustained and substantive market share

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[64] David Oragui, "How to advertise on Google Maps", *The Manifest*, August 7, 2018, https://themanifest.com/mobile-apps/how-advertise-google-maps.

[65] Shoshana Zuboff, *The age of surveillance capitalism: The fight for a human future at the new frontier of power* (New York: Hachette Book Group, 2019), 149.

[66] Craig M. Dalton and Jim Thatcher, "Seeing by the Starbucks: The social context of mobile maps and users' geographic knowledges", *Cartographic Perspectives* 2019, no. 92 (2019): 24.

[67] Ström, "Google Maps and the abstraction of cybernetic capitalism", 566.

[68] Ibid, 569.

[69] Jordan Choo, "Promote your franchise with Google Maps promoted pins", *Cogneta*, accessed June 30, 2021, https://kogneta.com/get-ready-aggressively-promote-local-franchises-google-maps/.

[70] "Attract new customers with local ads on the Google Maps app". *Google inside AdWorlds*, accessed June 30, 2021, https://adwords.googleblog.com/2013/08/attract-new-customers-with-local-ads-on.html.

[71] "Show local search ads on Google Maps", Google Ads Support, Google, accessed June 30, 2021, https://support.google.com/google-ads/answer/7040605?hl=en&ref_topic=3121771.

indicating market power on search advertising market and online maps services, it is plausible to examine whether local search advertising could be considered a form of hypernudging. This is going to be done by comparing its features to the characteristics of hypernudging.

(1) Aspect of choice architecture

Hypernudging is implemented by designing elements of users' decision-making context. This requirement is met as for a user that posed a search query, Google Maps user interface is the choice environment that presents them with decision-making options.

(2) Does not prohibit options

For a practice to constitute hypernudging, it must not prohibit any options[72]. However, by harnessing knowledge about users' specific circumstances and characteristics, it may impose *cognitive constraints* that hinder the exercise of a user's meaningful choice. Local advertising satisfies this criterion as users are not coerced to click on the ad, nor are they obliged to deviate from their preferred route towards promoted outlets. Nevertheless, the sheer volume of information (and options) on the Internet makes it costly to assess different presented alternatives – users' ability to understand the complete choice-set is hindered by cognitive constraints. Thus, the ordering of information affects the perception of the choice-set, allowing Google to exercise perception control over the user[73].

(3) Does not significantly change economic incentives

Hypernudging should not significantly affect users' economic incentives, though the wording implies that limited adjustment is possible. The local search ads are targeted based on users' data, including their demographics, but also behaviour, online habits and interests. Users "feed" Google's algorithm with this information, including data that allows deducing their economic incentives. When targeting users, Google is motivated to match specific users' economic incentives and budgetary constraints, instead of attempting to actively change them, as this increases the likelihood of "a

[72] Lembcke et al., "Towards a unified understanding", 10.

[73] Christian Meske and Tobias Potthoff, "The DINU-model – a process model for the design of nudges", *ECIS* (2017): 2587, 2593; Jamie Susskind, *Future politics: Living together in a world transformed by tech* (Oxford: Oxford University Press, 2018), 142-143.

click", resulting in collection of a fee from advertisers[74]. The matching, however, is not expected to be perfect, as the algorithm cannot take into account the unexpected events that have a financial impact on users in real life. This implies that in most cases the economic incentives will not be "significantly" changed, though with commercial ads a case-by-case assessment may be required.

(4) Intentional

Hypernudging is meant to lead users towards choice architects' intended outcomes[75]. Google's intention behind showing a particular ad is to entice the user to click on it, as the company gets paid a standard PPC rate[76]. The company is further incentivised to present ads that would lead to a desired transaction by the advertiser. This is because advertisers' expenditure is influenced by the return of investment (ROI) and how many of the clicks they paid for actually translated into a purchase. However, it is not self-evident that Google has an incentive to steer a user to a *specific* advertiser's offering (or outcome). In principle, any would do as long as the user clicks on the ad. Hence, "the intentionality for what" is the contentious issue here: in a broad sense, Google is intentional in showing the targeted ads that lead to the auction-winner's website. In a narrower sense, it is not clear that there is a preference-induced intention to steer users towards specific market outcomes. The requirement, therefore, is satisfied only in a weak sense.

(5) Use of psychological insights

The mechanisms used in hypernudging work by harnessing users' cognitive boundaries, personal characteristics and habits, instead of trying to rationally persuade or coerce them[77]. Digital advertising on Google Maps

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[74] Tom Simonite, "Google and Microsoft can use AI to extract many more ad dollar from our clicks", *WIRED*, 31 August, 2017, https://www.wired.com/story/big-tech-can-use-ai-to-extract-many-more-ad-dollars-from-our-clicks/.

[75] Karen Yeung, "The forms and limits of choice architecture as a tool of government", *Law and Policy* 38, no. 3 (July 2016): 187; Lembcke et al., "To nudge or not to nudge", 4.

[76] Ibid.

[77] Distinction should be made between nudging and persuasion, the latter focusing on a technically enabled influence. See B.J. Fogg, *Persuasive technology: Using computers to change what we think and do* (San Francisco, Morgan Kauffmann Publishers, 2013); Lembcke et al., "Towards a unified understanding", 10; Henrik Skaug Saetra, "When nudge comes to shove: Liberty and nudging in the era of big data", *Technology and Society* 1 (2019), 101-130.

is attractive to advertisers because users reveal their intentions in their search query[78]. The ads and recommendations are not expected to be off what the user was looking for – it is not irrational for the user to click on them. The use of psychological insights, however, comes with the ordering and ranking of available information, as searchers' behaviour is influenced by the framing of options[79]. The selection of specific ads may also be based on users' data that allows the algorithm to deduce their specific context. With developments in the emotion analytics field, it is not unlikely for consumer targeting to evolve towards catering for users' moods and personal characteristics, such as impulsiveness, creating opportunities to push their internal triggers[80].

In addition, local search advertising may play on users' perceived sense of urgency: if a user was browsing the web to search for a product X but did not want to commit to a purchase online, having a promoted pin with a discount on the way to their destination may work as a powerful nudge. Similar advertising techniques were tested out on Waze (now acquired by Google). In 2013, Taco Bell placed ads on Waze for the 12 pack for each Saturday morning thinking that people using Waze at that time were likely to get it on the way to watch college football. The campaign has proven to be successful, as Taco Bell managed to provide an attractive and relevant offer at the right point in time[81]. In this example, Taco Bell used the same tactic on consumers universally, and when it comes to dynamically

[78] Carsten D. Schultz, "Informational, transactional, and navigational need of information: Relevance of search intention in search engine advertising", *Information Retrieval Journal* 23, no. 2 (2020): 118.

[79] Lori Lorigo et al., "Eye tracking and online search: Lessons learned and challenges ahead", *Journal of the American Society for Information Science and Technology* 59, no. 7 (2008): 1041, 1044; Bing Pan et al., "In Google we trust: Users' decisions on rank, position, and relevance", *Journal of Computer-Mediated Communication* 12, no. 3 (2008): 801-823.

[80] Consider the nascent field of "emotion analytics", which focuses on identifying and analysing the full spectrum of human emotions including mood, attitude and emotional personality: Yuval Mor, "Emotions analytics to transform human-machine interaction", WIRED, accessed June 30, 2021, https://www.wired.com/insights/2013/09/emotions-analytics-to-transform-human-machine-interaction/; Tom Kelshaw, "Emotion analytics: A powerful tool to augment gut instinct", Think with Google, Google, August 2017, accessed June 30, 2021, https://www.thinkwithgoogle.com/intl/en-154/marketing-strategies/data-and-measurement/emotion-analytics-powerful-tool-augment-gut-instinct/.

[81] "Google's newest secret weapon for local ads". *Digiday*, accessed June 30, 2021, https://digiday.com/media/waze-advertisers/.

personalised predictive promoted pins, the potency of steering is expected to be higher[82].

The use of psychological insights does not imply that the user *must* be manipulated by the choice architect – users are not just puppets on a string. The more savvy web search users expect to be flooded with ads, thereby limiting their effectiveness in surpassing users' rationality. Some push back by using ad-blockers that reduce the inconvenience of digital advertising or by following the platform's manual procedures to turn off sponsored ads from certain providers[83].

(6) Delivered via digital interfaces

Hypernudging is delivered by using complex artificial intelligence and machine learning algorithms, thereby necessitating a digital interface. Google Maps user interface satisfies this requirement.

(7) Personalised

Hypernudging is tailored to each user based on their specific characteristics and circumstances (such as preferences, capabilities and opportunities)[84]. (Local) search advertising is generally considered a type of personalization strategy[85]. Possibilities to personalise ads to granular segments of audiences, or even individuals, is reflected in Google's audience targeting metrics[86] and personalisation policy[87]. Furthermore, the localisation of advertising messages for smartphone users creates opportunities to target them based on their mobile device's location at a particular time[88]. However, as

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[82] Anindya Ghose, Beibei Li, Siyuan Liu, "Mobile targeting using customer trajectory patterns", *Management Science* 65, no. 11 (2019): 5027-5049.

[83] See Simon Anderson and Joshua S. Gans, "Platform siphoning: Ad-avoidance and media content", *American Economic Journal: Microeconomics* 3, no. 4 (2011): 1. "Block certain ads", Google Ads Help, Google, accessed June 30, 2021, https://support.google.com/ads/answer/2662922?hl=en.

[84] Sandor Dalecke and Randi Karlsen. "Designing dynamic and personalized nudges", in *Proceedings of the 10th International Conference on Web Intelligence, Mining and Semantics* (2020), 140; Lanzing, "Strongly recommended", 554.

[85] Christian Schlee, *Targeted advertising technologies in the ICT space* (Wiesbaden: Springer Vieweg, 2013), 9-59.

[86] "About audience targeting". *Ads Help*, *Google,* accessed 11 January, 2021, https://support.google.com/google-ads/answer/2497941?hl=en.

[87] "Personalized advertising". *Advertising Policies Help, Google*, accessed 11 January, 2021, https://support.google.com/adspolicy/answer/143465?hl=en.

[88] Nancy J. King and Pernille Wegener Jessen. "Profiling the mobile customer – Privacy concerns when behavioural advertisers target mobile phones – Part I", *Computer Law & Security Review* 26, no. 5 (2010): 455-478.

Google Maps provides a single channel for advertising, it does not take into account where the consumer would be most receptive to the message. Thus, without being able to personalise the means of message delivery, this criterion is met, although it may be strengthened.

(8) Dynamic

Dynamism in context of hypernudging involves adjusting digital choice environments based on specific users' behaviour in real-time[89]. Dynamic personalisation is a quality of search ads – the same user posing a different search query is expected to receive different ads. Moreover, from the user's perspective, Google Maps operates in a highly blended choice architecture where online and offline are closely entwined[90]. Google Maps allows the user to make sense of the real world – both environments do not only co-exist, they go hand in hand, as the user will trust the online visualisation and directions to reach their offline destination. The directions are adjusting in real-time, responding to users' changing location and needs: would the user deviate from the proposed path, Google Maps would react with a new recommendation[91]. The presented ads adjust too, rendering the choice architecture dynamic.

(9) Deductive/predictive

Hypernudging is deployed based on the inferences about users' inner trigger points (personality, values, emotions) from their data. In digital advertising, statistical predictions are generally used to enrich users' profiles[92]. With the developments in predictive analytics, it is now possible to deduce individuals' personality traits based on their web search behaviour such as "the number of keywords one uses, click habits, the number of repetitions [and] dwell time"[93]. Even though the accuracy of such deductions and predictions is not perfect, in general digital search advertising satisfies this requirement.

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[89] Lanzing, "Strongly recommended", 553.

[90] On blended environments: Urte Undine Frömming, Steffen Köhn, Samantha Fox, and Mike Terry, "Digital environments and the future of ethnography. An introduction" (2017): 13.

[91] Yeung, "Hypernudge".

[92] Schlee, *Targeted advertising*, 9-59.

[93] Dong Nie et al., "Your search behaviour and your personality", in *Pervasive computing and the networked world*, eds. Zu Q., Vargas-Vera M., Hu B. (Springer, Cham, 2013), 459-470.

Basis		Hypernudging criterion	Local search advertising
Behavioural economics grounded nudge theory	1.	Aspect of choice architecture	Yes
	2.	Does not prohibit options	Yes
	3.	Does not significantly change economic incentives	Yes
	4.	Intentional	Yes (Weak)
	5.	Use of psychological insights	Yes
HCI digital nudging literature	6.	Delivered via digital interfaces	Yes
HCI personalised digital nudging literature and hypernudging as coined in the interdisciplinary law and informatics perspective	7.	Personalised	Yes
	8.	Dynamic	Yes
	9.	Predictive	Yes

Table 2: Comparison of hypernudging with local search advertising

The above assessment has shown that local search advertising on Google Maps meets the criteria relevant for a practice to constitute a form of hypernudging. While most of the requirements are clearly satisfied, some uncertainties remain. Intentionality is imperative in order for a choice architect – in this case, Google – to hypernudge users towards specific pre-defined outcomes. It is not clear whether it is sufficient to merely steer the user to click on an ad, or whether the company should engage in international steering towards favoured ads. Furthermore, while Google Maps user interface could be considered a dynamically personalised choice architecture, it does not take into account whether the user is receptive to this type of advertising. Thus, while Google Maps allows to target the right user, by the right message, at the right time, it might miss the mark as to the right means of delivery. The opportunities to take into account the mix of ads arise with integrated advertising campaigns, which will be assessed next.

3.3. Integrated advertising campaigns

Integrated advertising campaigns combine multiple channels of advertising such as search and display ads in order to promote a consistent message to a specific audience[94]. The goal is to convert viewers into customers by pinpointing where in the purchasing funnel – a staged process that a customer takes to buy a product – the consumer is and adjusting the

[94] "Digital marketing terms, integrated campaign". *Campaign Monitor*, https://www.campaignmonitor.com/resources/glossary/integrated-campaigns/.

message accordingly[95]. It involves coordinating the elements of advertising mix to create synergies between them[96]. Just as the most sophisticated hypernudging processes, integrated advertising campaigns are no longer about a specific ad delivered to the right user in a particular moment – they are about multiple ads, delivered via multiple channels over time to gently steer them towards a specific transaction.

Currently, most of the digital advertising campaigns are delivered via programmatic advertising, which has introduced new opportunities to reach the right user profile with the right message, time, quality, location and price of the offer[97]. This is made possible by the "constant collection and updating of user data from campaigns and digital platforms, matched with real time optimization"[98], thereby unlocking personalization and relevancy potential. Programmatic technology facilitates automated processes that entail real-time ad creation based on real-time information, all serving to steer consumer behaviour based on their specific context[99].

As discussed earlier (see section 2.1), Google is a systemic market actor within each layer of digital advertising value chain. With regard to integrated advertising campaigns, Google offers a number of products and services designed to allow advertisers to reach their audiences in an efficient and effective manner. Take the example of Google's Display and Video 360 (DV360) – a DSP that enables advertisers to manage their programmatic campaigns across display, video, TV, audio and other channels in one place[100]. It provides a consolidated approach to advertising, where business users are able to reach more unique consumers as well as different inventory sources and transaction types whilst saving time and

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[95] Bernard J. Jansen and Simone Schuster, "Bidding on the buying funnel for sponsored search and keyword advertising", *Journal of Electronic Commerce Research* 12, no. 1 (2011): 1; Catherine Seda, *Search engine advertising: Buying your way to the top to increase sales* (Boston: New Riders, 2004).

[96] Bob M. Fennis and Wolfgang Stroebe, *The psychology of advertising* (Routledge, 2020), 27.

[97] Oliver Gertz and Deirdre McGlashan, "Consumer-centric programmatic advertising", in *Programmatic advertising*, ed. Oliver Busch (Switzerland: Springer International Publishing, 2016): 58.

[98] Andy Stevens, Andreas Rau, and Matthew McIntyre, "Integrated campaign planning in a programmatic world", in *Programmatic advertising*, ed. Oliver Busch (Switzerland: Springer International Publishing, 2016), 193.

[99] Oliver Busch, "The programmatic advertising principle", in *Programmatic advertising*, ed. Oliver Busch (Switzerland: Springer International Publishing, 2016), 8.

[100] "Display & video 360", Product Overview, Google, 1, accessed 29 June, 2021, https://services.google.com/fh/files/misc/display_and_video_360_product_overview.pdf.

streamlining administration[101]. Taking multi-channel advertising campaigns a step further, Google not only encourages integrating its other services such as Google Analytics or Google Cloud, it offers a Google Marketing Platform which unifies advertising and analytics services together[102].

While, in light of the hypernudging framework, digital advertising via integrated advertising campaigns shares a number of characteristics similar to single channel advertising such as local search advertising on Google Maps, by reaching the right user with various types of ads over prolonged periods of time it exhibits at least two qualitative differences rendering such digital advertising a strong form of hypernudging.

Firstly, the design of integrated advertising campaigns allows evoking stronger psychological responses from the consumer. Take the example of priming – a technique that engages people to a task or exposes them to stimuli. It consists of meanings that evoke associated memories and in turn may influence people's behaviour[103]. By showing ads across different channels, the advertiser may be able to trigger consumers' "mental playback" so that they remember a related message from another channel. When consumers observe the same information across different sources over time, they may perceive it as more credible[104]. Furthermore, with constant user targeting, advertisers may be able to create a sense of brand familiarity[105]. People tend to choose familiar brands over novelty, and repeating the same, differently formulated message via multiple channels over time may help to achieve that[106].

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[101] Ibid, 3.

[102] "Google marketing platform", Google, accessed June 29, 2021, https://marketingplatform.google.com/about/.

[103] "Priming(conceptual)",*behaviouraleconomics.com*,accessedJune29,2021,https://www.behaviouraleconomics.com/resources/mini-encyclopedia-of-be/priming-conceptual/#:~:text=Priming%20(Conceptual)behaviouralecon2019%2D,%2C%20attitudes%2C%20etc.); Alain Cohn and Michel André Maréchal, "Priming in economics", *Current Opinion in Psychology* 12 (2016): 17-21.

[104] Lawrence Ang, *Principles of integrated marketing communications* (Cambridge: Cambridge University Press, 2021), 6.

[105] Jairene Cruz-Eusebio, "Encourage purchase through the mere exposure effect or the familiarity principle", *Brax*, March 24, 2021, https://www.brax.io/blog/the-magic-of-the-mere-exposure-effect-or-the-familiarity-principle.

[106] William Baker, J. Hutchinson, Danny Moore, and Prakash Nedungadi, "Brand familiarity and advertising: Effects on the evoked set and brand preference", *ACR North American Advances* (1986), 301.

Secondly, programmatically delivered integrated advertising campaigns are highly personalised. For instance, possibilities for creative dynamic optimization (CDO) allow advertisers to easily swap out creative content with the goal to deliver messages crafted to specific users[107]. Moreover, it is no longer only about the right user receiving the right message at the right time; individuals can be targeted by the right means depending on what that specific user is receptive to in a given moment. Considering Google's user base and potential for data synergies across its many business domains, identifying how and when the user should receive a particular message is, at the very least, plausible.

Basis		**Hypernudging criterion**	**Integrated advertising campaign**
Behavioural economics grounded nudge theory	1.	Aspect of choice architecture	Yes
	2.	Does not prohibit options	Yes
	3.	Does not significantly change economic incentives	Yes
	4.	Intentional	Yes (Weak)
	5.	Use of psychological insights	Yes (Strong)
HCI digital nudging literature	6.	Delivered via digital interfaces	Yes
HCI personalised digital nudging literature and hypernudging as coined in the interdisciplinary law and informatics perspective	7.	Personalised	Yes (Strong)
	8.	Dynamic	Yes
	9.	Predictive	Yes

Table 3: Comparison of hypernudging with integrated advertising campaigns

Nevertheless, just as with local search advertising on Google Maps, the hypernudging requirement of intentionality in integrated advertising campaigns remains satisfied in a weak sense. While Google has an incentive and intent to present users with ads that make them "click", it is not clear that there is an intention to point them towards specific advertisers' content. Therefore, hypernudging via digital advertising as examined up to this point is a relatively neutral practice, guided by the market dynamics of supply and demand for ads. The next section will elaborate why the platform's economic imperatives – or intentions – matter in this context

[107] "About dynamic creatives", Studio Help, Google, accessed June 29, 2021, https://support.google.com/richmedia/answer/2691686?hl=en; Gertz and McGlashan, "Consumer-centric programmatic advertising", 65-66.

and the circumstances in which hypernudging may lead to harmful market outcomes.

4. Hypernudging within digital advertising markets: Consumer harm?

The possibility offered by a platform such as Google to reach the right user, with the right message, by the right means and at the right time carries the promise of more effective targeting, which leads to better click-through rates and – ultimately – sales[108]. In (local) search advertising, Google holds significant market power that allows it to orchestrate the interactions between market players on the user- and advertiser-side of the market. From the market perspective, this is not a cause for concern, as long as there are no harms associated with market failures[109]. However, Google's position of power, coupled with the complex and opaque mechanisms that drive the digital advertising market, creates opportunities for hypernudging that may result in market manipulation and consumer harm. This section will assess the challenges of hypernudging through the lens of both the market and the user, highlighting the entwinedness and reinforcing qualities of both sides of the market. It will further examine whether these effects may be addressed by European competition law – a legal field concerned with curbing the negative effects of market power.

4.1. Intermediation bias and systemic market manipulation

Google is a systemic market actor on the user- and advertiser-facing sides of the business. When it comes to local search advertising on Google Maps, the market is concentrated; similarly, Google holds a strong market position within the online advertising technology sector[110]. This means that Google's design of choices shapes market players' economic interactions in this space. From a public policy perspective, it is imperative to question

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[108] Note, the effectiveness and welfare effects of digital advertising are inconclusive: Marc Bourreau, Alexandre De Streel, and Inge Graef. "Big Data and competition policy: Market power, personalised pricing and advertising". *Personalised pricing and advertising (February 16, 2017)* (2017); on effectiveness: Steffen Försch and Evert de Haan. "Targeting online display ads: Choosing their frequency and spacing". *International Journal of Research in Marketing* 35, no. 4 (2018): 661-672; Alexander Bleier and Maik Eisenbeiss, "The importance of trust for personalized online advertising", *Journal of Retailing* 91, no. 3 (2015), 390.

[109] Robert Baldwin, Martin Cave, and Martin Lodge, *Understanding regulation: Theory, strategy, and practice* (Oxford University Press on Demand, 2012).

[110] European Commission, Antitrust: Commission opens investigation into possible anticompetitive conduct by Google in the online advertising technology sector, 22 June 2021, accessed June 29, 2021, https://ec.europa.eu/commission/presscorner/detail/en/ip_21_3143.

whether concentration in such markets can also lead to sub-optimal design of these choices[111]. The overarching concern of hypernudging via digital advertising is the potential for systemic market manipulation. The concept was developed by Hanson and Kysar and refers to a situation where, due to the presence of unyielding cognitive biases, individual decision-makers become susceptible to manipulation by *those* who are able to influence the choice environment in which their decisions are made[112]. In the context of Google, by using data insights into individual users' cognitive processes and controlling the supply of ads, the platform may systemically steer market outcomes towards its own profit-driven objectives. For market manipulation to occur, hypernudging should be driven by the platform's bias[113].

Generally, Google has the incentive to offer users most relevant recommendations because they can capture part of the value that has been created for both the consumer and businesses that are being intermediated[114]. However, due to the information overload character of the available content and user-dependency on the algorithmic pre-selection of that content, the platform may inject profit-driven interests into their algorithm management[115]. This may lead to intermediation biases that result in consumer harm, both by providing them with poorer offerings on the platform and by distorting competition in the relevant downstream market, for instance by favouring a downstream affiliate partner[116].

Challenges arising from intermediation bias are familiar to European competition law. These include self-preferencing and favouritism behaviour by dominant market players, which may lead to foreclosure of

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[111] Emilio Calvan and Michele Polo, "Market power, competition and innovation in digital markets: A survey", *Information Economics and Policy* 100853 (2020): 8.

[112] Jon D. Hanson and Douglas A. Kysar, "Taking behaviouralism seriously: The problem of market manipulation" *New York University Law Review* 74: 635; Ryan Calo, "Digital market manipulation", *George Washington Law Review* 82 (2013): 1001.

[113] Sophia Gaenssle and Oliver Budzinski, "Stars in social media: New light through old windows?" *Journal of Media Business Studies* 1 (2020), 9.

[114] Ibid.

[115] Ibid.

[116] Richard Feasey and Jan Krämer. *Implementing effective remedies for anti-competitive intermediation bias on vertically integrated platforms*. Centre on Regulation in Europe asbl (CERRE), 2019, 5; Alexandre De Corniere and Greg Taylor, "A model of biased intermediation", *The RAND Journal of Economics* 50, no. 4 (2019): 858; Bernhard Rieder and Guillaume Sire, "Conflicts of interest and incentives to bias: A microeconomic critique of Google's tangled position on the web", *New Media & Society* 16, no. 2 (2014): 205.

competitors to the detriment of consumers[117]. The European Commission has already sanctioned Google for exclusionary conduct in a saga of abuse of dominance decisions[118]. Each investigation showcased how Google's ability to integrate different activities across its business domains fosters a relationship of economic dependency vis-à-vis business users and final consumers, thereby creating room for abusive behaviour[119]. Decisions also considered the systemic effects of algorithmic design choices on user behaviour in facilitating such anticompetitive outcomes[120].

Hypernudging via digital advertising could be considered another potentially harmful manifestation of Google's market power. While quantification of the prevalence of biases and consumer harm is unviable, as it is hidden within Google's proprietary data, recent investigations into ad tech markets offer a glimpse into the issues[121]. For example, Google has been accused of impeding interoperability and self-preferencing its own ad tech services[122]. The company is able to prioritise its products and services when competing with other advertisers for relevant keywords[123]. Furthermore, concerns have been raised over the "two-class society of

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[117] Jorge Padilla, Joe Perkins, and Salvatore Piccolo, "Self-preferencing in markets with vertically-integrated gatekeeper platforms", available at *SSRN 3701250* (2020); Nicolas Petit, "Theories of self-preferencing under Article 102 TFEU: A reply to Bo Vesterdorf", *Competition Law & Policy Debate* 1 (2015); Press Release, "Antitrust: Commission fines Google € 2.42 billion for abusing dominance as search engine by giving illegal advantage to own comparison shopping service", IP/17/1784, 27 June 2017.

[118] *Google Search (Shopping)*, AT.39740, C(2017) 4444 final; *Google Android,* AT.40099, C(2018) 4761 final; *Google Search (AdSense)*, AT.40411, C(2019) 2173 final.

[119] *Google Search (Shopping)*, AT.39740, C(2017) 4444 final, paragraphs 158-159, 341; *Google Android,* AT.40099, C(2018) 4761 final, paragraphs 105-111, 458, 1016; *Google Search (AdSense)*, AT.40411, C(2019) 2173 final, paragraphs 330-332.

[120] Nicolo Zingales, "Google Shopping: Beware of 'self-favouring' in a world of algorithmic nudging", *Competition Policy International-Europe Column* (2018): 3; *Google Search (Shopping)*, AT.39740, C(2017) 4444 final, paragraphs 454-457, 461, 491-494; *Google Android*, AT.40099, C(2018) 4761 final, paragraphs 781-782, 918.

[121] CMA, *Online platforms and digital advertising*; The ACCC, "Digital platforms inquiry"; Fourberg et al., *Online advertising*; *Google Search (AdSense)*, AT.40411, C(2019) 2173 final.

[122] Fourberg et al., "Online advertising", 45; European Commission, *Antitrust: Commission opens investigation into possible anticompetitive conduct by Google in the online advertising technology sector*, 22 June 2021, accessed June 29, 2021, https://ec.europa.eu/commission/presscorner/detail/en/ip_21_3143.

[123] Dina Srinivasan, "Why Google dominates advertising markets. Competition policy should lean on the principles of financial market regulation", *Stanford Technology Law Review* 24, no. 1 (2020): 61.

advertisers" because of "Preferred Deal" and private auction options[124]. The recent investigation into Google's behaviour in the search advertising market also uncovered hidden market sharing and preferential deals, granting data and speed advantages to some business users, including Facebook[125].

While Google is subject to on-going antitrust investigations on both sides of the Atlantic, drawing concrete conclusions about biased ad market intermediation is premature. However, the pre-requisite for reducing uncertainties is close market scrutiny over time. This may be facilitated by transparency obligations imposed by regulatory regimes, including the recent Digital Markets Act proposal[126].

4.2. Individual perception control and limitation of choice

Central to market manipulation concerns is systemic behaviour by individual users[127]. By virtue of controlling the filtering process of what the user is exposed to – be it publishers' content or ads – Google is in a position to exercise perception control over the individual and hypernudge them towards specific market outcomes[128]. Thus, when a user is navigating through an unfamiliar territory with the help of Google Maps, their perception of surroundings and their importance will depend on what the company's algorithm chooses to reveal, and in what way. The crude result of such perception control is *de facto* limitation of consumer choice: you cannot choose what you cannot see; taking a step further, you cannot want what you do not know exists.

There is a negative connotation associated with limitation of choice, as it appears axiomatic that more choice is always better. However, the research reveals that adding more alternatives to the choice-set increases satisfaction only up to a certain point due to the increased decision-making

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[124] Fourberg et al., "Online advertising", 26.

[125] The State of Texas et al., Complaint against Google, accessed June 29, 2021, paragraph 14, https://www.texasattorneygeneral.gov/sites/default/files/images/admin/2020/Press/20201216%20COMPLAINT_REDACTED.pdf.

[126] Mike Ananny, and Kate Crawford, "Seeing without knowing: Limitations of the transparency ideal and its application to algorithmic accountability", *New Media & Society* 20, no. 3 (2018): 973, 978.

[127] Hanson and Kysar, 'The problem of market manipulation"; Jon D. Hanson and Douglas A. Kysar, "Taking behaviouralism seriously: Some evidence of market manipulation", *Harvard Law Review* (1999): 1420-1572.

[128] Susskind, *Future politics*, 142-143.

costs – or, cognitive overload[129]. This choice paradox is particularly acute in online spaces, where users are exposed to a large set of alternatives for each search query, thereby necessitating some form of information sorting to allow them to dedicate more of their attention towards the most important decisions in life – it may be welfare- and autonomy-enhancing[130]. In fact, algorithmic systems can teach us things we do not know about ourselves: they not only help to predict and shape, but also uncover deeply hidden preferences[131]. Thus, limiting the choice of ads the user is exposed to may have positive effects. For instance, the increase in the number of consumer-product matches because of relevancy may elevate the social value of advertising[132].

The positive nature of choice limitation hinges on the premise that Google is a benevolent choice architect. However, with profit imperatives and potential intermediation bias at play, the company's goals may be inconsistent with users' preferences. As hypernudging is designed to hinder or even block individuals' reflection upon available options, for instance, through emotionally tailored messages, it carries behavioural manipulation potential[133]. Vast amounts of user data, at least theoretically, allow Google to identify exactly where in the purchasing funnel the consumer is. Deducting when the user is most likely to move further down the funnel and what type and form of messages induce the right response at a given moment is invaluable for leading them there. Automatic algorithmic systems may pick up on when the proposed offer is not working and recalibrate – the user can be retargeted later on. When it comes to influencing the user, it may no longer be about exposing them to a certain ad at one given point, but priming them at multiple moments, with multiple ads (and in the context of programmatic advertising – multiple business

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[129] Adi Ayal, "Harmful freedom of choice: Lessons from the cellphone market", *Law and Contemporary Problems* 74, no. 2 (2011): 94; Barry Schwartz and Andrew Ward, "Doing better but feeling worse: The paradox of choice", *Positive Psychology in Practice* (2014): 86.

[130] Antti Oulasvirta, Janne P. Hukkinen, and Barry Schwartz, "When more is less: The paradox of choice in search engine use", in *Proceedings of the 32nd international ACM SIGIR conference on research and development in information retrieval*, 2009, 516-523; Cass R. Sunstein, "Nudging and choice architecture: Ethical considerations", *Yale Journal on Regulation* (2015), paragraphs 87-88.

[131] Michal S. Gal, "Algorithmic challenges to autonomous choice", *Michigan Technology Law Review* 25, no. 1 (2018): 59.

[132] Dirk Bergemann, and Alessandro Bonatti, "Targeting in advertising markets: Implications for offline versus online media", *The RAND Journal of Economics* 42, no. 3 (2011): 417.

[133] Robert Baldwin, "From regulation to behaviour change: Giving nudge the third degree", *The Modern Law Review* 77, no. 6 (2014): 837.

domains, see section 2.2) – all this ultimately leading to the same outcome. Thus, hypernudging may result in systemic diversion of consumer attention towards favoured ads, thereby negatively affecting consumer choice[134].

European competition law is concerned with protecting the material welfare of society and with systemic large-scale hypernudging, the aggregate effects of limitation of choice may point towards anticompetitive market behaviour[135]. By taking advantage of users' behavioural inclinations and by imposing environmental constraints, the company might be engaging in exploitative practices. When such conduct results in direct harm to final consumers, it may fall within the scope of Article 102 TFEU prohibition[136]. However, exploitative abuses have not received much attention from competition authorities in the past, leading to uncertainties concerning its scope of application[137]. This can partially be explained by high burden of proof and overlaps with sector-specific regulation, which allowed the Commission to focus its priorities into investigating exclusionary abuses[138].

With the challenges brought by the consumer-centric digital economy, there seems to be a paradigm shift towards expanding the protection of consumers' interests and possibly reconfiguring the boundaries of European competition law enforcement[139]. Competition authorities are

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[134] Fourberg et al., *Online advertising*, 33.

[135] Katalin Judit Cseres, *Competition law and consumer protection*, vol. 49 (Kluwer Law International BV, 2005) 311. However, as consumer welfare effects are mixed, hypernudging via digital advertising should not be prohibited, but assessed on a case-by-case basis. See Marco Botta and Klaus Wiedemann, "To discriminate or not to discriminate? Personalised pricing in online markets as exploitative abuse of dominance", *European Journal of Law and Economics* 50, no. 3 (2020): 381.

[136] Ibid, 389. See also Pinar Akman, "The role of exploitation in abuse in Article 82 EC", *Cambridge Yearbook of European Legal Studies* 11 (2009): 167.

[137] Botta and Wiedemann, "To discriminate or not to discriminate?", 390.

[138] Ibid, 389.

[139] In particular, competition authorities placed much focus on the interplay between competition law and data protection, see Case C-319/20: Request for a preliminary ruling from the Bundesgerichtshof (Germany) lodged on 15 July 2020 – *Facebook Ireland Limited v. Bundesverband der Verbraucherzentralen und Verbraucherverbände – Verbraucherzentrale Bundesverband e.V.*; European Commission, Antitrust: Commission opens investigation into possible anticompetitive conduct by Google in the online advertising technology sector, 22 June 2021, accessed June 29, 2021, https://ec.europa.eu/commission/presscorner/detail/en/ip_21_3143. Maureen K. Ohlhulsen and Alexander P. Okuliar, "Competition, consumer protection, and the right [approach] to privacy", *Antitrust Law Journal* 80 (2015): 121-156. Viktoria HSE Robertson, "Excessive data collection: Privacy considerations and abuse of dominance in the era of big data", *Common Market Law Review* 57, no. 1 (2020): 161-190. Giuseppe Colangelo and Mariateresa Maggiolino, "Data accumu-

expected to be able to intervene in the presence of market failures, despite the overlap with other regulatory regimes, including data protection and consumer protection law[140]. A salient example is the German competition authority's decision on Facebook's data collection and processing practices, which were considered to constitute exploitative conduct[141]. Upon appeal of the decision, the Higher Regional Court of Düsseldorf filed a request for a preliminary ruling from the European Court of Justice, with questions centring around the nexus between competition law and data protection law enforcement[142]. Thus, even if hypernudging via digital advertising complied with other relevant legal rules, with anticompetitive effects felt on the market, competition law could be expected to be used as a remedy.

5. Conclusion

This contribution has shown that Google is a systemic actor in the digital advertising ecosystem. Its presence within each layer of the value chain, combined with the control and opaqueness of advertising services, creates dependency and other challenges for business users. Google is also a choice architect that shapes users' experiences on its platform's business domains, including the ads shown to them. Therefore, the company is uniquely positioned to hypernudge users towards specific market outcomes; it has the ability to steer within markets whilst following its economic imperatives.

Positioning digital advertising by Google within a hypernudging framework provides a new lens for studying Google's potential influencing of digital advertising markets and consumers. Hypernudging refers to one of the most sophisticated data-driven nudging practices which allows for dynamically personalised user steering, where (with perfect execution) the right

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lation and the privacy-antitrust interface: Insights from the Facebook case", *International Data Privacy Law* 8, no. 3 (2018): 224-239; Miriam Caroline Buiten, "Exploitative abuses in digital markets: Between competition law and data protection law", *Journal of Antitrust Enforcement* (2020): 1.

[140] Botta and Wiedemann, "To discriminate or not to discriminate?", 390.

[141] Bundeskartellamt, "Bundeskartellamt prohibits Facebook from combining user data from different sources", February 7, 2019, https://www.bundeskartellamt.de/SharedDocs/Meldung/EN/Pressemitteilungen/2019/07_02_2019_Facebook.html.

[142] Case C-319/20. See also the recent Commission's investigation into Google's online advertising technology sector, which highlighted "the need to protect user privacy, in accordance with EU laws in this respect, such as the General Data Protection Regulation (GDPR). Competition law and data protection laws much work hand in hand". European Commission, Antitrust: Commission opens investigation into possible anticompetitive conduct by Google in the online advertising technology sector, 22 June 2021, accessed June 29, 2021, https://ec.europa.eu/commission/presscorner/detail/en/ip_21_3143.

user is reached with the right message, by the right means, at the right time, as many times as needed. When examining local search advertising on Google Maps and integrated advertising campaigns delivered via Google's ad tech, with the company holding sizeable and durable positions in each of these markets respectively, it can be concluded that both could constitute a form of hypernudging. With potential intermediation biases at play, such steering may lead to systemic market manipulation and consumer harm. This makes it clear that the hypernudging manifestations seem to fall within the realm of competition law relevant practices. Competition authorities may examine self-preferencing behaviour as potential exclusionary abuse; similarly, by focusing on direct harm to consumers, they may explore the exploitative abuse route. Nevertheless, to date, there is no conclusive evidence that the company is in fact engaging in such practices.

Finally, as shown by this article, Google's systemic position on the advertiser- and user-sides of the market is the source of hypernudging – effects felt on both are not only inseparable, they are mutually reinforcing. In fact, hypernudging users would not be possible without Google's wide user reach, data advantages and inventory of search and display ads associated with a large advertiser base. While smaller market players may be able to facilitate some forms of nudging, unlike Google, they may not be able to deliver all, or even most, of the following: the right message, to the right user, by the right means, at the right time, as many times as needed. Missing the mark for any of these elements is expected to limit the dynamism and potency of these processes, also leading to fewer potentially negative effects on the market and individual users. Therefore, only once we zoom out and consider both sides of the market, the full picture of the sources and impact of hypernudging emerges. This may require stepping outside the realms of traditional competition law assessment and embracing the more holistic approach towards the understanding of respective markets and the processes that occur within.

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