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Artificial intelligence in marketing: friend or foe of sustainable consumption?

Erik Hermann[1]

A pivotal assumption of neoclassical economics is that both companies and consumers aim at optimizing self-interests. While the former seek to maximize profits, the latter pursue maximizing utility, satisfaction, and happiness. Consumers (can) derive utility and happiness from consumption, whose scale and scope is a function of their standard of living, among other things. Whether these tenets can and should be countered by anti-consumption, de-growth, and sufficiency is a higher-level discussion and out of scope of this paper. Instead, I adopt an advocacy perspective propagating to optimize the status quo by leveraging AI in marketing to gradually approach sustainable consumption.

Marketing claims to help consumers by satisfying wants and needs, but an endless quest for satisfying wants and needs can further fuel consumption, which in turn, depletes resources, adversely impacts the environment, and drives climate change. As companies and marketers increasingly acknowledge the need to pursue the transition to sustainable business and marketing practices (White et al. 2019), so we as consumers shape companies' environmental agendas by demanding sustainable products and services. In light of the environmental imperative and the stance of sustainable development, artificial intelligence (AI) in marketing is a double-edged sword. On the one hand, AI applications and systems in marketing—in essence—pursue sales' objectives and increase consumption and its (negative) externalities. For instance, Amazon—whose e-commerce platform relies on AI-driven recommender systems and collaborative filtering—had a relative carbon footprint of 122.8 g of CO_2 equivalents per dollar of gross merchandise sales in 2019 (Amazon 2020). Given Amazon's multi-billion sales volume, the carbon footprint of the world's largest e-commerce company alone equals dozens of tons of CO_2 emissions annually.

Moreover, energy consumption and emissions related to AI development, production, and deployment induce adverse rebound effects. On the other hand, AI in marketing can be a powerful force in promoting supply- and demand-side sustainability efforts. Correspondingly, AI's potential to foster sustainability in marketing should be leveraged across the four Ps of the marketing mix including product, price, place (distribution), and promotion (communication).

First, AI can inform product and service design and development processes (i.e., product) by identifying or anticipating sustainable product/service attributes that are valued most by consumers. Second, AI-enabled income prediction from digital footprints can contribute to personalize prices (i.e., price) based on consumers' potential willingness to pay for environmentally sustainable offerings. Third, AI can bring together sustainable products and services and consumer segments being best suitable for such offerings (i.e., place and promotion). Since particularly psychological factors can strengthen or inhibit consumers' sustainable consumption intentions and behavior, AI can segment and target consumers according to their (psychological) predisposition to sustainable offerings (i.e., psychological targeting). Thereby, marketers can streamline distribution and promotion strategies by means of online, mobile, and in-store psychological targeting. However, that should not be a short-term strategy merely and exclusively driven by sales objectives. Instead, marketers should harness AI applications to empower individuals to "consume better but less" (Wiedmann et al. 2020, p. 4). That is, AI in marketing should support us in making better (informed) and more sustainable decisions. Given that marketing and consumption are part of billions of consumers' everyday lives, even small individual (consumer) behavioral changes can take substantial aggregate effects. Particularly, the various psychological barriers to more sustainability—the "dragons of inaction" (Gifford 2011, p. 290)—should be lowered by marketers while accounting for consumers' autonomy and self-determination.

✉ Erik Hermann
    hermann@ihp-microelectronics.com

1   Wireless Systems, IHP – Leibniz-Institut für innovative Mikroelektronik, Frankfurt (Oder), Germany

Probably most importantly, our limited cognition (e.g., ignorance and environmental numbness) in relation to environmentally damaging and unsustainable consumption behavior should be addressed. Marketing should fulfill its information function, and respective AI-powered devices and applications could permanently update and provide our current ecological footprint (e.g., CO_2 emissions, water consumption) based on our purchase history and decisions. In addition, the individual ecological footprint could be compared to an individually defined social comparison groups (e.g., demographically comparable peer groups, regional or national averages etc.) to induce a certain degree of social pressure. Even if consumption might not be avoided by such approaches, it could be at least reduced or redistributed. That is, consumers might develop mental (environmental) accounting routines by balancing environmental footprints across different product categories or consumption contexts (i.e. accounts). Nevertheless, such approaches should also illustrate and quantify the consequences of our individual (un-)sustainable purchase decision(s) in global and long-term perspectives. Otherwise, the detrimental externalities in the countries of production—among other things—would be neglected.

Sustainable consumption does not have to be an oxymoron. Consumers—particularly in affluent countries—have to be made aware that each and every of their purchase decisions are related to environmental externalities in their home countries and—even more importantly—in the countries of production, since there is no global equity in environmental pollution and resource depletion. By raising awareness and tailoring sustainable offerings by means of the 4Ps of the marketing mix, consumers can be empowered to opt for more sustainable products and services. Thereby, AI in marketing can transition from an alleged foe and inhibitor to a powerful friend and enabler of sustainable consumption. Nevertheless, that is not to say that the technological advances of AI suffice to achieve sustainable consumption. Instead, individual lifestyle changes and questioning the economic and socio-cultural growth and consumption imperatives have to be seriously contemplated.

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