

# The Use of AI in Personalized Marketing: Balancing Benefits and Privacy Concerns

Mandeep Yadav<sup>1</sup>, Amitesh Kumar<sup>2</sup>, Rachit Jha<sup>3</sup>

UG Students, Department of Computer Science and Engineering<sup>1,2,3</sup>

Dronacharya College of Engineering, Gurugram, India

**Abstract:** In general, the integration of Artificial Intelligence into personalized marketing has revolutionized the mode in which companies engage with their consumers, enabling them to deliver tailor-made experiences and targeted ads dependent on consumers' individual preferences and activities. The above analysis gets driven by the fact that the utility of AI in personalized marketing enhances customer satisfaction, increases sales, and improves the overall efficiency of marketing. However, the vast application of Artificial Intelligence in personalized marketing usage has raised significant privacy concerns centring on the aspect of data collection, profiling, as well as the use of targeted ad measures for strategies. For this reason, it is imperative that while the benefits of personalized marketing via AI are maximized, privacy considerations should also be taken into account to build consumers' trust and compliance with relevant laws.

**Keywords:** Artificial Intelligence, Personalized Marketing, Privacy Concerns, Data Collection, Ethical Implications

## REFERENCES

- [1]. "AI Has Launched a \$200 Billion Revolution in Content Personalization October 05, 2021 By Silvio Palumbo , Mario Simon , Will Cornock , Chris George, and Yohei Shoji Companies looking to make a step change in customer and consumer engagement should investigate this powerful new technology now."
- [2]. URL: <https://www.bcg.com/publications/2021/ai-content-generation-is-a-2-billion-dollar-revolution-in-content-personalization>.
- [3]. "Advanced personalization and recommendation systems are the brains behind every customer facing technology in your business - including voice enabled devices, configurable offerings, sales..."
- [4]. URL: <https://www.forbes.com/sites/stephendiorio/2021/10/01/advancing-the-science-of-personalization/>
- [5]. Amazon (2020). *All in: Staying the course on our commitment to sustainability*. Retrieved February 4, 2021, from <https://sustainability.aboutamazon.com/pdfBuilderDownload?name=sustainability-all-in-december-2020>.
- [6]. Amazon (2021). *Quarterly Results 2020: Q4 earnings*. Retrieved February 4, 2021, from [https://s2.q4cdn.com/299287126/files/doc\\_financials/2020/q4/Amazon-Q4-2020-Earnings-Release.pdf](https://s2.q4cdn.com/299287126/files/doc_financials/2020/q4/Amazon-Q4-2020-Earnings-Release.pdf).
- [7]. Ameen N, Tarhini A, Reppel A, Anand A. Customer experiences in the age of artificial intelligence. *Computers in Human Behavior*. 2021;114:106548. doi: 10.1016/j.chb.2020.106548. [PMC free article] [PubMed] [CrossRef] [Google Scholar]
- [8]. Ananny M, Crawford K. Seeing without knowing: Limitations of the transparency ideal and its application to algorithmic accountability. *New Media & Society*. 2018;20(3):973–989. doi: 10.1177/1461444816676645. [CrossRef] [Google Scholar]
- [9]. Andrew J, Baker M. The general data protection regulation in the age of surveillance capitalism. *Journal of Business Ethics*. 2021;168(3):565–578. doi: 10.1007/s10551-019-04239-z. [CrossRef] [Google Scholar]
- [10]. Bahl S, Milne GR, Ross SM, Mick DG, Grier SA, et al. Mindfulness: Its transformative potential for consumer, societal, and environmental well-being. *Journal of Public Policy & Marketing*. 2016;35(2):198–210. doi: 10.1509/jppm.15.139. [CrossRef] [Google Scholar]

- [11]. Banker S, Khetani S. Algorithm overdependence: How the use of algorithmic recommendation systems can increase risks to consumer well-being. *Journal of Public Policy & Marketing*. 2019;38(4):500–515. doi: 10.1177/0743915619858057. [CrossRef] [Google Scholar]
- [12]. Barredo Arrieta A, Díaz-Rodríguez N, Del Ser J, Benneto A, Tabik S, Barbado A, et al. Explainable artificial intelligence (XAI): Concepts, taxonomies, opportunities and challenges toward responsible AI. *Information Fusion*. 2020;58:82–115. doi: 10.1016/j.inffus.2019.12.012. [CrossRef] [Google Scholar]
- [13]. Beauchamp TL, Childress JF. *Principles of biomedical ethics*. 7. New York: Oxford University Press; 2013. [Google Scholar]
- [14]. Belk R. Ethical issues in service robotics and artificial intelligence. *The Service Industries Journal*. 2020 doi: 10.1080/02642069.2020.1727892. [CrossRef] [Google Scholar]
- [15]. Belkhir L, Elmeligi A. Assessing ICT global emissions footprint: Trends to 2040 & recommendations. *Journal of Cleaner Production*. 2018;177:448–463. doi: 10.1016/j.jclepro.2017.12.239. [CrossRef] [Google Scholar]
- [16]. de Bellis E, Johar GV. Autonomous shopping systems: Identifying and overcoming barriers to consumer adoption. *Journal of Retailing*. 2021;96(1):74–87. doi: 10.1016/j.jretai.2019.12.004. [CrossRef] [Google Scholar]
- [17]. Bleier A, Goldfarb A, Tucker C. Consumer privacy and the future of data-based innovation and marketing. *International Journal of Research in Marketing*. 2020;37(3):466–480. doi: 10.1016/j.ijresmar.2020.03.006. [CrossRef] [Google Scholar]
- [18]. Bol N, Strycharz J, Helberger N, van de Velde B, de Vreese CH. Vulnerability in a tracked society: Combining tracking and survey data to understand who gets targeted with what content. *New Media & Society*. 2020;22(11):1996–2017. doi: 10.1177/1461444820924631. [CrossRef] [Google Scholar]
- [19]. Bonnemains V, Saure C, Tessier C. Embedded ethics: Some technical and ethical challenges. *Ethics and Information Technology*. 2018;20(1):41–58. doi: 10.1007/s10676-018-9444-x. [CrossRef] [Google Scholar]
- [20]. Brey PAE. Method in computer ethics: Towards a multi-level interdisciplinary approach. *Ethics and Information Technology*. 2000;2(2):125–129. doi: 10.1023/A:1010076000182. [CrossRef] [Google Scholar]
- [21]. Brey PAE. Anticipating ethical issues in emerging IT. *Ethics and Information Technology*. 2012;14(4):267–284. doi: 10.1007/s10676-012-9293-y. [CrossRef] [Google Scholar]
- [22]. De Bruyn A, Viswanathan V, Beh YS, Brock JK-U, von Wangenheim F. Artificial intelligence and marketing: Pitfalls and opportunities. *Journal of Interactive Marketing*. 2020;51:91–105. doi: 10.1016/j.intmar.2020.04.007. [CrossRef] [Google Scholar]
- [23]. Burr C, Cristianini N, Ladyman J. An analysis of the interaction between intelligent software agents and human users. *Minds and Machines*. 2018;28(4):735–774. doi: 10.1007/s11023-018-9479-0. [PMC free article] [PubMed] [CrossRef] [Google Scholar]
- [24]. Burr C, Taddeo M, Floridi L. The ethics of digital well-being: A thematic review. *Science and Engineering Ethics*. 2020;26(4):2313–2343. doi: 10.1007/s11948-020-00175-8. [PMC free article] [PubMed] [CrossRef] [Google Scholar]
- [25]. Butkus MA. The human side of artificial intelligence. *Science and Engineering Ethics*. 2020;26(5):2427–2437. doi: 10.1007/s11948-020-00239-9. [PubMed] [CrossRef] [Google Scholar]
- [26]. Calvano E, Calzolari G, Denicolò V, Pastorello S. Artificial intelligence, algorithmic pricing, and collusion. *American Economic Review*. 2020;110(10):3267–3297. doi: 10.1257/aer.20190623. [CrossRef] [Google Scholar]
- [27]. Campbell C, Sands S, Ferraro C, Tsao H-Y, Mavrommatis A. From data to action: How marketers can leverage AI. *Business Horizons*. 2020;63(2):227–243. doi: 10.1016/j.bushor.2019.12.002. [CrossRef] [Google Scholar]
- [28]. Cappella JN. Vectors into the future of mass and interpersonal communication research: Big data, social media, and computational social science. *Human Communication Research*. 2017;43(4):545–558. doi: 10.1111/hcre.12114. [PMC free article] [PubMed] [CrossRef] [Google Scholar]

- [29]. Carrington M, Chatzidakis A, Goworek H, Shaw D. Consumption ethics: A review and analysis of future directions for interdisciplinary research. *Journal of Business Ethics*. 2021;168(1):215–238. doi: 10.1007/s10551-020-04425-4. [CrossRef] [Google Scholar]
- [30]. Castelo N, Schmitt B, Sarvay M. Human or robot? Consumer responses to radical cognitive enhancement products. *Journal of the Association for Consumer Research*. 2019;4(3):217–230. doi: 10.1086/703462. [CrossRef] [Google Scholar]
- [31]. Castillo D, Canhoto AI, Said E. The dark side of AI-powered service interactions: Exploring the process of co-destruction from the customer perspective. *The Service Industries Journal*. 2020 doi: 10.1080/02642069.2020.1787993. [CrossRef] [Google Scholar]
- [32]. Cath C. Governing artificial intelligence: Ethical, legal and technical opportunities and challenges. *Philosophical Transactions of the Royal Society A*. 2018;376(2133):20180080. doi: 10.1098/rsta.2018.0080. [PMC free article] [PubMed] [CrossRef] [Google Scholar]
- [33]. Cervantes J-A, López S, Rodríguez L-F, Cervantes S, Cervantes F, Ramos F. Artificial moral agents: A survey of the current status. *Science and Engineering Ethics*. 2020;26(2):2313–2343. doi: 10.1007/s11948-019-00151-x. [PubMed] [CrossRef] [Google Scholar]
- [34]. Choi S, Mattila AS, Bolton LE. To err is human(-oid): How do consumers react to robot service failure and recovery? *Journal of Service Research*. 2020 doi: 10.1177/1094670520978798. [CrossRef] [Google Scholar]
- [35]. Coeckelbergh M. Artificial intelligence, responsibility attribution, and a relational justification of explainability. *Science and Engineering Ethics*. 2020;26(2):2051–2068. doi: 10.1007/s11948-019-00146-8. [PMC free article] [PubMed] [CrossRef] [Google Scholar]
- [36]. Cows J, Tsamados A, Taddeo M, Floridi L. A definition, benchmark and database of AI for social good initiatives. *Nature Machine Intelligence*. 2021;3(2):111–115. doi: 10.1038/s42256-021-00296-0. [CrossRef] [Google Scholar]
- [37]. Csikszentmihalyi M. The costs and benefits of consuming. *Journal of Consumer Research*. 2000;27(2):267–272. doi: 10.1086/314324. [CrossRef] [Google Scholar]
- [38]. D’Acquisto G. On conflicts between ethical and logical principles in artificial intelligence. *AI & SOCIETY*. 2020;35(4):895–900. doi: 10.1007/s00146-019-00927-6. [CrossRef] [Google Scholar]
- [39]. Dasgupta PS, Ehrlich PR. Pervasive externalities at the population, consumption, and environment nexus. *Science*. 2013;340(6130):324–328. doi: 10.1126/science.1224664. [PubMed] [CrossRef] [Google Scholar]
- [40]. Datta A, Tschantz MC, Datta A. Automated experiments on ad privacy settings: A tale of opacity, choice, and discrimination. *Proceedings on Privacy Enhancing Technologies*. 2015;1:92–112. doi: 10.1515/popets-2015-0007. [CrossRef] [Google Scholar]
- [41]. Davenport T, Guha A, Grewal D, Bressgott T. How artificial intelligence will change the future of marketing. *Journal of the Academy of Marketing Science*. 2020;48(1):24–42. doi: 10.1007/s11747-019-00696-0. [CrossRef] [Google Scholar]
- [42]. Dekimpe MG, Geyskens I, Gielens K. Using technology to bring online convenience to offline shopping. *Marketing Letters*. 2020;31(1):25–29. doi: 10.1007/s11002-019-09508-5. [CrossRef] [Google Scholar]
- [43]. de Laat PB. Algorithmic decision-making based on machine learning from big data: Can transparency restore accountability? *Philosophy & Technology*. 2018;31(4):525–541. doi: 10.1007/s13347-017-0293-z. [PMC free article] [PubMed] [CrossRef] [Google Scholar]
- [44]. Dellaert BGC, Shu SB, Arentze TA, Baker T, Diehl K, Donkers B, et al. Consumer decisions with artificially intelligent voice assistants. *Marketing Letters*. 2020;31(4):335–434. doi: 10.1007/s11002-020-09537-5. [CrossRef] [Google Scholar]
- [45]. Dhar P. The carbon impact of artificial intelligence. *Nature Machine Intelligence*. 2020;2(8):423–425. doi: 10.1038/s42256-020-0219-9. [CrossRef] [Google Scholar]

- [46]. Dholakia U, Jung J, Chowdhry N. Should I buy this when I have so much? Reflection on personal possessions as an anticonsumption strategy. *Journal of Public Policy & Marketing*. 2018;37(2):260–273. doi: 10.1177/0743915618813582. [CrossRef] [Google Scholar]
- [47]. Dietvorst BJ, Simmons JP, Massey C. Algorithm aversion: People erroneously avoid algorithms after seeing them err. *Journal of Experimental Psychology: General*. 2015;144(1):114–126. doi: 10.1037/xge0000033. [PubMed] [CrossRef] [Google Scholar]
- [48]. Floridi L. Establishing the rules for building trustworthy AI. *Nature Machine Intelligence*. 2019;1(6):261–262. doi: 10.1038/s42256-019-0055-y. [CrossRef] [Google Scholar]
- [49]. Floridi L, Cows J, Beltrametti M, Chatila R, Chazerand P, Dignum V, et al. AI4People—an ethical framework for a good AI society: Opportunities, risks, principles, and recommendations. *Minds and Machines*. 2018;28(4):689–707. doi: 10.1007/s11023-018-9482-5. [PMC free article] [PubMed] [CrossRef] [Google Scholar]
- [50]. Floridi L, Cows J, King TC, Taddeo M. How to design AI for social good: Seven essential factors. *Science and Engineering Ethics*. 2020;26(3):1771–1796. doi: 10.1007/s11948-020-00213-5. [PMC free article] [PubMed] [CrossRef] [Google Scholar]
- [51]. Floridi L, Strait A. Ethical foresight analysis: What it is and why it is needed? *Minds and Machines*. 2020;30(1):77–97. doi: 10.1007/s11023-020-09521-y. [CrossRef] [Google Scholar]
- [52]. Floridi L, Taddeo M. What is data ethics? *Philosophical Transactions of the Royal Society A*. 2016;374(2083):20160360. doi: 10.1098/rsta.2016.0360. [PMC free article] [PubMed] [CrossRef] [Google Scholar]
- [53]. Gifford R. The dragons of inaction: Psychological barriers that limit climate change mitigation and adaptation. *American Psychologist*. 2011;66(4):290–302. doi: 10.1037/a0023566. [PubMed] [CrossRef] [Google Scholar]
- [54]. Gladstone JJ, Matz SC, Lemaire A. Can psychological traits be inferred from spending? Evidence from Transaction Data. *Psychological Science*. 2019;30(7):1087–1096. doi: 10.1177/0956797619849435. [PubMed] [CrossRef] [Google Scholar]
- [55]. Glikson E, Wolley AW. Human trust in artificial intelligence: Review of empirical research. *Academy of Management Annals*. 2020;14(2):627–660. doi: 10.5465/annals.2018.0057. [CrossRef] [Google Scholar]
- [56]. Gossen M, Ziesemer F, Schrader U. Why and how commercial marketing should promote sufficient consumption: A systematic literature review. *Journal of Macromarketing*. 2019;39(3):252–269. doi: 10.1177/0276146719866238. [CrossRef] [Google Scholar]
- [57]. Granulo A, Fuchs C, Puntoni S. Preference for human (vs. robotic) labor is stronger in symbolic consumption contexts. *Journal of Consumer Psychology*. 2021;31(1):72–80. doi: 10.1002/jcpy.1181. [CrossRef] [Google Scholar]
- [58]. Gray HM, Gray K, Wegner DM. Dimensions of mind perception. *Science*. 2007;315(5812):619–719. doi: 10.1126/science.1134475. [PubMed] [CrossRef] [Google Scholar]
- [59]. Grewal D, Hulland J, Kopalle PK, Karahanna E. The future of technology and marketing: A multidisciplinary perspective. *Journal of the Academy of Marketing Science*. 2020;48(1):1–8. doi: 10.1007/s11747-019-00711-4. [CrossRef] [Google Scholar]
- [60]. Grewal D, Noble SM, Roggeveen AL, Nordfalt J. The future of in-store technology. *Journal of the Academy of Marketing Science*. 2020;48(2):96–113. doi: 10.1007/s11747-019-00697-z. [CrossRef] [Google Scholar]
- [61]. Guha A, Grewal D, Kopalle PK, Haenlein M, Schneider MJ, Jung H, et al. How artificial intelligence will affect the future of retailing. *Journal of Retailing*. 2021;97(1):28–41. doi: 10.1016/j.jretai.2021.01.005. [CrossRef] [Google Scholar]
- [62]. Gunning D, Stefik M, Choi J, Miller T, Stumpf S, Yang G-Z. XAI—explainable artificial intelligence. *Science Robotics*. 2019;4(37):7120. doi: 10.1126/scirobotics.aay7120. [PubMed] [CrossRef] [Google Scholar]

- [63]. Haenlein M, Kaplan A. Artificial intelligence and robotics: Shaking up the business world and society at large. *Journal of Business Research*. 2021;124:405–407. doi: 10.1016/j.jbusres.2020.10.042. [CrossRef] [Google Scholar]
- [64]. Hagen L, Uetake K, Yang N, Bollinger B, Chaney AJB, Dzyabura D, et al. How can machine learning aid behavioral marketing research? *Marketing Letters*. 2020;31(4):393–404. doi: 10.1007/s11002-020-09535-7. [CrossRef] [Google Scholar]
- [65]. "A popular running example of AI-powered personalization is Amazon's recommendation system. The system uses a machine learning algorithm to analyze customers' purchase history, search records, and other behavioral data, to predict products the customer can be interested in, and recommend them in real time." URL: <https://www.techopedia.com/ai-powered-personalization-how-machine-learning-is-transforming-customer-experience>
- [66]. "6. Macy's On Call Directs Customers In Store. Artificial intelligence can also be used to personal the in-store experience. Macy's uses IBM Watson AI technology to power its smartphone-based ...", URL: <https://www.forbes.com/sites/blakemorgan/2019/01/24/the-7-best-examples-of-artificial-intelligence-to-improve-personalization/>
- [67]. "AI content personalization tools process all of your content and its metadata. They then identify what the content is about, its length, and its format. Your content is then classified and labelled by a combination of AI and humans to standardize labelling. Once that's done, the AI content personalization tool determines what content to recommend ...", URL: <https://www.marketingaiinstitute.com/blog/how-ai-content-personalization-works>

**Images:**

- Revolutionizing Customer Engagement: How AI and Personalization Algorithms Are Transforming Experiences. URL: <https://www.linkedin.com/pulse/revolutionizing-customer-engagement-how-ai-algorithms-volkmar-kunerth/>
- Consumers Open To AI In Marketing, But Privacy Concerns Remain. URL: <https://cdp.com/articles/report-consumers-open-to-ai-in-marketing-but-privacy-concerns-remain/>
- Balancing Personalization and Privacy Concerns - Data Overload: Managing the Disadvantages of Customer Segmentation. URL: <https://fastercapital.com/startup-topic/Balancing-Personalization-and-Privacy.html>