Innovation in Marketing: The Emergence of New Technologies Shaping Future Marketing Concepts and Perspectives

M. Majid, Rajiman, Evy Nahdia Zuliastuti Nugraheni, Aulia Busono
Sekolah Tinggi Ilmu Ekonomi Widya Darma Surabaya, Indonesia
Email: mmadjid.ac@gmail.com, rajiman.uwks@gmail.com,
enahdiazuliastutinugraheni80@gmail.com

ABSTRACT

Rapid technological advancements have significantly impacted various fields, including marketing. This article examines the emergence of new technologies in the marketing industry and their influence on companies' strategies. The aim of this research is to develop a framework that understands the role and benefits of new technologies in shaping the future of marketing. In this study, researchers investigated various technologies that are on the rise in marketing, such as artificial intelligence, advanced data analytics, location-based marketing, and the application of blockchain technology in marketing campaigns. The researchers analyzed how these technologies have helped companies improve efficiency, target audiences more precisely, and create more personalized customer experiences. In addition, this article also discusses the challenges faced by companies in adopting and integrating new technologies in their marketing strategies. Technological advancements often bring new complexities and paradigm shifts, which can affect the way companies interact with consumers and the market as a whole. Therefore, the researcher proposes a framework that can help companies in understanding and addressing these challenges more effectively. The results of this research show that new technologies have opened up new opportunities in marketing, increased campaign creativity, optimized data management, and expanded brand reach globally. However, to take full advantage of the potential of this technology, companies must understand market shifts, consumer behavior, and industry trends. This article also explores how technology will further transform marketing, urging businesses to proactively adapt and integrate innovations.

INTRODUCTION

As a scientific field, marketing has a long tradition of studying the adoption of new technologies (Kemper et al., 2019). This concern is, of course, justified, as studies have consistently shown that companies that invest heavily in new technologies are more agile and have a strong competitive advantage (IBM Institute for Business Value 2021). However, what has received less attention in the literature is how new technologies are giving rise to innovations in the techniques, tools, and marketing strategies themselves.

In particular, it requires marketing scholars to develop a theoretical paradigm of how marketers use technology to develop a competitive advantage. This particular issue on "New Technologies in Marketing" presents the latest scientific research that recognizes the fundamental role of new technologies in driving marketing theory and practice. The articles in this particular issue study a variety of new technologies, and researchers hope that these scientific studies will stimulate further research on new technologies in marketing and their application in practice. In this editorial, researchers provide some framework for considering how new technologies are affecting marketing disciplines. These frameworks serve to organize

a portfolio of articles on this particular issue, identify potential gaps that are worthy of further research, and propose an agenda for future research.

Previous research has defined "technology" as scientific knowledge and its application for useful purposes (see, for example, John, Weiss, and Dutta 1999). This definition recognizes that technology can be related both to products or services arising from scientific knowledge as well as to knowledge itself. Thus, this definition avoids the need to distinguish between the product or service (e.g., chatbots) and the technology (e.g., artificial intelligence [AI]) that covers it, which is sometimes impossible (Glazer 1991).

As technology evolves over time, marketing scientists also define the term "new" as referring to the latest application of scientific knowledge that has not been replaced by others. In other words, a technology is considered "new" when it is still in the early stages of adoption by companies and/or consumers (i.e., in the *innovator* or *early user* stage).

The articles in this particular issue examine a variety of new marketing technologies that are at one or both points of the adoption cycle. Therefore, these articles reasonably use a wide range of research methodologies. In particular, more advanced technologies are more likely to have generated robust data because the number of companies or consumers who have adopted the technology is sufficient to allow for empirical observation and quantitative analysis of the causes and effects of adoption (e.g., the richest realities as in the study of Tan, Chandukala, and Reddy [2022], direct sales calls via livestream in the study of Bharadwaj et al. [2022]).

Other technologies are in the early stages of the adoption cycle, and the causes or consequences of the adoption of such technologies can only be established through experiments (e.g., chatbots as in the study of Crolic et al. [2022], recommendations based on artificial intelligence as in the study of Longoni and Cian [2022]) or conceptually (e.g., genetics as in the study of Daviet, Nave, and Wind [2022], platforms as in the study of Wichmann, Wiegand, and Reinartz [2022], avatars as in the study of Miao et al. [2022]).

Integrating all of these considerations, marketing scientists define new technologies in marketing as "scientific knowledge and/or their application in the early stages of the adoption cycle for companies and/or consumers, with the potential to influence activities, institutions, and processes in creating, communicating, delivering, and exchanging offerings that have value for customers, clients, partners, and society at large." This research aims to analyze the role of emerging technologies (e.g., AI, data analytics, blockchain) in modern marketing strategies and propose a framework for their effective adoption. The findings will help businesses optimize technology integration, enhance customer engagement, and navigate challenges in the evolving digital landscape.

METHOD

This research employs a mixed-methods approach to examine how emerging technologies are transforming marketing practices. The methodology combines a comprehensive literature review of academic sources and industry reports with in-depth case studies of real-world implementations by leading brands. The qualitative analysis examines thematic patterns in technology adoption, while quantitative data from cited studies provide measurable evidence of impact. This dual approach ensures that the findings are both theoretically grounded and practically applicable, offering actionable insights for marketers navigating technological disruption. The methodology is specifically designed to address the

research gap between technological potential and practical implementation in marketing strategies.

Four Ways New Technology Is Affecting Marketing

At a high level of abstraction, researchers can observe that new technologies affect marketing in four broad, interrelated ways, as illustrated in Figure 1. In particular, new technologies (1) support new forms of interaction between consumers and companies, (2) provide new types of data that enable new methods of analysis, (3) create marketing innovations, and (4) require new strategic marketing frameworks. It is important to remember that different technologies can serve several of these functions simultaneously and to varying degrees. For this reason, some of the articles in this particular issue appear in more than one cell in Figure 1.
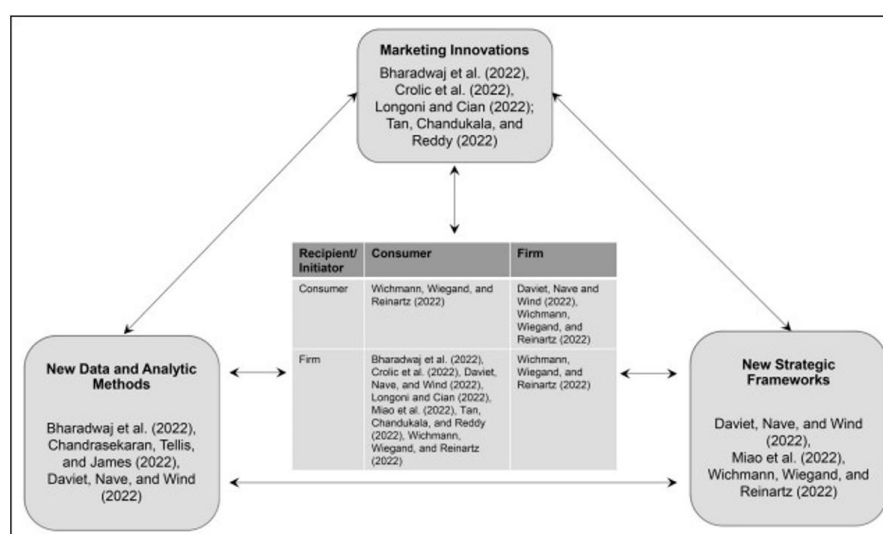

Figure 1. Four Ways New Technology Is Affecting Marketing
Source: Developed for this study based on analysis

A New Form of Consumer and Corporate Interaction

Researchers begin at the center of Figure 1 with how new technologies enable new forms of *consumer-to-consumer*, *consumer-to-company*, *company-to-consumer*, and *company-to-enterprise* interactions. Many companies now enable direct *consumer-to-consumer* interaction by engaging consumers within the brand. For example, brands such as Nike and Adidas have developed digital platforms to promote interaction among the runner and coach communities as well as third parties (Wichmann, Wiegand, and Reinartz 2022).

New technologies have often been implemented effectively to improve *company-consumer* interaction by providing new marketing tools. For example, artificial intelligence (AI) is a powerful machine in replacing the human representatives of a company with a machine agent, which facilitates *company-consumer* interaction through "machine words" (Longoni and Cian 2022). Anthropomorphized chatbots can influence consumer responses in *consumer-initiated* service interactions (Crolic et al. 2022). In addition, avatars are increasingly used in *company-consumer* interactions, where the level of realism of the avatar's shape and behavior is a major determining factor of its effectiveness (Miao et al. 2022). *Richest reality* (AR) is used in retail to facilitate *company-consumer* interaction, which as a "try before

you buy" technology, is very effective when consumers feel doubtful about a product (Tan, Chandukala, and Reddy 2022).

Computer vision recognition and facial recognition methods present marketers with new tools that can be used to improve the effectiveness of personal sales through livestreams (Bharadwaj et al. 2022).

New Data and Analysis Methods

New technologies are also creating new data and giving rise to new methods of analysis, as shown on the left side of Figure 1. For example, Bharadwaj et al. (2022) proposed an analytical framework that uses the computer vision recognition method to analyze the effectiveness of a salesperson's facial expressions in sales via livestream.

Chandrasekaran, Tellis, and James (2022) offer an approach for companies to assess the potential of new technologies in making informed product launch and product retirement decisions. In addition, Daviet, Nave, and Wind (2022) show a future where consumers can give consent for the use of their genetic data to improve customer targeting and new product development. These studies show that by transforming *consumer-to-consumer* and *consumer-to-company* interactions, new technologies are generating new forms of data. As a result, these new forms of data often require the development of new methods or adaptations of existing methods for processing or analyzing this data.

Marketing Innovation

The top of Figure 1 highlights the potential of new technologies in providing new marketing tools and techniques that lead to innovation in the marketing of products and services. For example, Bharadwaj et al. (2022) show how personal sales through livestreaming can be optimized with computer vision artificial intelligence. Longoni and Cian (2022) analyzed the effectiveness of artificial intelligence-based "machine words," while Crolic et al. (2022) examined the effectiveness of chatbots. Tan, Chandukala, and Reddy (2022) analyzed the effectiveness of AR in retail. Studies like these reveal that new technologies allow marketers to develop and implement new tools that make marketing products and services more effective.

New Strategic Framework

Finally, new technologies allow for the development of new marketing strategies and strategic frameworks, as shown on the right side of Figure 1. Wichmann, Wiegand, and Reinartz (2022) conceptualize digital platforms as a place for crowdsourcing and *crowdsending* consumers to products and services. Miao et al. (2022) propose an avatar typology that assists marketers in decision-making on how to design and implement avatars. Daviet, Nave, and Wind (2022) propose a framework that integrates the impact of genetics in consumer behavior theory and uses that framework to provide an overview of the use of genetic data in marketing. These articles demonstrate the value of the new strategic framework in understanding the impact of new technologies in the marketing domain. They also provide guidance for formulating the most relevant research questions.

RESULT AND DISCUSSION

New Technologies Underlie Changes in Marketing Decision-Making

After discussing four fundamental ways in which new technologies affect marketing practices, researchers now offer a framework for understanding how new technologies improve

marketing decision-making and the dynamics of companies and related markets. Figure 2 presents a flywheel that illustrates the energy stored and used when companies invest in new marketing technologies to generate ever-increasing profits. Starting from the left side, new technologies can increase the wealth, quality, and volume of market and consumer data (see Figure 1). For example, the rapid growth of digital devices and software applications has created a stream of data that records how consumers think, feel, behave, and interact with consumers and other companies at various points of the customer journey (Wedel and Kannan 2016). Some data that may have previously been difficult for many companies to reach, such as eye movements, speech, facial recognition, and genetic data, may become prevalent as the cost of collecting and analyzing them rapidly diminishes (see, for example, Bharadwaj et al. 2022; Daviet, Nave, and Wind 2022). Digital data collection technology, which generates data on consumer-to-company interactions through images, videos, speech, and text, among others, has also enabled large-scale field experiments and A/B tests that allow companies to assess the causal effects of their marketing actions. With this experiment, marketers can optimize website design, effectively retarget ads, evaluate the effects of new marketing tools, and attribute effects on marketing actions throughout the customer journey.

Moving clockwise around the flywheel, researchers argue that the rich availability of data leads to new and improved methods of consumer and enterprise decision-making (at the top of Figure 2). To some extent, data quality can be a substitute for model complexity. For example, in A/B testing, the data-generating mechanism is controlled by the researcher or company so that a simpler model can be used (see Tan, Chandukala, and Reddy 2022). However, the idea that simpler models are always adequate is wrong. Increasing the richness of data (e.g., reviews, searches, blogs, locations, images, videos, speech, eye movements, hands, head, and body, genetic data) often requires more complex models or machine learning approaches. In addition, larger data volumes reduce sampling and measurement errors. Both the increase in the richness and volume of data allows for better predictive performance of machine learning methods. For example, Bharadwaj et al. (2022) show how the massive application of computer vision methods for image analysis, combined with advanced statistical techniques, results in superior predictive performance for sales outcomes.

The right side of the flywheel highlights that better methods allow marketers to gain new and valuable insights. For example, Chandrasekaran, Tellis, and James (2022) developed a method that provides managers with insight into whether to adopt new technologies, continue to leverage old technologies, or invest in both. In addition, the research of Tan, Chandukala, and Reddy (2022) shows that AR can reduce the uncertainty of consumer products and thus improve marketing and sales outcomes.

At the bottom of the flywheel in Figure 2, researchers highlight how better insights derived from new technologies can enable better and faster decision-making by consumers and companies. AR in retail can provide consumers with better information and education and thus improve their decision-making regarding products and services (Tan, Chandukala, and Reddy 2022). Chatbots enable real-time interaction with companies that can provide insights and information to consumers to improve their satisfaction, company evaluation, and purchase intent (Crolic et al. 2022). These interactions, in turn, produce more and richer data to continue this cycle.
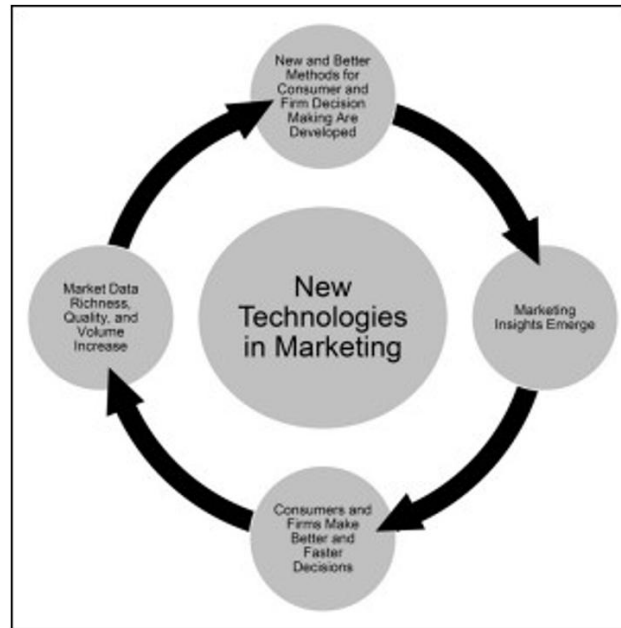
Figure 2. New technologies are improving marketing decision-making
Source: Developed for this study, incorporating concepts

New Technologies in Marketing: The Future Direction

This section brings together various elements of the researcher's perspective, emphasizing key learnings for marketers and marketing scholars. The researchers also identified several high-potential future research directions.

1) Trends in Marketing Decision-Making: Automation and Personalization

The interactions, methods, innovations, and frameworks powered by technology (Figure 1), along with the market and marketing knowledge generated from such data (Figure 2), provide opportunities for marketers for real-time decision-making or automation. For example, artificial intelligence (AI) is starting to play a crucial role in automatically generating tailored offers based on the search behavior and navigation history of individual consumers. Similarly, AI is starting to be a consideration in a company's new product development decisions (for example, product launch or recall decisions). The current debate about automation versus augmentation in AI (Raisch and Krakowski 2021) suggests that there is a great opportunity for research on the most effective types of human/AI collaborative teams in different marketing contexts.

Interactions powered by technology also provide an opportunity for marketers to observe consumers engaging in new ways with products, brands, stores, companies, and other consumers. These observations provide a deeper understanding of consumer relationships and preferences, and provide opportunities for companies to create new sources of value for both consumers and companies. In particular, personalization and recommendation systems will remain key areas for future research.

As the trend of automated marketing decision-making accelerates, it seems imperative to set the boundaries of machine learning and artificial intelligence methods that are becoming increasingly popular. For example, how sensitive are machine learning applications in marketing to minor interference (adversarial attacks) on data input? How well do these systems perform on data/issues that are outside the training data domain? How can we improve the

interpretation of machine learning approaches applied to marketing problems? What is the role of machine learning in making causal inferences from quasi and non-experimental data?

All of these questions are becoming important to understand and explore as marketing decisions are increasingly supported by automation and artificial intelligence technologies. An understanding of the limitations and potential of these methods will help marketers to make more informed and effective decisions and improve their ability to deal with challenges and changes in an ever-evolving business environment.

2) Trends in Consumer Decision-Making: Augmented/Virtual Reality and Autonomous Products

Technology allows consumers to interact with products, companies, and others in virtual reality (VR) and augmented reality (AR). Although many of the well-established theories of consumer behavior can naturally be extended to virtual spaces, many of them may need to be significantly updated to accommodate consumer search, choice, and consumption practices. For example, how is context-relevant information (e.g., product information, recommendations) presented in a virtual or augmented environment processed?

How do incarnations and presence experiences facilitate the acquisition of information and consumer decision-making in a virtual context? What are the consequences of engaging in VR/AR, including for self-image, anxiety, and interpersonal interactions? What role do sharing platforms play in the development of consumer self-presentation strategies, political views, body image, and values (e.g., materialism)?

Another important trend in consumer behavior is the adoption of autonomous products. Traditionally, consumers have purchased products that help them complete certain tasks (e.g., mowing lawns, cooking food). Today, autonomous products that completely eliminate consumers from task completion are increasingly available. Consumer researchers need to expand existing theories to understand how consumers assess, feel, and interact with these autonomous devices (De Bellis, Johar, and Poletti 2021). How does the consumer experience emerge from repeated interactions with artificial intelligence smart devices, as initiated in the work of Hoffman and Novak (2018) that places consumer behavior in a broader, non-human-centric context?

This "object-oriented" approach is not only innovative but also important as consumers increasingly actively interact with new technologies that now have autonomous capabilities. To fully understand consumers' experiences with new technologies, researchers must consider that consumer perceptions of new technologies go beyond internal subjective responses and are influenced by (and can influence) agencies, autonomy, and technological authorities themselves.

3) Broader Research Directions for Marketing Studies

While the previous two subsections leverage existing trends to identify important research questions, researchers also want to think further into the future to outline the broader direction of research within this area. Doing this allows the researcher to identify the gaps between the topics that the researcher initially imagined and the actual scope of those topics in this particular issue. Second, the researcher thought about the various dimensions of consumer behavior, market research, and marketing decision-making to identify areas of future research with high potential. The researcher will discuss each one in order.

The role of new technologies in marketing organizations. How are new marketing technologies changing the role of marketing in companies? What is the effect of the adoption of new technologies by marketing on the performance of the company in general? How are new technologies changing the way marketing collaborates with other functions, including interfaces with operations (e.g., collaboration between the two functions in push notifications or product returns), research and development (e.g., new product/service development, product improvement, quality control), and information technology (e.g., marketing technology budgeting and decision-making)?

The social and policy impact of new technologies in marketing. How should companies react to policy initiatives that aim to protect consumer privacy and limit data access? How should companies developing, marketing, or using new marketing technologies act ethically in society and engage in public debate about the consequences of their actions on companies, consumers, and society? How can researchers identify the public risks posed by new marketing technologies, and how should society manage them? What are the relevant consequences of new policy initiatives, such as climate change policies, for new technologies in marketing?

The "dark side" of new technologies. Eliminating face-to-face interactions can make transactions more efficient from a company's point of view. What are the implications for the company's relationship with customers? Can this shift lead to feelings of loneliness and isolation for customers? The dramatic loss of privacy due to the use of new technologies has become a major concern for consumers. What are the behavioral consequences of the loss of privacy due to consumers' growing digital footprint? What methods can be used to protect consumer data privacy and security while still enabling real-time personalization?

As new technologies are integrated into marketing practices, questions arise about potential bias in corporate decision-making. Research involving artificial intelligence (AI) must explicitly address the ethical aspects of AI technology towards constituent populations. The potential for algorithmic bias in all digital applications, especially social media, requires a clear understanding of how these systems can operate suboptimally and negatively impact consumer well-being. In general, as marketers develop new marketing methodologies and fill them with richer, larger data streams, marketers need to be aware that these "improvements" in marketing decision-making can inadvertently harm stakeholders (see Mehrabi et al. 2022).

4) Securing Relevance from Marketing Scientists

In the face of changing roles of marketers, the previously identified areas of future research provide opportunities for marketing scientists to remain relevant and influential. The speed at which new technologies are developed and implemented is inversely proportional to the speed at which scientists can access data derived from those technologies, develop rigorous frameworks for analyzing phenomena, and move research through the review process (including current specific issues). Three guidelines for future research can help address this dilemma for research on new technologies in marketing, and perhaps also for marketing science in general.

1. Collaborative Research: Collaboration between academic scientists, marketing practitioners, and technology companies can unlock faster access to relevant data and insights. This kind of collaboration can help researchers understand real-world challenges faced by companies and consumers, as well as ensure that the research is more relevant to the needs of practitioners and the industry.

2. Agile Research Methodologies: The use of more flexible and adaptive research methodologies can help marketing scientists respond to rapid changes in marketing and technology. A more agile methodology can allow researchers to more quickly collect data and analyze evolving consumer trends and behaviors.

3. Continuous Learning and Engagement: Marketing scientists must continuously learn about the latest developments in marketing and technology, as well as engage with industry communities and practitioners. By staying connected to current trends, scientists can identify relevant research questions and remain relevant in their contribution to marketing understanding.

By adopting a collaborative approach, a more agile methodology, and a commitment to continuous learning, marketing scientists can be more effective in addressing the challenges and changes posed by new technologies, and remain relevant in producing research that is impactful and beneficial to marketing practices and society as a whole.

5) Ensuring Relevance from Marketers

The articles in this particular issue reveal the very specialized knowledge that marketers must have to operate effectively in a new technological environment. Given the huge impact of new technologies on marketing practices, companies increasingly need marketers who understand the full scope of new technologies used by consumers, how new technologies can translate consumer data into insights, and new technologies that companies can use to achieve more profitable marketing and consumer outcomes.

These marketers should be the main pillars in the company's digital transformation journey. Some refer to these specialists as "marketing technologists" (e.g., Brinker and Heller 2015). Marketing scientists understand that new technologies can be trending at any time and help the way companies serve customers most effectively. Marketers should refer to the company's goals and pursue the application of technology flexibly. Going forward, non-digital technologies (e.g., genetic data, decision science) will also be part of marketers' portfolios. Although marketing technologists may be a specialized function, future marketers will have to combine several aspects of and be able to communicate with (marketing) technologists.

CONCLUSION

This special issue on "New Technologies in Marketing" presents a broad spectrum of research that investigates how new technologies drive marketing practices and can stimulate further research. By explaining how new technologies enable new forms of interaction between consumers and companies, the study shows that new technologies generate new types of data and analysis methods, create marketing innovations, and have consequences for new strategic marketing frameworks. Collectively, the articles in this issue reveal positive cycles in which companies implement new marketing technologies, increasing the richness and volume of market data, which in turn give rise to new methods of analysis, enabling new insights that support more effective marketing decisions. These improved decisions further enhance the collection of additional market data, continuing the cycle. Against this background, and inspired by the research presented in this particular issue, the researchers provide recommendations for future research and offer insights on how marketing scientists and marketing practitioners can remain relevant in the context of the rapid development of new

technologies. The researchers hope that the articles in this particular issue will inspire marketing scientists to take on the challenges of future research in this evolving field.

REFERENCES

Bharadwaj, N., Ballings, M., Naik, P. A., Moore, M., & Arat, M. (2022). A new livestream retail.

Brinker, S., & Heller, J. (2015, March 1). Marketing technology: What it is and how it should work. *McKinsey & Company*. https://www.mckinsey.com/business-functions/marketing-and-sales/ourinsights/marketing-technology-what-it-is-and-how-it-should-work

Chandrasekaran, D., Tellis, G. J., & James, G. M. (2022). Leapfrogging, cannibalization, and survival during disruptive technological change: The critical role of rate of disengagement. *Journal of Marketing, 86*(1), 149–166.

Crolic, C., Thomaz, F., Hadi, R., & Stephen, A. T. (2022). Blame the bot: Anthropomorphism and anger in customer–chatbot interactions. *Journal of Marketing, 86*(1), 132–148.

Daviet, R., Nave, G., & Wind, J. (2022). Genetic data: Potential uses and misuses in marketing. *Journal of Marketing, 86*(1), 7–26.

De Bellis, E., Johar, G. V., & Poletti, N. (2021). Meaning of manual labor drives consumer adoption of autonomous products [Working paper].

Glazer, R. (1991). Marketing in an information-intensive environment: Strategic implications of knowledge as an asset. *Journal of Marketing, 55*(5), 1–19.

Hoffman, D. L., & Novak, T. P. (2018). Consumer and object experience in the Internet of Things: An assemblage theory approach. *Journal of Consumer Research, 44*(6), 1178–1204.

IBM Institute for Business Value. (2021). *2021 CEO study: Find your essential*. https://www.ibm.com/thought-leadership/institute-business-value/c-suite-study/ceo

John, G., Weiss, A. M., & Dutta, S. (1999). Marketing in technology-intensive markets: Toward a conceptual framework. *Journal of Marketing, 63*(Special Issue), 78–91.

Kemper, J. A., Hall, C. M., & Ballantine, P. W. (2019). Marketing and sustainability: Business as usual or changing worldviews? *Sustainability, 11*(3), 780.

Longoni, C., & Cian, L. (2022). Artificial intelligence in utilitarian versus hedonic contexts: The "word-of-machine" effect. *Journal of Marketing, 86*(1), 91–108.

Mehrabi, N., Morstatter, F., Saxena, N., Lerman, K., & Galstyan, A. (2022). A survey on bias and fairness in machine learning. *ACM Computing Surveys, 54*(6), Article 115.

Miao, F., Kozlenkova, I. V., Wang, H., Xie, T., & Palmatier, R. W. (2022). An emerging theory of avatar marketing. *Journal of Marketing, 86*(1), 67–90.

Raisch, S., & Krakowski, S. (2021). Artificial intelligence and management: The automation-augmentation paradox. *Academy of Management Review, 46*(1), 192–210.

Tan, Y.-C., Chandukala, S. R., & Reddy, S. K. (2022). Augmented reality in retail and its impact on sales. *Journal of Marketing, 86*(1), 48–66.

Wedel, M., & Kannan, P. K. (2016). Marketing analytics for data-rich environments. *Journal of Marketing, 80*(6), 97–121.

Wichmann, J. R. K., Wiegand, N., & Reinartz, W. J. (2022). The platformization of brands. *Journal of Marketing, 86*(1), 109–131.