



The future of digital technologies in marketing: A conceptual framework and an overview

Kirk Plangger¹ · Dhruv Grewal^{2,3} · Ko de Ruyter¹ · Catherine Tucker⁴

Published online: 24 October 2022
© Academy of Marketing Science 2022

Abstract

Digital technologies are key to achieving competitive advantage across marketing and retailing contexts. At the same time, marketing managers are confronted with a variety of challenges surrounding the strategic use of these technologies and the need to re-think their digital strategies. Importantly, managers need to develop a deeper understanding of consumer attitudes towards and engagement with (or lack thereof) digital technologies. Marketing strategists can benefit from academic marketing's thought leadership to learn how they can transform these challenges into strategic opportunities for competitive advantage. This can lead to technological innovations that create customer, firm, and societal value. Some of these benefits are described in the articles that make up this special issue. We propose a framework that focuses on the role of strategic resources used by managers to develop and deliver on the promise of digital technologies. Then, we report insights from 16 boardroom interviews with senior marketing managers resulting in three broad themes: decentralized marketing, metamodern customer experiences, and marketing mechanization. We close with a research agenda to motivate additional thought-leading research in this fast-growing area.

Keywords Digital technologies · Marketing strategy · Decentralized marketing · Metamodern customer experiences · Marketing mechanization

As digital technologies emerge and develop, they are essential to strategic marketing effectiveness in terms of grabbing customers' attention, securing patronage, and ultimately, loyalty. While these technologies hold the promise of providing substantial value in terms of engaging customers with brand messaging and offerings, they have set a high

bar for delivering on this promise in the face of substantial investment costs. Firms leverage digital technologies to differentiate themselves from competitors and to improve their operational efficiency (Bonetti et al., 2022). Such pressing strategic imperatives have driven continually increasing global investments in artificial intelligence (AI), expected to increase more than 1250% from 2020 to 2028 reaching an estimated \$641 billion in spending (Georgiadis, 2022). In this rapidly changing landscape of technology-driven marketing innovation, firms have new options for creating brand value for themselves, as is readily apparent in the growth of organizations such as Amazon, Microsoft, Apple, Alphabet, Tesla, and Tencent. At the same time, there is increased awareness that businesses must consider carefully how customers and society might be affected by the adoption of digital technologies and how value can best be generated for customers and other shareholders.

Recent research highlights the growing importance of digital technology for marketing (Grewal et al., 2020) and retailing (Grewal et al. 2017). A critical area of inquiry pertains to ensuring an effective understanding of how consumers respond to new technologies, such as robots, chatbots,

✉ Kirk Plangger
kirk.plangger@kcl.ac.uk
Dhruv Grewal
dgrewal@babson.edu
Ko de Ruyter
ko.de_ruyter@kcl.ac.uk
Catherine Tucker
cetucker@mit.edu

¹ Department of Marketing, King's Business School, King's College London, London, UK

² Marketing Division, Babson College, Babson, USA

³ Fractional, University of Bath, Bath, UK

⁴ MIT Sloan School of Management, Massachusetts Institute of Technology, Cambridge, USA

Table 1 Summary of the special issue's articles

Authors	Nature of contribution	Emerging technology	Strategic resources	Strategic outcomes		
				Customer	Firm	Society
Xu & Mehta	Empirical (experiments)	AI		X		
Uysal, Alavi, & Bezençon	Empirical (mixed methods)	IoT and AI (voice assistant)		X		
Mishra, Ewing, & Cooper	Empirical (secondary data analysis)	AI			X	
Liu-Thompkins, Okazaki, & Li	Empirical (experiment)	Virtual agents		X	X	
Bahmani, Bhatnagar, & Gauri	Empirical (event study)	IoT and AI (voice assistant)	Techno-logical (software)		X	
King, Auschaitrakul, & Lin	Empirical (experiments)	IoT (voice)		X		
Schweidel et al.	Conceptual	Digital technologies	Customer data		X	
Shankar & Parsana	Methodological	AI (NLP & text-mining)				
Padigar et al.	Empirical (event study)	AI	Combined		X	X
Quach et al.	Empirical (interviews)	Digital technologies	Customer data	X		

and other Artificial Intelligence (AI) driven applications (Davenport et al., 2020). For example, despite the benefits they can provide, robots that appear too human-like can evoke a sense of eeriness (often referred to as the Uncanny Valley phenomenon) and potentially alienate consumers (Mende et al., 2019). To avoid such undesirable and unintended consequences, deployment of new technologies requires careful consideration, planning and training of users (e.g., frontline employees), and an understanding of how a technological push should be balanced against a customer pull (Keeling et al., 2019).

Crucially, efforts along these lines should reflect the pathways through which digital technologies create customer value. For example, online retailers (e.g., Wayfair, Amazon) aim to establish digital customer experiences that are on par with, or even better than, their physical counterparts. They also might leverage digital technologies to enhance customer experiences (Hilken et al., 2020) or customer engagement (Heller et al., 2021), while mitigating privacy concerns (Okazaki et al., 2020; Bleier et al., 2020). Digital technologies can also create and influence value by enabling managers to access underserved markets (De Ruyter et al., 2021).

The contributions included in this special issue address some of these critical notions. We received 51 submissions, which in turn benefited from the guidance of a great set of reviewers, as acknowledged in the Appendix. As we detail in Table 1, the ten articles in this thought leading special issue range in the nature of their contributions and empirical approaches, including interviews, field and online experiments, surveys, and secondary data analysis methods. These articles explore different emerging technologies including various applications of AI, Internet of Things (IoT), voice versus typed search modalities, virtual agents, Natural Language Processing (NLP), and combinations of digital technologies. They also address different strategic resources, such as design, the ability to change AI features, software

development, data storage and sharing, and marketing assets. Finally, they investigate a range of relevant outcomes, such as attitudes, purchase intentions, brand value, and firm performance.

By building on these diverse contributions, we propose an overarching framework of how strategic resources can be transformed into value for customers, firms, and society. We contextualize this framework building on insights derived from 16 interviews with marketing executives and senior managers, through which we identify some common themes regarding future applications of digital technology in marketing. Combining these insights, we construct a research agenda for continued investigation of emerging digital technologies in marketing.

Strategic marketing imperatives for emerging digital technologies

Firms that frequently experiment with, and adopt, emerging digital technologies can lead their industries, because they foster innovations related to the customer experience but also to their design, production, promotion, and delivery efforts (Grewal et al., 2020). For example, Amazon constantly experiments with technology, from robots in the warehouses to drones as delivery mechanisms, which help it gain and maintain its strategic edge. The pandemic has intensified the effects of such innovative uses of emerging digital technologies as customers have sought to limit their physical contact and adjusted their purchase behaviors (Grewal et al., 2021). This change in behavior benefited organizations that applied new ways of using technologies such as UberEats and Instacart that provide food deliveries to people's homes. Moreover, in addition to opening fully automated stores such as AmazonGo, Amazon added quicker grocery delivery from Amazon Fresh and Whole Foods. As these examples and the contributions to this thought leadership

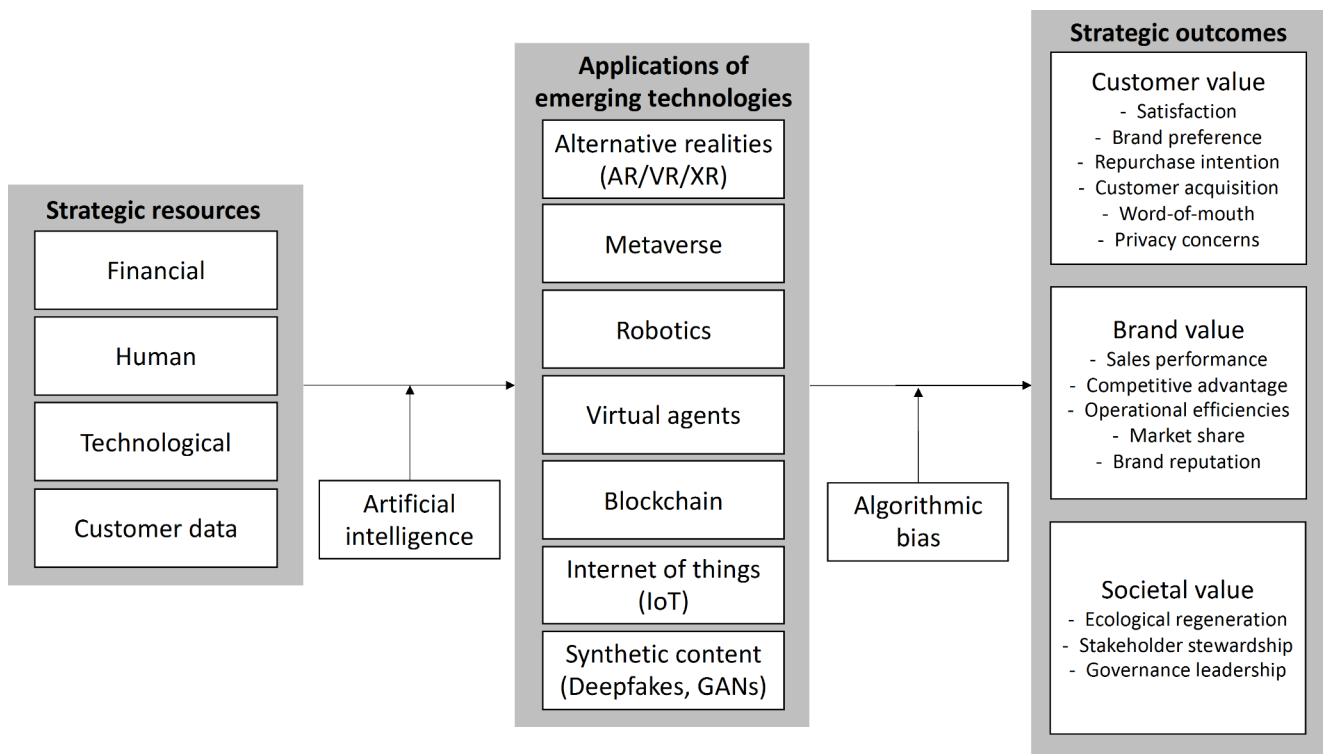


Fig. 1 Framework

special issue show, organizations use strategic resources to develop and deploy relevant digital technologies to achieve strategic outcomes for their customers, firms, and society, as depicted in Fig. 1. The framework also highlights the importance of AI and algorithmic bias as important boundary conditions that may mitigate investments in digital technologies and their returns in terms of strategic outcomes.

Digital technology–enabling strategic outcomes

Managers that embrace emerging digital technologies must anticipate their impacts on purchase journeys, customer perceptions, and service delivery. With their focus on purchase journeys, Schweidel et al. (2022) find that the strength of customer–firm relationships largely determines customers’ willingness to transmit digital signals that enable personalized marketing. The present an interesting framework to highlight the effects of consumer signals, organizational decisions, and consumer reactions at the pre-purchase stage, the purchase stage, and post-purchase stage.

The modality that customers use to interact with digital technologies also affects their behavior; as King et al. (2022) report, typed (versus vocal) interactions with a search page enhances people’s purchase intentions and behaviors. They suggest (and demonstrate) that typing your search query likes puts a customer in a more deliberative mindset, and this is likely to influence their customer journey, and ultimate

purchase behaviors. For voice search features, their findings suggest the importance of action-oriented communication. Recent research has highlighted the importance of dynamic communications (e.g., Farace et al., 2020; Roggeveen et al., 2015; Villarroel et al. 2019), however, such data sharing through technology also can raise concerns about privacy and security. Firms thus must exhibit caution when deploying emerging digital technologies, because tensions could surface related to customers’ privacy preferences during their purchase journey. Interactions with the firm that rely on such technologies could result in strained relationships (Quach et al., 2022).

Even outside their purchase journeys, customers may perceive brands differently if they use emerging technologies. Among luxury brands, Xu and Mehta (2022) find that customers perceive hedonic products (e.g., handbags) as less attractive if they feature AI-based designs, due to the diminished emotional value of these products. However, this negative effect of AI-based product design appears to disappear for functional products (e.g., luxury automobiles).

Similarly, service interactions facilitated by emerging digital technologies may provide convenience benefits but also produce negative outcomes in some contexts. Uysal et al. (2022) investigate how anthropomorphic virtual agents may evoke heightened privacy concerns and diminished well-being. They assess the effects of different intervention strategies: increasing the awareness of the problem,

improving knowledge of problem resolution methods, and implementing solutions. The taking-action intervention strategy was the most successful in alleviating negative identify threat effects.

Liu-Thompkins et al. (2022) identify situations in which artificial empathy in automated customer–firm interactions are desirable, even as they acknowledge that some applications of artificial empathy could harm these relations. Their study provides evidence that an AI providing greater artificial empathy results in improved customer experiences and outcomes.

Enhancing value creation using artificial intelligence

Across industries, many firms invest heavily in AI applications (Bonetti et al., 2022; Grewal et al., 2021; Davenport et al., 2020), and by doing so these firms can increase the effectiveness of other marketing investments. For example, Mishra et al. (2022) demonstrate that AI-focused firms are more profitable, with greater operating efficiency and better returns on marketing investments. At the same time, they find that firms with an AI focus reduced advertising expenditure.

Bahmani et al. (2022) focus on organizations' investments on voice assistant devices, such as Amazon's Alexa. They highlight how announcements of various capabilities in their devices can influence firm value. Specifically, informational capabilities had a positive effect on the influence of announcement on firm value, while object-control capabilities did not have a significant effect. Interestingly, transactional capabilities had a negative moderating effect. Thus, while voice assistant capabilities have differential effects at the firm valuation level, it would be equally important to understand their effects at the customer level. Additionally, the use of AI voice assistant device features can be used by customers as signals of intelligence and artificiality (more machine-like), and in turn influence their evaluations (Guha et al., 2022).

Shankar and Parsana (2022) unpack how AI-powered natural language processing can help firms analyze unstructured data and uncover consumer sentiment and behaviors, which leads to better brand positioning, more innovative product developments, expanded competitive advantages, and more agile marketing communications. They provide a comprehensive review of Natural Language Processing (NLP) models, and with the help of two datasets (product announcement and news articles), highlight the advantages and disadvantages of different models, and when certain models may be better suited.

According to Padigar et al. (2022), AI investments strengthen the power of the marketing department and

improve investors' responses to new product developments. In short, AI has the potential to enhance the value created by marketing strategies and investments in emerging digital technologies. Using an event study of announcements from S&P500 organizations, they highlight that the market power – investor response relationship is enhanced when AI announcements include information that the innovation is more complex, externally sourced, or pertains to later innovation stages.

Ethical implications and mitigating algorithmic bias

Although emerging digital technologies such as artificial intelligence and machine learning can enhance predictions, some potential roadblocks exist that may hinder their benefits for society. As is true of any economic innovation, efficiency increases could come at the expense of equity. For example, AI and the algorithms on which it depends might reinforce existing forms of inequality (Davenport et al., 2020) or may promote information compression (Watson et al., 2022) resulting in non-optimal societal outcomes. Furthermore, three potential sources of bias have been speculated about in prior literature (Cowgill & Tucker, 2020). First, the lack of diversity in programming communities may be reflected in how algorithms are written and deployed. Second, algorithms may be trained with data sets that themselves reflect existing biases. For example, if voice recognition software lacks data related to African-American dialects, due to existing digital exclusion, then future generations of the software will continue to be less and less effective for an already excluded segment of the population. Third, algorithms that involve real-time data processing might pick up on biased individual actions. If a human resources department historically defined its selection criteria to seek out students from undergraduate institutions that are not inclusive, this bias may be learned and reinforced by the algorithm.

Many of these concerns about algorithmic bias and algorithmic exclusion pertain to algorithms used to inform hiring, credit, education, and judicial proceedings. However, there are reasons to be concerned in more traditional areas of marketing too. For example, Lambrecht and Tucker (2019) show that, in trying to maximize cost effectiveness, an advertising algorithm might limit advertisements encouraging STEM (Science, Technology, Engineering, and Math) careers to female candidates, because accessing women is relatively more expensive than accessing men. Marketers must be aware of such detrimental potentials and the risk of outcomes that contradict the companies' values, even if the nature or intended purpose of the AI or machine learning seems innocuous.

Table 2 Interview sample

No.	Pseudonym	Gender	Title	Industry
1	Adam	Male	VP Marketing	Technology
2	Brittney	Female	Head of Marketing	Fashion
3	Christa	Female	Marketing Manager	Technology
4	Darlene	Female	Senior eCommerce Strategist	Consulting
5	Edward	Male	Account Director	Technology
6	Fred	Male	Head of Marketing	Public sector
7	Gregory	Male	Head of Advertising	Consulting
8	Howard	Male	Founder & CEO	Technology
9	Ian	Male	Creative Design Manager	Entertainment
10	Jeff	Male	Creative Director	Technology
11	Kirsten	Female	Creative Development Director	Entertainment
12	Luke	Male	Product Design Director	Technology
13	Melissa	Female	Founder & CEO	Fashion
14	Nicole	Female	Founder & Managing Partner	Consulting
15	Olivia	Female	Media Director	Consulting
16	Peter	Male	Technical Creative Director	Entertainment

Insights from the boardroom on digital technology trends in marketing

This special issue presents research insights into how digital technologies can affect marketing strategies and customers. To corroborate research findings and assess the potential impact of the issues identified by marketing scholars, we gathered insights on the perspectives of senior marketing practitioners on the future of digital technologies in marketing. We conducted 16 interviews with marketing leaders from a variety of industries (see Table 2). With informed consent and detailed introductions, we explored how digital technologies feature in these executives' marketing practice, then probed some specific potential applications of technologies, including AI, extended realities, the Metaverse, robotics, virtual agents, blockchain, the Internet of Things, and synthetic content.

Each interview lasted approximately 30 min and was transcribed, to facilitate coding by the author team. We inductively analyzed the transcripts in four steps: (1) open coding of five transcripts, (2) creation of core categories that define emergent general themes; (3) refinement of definitions and relationships among core categories, and (4) hermeneutic interpretation of the findings (Arnold & Fischer, 1994). The informants varied in their specific views on applications of digital technologies to their own future practices, but three common themes emerged: decentralized marketing, metamodern customer experiences, and marketing automation. We detail these themes next.

Decentralized marketing

Whereas Web 2.0 technologies forced firms and their brand managers to give up some power to customers and other stakeholders (Thomaz et al., 2020), Web 3.0 technologies such as blockchains appear likely to usher in an era of what we can call *decentralized marketing*. More democratized brands will center on sustainability, provenance assurance, privacy and security protection, and innovative digital products. This push is evident in Adam's comments:

The approach with Web 3.0 is more and more decentralization, because I think it's inevitable for marketing to be more decentralized and distributed, and more democratic in a sense. The way that we do marketing needs to be welcoming of feedback of the community. We talk a lot about community in Web 3.0, but that community is customers. This is the difference in approach. What's the best way for brands to engage customers when customers are already improving the brand and selecting their brand? How much more customer engagement can brands want or expect?

As firms and managers are forced to rethink how, when, and why they engage with customers, Web 3.0 technologies offer a wide array of information sharing options. The fashion brand Alexander McQueen's MCQ line embeds near-field communication (NFC) chips in garments, through which both customers and supply chain partners can verify their ecological and social sustainability production credentials and assure their provenance by tracking the contributions of each supply chain partner (So, 2020). This added brand transparency not only informs customers about the sustainability of their favorite brands but also incentivizes those brands to clean up their manufacturing processes and supply chains (Montecchi et al., 2021).

Beyond offering more information to, and engagement with, consumers, decentralized marketing aids firms in protecting customers' privacy and securing existing information. Gregory acknowledges this benefit, saying:

Recent initiatives done by some of the world's leading marketing tech platforms, such as Google or Meta, are looking to retain anonymity but still enable marketers a certain level of granularity to select customers based upon a broad index of interests and attributes. From an advertising perspective, we're not just spraying and praying, but we have targeted approach that respects privacy. This is still developing, month by month, year by year, as it gradually becomes part of the digital marketing ecosystem.

Moreover, some firms have implemented privacy-centered brand positioning and have new strategies for their uses of customer data, as Edward explains:

The new iPhone TV spot where there's an auction house and the audience bidding for some young lady's data, like her phone contacts. Her data is disappearing in puffs as they're bidding. This ad is showing the brand giving back control to the consumer, because they realize now that the genie's out the bottle. Consumers are now aware how valuable their data are, and how all these kind of internet services haven't been for free. They've been trading on our personal data. We're seeing a rise of startups now that are gaining traction and are going to reclaim that data and actually allow consumers to monetize it.

Privacy threats are not likely to disappear, but firms can position themselves as protecting customer data, because they embrace tamper-evident Web 3.0 technologies that provide customers with both assurances and value.

The Web 3.0 technologies that enable decentralized marketing also provides new foundations for exciting digital offerings. For example, non-fungible tokens (NFTs) allow for a range of digital products to come to market, secured by blockchain ledgers that establish them as original and unique. Many NFTs can be classified as digital art, often based on novel collaborations between leading brands and artists that produce digital products such as Nike's Cryptokicks or Ardbeg's Fon Fhòid Scottish whisky. As firms innovate and experiment with the use of digital products, in the metaverse or as a digital twin, new business models, customer value considerations, and exchange systems are likely to emerge.

Metamodern customer experiences

Advances in alternative reality technologies—augmented (AR), virtual (VR), and extended (XR) combined with recent innovations in the metaverse, provide grounds for what we call *metamodern customer experiences*, or hyper-realistic immersive brand narratives that account for customer diversity.¹ Reflecting on the future of marketing as it pertains to these technologies, Brittney reports:

Many of the very big fashion brands like Burberry or Gucci, et cetera, are trying to figure out new ways to spend their marketing money. There're only so many

ads you can buy. There are only so many millions of pounds you can put behind celebrity campaigns. So, they are tactically turning to new platforms like games to activate customers from Roblox to Fortnite to maybe building worlds of their own within epic games on the unreal engine. They're looking at VR and AR experiences where they can bridge that gap between physical and digital. Quite a lot of the bigger brands are trying to toy with the idea of selling digital products to people. This kind of marketing mix is much broader than it's kind of been in the past. Brands feel like they have to be in multiple places at once, but from a technology perspective, I think the most exciting things are probably VR and AR, as they can bridge the digital and the real worlds. It's quite exciting to really use technology creatively in a new way to excite consumers.

Moreover, alternative reality technologies can make impossible notions possible, by stretching the abilities of marketing across space and time, as Fred claims:

Some of the more experiential technologies like VR can really help people experience [a place] from the comfort of their home regardless of distance. You could even design a virtual experience with AR or VR that places people in the suffragette movement where you could ask them questions. It could be really creative with these things.

Thus, marketers have the ability to connect and engage with consumers using malleable realities created by technologies, which not only match consumers' preferences but also delight and thrill them.

When alternative reality technologies enable marketers to design customer experiences across different realities, they also can produce an *omni-reality*, in which the basic brand identity and message remains the same, but the delivery mode to consumers changes with the context. However, Brittney cautions marketers about the need to maintain brand authenticity:

One of the biggest challenges with the metaverse world is that you can't just go in there and be [Brand] within a metaverse because the audience that you are speaking to behave in a very different way than probably what you're used to. So how do you bring them on board? How do they feel like they're a part of that experience? They're very, very critical about things that don't feel authentic to that environment. The credentials or the fundamentals of how that world works are extremely important. It's being authentic to you as

¹ For context, metamodernism theory is a higher-order synthesis of scientific rational modernism and critical post-modernism that offers integrated and constructive perspectives, narratives, and work (see Storm 2021).

a brand, what you stand for, and then it's also being authentic to your audience and what they expect from you within certain environments.

Marketers also need to be cognizant of negative outcomes of customer interactions, online and offline, as they relate to the creation of metamodern customer experiences, according to Darlene:

All these social issues that we are dealing with offline in the real world haven't really been addressed. We're kind of recreating the same model in these new spaces, which I think is not great. It would be really nice to invite marketers to make these spaces more inclusive to make sure that whatever is being built has a brighter future for more people.

The possibilities for creating metamodern customer experiences seems bright and boundless, but marketers still have an ethical and professional imperative to establish them in ways that improve the accessibility of the experiences.

Marketing mechanization

Although marketing managers have used complicated metrics for decades, *marketing mechanization* relies on machine learning and AI to go beyond simple count metrics to assess, evaluate, and forecast customer behavior, while also automatically adjusting marketing strategies and customer service delivery. The promise of marketing mechanization is evident in these views expressed by two informants:

Machine learning and AI can help quantify and qualify the massive data you get from the human experience or the human condition, and kind of group those in a manner that makes it a little bit more digestible. So, it can give guidance. It can help shape the best result or a desired result. It can help guide us to a desired result. (Jeff)

There's a lot of tools that would allow you to upload an image, or let's say like an entire webpage, and the AI will be able to predict where the human gaze would go in each moment. The AI can understand ... are incredible and open up a world of possibilities.... I think in the future will be more about automation, but we'll still require some kind of human involvement. (Darlene)

Both these informants see the potential of advanced analytics, in terms of generating substantial value, yet they also point out the need for contributions from (human) marketing managers. AI and advancements in machine learning

can help employees and technology better collaborate (i.e., the Fifth Industrial Revolution) in serving customers (Noble et al., 2022). These managers highlight how AI and latest advancements in digital technologies allow them to be able to focus on more valuable and productive aspects of their job:

The design process used to be very slow. AI and machine learning alone is helping to speed these processes up quite a bit. They're speeding up the output processes way faster. That's allowing us just to be creative way faster, instead of waiting six to eight hours to come back and be creative again. (Luke)

I personally think that AI will allow marketers to become more creative because it will remove some of the more menial tasks that a lot of us are doing today, and probably shouldn't have to do. So, that will free up more time for us to be creative and strategic. (Olivia)

Thus, marketing mechanization can help to efficiently redeploy marketing human resources in more meaningful and productive ways because menial tasks get taken over by automated computer resources. However, these mechanized tools also could become vehicles for further inequalities across the globe. As Peter realizes, "technology can be a privilege like how people experience technology in the more industrialized nations versus people in third world countries." Therefore, despite the great promise of automatic marketing strategies, firms and managers adopting marketing mechanization should consider the risks as well.

A marketing practitioner-informed research agenda for the future of digital technologies

It is an exciting time to be a marketer. Many applications of digital technologies, which seemed like science fiction just a few years ago, are being implemented in practice by managers in diverse industries. Marketing scholarship has a lot to offer in providing guidance and insights as to how investments in digital technologies can contribute and create value for customers, firms, and society. By combining insights from the marketing literature (including the contributions in this special issue) and from the boardroom, we propose a research agenda, in the hope of inspiring continued new research into the themes of decentralized marketing, metamodern customer experiences, and what is emerging as marketing mechanization (Table 3). We identify a wide array of relevant questions to enhance value generation while warranting ethical robustness.

Beyond these detailed questions and issues and based on our experience of closely engaging with the author and

Table 3 Research agenda

Themes	Potential Research Questions
Decentralized marketing	
<i>Enabling strategic outcomes</i>	<ul style="list-style-type: none"> • How can tamper-evident authenticity signals for content, products, or services be made accessible to customers? How will such added transparency affect customer decision-making? • To what extent can customers with intense privacy concerns be convinced by security guarantees provided by block-chain applications? • Can Benefit Corporations (B-Corps) use Web 3.0 technologies to reassure customers? To what extent will such uses become pervasive in their supply chains?
<i>Enhancing value creation using AI</i>	<ul style="list-style-type: none"> • Can AI effectively facilitate customer communities without affecting their organization, liberty, or leadership?
<i>Ethical implications</i>	<ul style="list-style-type: none"> • How can marketers identify algorithmic bias in practice? When is it appropriate to do so? • To what extent can decentralized marketing produce more risky customer behaviors and decisions?
Metamodern customer experiences	
<i>Enabling strategic outcomes</i>	<ul style="list-style-type: none"> • How can brand managers design and assess the metamodern customer experiences to optimize the effective use of strategic resources to generate outcomes? • How will firm interactions with (potential) customers in the Metaverse lead to increases in customer loyalty and sales? • To what extent will customers tolerate advertising messages and want to perform transactions in the metaverse? • How can brand managers best use hyper-reality to integrate alternative reality technologies (e.g., AR, VR) with real world experiences beyond novelty? • How does the live synchronous nature of immersive environments encourage positive (negative) consumer (mis) behaviors?
<i>Enhancing value creation using AI</i>	<ul style="list-style-type: none"> • What level of control are organizations or consumers willing to give up to AI to generate metamodern experiences? • How can AI collect valuable data from customers interacting with branded metamodern experiences while protecting customer privacy and ensuring data security?
<i>Ethical implications</i>	<ul style="list-style-type: none"> • What regulations or industry norms need to be established to protect customers engaging with firms in metamodern experiences? • As the ability to create fake or false content increases, what role should advertisers and firms take in terms of informing customers? How can organizations manage their intellectual property across the many platforms of metamodern experiences? • What power imbalances exist, and what are their implications?
Marketing mechanization	
<i>Enabling strategic outcomes</i>	<ul style="list-style-type: none"> • To what extent does marketing mechanization increase capabilities to reach underserved and underrepresented segments? • How does marketing mechanization enable frontline employees to improve customer service and satisfaction?
<i>Enhancing value creation using AI</i>	<ul style="list-style-type: none"> • How can AI assist with crisis and complaint management? • How can AI help retail and sales associates more effectively service their customers? • How can managers implement AI and other advanced digital technologies without alienating frontline employees?
<i>Ethical implications</i>	<ul style="list-style-type: none"> • Can programmatic advertising using demand-side platforms (DSPs) be developed to encourage diversity and inclusion? • What is the optimal mix of technology and human resources for achieving efficient marketing insights and effective market differentiation?

review teams and interviewing senior marketing leaders, we have learned that value capture from digital transformation depends largely on innovative differentiation on customer engagement. Rather than relying on cost-efficiencies and incremental product and service improvements, return on investment can be expected when firms rely on bolder digital strategies that focus on creating unique and personal experiences that engage customers on all levels (i.e., emotionally, cognitively, and behaviorally). Customer engagement requires context specific adaption and often proprietary development of digital technologies, as organizations cannot rely on one-size-fits-all, off the shelf solutions. Finally, successful value capture depends on a willingness to invest in hiring and developing marketing executives and customer-facing employees who are both tech- and ethos-savvy to deliver on the value promise of digital technologies in a

manner that is in sync with the values of stakeholders and society.

Appendix: List of reviewers

We appreciate the timely and constructive feedback provided by all the reviewers of manuscripts submitted to this special issue. The reviewers are listed next:

Abhijit Guha
Adam Nguyen
Aimee Dinnin Huff
Amallesh Sharma
Amir Grinstein
Anabela Reis
Angeline Close Scheinbaum

Anouk de Regt
 Aric Rindfleisch
 Ashley Goreczny
 Barry Babin
 Ben Lowe
 Benedict G C Dellaert
 Billur Akdeniz
 Brad D. Carlson
 Brent McFerran
 Carl-Philip Ahlbom
 Catherine Cole
 Charlotte Mason
 Cheryl Nakata
 Christian Homburg
 Colin Campbell
 Cristel Antonia Russell
 Debbie Isobel Keeling
 Dinesh Gauri
 Elisa B. Schweiger
 Elizabeth Howlett
 Eric Shih
 Felipe Thomaz
 Francesca Bonetti
 Francisco Villarroel Ordenes
 Francois Anthony Carrillat
 Grish Mallapragada
 Haiming Hang
 Hope Jensen Schau
 Ingrid M. Martin
 Jakki Mohr
 James Mourey
 Janet Y. Murray
 Japdip Singh
 Jonas Heller
 Jonlee Andrews
 Julie Guidry Moulard
 Kathryn Ponders
 Kelly D. Martin
 Kimberly Whitler
 Kiran Pedada
 Maik Hammerschmidt
 Manish Kacker
 Marisabel Romero Lopez
 Marius C. Claudy
 Markus Blut
 Martin Eisend
 Matteo Montecchi
 Michael Barone
 Michael Etter
 Michael Haenlein
 Michael Tsiros
 Mickey Belch
 Neeraj Bharadwaj

Oguz Acar
 Oliver Rutz
 Peter Verhoef
 Praveen Kopalle
 Rajkumar Venkatesan
 Ralitza Nikolaeva
 Rama Kumari Jayanti
 Richard A. Gooner
 Rosanna Garcia
 Sajeev Varki
 Sara Rosengren
 Scott Koslow
 Sean Sands
 Shuba Srinivasan
 Sonke Albers
 Stacey Robson
 Stefan Hoffmann
 Stefan Wuytys
 Steffan Jahn
 Stephan Vargo
 Sujay Dutta
 T. Bettina Cornwell
 Tamuka Ghoshal
 Unnati Narang
 Vamsi Kanuri
 Venkatesh Shankar
 Wei-Lun Chang
 Yany Gregoire
 Yinlong Zhang
 Yong Liu
 Zachary Arens

Acknowledgements We thank the very busy informants for giving their time to provide us with insights into the future of digital technologies in marketing. We thank John Hulland and Mark Houston for their support and advice, as well as the special issue reviewers. We also congratulate the special issue contributors who submitted their work, endured several challenging years, and persevered through the review process to achieve publication.

References

- Arnold, S. J., & Fischer, E. (1994). Hermeneutics and consumer research. *Journal of Consumer Research*, 21(1), 55–70.
- Bahmani, N., Bhatnagar, A., & Gauri, D. (2022). Hey, Alexa! What attributes of Skills affect firm value? *Journal of the Academy of Marketing Science*. <https://doi.org/10.1007/s11747-022-00851-0>
- Bleier, A., Goldfarb, A., & Tucker, C. (2020). Consumer privacy and the future of data-based innovation and marketing. *International Journal of Research in Marketing*, 37(3), 466–480.
- Bonetti, F., Montecchi, M., Plangger, K., & Schau, H. J. (2022). Practice co-evolution: Collaboratively embedding artificial intelligence in retail practices. *Journal of the Academy of Marketing Science*. <https://doi.org/10.1007/s11747-022-00896-1>
- Cowgill, B., & Tucker, C. E. (2020). Algorithmic fairness and economics. *Columbia Business School Research Paper*, Retrieved

- August 26, 2022 from https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3361280
- Davenport, T., Guha, A., Grewal, D., & Bressgott, T. (2020). How artificial intelligence will change the future of marketing. *Journal of the Academy of Marketing Science*, 48(1), 24–42.
- de Ruyter, K., Keeling, D. I., Plangger, K., Montecchi, M., Scott, M. L., & Dahl, D. W. (2021). Reimagining marketing strategy: Driving the debate on grand challenges. *Journal of the Academy of Marketing Science*, 50(1), 13–21.
- Farace, S., Roggeveen, A., Villarroel Ordenes, F., De Ruyter, K., Wetzels, M., & Grewal, D. (2020). Patterns in motion: how visual patterns in ads affect product evaluations. *Journal of Advertising*, 49(1), 3–17.
- Georgiadis, C. (2022). How technology will revolutionize marketing in 2022 And Beyond, *Forbes*, February 4, Retrieved July 20, 2022 from <https://www.forbes.com/sites/forbesagencycouncil/2022/02/04/how-technology-will-revolutionize-marketing-in-2022-and-beyond/?sh=71f54d142fdd>
- Grewal, D., Roggeveen, A.L., Nordfält, J. (2017). The Future of Retailing. *Journal of Retailing*, 93, 1–6.
- Grewal, D., Gauri, D. K., Roggeveen, A. L., & Sethuraman, R. (2021). Strategizing retailing in the new technology era. *Journal of Retailing*, 97(1), 6–12.
- Grewal, D., Hulland, J., Kopalle, P. K., & Karahanna, E. (2020). The future of technology and marketing: A multidisciplinary perspective. *Journal of the Academy of Marketing Science*, 48(1), 1–8.
- Guha, A., Bressgott, T., Grewal, D., Mahr, D., Wetzels, M., & Schweiger, E. (2022). How artificiality and intelligence affect voice assistant evaluations. *Journal of the Academy of Marketing Science*. <https://doi.org/10.1007/s11747-022-00874-7>
- Heller, J., Chylinski, M., de Ruyter, K., Keeling, D. I., Hilken, T., & Mahr, D. (2021). Tangible service automation: Decomposing the technology-enabled engagement process (TEEP) for augmented reality. *Journal of Service Research*, 24(1), 84–103.
- Hilken, T., Keeling, D. I., de Ruyter, K., Mahr, D., & Chylinski, M. (2020). Seeing eye to eye: social augmented reality and shared decision making in the marketplace. *Journal of the Academy of Marketing Science*, 48(2), 143–164.
- Keeling, D. I., de Ruyter, K., Mousavi, S., & Laing, A. (2019). Technology push without a patient pull: examining digital unengagement (DU) with online health services. *European Journal of Marketing*, 53(9), 1701–1732.
- King, D., Auschaitrakul, S., & Lin, C. W. J. (2022). Search modality effects: merely changing product search modality alters purchase intentions. *Journal of the Academy of Marketing Science*. <https://doi.org/10.1007/s11747-021-00820-z>
- Lambrecht, A., & Tucker, C. (2019). Algorithmic bias? An empirical study of apparent gender-based discrimination in the display of STEM career ads. *Management Science*, 65(7), 2966–2981.
- Liu-Thompkins, Y., Okazaki, S., & Li, H. (2022). Artificial empathy in marketing interactions: Bridging the human-AI gap in affective and social customer experience. *Journal of the Academy of Marketing Science*. <https://doi.org/10.1007/s11747-022-00892-5>
- Mende, M., Scott, M. L., van Doorn, J., Grewal, D., & Shanks, I. (2019). Service robots rising: How humanoid robots influence service experiences and elicit compensatory consumer responses. *Journal of Marketing Research*, 56(4), 535–556.
- Montecchi, M., Plangger, K., & West, D. C. (2021). Supply chain transparency: A bibliometric review and research agenda. *International Journal of Production Economics*, 238, 108152.
- Noble, S. M., Mende, M., Grewal, D., & Parasuraman, A. (2022). The Fifth Industrial Revolution: How Harmonious Human–Machine Collaboration is Triggering a Retail and Service [R]evolution. *Journal of Retailing*, 98(2), 199–208.
- Mishra, S., Ewing, M. T., & Cooper, H. B. (2022). Artificial intelligence focus and firm performance. *Journal of the Academy of Marketing Science*. <https://doi.org/10.1007/s11747-022-00876-5>
- Okazaki, S., Eisend, M., Plangger, K., de Ruyter, K., & Grewal, D. (2020). Understanding the strategic consequences of customer privacy concerns: A meta-analytic review. *Journal of Retailing*, 96(4), 458–473.
- Padigar, M., Pupovac, L., Sinha, A., et al. (2022). The effect of marketing department power on investor responses to announcements of AI-embedded new product innovations. *Journal of the Academy of Marketing Science*. <https://doi.org/10.1007/s11747-022-00873-8>
- Quach, S., Thaichon, P., Martin, K. D., Wevan, S., & Palmatier, R. W. (2022). Digital technologies: tensions in privacy and data. *Journal of the Academy of Marketing Science*. <https://doi.org/10.1007/s11747-022-00845-y>
- Roggeveen, A. L., Grewal, D., Townsend, C., & Krishnan, R. (2015). The impact of dynamic presentation format on consumer preferences for hedonic products and services. *Journal of Marketing*, 79, 34–49.
- Storm, J. A. J. (2021). *Metamodernism: The future of theory*. Chicago, IL: University of Chicago Press.
- Schweidel, D. A., Bart, Y., Inman, J. J., Stephen, A. T., Libai, B., Andrews, M., Rosario, A. B., Chae, I., Chen, Z., Kupor, D., Longoni, D., & Thomaz, F. (2022). How consumer digital signals are reshaping the customer journey. *Journal of the Academy of Marketing Science*. <https://doi.org/10.1007/s11747-022-00839-w>
- Shankar, V., & Parsana, S. (2022). An overview and empirical comparison of natural language processing (NLP) models and an introduction to and empirical application of autoencoder models in marketing. *Journal of the Academy of Marketing Science*. <https://doi.org/10.1007/s11747-022-00840-3>
- So, D. (2020). Alexander McQueen launches McQ, a blockchain-powered creative platform, High Nobility, Retrieved September 1, 2022 from <https://www.highsnobiety.com/p/alexander-mcqueen-launches-mcq/>
- Thomaz, F., Salge, C., Karahanna, E., & Hulland, J. (2020). Learning from the dark web: Leveraging conversational agents in the era of hyper-privacy to enhance marketing. *Journal of the Academy of Marketing Science*, 48(1), 43–63.
- Uysal, E., Alavi, S., & Bezençon, V. (2022). Trojan horse or useful helper? A relationship perspective on artificial intelligence assistants with humanlike features. *Journal of the Academy of Marketing Science*. <https://doi.org/10.1007/s11747-022-00856-9>
- Villarroel Ordenes, F., Grewal, D., Ludwig, S., Ruyter, K. D., Mahr, D., & Wetzels, M. (2019). Cutting through content clutter: How speech and image acts drive consumer sharing of social media brand messages. *Journal of Consumer Research*, 45(5), 988–1012.
- Xu, L., & Mehta, R. (2022). Technology devalues luxury? Exploring consumer responses to AI-designed luxury products. *Journal of the Academy of Marketing Science*. <https://doi.org/10.1007/s11747-022-00854-x>
- Watson, R. T., Plangger, K., Pitt, L., & Tiwana, A. (2022). A theory of information compression: When judgments are costly. *Information Systems Research*. <https://doi.org/10.1287/isre.2022.1163>

Publisher's Note Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.