

IAB Artificial Intelligence in Marketing

Where Brands and Consumers Meet Through Data

December 2019



The advertising landscape has transformed dramatically in the last two years. A huge part of that transformation is related to developments in artificial intelligence (AI) and machine learning. This IAB guide is designed to help brand marketers and their agencies identify the opportunities that artificial intelligence and machine learning present, the range of options available, and some recent best practices for applying AI to marketing and advertising.

Developed by the IAB AI Working Group which was formed to help marketing and technology executives navigate the impact AI and machine learning will have on the world of digital advertising, this is the first guide of its kind to offer a full picture of the benefits of AI in marketing, real-world use cases, best practices, and key takeaways for marketers looking to leverage AI to better engage with customers at scale.



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About This Report

When IAB put out the call to its members to form an AI working group, the response was overwhelming: 115 members raised their hands to contribute to our collective industry understanding of this nascent and essential topic. The charter of the IAB AI Working Group is to:

- Understand how AI and machine learning affect our industry
- Simplify, define and set standards for the space as it relates to the advertising and marketing industry
- Organize tools for the industry to plan ahead
- Think about responsible uses of AI to ensure that humans and machines work well together in the future

One of the first projects to come out of the working group was to survey IAB members and others in the industry including traditional publishers, technology providers, research companies, and companies focused exclusively on AI for answers to the following questions:

- What is Al?
- What is machine learning?
- Is AI the same as machine learning, or are they related or different?
- How is Al currently being used for marketing and advertising purposes?
- What are best practices for using AI in advertising and marketing?
- What are the most important challenges in AI?

Their responses informed the basis of this IAB guide, focusing on the areas of greatest importance to the marketing industry at this time. While this document does not serve as a technical guide, it sets forth proposed definitions to provide clarity around AI, outlines the key areas where AI is currently being used for marketing purposes, and offers guidance on best practices for what works and why. Moving forward, IAB will take deeper dives into AI-related topics such as voice and machine-learning advancements, and the IAB Tech Lab will evaluate technical specifications to solve for AI-related business needs. IAB's Public Policy group will also serve as an important guide related to privacy and ethical considerations related to AI and machine learning.

IAB acknowledges the leadership of the working group co-chairs and the 115 working group participants under the leadership of IAB's committee co-chairs, Matthew Groner, SVP Product Management for AdTheorent, and Antonio Tomarchio, CEO and Founder of Cuebig.



Overview of AI in Advertising and Marketing

Al is already an integral part of the business landscape, particularly in the U.S. And with good reason: In a recent Deloitte <u>survey</u> of 1,100 U.S. executives from companies considered to be early Al adopters, 82% reported a positive return on their investment for their Al initiatives. "Many of the complex challenges businesses need to solve today require humans working with machines to gain an advantage," says David Rudini, principal and chief analytics officer, Deloitte Consulting LLP. "In order to achieve true ROI from your Al investments, it requires defining specific business outcomes, and understanding the costs, cascading impacts, and talent implications at the onset."

When it comes to marketing and advertising, AI is extremely pervasive, with at least 80% of the <u>digital media</u> <u>market likely to be using</u> some kind of AI in advertising this year. In fact, modern digital advertising as we know it today wouldn't exist without AI. AI is used to profile visitors to a website or app, then that information is used to target and deliver ads to a network of platforms and services that play different roles at each stage of the advertising supply chain.

We're seeing Al analyze customer behavior to make smart recommendations based on attributes such as age, gender, location, and millions of other data points that marketers can use to reach the right customer at the right time. And we're already seeing unique web pages that are built on the fly just for individual consumers — a custom shopping catalog for one, compliments of Al. Al-powered conversational intelligence like chatbots and voice-enabled platforms like Alexa are also radically changing our ideas of what digital marketing can do.

Brands want to reach the right consumers, at the right time, with the right message and Al-enabled platforms and tools are making this a reality.

But technology has a way of outpacing our ability to understand what is actually going on, and that is definitely the case with AI. As AI becomes more widely adopted in the advertising ecosystem, we need a common vocabulary for what AI is, and what it's not. In fact, as an industry we don't currently have a common vocabulary to define what AI is (and isn't in marketing and how it should (and shouldn't be used, both of which were primary drivers in the creation of this playbook.

What is AI?

The first thing to understand is that at the core of AI is data. AI needs data to function, which gives companies with larger and more accurate data sets an advantage.

A good way to define AI is to showcase what it does:



AITURNS A INTO B

Most of the recent progress in AI is simply turning input A into output B

INPUT A	OUTPUT B	APPLICATION
Picture	Are there human faces? (0 or 1)	Photo tagging
Loan application	Will they repay the loan? (0 or 1)	Loan approvals
Ad plus user information	Will user click on ad? (0 or 1)	Targeted online ads
Audio clip	Transcript of audio clip	Speech recognition
English sentence	French sentence	Language translation
Sensors from hard disk, plane engine	Is it about to fail?	Preventative maintenance
Car camera and other sensors	Position of other cars	Self-driving cars

Source: Sara Robertson, Xaxis

Definition of AI: Intelligence demonstrated by machines that mimic cognitive functions that humans associate with other human minds such as learning and problem-solving.

What is Machine Learning?

"Machine learning is basically a way for a computer to find the nuggets of information that a human can't," explains Fausto Ibarra, Director of Global Product Management for Google Cloud Platform. "Once you have your data and train and deploy your models, the machine can go through terabytes of data and get smarter and smarter — basically train itself — and ultimately make predictions for you."

In other words, machine learning is a subset or type of AI. Machine learning is focused on developing algorithms that can learn from data and adapt in real-time as they're exposed to more data. The algorithms improve their ability to make decisions as they operate, by monitoring the data flowing through the system and updating how they make decisions based on how previous decisions worked. In practice, it's essentially statistical optimization that looks through the database to identify what kind of patterns lead to successful decisions, and what leads to unsuccessful decisions. The algorithm then optimizes towards successful decisions.



Definition of Machine Learning: A type of AI that focuses on the development of computer systems with the ability to change when exposed to new data.

How Big is AI in the Advertising Market and What's Driving Growth?

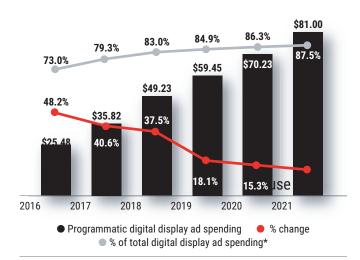
The Al market is growing at an astounding rate as the amount of data companies collect increases and businesses look to use that data in meaningful ways. In the digital marketing space, most of the growth of Al is attributed to programmatic advertising. According to eMarketer, in 2019 U.S. advertisers will spend nearly \$60 billion on programmatic display. By 2021, almost 88%, or \$81 billion, of all U.S. digital display ad dollars will transact programmatically.

Al is currently being used in all phases of the marketing planning process from planning and insights to campaign measurement and cases are evolving quickly as technology advances and adoption grows. For example, 55% of adults will have a smart speaker by 2022, reports OC&C Strategy Consultants, more than doubling the nearly 20% of U.S. adults who report they have one today, according to a 2018 Smart Speaker Consumer Adoption Report.

Smart speakers like Amazon's Alexa and Google's Home are a prime use of voice search, a voice recognition technology that enables users to

U.S. Programmatic Digital Display Ad Spending, 2016 – 2021

billions, % change and % of total digital display ad spending*



Note: digital display ads transacted via an API, Including everything from publisher-directed APIs to more standardized RTB technology; includes native ads and ads on social networks like Facebook and Twitter; *includes advertising that appears on desktop/laptop computers, mobile phones, tablets and other Internet-connected devices Source: eMarketer, April 2019

T10457 www.eMarketer.com

receive answers from the internet through an Al-driven assistant. These new Al-driven assistants provide great opportunities for marketers: Two in five consumers find voice ads to be more engaging and less intrusive than traditional banner ads or TV ad spots, according to an Adobe study of over 1,000 consumers (Adobe Digital Insights, 2019 U.S. Voice Assistant Survey).



Benefits of AI in Advertising and Marketing

Most marketers have adopted some form of AI and machine learning technologies. Among the marketing objectives and AI solutions driving adoption are:

MARKETING OBJECTIVE	AI SOLUTIONS
Ad precision and effectiveness	Profile building and look-alike modeling; user profile segmentation and clustering
	Campaign auto-optimization for performance including multi-dimensional optimization by placement/creative/geo done simultaneously
	Capturing data to convert into actionable advertising insights
	Predicting future consumer behavior as well as optimizing real-time behaviors
Audience optimization	Audience optimization strategy by targeting consumers based on long-term behaviors and lifetime value
	Hyper-targeting based on how consumers engage with and respond to brand advertising
Creative relevance	Natural language processing and sentiment analysis to determine consumer intent to inform creative execution or for tasks like content recommendations, similarity, and categorization of text
	Analyze interactions/content consumption to customize/personalize content
	Auto optimization of content and creative experiences including sequenced messaging optimization
	Automatic visual and audio recognition which creates insights that are used to enhance advertising
	Recognize trends and address them in real time (from a content consumption perspective to help optimize content strategy)
Media efficiency	Systems that automatically and autonomously do attribution, marketing mix modeling, journey discovery, and audience-of-the-one creation/generation
	Bids optimization based on price prediction for OpenRTB
	Al-powered media mix modeling based on how consumers respond to campaigns across different channels
Fraud and brand safety issue avoidance	Anomaly detection for brand safety
	Fraud detection using patterns and train sets
	Bot detection
	Natural language processing for text recognition to understand the context of the page and blacklist bad content



Key Uses of AI in Advertising and Marketing Today

While there are many marketing objectives AI can help with, there are some key uses of AI that currently dominate the market. These include:

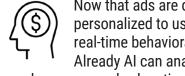
Performance optimization



Machine learning algorithms can guickly analyze how your ads are performing across specific platforms, then offer recommendations on how to improve performance. In some cases, these platforms may use AI to automate actions that you know you should be taking based on best practices, saving you time. In other cases, they may highlight performance issues you didn't

even know you had and save you time and money.

Personalization



Now that ads are delivered through a medium marketed on the promise that it would be personalized to us, mass ads don't cut it anymore. All and machine learning are able to take real-time behavioral data from consumers and serve highly personalized and relevant ads. Already AI can analyze customer behavior to make smart recommendations based on attributes such as age, gender, location, and millions of other data points. And we're all familiar with unique web

pages that are built on the fly just for us - a custom shopping catalog for one, compliments of Al. Predictive analytics algorithms can determine which consumers have the highest likelihood of taking a specific action, whether that action is online or in the real world.

Automatic ad creation



Al-powered systems can automate the process of creating ads, based on your goals. Social media ad platforms already do this with intelligent automation to suggest ads you should run based on the links you're promoting. There are also third-party tools that use natural language processing and natural language generation, both Al-powered technologies, to write ad copy that performs as well or better than human-written copy — in a fraction of the time and at scale.

Audience targeting

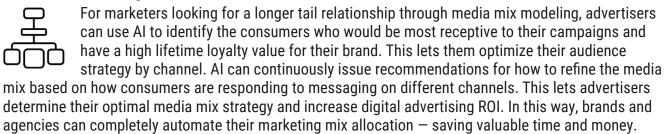


Ad targeting matters, often as much as the actual ad copy and creative. Platforms such as Facebook, LinkedIn, and Google offer data-rich algorithms to target audiences with incredible precision but doing this manually is often unsustainable and doesn't scale. By leveraging AI, marketers can reach the right audience and understand how consumers react

to campaigns, different types of creative, and different channels. Advertisers can hyper-target consumers, optimize targeting tactics in real-time, and tune the overall media delivery based on consumer behavior. Al can also enable a shift to longer-term KPIs and consumer lifetime value. By applying AI and creating a data feedback loop that engages machine learning, marketers are able to reach a more qualified audience than simply selecting a static audience from whatever sources are available.



Media mix modeling





Direct Brands and the Al Revolution

As the world shifts from an indirect brand economy to a direct brand economy, legacy brands and their suppliers are struggling with growth, while more customized, data-enriched, consumer-centric brands are thriving. Direct-to-consumer brands are fueled by data, devoted to performance, and developing new ways of doing business which include early adoption of AI.

Up and coming direct-to-consumer brands are built around data and leveraging it: They create value by creating a mutually beneficial, two-way relationship between the brand and the consumer, a relationship that throws off data that is vital to every part of the business. When machine learning and advanced algorithms are applied to these oceans of digital information, we can intimately understand the motivations of almost any consumer.

Direct brands have also become masters at using AI and programmatic effectively by generating creative assets that can be adapted to best take advantage of these technologies (e.g., dynamic creative assets: multiple headlines, images, and calls-to-action).

For more on direct brands and how they are using data and technology like AI and programmatic, you can download the IAB report on How to Build a 21st Century Brand.



Real-World Examples of AI Marketing at Work

Norwegian Airlines: Driving Real-Word Business Outcomes



Norwegian Airlines partnered with AdTheorent to use machine learning to drive flight bookings. Norwegian identified key markets based on flight locations, including Austin, Boston, Chicago, Denver, Florida, Los Angeles, New York, and San Francisco/Oakland.

AdTheorent developed custom machine learning models to target users within the target DMAs who were deemed most likely to engage with the ad and then complete a booking. To track consumer actions after exposure to the brand campaign, AdTheorent placed pixels on the booking website, specifically the booking confirmation page. Leveraging that pixel data, AdTheorent's data science and execution teams used real-time feedback to optimize campaign delivery towards consumers most likely to purchase tickets on the booking site.

Results: The campaign delivered a cost-per-booking CPA that was 170% lower than the goal.

The Humane Society: Relationship Targeting on a Whole New Level



The Humane Society and Maddie's Project partnered with AdTheorent to encourage millions of pet lovers to find a home for the 2.4 million healthy pets currently available for adoption in shelters. The primary objective was to drive "intent to adopt" actions on site.

AdTheorent first identified individuals who had previously visited the Shelter Pet Project's website. AdTheorent data scientists used attributes from this audience, showing an intent to adopt, to create predictive targeting models to reach individuals likely to adopt.

Since pet adoption is typically a family decision, AdTheorent activated the Relationship Graph. AdTheorent identified and messaged the friends and co-habitants of the core audience that had expressed interest in pet adoption, to influence potential pet adopters through these relationships.

Results: The campaign delivered an 86% lift in conversion rates for individuals with 6+ connections versus those with just one connection and a 70% increase in conversion rates for the same group.

Toyota Prius Prime: Turbocharging Engagement with Cognitive Ads



Toyota, in collaboration with Watson Advertising, sought to reach and engage auto buyers interested in the Prius Prime. Since the Prius Prime is a technologically advanced car, Watson Ads provided a perfect vehicle to engage and educate this tech-savvy audience.

Watson Advertising and Toyota launched the first cognitive ads for the auto industry with Watson Ads. Watson was trained on product information and Toyota Prius Prime FAQs and used natural language processing to enable 1:1 dialog with users. Watson Ads engaged in real-time conversations, allowing consumers to interact with Toyota Prius Prime via dynamic ads across The Weather Channel apps and website.



Results: Toyota saw a 37% higher engagement with audience-based location targeting and a 20% purchase consideration for men ages 35 to 49.

Campbell's: AI Cooks Up Personalized Results



Campbell's collaborated with Watson Advertising on the first-ever consumer use of IBM Watson technology for advertising. Watson Ads lets consumers interact with the ad experience by allowing them to ask questions via voice or text and receive highly personalized information in response.

Chef Watson analyzed thousands of recipes to understand how ingredients are used in different dishes, commonly paired ingredients, and varying cooking styles. Chef Watson then combined this knowledge with machine learning specific to Campbell's recipe library and ingredients to generate unique recipes based on a consumer's tastes. Because this first campaign was a proven success, Watson Advertising and Campbell's applied these insights into another Watson Ads campaign.

Results: Campbell's saw a 1.9x increase in desktop ingredient submissions rate throughout the campaign and a 27% mobile app video completion rate.

Behr: Taking the Guesswork Out of Personalized Color Advice



Paint brand Behr came to IBM Watson Advertising looking to reach and engage consumers with personalized recommendations that make their interior paint color selection process easier. Since the process of selecting paint colors is a personal experience, IBM Watson Ads provided a perfect way for Behr to offer personalized paint color recommendations at scale, helping to take the

indecision out of the interior painting process.

Results: Behr exceeded brand benchmarks and saw meaningful time spent with consumers with more than 15,000 conversations between Behr and consumers, a 17% increase in purchase consideration, and an 8.5% incremental lift in foot traffic to retailer locations.

Best Western: The Right Place at the Right Time



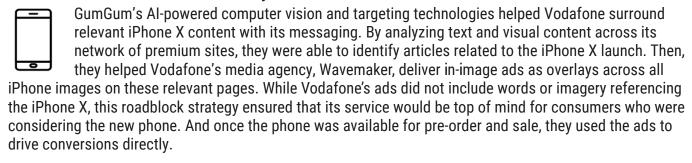
Best Western was looking to reach and engage consumers in active travel planning mode around peak holiday weekends — some of the busiest travel periods of the year. So, IBM Watson Ads engaged in real-time conversations, offering tips, tricks, and inspiration for travelers on their estinations, allowing consumers to interact with Best Western via dynamic ads on weather com-

upcoming destinations, allowing consumers to interact with Best Western via dynamic ads on weather.com and The Weather Channel app. They also used audience targeting to reach consumers that were most likely to be business or leisure travelers, urban millennials, or people who had recently traveled.



Results: Best Western saw meaningful time spent with consumers and an increase in traffic to their locations, including a 48.6% incremental lift in visits to Best Western locations.

Vodafone: A New Twist on Ad Overlays



Results: Vodafone's iPhone X campaign computer vision targeting and engaging ad units increased Vodafone's share of voice around the iPhone launch by 67% year-over-year.

IKEA: Voice-Enabled Interactive Ads That Learn

IKEA and media agency Wavemaker tapped Instreamatic to launch a new voice-enabled ad campaign that could take advantage of Instreamatic's Al-powered dialogue advertising platform. The campaign sought to promote IKEA's new line of bedding products. To do so, the IKEA campaign used audio ad creative that prompted listeners to interact in a conversation with the brand, browse a list of new products, and hear IKEA sing a lullaby — a catchy jingle — about the products selected. The ads were played on music apps in mid-roll positions, and on digital radio apps in the pre-roll position.

Using natural language understanding (NLU), the voice AI core within Instreamatic's platform enables listeners to interact with audio ads through natural and conversational dialogues. The ad creative for IKEA's campaign made smart use of these capabilities to prepare a range of responses depending on the user's reactions to certain prompts. The Instreamatic platform's AI technology uses deep learning to continuously increase its vocabulary, its understanding of user intent, and its predictive power. These capabilities let IKEA iterate on ad creative that optimizes both ad experiences and campaign performance.

Results: IKEA's campaign achieved an engagement rate of 7.68%, a total engagement rate of 14.13%, and an interest rate of 4.28%. IKEA's voice-enabled campaign also achieved a stellar 58.3% reach metric, far surpassing the 25-35% historic norm for audio-only advertising.



Best Practices & Key Takeaways

While AI is not new, the applications are evolving rapidly. Many marketers are already using AI technologies without even knowing it. At the core of AI is data and the results will only be as good as the data applied to the models.

For this report, IAB member eMarketer compiled a list of suggestions for marketers considering exploring new AI technologies:

Evaluate

- Understand the problem you are trying to solve and define a goal that results in a business outcome that addresses that problem.
- Evaluate your AI approach to ensure that it actually solves that problem.
- Al should not be a black box; understand what data is being applied and how that data is impacting
 the result.
- Evaluate the key data that the model is using to learn more about your inputs and the quality or reliability
 of the data.
- Evaluate new data sets that could be used to improve modeling.
- Trend the model scoring over time to understand how it is adapting to data. Is the change due to different inputs or improved results?

Experiment

- Be flexible and open to discovering new things as you deploy new technology; be as nimble and agile as possible.
- Do small pilots to test the solution with limited risk.
- Test and learn in stages; work the kinks out before launching at full scale.
- Be aware of bias, whichever assumptions you bring to the input into the model will be present in the result.
- Be honest about successes and failures and learn from both.



Conclusion & What's Next

Al is having a profound effect on how brands talk to consumers — and we haven't seen anything yet. Al is already helping direct brands and savvy marketers deliver better, smarter, and more relevant conversations and experiences and at least 80% of the digital media market is likely to be using some kind of Al in advertising this year.

Over the next five to 10 years we expect this trend to accelerate as marketers learn how AI can not only make their programmatic advertising smarter and better but they also learn to optimize performance, personalize marketing, automate ad creation, target new audiences, fine-tune their media mix and use AI in ways we can't even yet imagine as technologies like 5G and IoT come into their own.

What's clear is that time to define in marketing and digital advertising how we should use AI to make the ecosystem better, how we build better ad experiences, how we ensure brand safety, and how we help buyers and publishers find better audiences. As AI evolves, we need standards and guidelines for how to use it for practical applications and for ethical applications.

In addition to the opportunities AI presents, it also poses challenges. The ethical challenges our industry faces with AI are far-reaching. As smart as AI is, we need to be sure it's not inadvertently discriminating against people in ways that are not intended — and that all the data it takes to power AI isn't also putting customers at risk.

Together we need to ensure we are all good stewards of AI so our entire industry can grow with it. This requires a set of guiding principles that helps govern how companies communicate and use consumer data.

We need standards and best practices for efficiency, effectiveness, and safety in how the industry operates. At leaders all have a responsibility to keep our collective commons safe, secure, and thriving. These are all efforts the IAB At Working Group will be tackling in 2020 and beyond.



Additional Resources

Al in advertising and programmatic advertising resources that may be of interest to our members and the industry:

2019 Outlook for Data

https://www.iab.com/insights/2019-outlook-for-data/

The State of Data 2018

https://www.iab.com/news/ai-readiness-digital-marketing/

AI Readiness in Digital Marketing

https://www.iab.com/news/ai-readiness-digital-marketing/

Artificial Intelligence: Myth versus reality in the digital advertising world

https://www.iabeurope.eu/wp-content/uploads/2019/08/Xaxis_IAB-Europe_Artificial-Intelligence-Report_ July-2018.pdf

How to Build a 21st Century Brand

https://www.iab.com/insights/how-to-build-a-21st-century-brand-2019/

Automation and Programmatic

https://www.iab.com/guidelines/programmatic-rtb/

iab.

About IAB and the IAB Data Center



IAB empowers the media and marketing industries to thrive in the digital economy. Its membership is comprised of more than 650 leading media and technology companies that are responsible for selling, delivering, and optimizing digital advertising or marketing campaigns. The trade group fields critical research on interactive advertising, while also educating brands, agencies, and the wider business community on the importance of digital marketing. In affiliation with the IAB Tech Lab, it develops technical standards and best practices. IAB and the IAB Education Foundation are committed to professional development and elevating the knowledge, skills, expertise, and diversity of the workforce across the industry. Through the work of its public policy office in Washington, D.C., IAB advocates for its members and promotes the value of the interactive advertising industry to legislators and policymakers. There are 43 IABs licensed to operate in nations around the world and one regional IAB, in Europe. Founded in 1996, IAB is headquartered in New York.



The IAB Data Center of Excellence is an independently funded and staffed unit within IAB, founded to enhance existing IAB resources and to drive the "data agenda" for the digital media, marketing, and advertising industry. IAB Data's mission is to define boundaries, reduce friction, and increase value along the data chain, for consumers, marketers, and the ecosystem that supports them. For more information or to get involved, please contact data@iab.com.



About the IAB AI Working Group

IAB has always worked to light the way for the industry as we entered new and unexplored areas. With rising industry-wide conversations and interest from members, in August 2017 IAB launched the AI Working Group to help marketing, technology, and advertising executives navigate the impact that AI and ML will have on marketing and advertising. Current members of the working group include:

AccuWeatherExperianOwnerIQAcxiomGooglePinterestAdTheorentIBM Watson AdvertisingSRAX

ALC LiveRamp The Trade Desk

Broadsign Lotame Valassis
Conversant MediaMath Verve
Cuebiq Neustar Xandr

Dun & Bradstreet Nielsen Equifax Oracle

The IAB AI Working Group is open to IAB members. If you are interested in participating, please email committees@iab.com to join the working group.