
# ARTIFICIAL INTELLIGENCE IMPACT IN MARKETING

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*To create a brand that people can trust, the company needs to predict intentions and needs along the consumer decision journey*

Almost two thirds of the world's population will have access to the Internet by 2023. According to CISCO (2021), there will be 5.3 billion total internet users (66% of the world population) by 2023, were 3.9 billion (51% of the world population) in 2018. The number of devices connected to IP networks will be more than three times the world population by 2023. There will be 3.6 networked devices per capita by 2023, up from 2.4 networked devices per capita in 2018. There will be 29.3 billion networked devices by 2023, up from 18.4 billion in 2018. Machine-to-Machine (M2M) connections will be half of global connected devices and connections by 2023. The share of M2M connections will increase from 33% in 2018 to 50% in 2023. There will be 14.7 billion M2M connections by 2023.

Given this scenario, it is understood that marketing will have to be based on data, using predictive and contextual models, using the capabilities of artificial (or augmented) intelligence, augmented reality, becoming augmented marketing.

Artificial intelligence enables computerised systems to collect data to perform the tasks of intelligent beings in a way that maximises their chances of success. There are different types of AI (computer vision, natural language processing, voice and audio processing, predictions/ predictions on structured data, distributed AI: autonomous agents and autonomous systems: robots), but all are focused on trying to mimic human intelligence in computers to make their intelligent operations. The effort to develop computer-based systems that behave like humans includes natural languages, robotics, perceptual, expert systems, and "intelligent" machines! AI builds, through analogies, a system that seeks knowledge to solve any problem it faces. Some examples of algorithms that use AI are related to CBR, Collaborative Filtering, Genetic Algorithms, Neural Networks and Bayesian Networks. On the other hand, the evolution of algorithms associated with machine learning and deep learning allows tasks to be performed by learning, namely:

Pattern recognition (objects in real scenes, facial identities, facial expressions, spoken words). Anomaly recognition (unusual sequences of credit card transactions, unusual patterns of sensor readings in a nuclear reactor).

Prediction (future stock prices or exchange rates, which movies a person will like).

According to the AI Index Report of 2021, AI systems are generative of everything, as they can now compose text, audio, and images to a sufficiently high standard that humans have a hard time telling the difference between synthetic and non-synthetic outputs for some constrained applications of the technology.

On the other hand, the industrialisation of computer vision has seen immense progress in the past decade, primarily due to machine learning techniques (specifically deep learning). Meanwhile, companies are investing increasingly large amounts of computational resources in

training computer vision systems faster than ever before. The same report highlights that Natural Language Processing (NLP) rapid progress has yielded AI systems with significantly improved language capabilities that have started to have a meaningful economic impact on the world. Google and Microsoft have both deployed the BERT language model into their search engines, while other large language models have been developed by companies ranging from Microsoft to OpenAI.
According to the report by McKinsey & Company, 2020, high tech and telecom companies were most likely to report AI adoption in 2020 (more than 70%), in second place by both financial services and automotive and assembly (60%). Across industries, companies in 2020 are most likely to report using AI for Human Resources, Manufacturing, Marketing and Sales, Product and/or Service Development, Risk, Service Operations Strategy and Corporate Finance and Supply-Chain Management. By industry, the type of AI capabilities adopted by various companies in 2020 were most likely to identify other machine learning techniques, robotic process automation, and computer vision as capabilities adopted in at least one business function. Main Industries: Autonomous Vehicles, Computer Vision, Conversation AI Interfaces, Deep Learning, NL Generation, NL Speech Understanding, NL Text Understanding, Other Machine Learning Techniques, Physical Robotics, Robotic, Process, Automation.

There are several types of technologies that are having and will continue to have more and more impact on the processes associated with logistics, namely those related to the use of artificial intelligence, Supply Chain Visibility (SCV) technologies, blockchain, tracking and mapping technologies, autonomous vehicles, automation and robotics, visual search engines, mobile apps, immersive experiences, IoT for connected products and packaging (smart products), voice picking, 3D printing, kiosks, coupon dispensers in sales centres, chatbots, virtual reality and augmented reality, machine learning, descriptive analytics and advanced analytics.
The consumer decision journey has been altered using Big Data, the Internet of Things and Artificial Intelligence. Consumers now have a variability of online and offline solutions to research and purchase products and services, just by using their smartphones 24/7. With this scenario, digital channels represent a cheaper way to interact with consumers, but they are even critical to executing promotions, sales, and increasing customers. With the advancements in digital media capabilities, consumers are looking for an increase in their experience in 4 areas:
Consumers want to interact anywhere at any time of day.
Consumers want to do new things and receive information that creates value for them.
Consumers expect all the data collected about them to be used to personalise their experience along their journey, meeting their journey, meeting their needs.
Consumers expect all interactions across digital channels to be easy and accessible.

More than following consumers along their decision journey, marketers now need to predict consumers' intentions and help them in their process. In the study "Breaking the marketing old with machine learning" conducted by MIT and Google, 63% of marketers surveyed said that anticipating consumers' intent leads to better results for companies.

Amazon.com uses predictive machine learning models to make intelligent recommendations. Through machine learning models, it is possible, for example, to know which printer ink a consumer need. Knowing

a customer's preferences is just the beginning, the ability to personalise extends into optimising the next steps in the consumer's decision journey. The moment a customer engages, the company must analyse their behaviour and predict their next move. "Digital First" companies have been optimising the consumer decision journey in an increasingly systematised way. With an obsession to improve the consumer experience, Amazon.com has revolutionised the online shopping experience. Amazon.com bases every step of the consumer journey on algorithms, from passive search to customer recovery. In addition to the algorithms used in product recommendation and retargeting, Amazon.com also uses new AI services to recognise consumer needs for new products. This "programmatic sampling" model is based on offering a sample of a product, then with the combination of retargeting automation, conversions increase by an average of 15%.

To create a brand that people can trust, the company needs to predict intentions and needs along the consumer decision journey. Intentions are everywhere. They are signposted whenever people seek assistance on digital. The challenge is to know the customers, to be able to predict those intentions. Algorithms are the key to this, without them, it is impossible to segment the audience and find the right customers efficiently and at the right time. In this sense, according to a report by the Boston Consulting Group and the MIT Sloan Management Review, companies that personalise their communications can increase their revenues by up to 20% and reduce costs by up to 30%. One of the key technologies used in this process is Artificial Intelligence. According to the report by Aquia's, about half of marketers (52%) say their organisation has prioritised making sure their branding remained consistent for customers in 2021. 80% of consumers say they expect brands to have a consistent message and appearance across their digital platforms. 84% feel pressure to deliver marketing content differently to attract attention when representing their offerings. 49% of marketers have created more content for customer engagement to adapt to new customer behaviours.

Caused by the Covid-19 pandemic, customer behaviours have shifted during the crisis and may not revert to pre-pandemic norms. McKinsey reports as many as 30% to 40% of U.S. consumers have switched brands or retailers, and the majority intend to continue their new shopping behaviour. Many switchers seek better prices, but product availability, quality, and purpose are other motivators. The researchers also found that the e-commerce percentage of total retail sales remains about 35% above pre-pandemic levels. With customer loyalty to brands low - and the cost of acquiring new customers high - marketers need to focus on creating and sustaining engagement with every customer. It's not enough to recreate previously existing processes as digital ones. They must reimagine some Customer Experiences altogether, combining several technologies associated with AI. Based on the Constellation study, looking at the investment in all market sectors, there will be an investment of over 100 billion per year in Artificial Intelligence in 2025, while in 2015, only 2 billion were spent. The Marketing industry will be no exception, and there will be increasing investment in AI.

**REFERENCES**


Acquia (2021). Deliver a modern digital CX: A guide for marketing innovators. Customer Experience Trends Report, Global Edition.

CISCO. (2020). Cisco Annual Internet Report (2018–2023) White Paper. https://www.cisco.com/c/en/us/solutions/collateral/executive-perspectives/annual-internet-report/white-paper-c11-741490.html

Daniel Zhang, Saurabh Mishra, Erik Brynjolfsson, John Etchemendy, Deep Ganguli, Barbara Grosz, Terah Lyons, James Manyika, Juan Carlos Niebles, Michael Sellitto, Yoav Shoham, Jack Clark, and Raymond Perrault (2021). "The AI Index 2021 Annual Report," AI Index Steering Committee, Human-Centered AI Institute, Stanford University, Stanford, CA, March 2021.

Ribeiro T., Reis J. L. (2020). Artificial Intelligence Applied to Digital Marketing. In: Rocha Á., Adeli H., Reis L., Costanzo S., Orovic I., Moreira F. (eds) Trends and Innovations in Information Systems and Technologies. WorldCIST 2020. Advances in Intelligent Systems and Computing, vol 1160. Springer, Cham. https://doi.org/10.1007/978-3-030-45691-7_15. a