Marketing and Artificial Intelligence

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MARKETING AND ARTIFICIAL INTELLIGENCE

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Abstract
In recent years, artificial intelligence (AI) has become an emerging trend in different fields: science, business, medicine, automotive and education. AI has also reached marketing. The aim of the paper is to research how deeply AI is applied in marketing and what implications there are for marketing practitioners. Authors stated two research questions - which areas of AI are used in marketing and what implications AI delivers for marketing managers. To answer those questions, the authors conducted research on secondary data with AI examples used for marketing purpose. The analysis of gathered examples shows that AI is widely introduced into the marketing field, though the applications are at the operational level. This may be the effect of careful implementation of the new technology, still at the level of experimenting with it. The uncertainty of the outcome of AI implementation may affect the caution in putting these innovations into practice as well. Gathered examples proved that AI influences all aspects of marketing mix impacting both consumer value delivery as well as the marketing organization and management. The paper delivers implications for business, especially ideas about implementing AI into marketing, designing innovations and the ideas on how to incorporate new skills into marketing team required by the new technology.

Keywords: artificial intelligence, AI, marketing, AI application, AI implications, AI in Marketing
JEL Classification: M31, M15

Introduction

Artificial intelligence (AI) has lately become a very popular subject in the area of management and marketing sciences, although, quite paradoxically, the works on its development in other fields of science have been proceeding continuously for over half a century. Over the years, AI has been appearing in and disappearing from the spotlight depending on the level of its advancement and the increase in its potential applicability. The interest in and the extensive discussion on AI are caused by the first wide-scale commercial applications of AI, which have shown the potential and the capabilities of this technology also in the area of marketing. The rapid development of AI in recent years has been possible thanks to the advancement of the cognitive mechanisms of AI and of capabilities of machines to learn based on the obtained data (Lieto, Bhatt, Oltramari, & Vernon, 2017), as well as thanks to the possibility to create previously non-existing information (Grawal, Gans, & Goldfarb, 2017). The power of AI also lies in the spectrum of processing of various

formats of data - apart from numerical data, artificial intelligence processes texts, images, and sounds, providing them with significance and relevance for further analyses (Dhar, 2016).

AI has been so far drawing the attention of engineers, IT experts, and analysts, but is now moving outside its traditional areas of occurrence, making an increasingly stronger mark in the field of management and marketing. The ever-increasing amount of consumer data available online, in big data systems or mobile devices, makes AI become an important ally of marketing, as it is based on data analysis in almost every area of its application. Marketing takes advantage of data to a large extent - from consumer needs research, market analyses, customer insights, and competition intelligence through pursuing activities in various communication or distribution channels to measuring the results and effects of the adopted strategies. Marketing becomes a natural beneficiary of developing information technology (Mazurek, 2011a, 2011b, 2014). The proximity of both domains makes it possible to achieve a synergy effect. Therefore, it seems important to emphasise the potential of artificial intelligence and of the available AI-based tools and to discuss the commercial applications of AI in the area of marketing.

The article is divided into four parts. The first part includes the key definitions of the ideas related to AI. The second discusses examples of AI solutions implemented in the area of marketing. The third part, being an effect of an analysis of the collected examples, provides a description of areas of AI's impact on marketing. The final part of the article covers the opportunities and risks underlying the application of AI in marketing activity.

1 Theoretical background

1.1 Artificial Intelligence overview

Artificial intelligence derives from information technology. It is often used interchangeably with notions like automation or robotization. It also tends to be confused with machine learning or algorithm application. According to Oxford Dictionary, AI is "the theory and development of computer systems able to perform tasks normally requiring human intelligence, such as visual perception, speech recognition, decision-making, and translation between languages" ("artificial intelligence | Definition of artificial intelligence in English by Oxford Dictionaries", 2019). The technology based on artificial intelligence is able to imitate the cognitive functions that we attribute to the human mind, including the ability to solve problems and learn (Syam, Sharma, 2018). The role and of AI is to process and identify the acquired data and then to perform certain tasks. This is the definition of the so-called *Artificial Narrow Intelligence*, which functions and carries out tasks in a defined area (Shanahan, 2015). The second type of AI is *Artificial General Intelligence*, whose scope of intellectual capacity is comparable to that of the human brain (Sterne, 2017). The current potential of AI works in a narrow area, and tasks are performed thanks to the advancement of three technologies: machine learning, deep learning, and natural language processing.

Machine learning (ML) has taken AI to a higher level, one above the level of following a set of predefined rules. Therefore, ML has changed the role of algorithms that have been used so far with AI. ML has enabled computers to learn by themselves based on the available

data by establishing links between individual pieces of data. Thanks to these capabilities, ML makes it possible to draw conclusions and form generalisations on the basis of performed analyses (McIlwraith, Marmanis, & Babenko, 2017). ML comes in many forms and may be presented as pattern recognition, statistical modelling, data exploration, knowledge discovery, predictive analytics, data analytics, adaptive systems, self-organising systems, and many more (Domingos, 2016).

Deep learning (DL) is a higher level of ML because it is based on learning algorithms that do not need to be managed manually. DL, taking advantage of big data and computing power (of, e.g. server farms, CPU power, cloud computing), makes it possible to decipher and provide the result for a new piece of information instantly (Alpaydin, 2016).

Natural language processing (NLP) is one of the applications of ML and DL, aiming at speech recognition. Many years of research in this area have made it possible to work on large amounts of data (text samples) that act as sources of the context, the vocabulary, the syntax, and the semantic meaning (Alpaydin, 2016).

Advancements conducted in those technologies have enabled the development of AI in the areas of voice, text, and image recognition, decision-making, and autonomous robots and vehicles. Practical applications can be met for each of these areas. Voice recognition is available, for example, in smartphones (e.g. Siri, Google Assistant). Text recognition solutions are used as virtual assistants who deliver rapid answers (e.g. Deakin University and IBM Watson). Image recognition is used for payment approval, thanks to comparison face image the system can make payments (e.g. food chain KFC). Decision-making system is available for educational purpose – IBM Elements is dedicated for teachers to support them in student assessment and to deliver creates recommended individual development path for each student. Finally, autonomous robots and vehicles are used in the warehouses to manage the stock (e.g. in Amazon Kiva system).

1.2 Marketing mix

In 2013 by the American Marketing Association approved a new version of marketing definition. According to the association “marketing is the activity, set of institutions, and processes for creating, communicating, delivering, and exchanging offerings that have value for customers, clients, partners, and society at large” ("What is Marketing? — The Definition of Marketing — AMA", 2019).

The critical aspect of marketing is the value delivery to customers (Grönroos, 2006), while the value may represent different product aspects such as goods, ideas, services, information, or any type of solution that fulfil customer needs.

McCarthy proposed the idea of “marketing mix” as a conceptual framework translating marketing planning into practice (Bennett, 1997). Though the marketing mix is not a scientific theory, its tools can develop both long-term strategies and short-term tactical marketing programmes (Palmer, 2004). McCarthy refined previous Borden's conception of satisfying the target market. He regrouped Borden's 12 elements (product planning, pricing, branding, channels of distribution, personal selling, advertising, promotions, packaging, display, servicing, physical handling, fact-finding and analysis) into four elements, called

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4Ps: product, price, promotion, and place. There were further advancements made within the marketing mix concept, such as adding another Ps - people, processes, physical evidence (Booms, Bittner, 1980), though the idea of 4Ps is still widely used and accepted.

2 Methodology

Due to the emerging trends of AI application in the business area, the aim of this paper is to review the AI implementation in the field of marketing. The goal of the research is to assess the scope of AI application within marketing mix and find answers to the research questions: (1) do all areas of AI (voice, text, image recognition, decision-making, autonomous vehicles and robots) find application in marketing; (2) what kind of implications does AI make in marketing practice. To answer these questions, the authors decided to conduct secondary data research to gather examples of AI application. The procedure of collecting AI application was made in two steps. The first step was a focus on review the marketing portals (www.marketingweek.com, www.adweek.com, www.warc.com) to gather AI application in marketing. The second step was the validation of selected examples by confirming gathered examples with the information on the company site or in the press release of each example. There was no limitation connected with the sample location; the goal of the secondary research was to collect any example of AI application. The presented conclusions are based on the results of the authors' analysis of gathered examples.

3 Results

To answer the first research question, (do all areas of AI find application in marketing?) authors compiled all validated examples grouped according to the five AI areas which are presented in Table 1. For each mentioned AI area (text, voice, image recognition, decision making, autonomous vehicles and robots) authors have found AI application in marketing. While text recognition, image recognition, decision-making technologies are widely used, the voice technology, as well as autonomous vehicles and robots, are not so popular. This can be caused by the greater complexity of both technologies. Moreover, autonomous vehicles and robots are more often perceived as a part of Industry 4.0 domain than marketing. Thus it is seldom perceived as a way of creating and developing innovations in sales channel management, merchandising optimization or delivering customer service which are placed in a marketing mix program within the ‘place’ domain.

Table 1 | Examples of application of AI in marketing

AI areas	Examples of application in marketing
Voice processing technologies	• Voice purchase requests made through a device or the Amazon Alexa app. • Virtual assistants are supporting task execution (Siri, Google Home, Cortana).
Text processing technologies	• Use of a virtual assistant as a guide to walk you through a shopping centre (Alpine.AI). • A virtual assistant embedded in a mobile bank app, taking advantage of NLP, handles client requests alone by responding to their inquiries. A virtual assistant is presenting application features, options to make a purchase of bank products by oneself, and providing information about the location of bank branches and cash machines (ING Bank Śląski). • A GPS navigation system that apart from showing the route to the

	selected destination suggests attractions found nearby or on the way to the destination, and shows similar objects to those related to the set destination (Naver). • An analysis of statements made by clients of banks, insurance companies, and telecoms performed in order to diagnose irritating situations, which led to the elimination of negative events that might occur in the customer journey, and to modification of the customer service process (Touchpoint). • Development and launch of new beer recipes, and modification of the existing products thanks to information gathered by a chatbot (Intelligentx Brew). • Development of a marketing campaign to launch a new car model - the Toyota Mirai. Using data provided by a selected target group, computers performed an analysis of texts and videos on YouTube in order to teach the machines the preferred style of the said target group. Next, through multiple iterations, they developed the first creative advertising campaign, and the final texts for the adverts were approved by the supervising team. The result was almost a thousand of advertising spots tailored to the profiles of the ad recipients on Facebook (Toyota, Saatchi&Saatchi). • Promotion of the *Milonerzy* TV show, the Polish edition of *Who Wants to Be a Millionaire?*, on Facebook taking advantage of a conversational chatbot. Maintaining the format and the style typical of the show made it possible to offer new and unique experience (TVN).
Image recognition and processing technology	• Face recognition as a way to make payments (KFC). • Recognising the condition of face skin, followed by an individual selection of the type of face cream based on an analysis of one's photo and data, including information about the current weather (Shiseido). • A photo as a medium to search for items online. Apart from search results in the form of identical items, the search engine offers similar or complementary items (eBay). • Using the client's face image to select colour cosmetics individually during online shopping (Estée Lauder). • Service-free bricks and mortar shop where video cameras analyse the selected products and payments are made automatically (Amazon). • Electronic mirrors in a clothing shop that match the collection to the client's appearance, style, and taste (FashionAI). • Selection of the best Christmas gift by going through twelve best suggestions. Based on the recognition of the buyer's face and emotion analysis, the programme suggested the best option to go for (eBay). • Identification of clients before the start of a video consultation by comparing the video image with a photo provided earlier by the client (BBVA). • Embedded ML mechanisms make it possible to automatically frame images according to the requirements of the brand and communication channels (Adobe Sensei). • An image finder that makes it possible to select the best photos and reject the less appealing ones (Everypixel).
Decision-making	• Development of individual savings plan thanks to an analysis of the funds available on one's account, receipts, amount of expenses and the way one spends their money. By comparing the financial behaviour of a user and a given community, the application develops a tailor-made savings plan to match the financial capabilities of a given person (Plum). • Travel destinations matched individually based on the traveller's musical preferences. Apart from the city, the app chooses specific districts and attractions to match the user's profile (Spotify, Emirates).

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	• A chatbot is preparing a cocktail recipe using the ingredients the consumer has at home and based on the consumer's preferences. The chatbot analyses 300 recipes and offers the best-matched solution (Diageo Simi Bartender). • Based on the user's mobile phone data (location, sun exposure time), the app indicates the right level of UV protection filter (Monteloeder). • Dynamic matching of prices to the user based on their shopping record visited websites, or the owned mobile phone (iperfumy.pl, kontigo.pl). • Matching adverts to user characteristics based on one's online history (ING Bank Śląski). • New product recommendations (Amazon, Netflix). • GO-I-PACE, an application is analysing one's driving style, route choices, and frequency of charging the car (electric car). Based on the results, the app offers suggestions on how to drive the care in a more efficient and effective manner (Jaguar I-PACE). • ZozoSuit helps customers order clothes fitted perfectly to their figure. Thanks to in-built 150 sensors, ZozoSuit makes it possible to take 150,000 measurements (Start Today, StretchSense). • A platform to manage marketing campaigns online. In the first weeks, AI learns the specificity of a given company, then, based on data analysis, comes up with recommendations concerning the campaign strategy (Albert AI, Harley Davidson). • Detecting faults and errors in product functioning and forecasting malfunction occurrences. The synchronisation of the work performed by the technical team responsible for device (lift) monitoring and repair works (if necessary) (KONE, IBM Watson IoT, Salesforce Einstein). • Creation of a consolidated customer record regardless of the products purchased and used, linking customer data from every company area (Sales Cloud Einstein, U.S. Bank). • Synchronisation of customer data from all possible points of contact with the brand (social media, website, e-mail, phone conversation). All interactions are aggregated and presented in one place in order to offer improved customer service (Salesforce, Adidas).
Autonomous robots and vehicles	• Service-free shops (Ford & Alibaba, Amazon Go, Zaitt Brasil). • A robot used to check the stock on shop shelves and the arrangement of the products displayed. Information of shortages or incorrect arrangement is sent to the service staff, who take their time to look into the reported issues (Schnuck). • An autonomous shop is offering basic and fresh products and magazines, able to travel independently to the warehouse in order to replenish the stock. The shop was tested in Shanghai (Moby Mart).

Source: authors

4 Findings and Discussion

4.1 Implications for marketing

To answer the second research question (*what kind of implications does AI make in marketing practice*?) authors conducted an analysis of gathered examples and made a synthesis of how the examples reflect the marketing mix. Conclusions are presented in Table 2. Each validated examples shows that AI impact each area of marketing mix program. This fining is especially important for practitioners who are responsible for developing innovations as AI influence the whole spectrum of marketing activity. It is worth mentioning that the area of 'place' requires cooperation with Industry 4.0 specialist, as

autonomous vehicles and robots play a crucial role in creating new sales channels and new customer service. Additionally, AI applications that extend the core product requires innovation design approach to find the insights that match ideas going beyond the product or even category. This Is important for implementing AI within 'product' and 'promotion' areas in the marketing mix program.

Table 2 | Areas of the impact of AI on marketing mix

Product	Price	Promotion (Brand)	Place (Sales & distribution)
• New product development • Hyper-personalisation • Automatic recommendations • Creating additional value • Additional solutions beyond product category	• Price management and dynamic price matching to customer profile	• Creating a unique experience • Personalised communication • Creating the wow factor and offering benefits • Elimination of the process of learning product categories • Positive impact on the customer • Minimised disappointment	• Convenient shopping • The faster and simpler sales process • 24/7 customer service (chatbot) • Purchase automation • Service-free shops • Consultant-less customer support • New distribution channels • Merchandising automation

Source: authors

The analysis of the collected cases shows that AI activities have a two-way impact on marketing. On the one hand, the beneficiary of changes is the consumer, but on the other, new solutions affect the entirety of the pursued marketing activities.

4.2 The impact of AI on consumers

Just as the Internet has brought about many advantages from the consumer's point of view, such as automatic recommendations and relevant product suggestions (Grewal, Roggeveena, & Nordfältba, 2017), shorter shopping time (Moncrief, 2017), or customer service personalisation (Jordan, & Mitchell, 2015), AI goes one step further and offers new opportunities in marketing activity. The analysis of the collected examples of the application of AI in marketing shows a whole spectrum of advantages that AI offers to consumers:

- **More convenient and quicker shopping** time thanks to improved processes (e.g. automatic payments, the better quality of search engines, 24/7 customer service).
- **New consumer experience** via mass-scale hyper-personalisation, after-sales service that creates additional value going beyond the basic product.
- **A new dimension of the consumer-brand relationship** delivered by building surprise and delight minimised post-purchase dissonance thanks to the possibility to test the considered product virtually, elimination of the process of category learning, and finally taking advantage of benchmarking against other users.

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4.3 The impact of AI on marketing management

When it comes to marketing management, AI has a significant impact on contemporary practices, and will surely require a new approach to tasks fulfilled in marketing teams:

- **Elimination of laborious and time-consuming activities**. AI automates routine and repeatable tasks (e.g. data collection and analysis, image search and adaptation/processing).
- **Bigger significance of creative and strategic activities**. Precise analyses performed by AI increases the role of creative and strategic activities to build competitive advantage.
- **Design innovations**. AI redefine the way the value is delivered to the customer and increase the role of finding new solutions through design.
- **Developing new competences in the marketing team**. AI requires incorporating data scientist skills as well as an understanding of the new technology possibilities in the marketing team.
- **A new marketing ecosystem**. The complexity of AI increases the role of companies producing AI solutions. Due to the current level of AI advancement (the level of Artificial Narrow Intelligence), there is a need to develop a new model of cooperation with AI entities offering data engineering or ML tools.

Conclusion

The analysis confirmed that AI is applied in many areas of marketing. The commercial solutions based on it take advantage of all five AI areas: image recognition, text recognition, decision-making, voice recognition and autonomous robots and vehicles. While the first three are applied quite extensively in marketing, the instances practical application of voice recognition are rare and developed by the biggest tech companies such as Amazon, Google, Apple, or Microsoft on a large scale. Similarly, the autonomous vehicles and robots are not so frequent solution, as this area is much more connected with Industry 4.0, than innovation design within the marketing mix.

AI in marketing tends to be currently implemented at the operational level, usually as one-off initiatives or activities. This may result from the fact that we are dealing with the first instances of the practical application of AI, and companies are careful with implementing this new technology, experimenting with it. The costs related to the development of new concepts and the uncertainty of the outcome of their implementation may affect the caution in putting these innovations into practice as well.

When analysing product popularity, i.e. of Salesforce Einstein and Albert AI, it seems that the first implementations inspire trust to AI solutions and companies are more willing to take advantage of them if they see positive results of their application.

The analysis of the collected examples shows that AI offers a new quality to a consumer's life. 24/7 customer service, hyper-personalised solutions, more convenient shopping, or the possibility to avoid making the wrong choice all contribute to a new dimension in the area of the marketing organisation.

These changes have an unquestionable impact on the functioning of marketing departments and organisations. Most of all, it necessitates introducing new functions and skills to marketing teams, i.e. people with the right knowledge about AI, data science and qualifications in design and implementation of new solutions. It is also about managing a new model of cooperation with the entities offering advanced AI solutions and reaching a synergy effect with regard to AI and other functions.

The research proved that AI applications are incorporated in all areas od marketing mix as well as five different AI technologies are used within marketing practice. As the authors found that the first AI applications are made as a single implementation, often as an experiment, there is a need for further research to assess the impact of AI on marketing, especially the business effect.

References

Alpaydin, E. (2016). *Machine Learning.* MIT Press.

Artificial intelligence | Definition of artificial intelligence in English by Oxford Dictionaries. (2019). Retrieved from https://en.oxforddictionaries.com/definition/artificial_intelligence.

Bennett, A. R. (1997). The five Vs-a buyer's perspective of the marketing mix. Marketing Intelligence & Planning, 15(3), 151-156.

Booms, B. H., Bitner, B. J. (1980). Marketing strategies and organisation structures for service firms. In Donnelly, J. & George W. R. (Eds.), *Marketing of services*. American Marketing Association, p. 47-51.

Dhar, V. (2016). The Future of Artificial Intelligence. *Big Data*, 4(1), 5-9, https://doi.org/10.1089/big.2016.29004.vda.

Domingos, P. (2016). *Naczelny Algorytm: Jak jego odkrycie zmieni nasz świat*. Helion, Gliwice.

Grawal, A., Gans, J. S., & Goldfarb, A. (2017). What to Expect From Artificial Intelligence. *MIT Sloan Management Review*. Retrieved August, 10, 2018, from https://sloanreview.mit.edu/article/what-to-expect-from-artificial-intelligence/.

Grewal, D., Roggeveen, A. L., & Nordfält, J. (2017). The future of retailing. *Journal of Retailing*, 93(1), 1-6. https://doi.org/10.1016/j.jretai.2016.12.008.

Grönroos, Ch. (2006), On defining marketing: finding a new roadmap for marketing. *Marketing Theory*, 6(4), 395–417.

Haridy, R. (2017). *2017: The year AI beat us at all our own games*. Retrieved May, 10, 2018, from https://www.google.pl/url?sa=t&rct=j&q=&esrc=s&source=web&cd=2&cad=rja&uact=8&ved=2ahUKEwi3qejh88PcAhXBA5oKHXjyDoYQFjABegQIARAB&url=https%3A%2F%2Fnewatlas.com%2Fai-2017-beating-humans-games%2F52741%2F&usg=AOvVaw0ynvQnvrHHNWMIs5LvYFK4.

Jordan, M. I., & Mitchell, T. M. (2015). Machine learning: Trends, perspectives, and prospects. Science, 349(6245), 255-260. https://doi.org/10.1126/science.aaa8415.

Lieto, A., Bhatt, M., Oltramari, A., & Vernon, D. (2017). The role of cognitive architectures in general artificial intelligence. *Cognitive Systems Research*, 48, 1-3, https://doi.org/10.1016/j.cogsys.2017.08.003.

Mlot, S. (2018). AI Beats Human Lawyers at Their Own Game. Retrieved May, 10, 2018, from https://www.google.pl/url?sa=t&rct=j&q=&esrc=s&source=web&cd=14&cad=rja&uact=8&ved=2ahUKEwi3qejh88PcAhXBA5oKHXjyDoYQFjANegQIAxAB&url=https%3A%2F%2Fwww.geek.com%2Ftech%2Fai-beats-human-lawyers-at-their-own-game-1732154%2F&usg=AOvVaw02zOiXuratoHCB8YfsmLQV.

Mazurek, G. (2011a). Informacja w wirtualnym środowisku a rozwój społeczeństwa informacyjnego. *Zeszyty Naukowe Uniwersytetu Szczecińskiego – Ekonomiczne Problemy Usług*, 650(1), 186-194.

Mazurek, G. (2011b). Virtualization of marketing - conceptual model. In *Proceedings of the 2011 International Conference on Marketing Studies (ICMS2011)*, Academy of Taiwan Information Systems Research (ATISR), Kuala Lumpur, 9-11th September, 220-229.

Mazurek, G. (2014). Network Value Creation through Marketing, Management & Business Administration. *Central Europe*, 22(4), 70-77. https://doi.org/10.7206/mba.ce.2084-3356.120.

McIlwraith D., Marmanis H., & Babenko D. (2017). *Inteligentna sieć. Algorytmy przyszłości*. Helion, 2nd edition, Gliwice, p. 27.

Moncrief, W. C. (2017). Are sales as we know it dying ... or merely transforming? *Journal of Personal Selling & Sales Management*, 37(4), 271-279, https://doi.org/10.1080/08853134.2017.1386110.

Palmer, A. (2004). *Introduction to Marketing - Theory and Practice*. UK: Oxford University Press.

Shanahan, M. (2015). *The Technology Singularity*. MIT Press.

Simonite, T. (2018). AI beat humans at reading! Maybe not. Retrieved May, 10, 2018, from https://www.google.pl/url?sa=t&rct=j&q=&esrc=s&source=web&cd=17&cad=rja&uact=8&ved=2ahUKEwi3qejh88PcAhXBA5oKHXjyDoYQFjAQegQIBxAB&url=https%3A%2F%2Fwww.wired.com%2Fstory%2Fai-beat-humans-at-reading-maybe-not%2F&usg=AOvVaw0b1rNX76rschfKgbWprQsz.

Sterne, J. (2017). *Artificial Intelligence in Marketing. Practical Applications*. Wiley and SAS Business Series.

Syam, N., & Sharma, A. (2018). Waiting for a sales renaissance in the fourth industrial revolution: Machine learning and artificial intelligence in sales research and practice. *Industrial Marketing Management*, 69, 135-146. https://www.ama.org/the-definition-of-marketing/ (access 13/04/2019).

What is Marketing? — The Definition of Marketing — AMA. (2019). Retrieved from https://www.ama.org/the-definition-of-marketing/.