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ARTIFICIAL INTELLIGENCE AND MARKETING

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Abstract

The application of Artificial intelligence (AI) in marketing is in order to continuously follow and predict the next purchasing decisions of the target consumers and to improve their consumer "journey". The power of AI is reflected in its core elements: big data, machine learning and powerful solutions. The concept of "big data" means that marketers have ability to aggregate and segment huge amounts of data with minimal manual work. By using this data, they will be sure that they would deliver the right message to the right people at the right time, via the channel of choice. Machine learning (deep learning) allows marketers to understand and draw logical conclusions from large data collections. They can predict consumption trends, track and analyze consumer purchases, predict the next consumer behavior. Making powerful solutions means that we are living in an era when machines truly understand the world in the same way as humans. Machines can easily identify concepts and themes across a range of data, interpret emotions and human communications, and generate adequate responses to consumers. They can easily predict the behavior and decisions of buyers and use that data to solve issues in future.

In the following years, marketers can expect greater AI impact, through more intelligent searches, smarter ads, refined content delivery, relying on bots, continued learning, preventing fraud and data breaches, sentiment analysis, image and voice recognition, sales forecast, language recognition, predictive customer service, customer segmentation, etc. This paper attempts to discover the future relationship between marketers and artificial intelligence machines.

Key words: *Artificial intelligence, marketers, marketing, machine learning, big data, powerful solutions, bots*

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1. Introduction

Nowadays, companies use and appreciate the values of business intelligence. Business data are analyzed for multiple purposes: system log analysis, analysis of comments and opinions published on social media, risk assessment, consumer retention, brand management, etc. (Tjepkema, 2017). These different tasks can be performed by different, separate systems. However, separate systems do it in an expensive and slow way. There is a need of a large infrastructure that will manage all heterogeneous large data of separate multi-systems.

The "big data" changes the way people live and work, from doing business to shopping in the store and buying movie tickets. Each piece of information is segmented and used to analyze the way consumers think and make purchasing decisions. In order to take advantage of this opportunity, one has to forget the existing outdated and non-innovative solutions. We live in an era when using new technologies can easily identify future consumer trends and more deeply analyze the way consumers decide about purchases.

Developed economies increasingly use data-intensive technologies. There are 4.6 billion subscribers to mobile phones worldwide and between 1 and 2 billion people using the Internet (Schulterbraucks, 2017). This means that modern technology and artificial intelligence are increasingly used. Artificial intelligence is a subset of computer science in which computers can undertake reasoning and common sense tasks, such as vision and knowledge, which were formerly only undertaken by humans. It includes tasks such as learning, watching, observing, understanding, talking, socializing, planning, reasoning, creativity and problem solving. It is thought that 63% of companies already use artificial intelligence tools without knowing it. 47% of consumers, however, use bots that communicate when buying online products. 40% of consumers do not mind if they get an answer to their questions from an artificial intelligence tool, as long as they receive a satisfactory, quick, helpful and simple answer. But what does all this mean for marketers? Thanks to the bots, consumers can receive personalized shopping recommendations and for them there is always available consumer care.

2. Big data

The term "big data" denotes an explosion in the quantity and diversity of high-frequency digital data. In a company, large amounts of data come from everywhere: posts and comments on social networks, digital images and videos, electronic catalogues, reports on cash and consumer transactions, GPS signals from mobile phones, etc. These data are very large and complex which traditional data processing software can not process. The main challenges associated with large data are their collection, storage, analysis, search, sharing, transfer, visualization, updating and their privacy. With the exponential increase in the amount of data, the current technologies become obsolete. Big data processing requires complex coding skills, domain knowledge, and statistical knowledge.

Big data can be explained by the 3V dimensions - Volume, Velocity, Variety (Laney, 2001).

Volume: Companies produce terabytes of data every day! With the increase in the volume of data, while using the traditional ways to process them, many data remains unprocessed. Although the company has all the information about what consumers are doing and want, they can not answer them accordingly. This is a sure alarm for the company to change something.

Variety: the volume of data is only an initial problem. The real problem for traditional tools is the diversity of data. Traditional processing tools are best used for structured data. They process only data that is well structured and formatted. But today's data collected from various sources, e-mails, consumer comments, social media, consumer web site experiences and call centers are unstructured or semi-structured.

Velocity: the speed at which data is generated is critical as the previous two factors. The speed at which the company analyzes data can be its comparative advantage.

Each of these V-dimensions can be achieved with traditional solutions. For example, if in the company most data is structured, it can achieve 80-90% of the business value through traditional tools. But if the company faces all 3V dimensions at once, then it has a problem of "big data". Accordingly, the "big data" technologies can be described as a new generation of technologies and architecture designed to economically draw value from large amounts of diverse data with high speed and deep analysis. These data are so large that current or

traditional technologies can not cope with them (to collect, store, manage and analyze it efficiently and in a shorter time).

3. Machine learning

Machine learning is used to predict or provide calculated suggestions that are based on analyzing large amounts of data (Tjepkema, 2017). The best examples are Netflix algorithms that offer suggestions for watching movies to consumers based on movies they have seen in the past or Amazon's algorithms that recommend books to consumers based on purchased books in the past. Machine learning is an advanced area of artificial intelligence that allows programs to absorb large amounts of data and create predictable algorithms that improve over time. With the use of machine learning, marketers can provide customized content to consumers, as well as suggestions for products that they could buy. Marketers have data that guarantee success for offering consumers what they want to buy.

Machine learning algorithms are divided into three major categories: supervised learning, unsupervised learning and reinforcement learning (Sterne, 2017). Supervised learning is used in cases where a particular set of data lacks certain data and it should be adequately predicted. Unsupervised learning is used when the connection between unrelated, diversified data is to be discovered in a huge set of data. Reinforcement learning is located between these two extremes, i.e it predicts what will happen if there is a connection between two or more events or data.

Machine learning is interdisciplinary in nature and involves techniques from various fields, such as computer science, statistics, mathematics, artificial intelligence, etc. The main feature of machine learning is to obtain experience data by applying algorithms that rely on computer vision, artificial intelligence and data mining.

4. Powerful solutions

Decision making consists of two main tasks: tree introduction and tree pruning (Davis, 2016). Tree introduction and creation of a "tree" of data is a task when a multitude of data is segmented by characteristics, then selects, separates and categorizes it. The goal is that the data tree consists of the purest minimal data that is split across the entire set of data. The purity is measured according to the concept of information that shows how well one needs to know

about the particular topic. The complete data tree can be too complicated and contains unnecessary structures, it is difficult to understand and difficult to interpret. Tree pruning is the process of removing unnecessary structures from the decision tree so that people can make more efficient, more accurate and more understandable decisions.

5. The future of aritifical intelligence marketing

In future, marketers can expect the following impacts from artificial intelligence marketing (Tjepkema, 2017):

A) More intelligent searches: As technology solutions become wiser and more perfect, it's important to keep in mind that the public becomes more sophisticated in their requirements. Thanks to social media and fast search engines like Google, people find what they need in a very short time. Artificial intelligence and big data can analyze these search models and help marketers identify the key areas they need to focus their efforts on.

B) Smarter Ads: Marketers are still trying to attract consumers with smart advertisements today, but with using artificial intelligence, they can do it faster and more efficiently. With big data, online ads are becoming smarter and more effective. Artificial intelligence can dig deeper into the data, social networks, profiles, and other online content for human solutions.

C) Refined Content Delivery: With the help of artificial intelligence, marketers will be able to target consumers to a completely different level. By analyzing the targeted consumers, marketers, besides the demographic characteristics, will understand the consumers on an individual basis. Now, marketers can use artificial intelligence on two levels: identify potential customers more easily and deliver the ideal content that is most relevant to them. This is achieved through big data, machine learning and their combination.

D) Relying on Bots: Consumer care and retention is another area where artificial intelligence can play a significant role in the future. Very soon, the conversation functions and other direct-to-consumer engagement will be carried out by artificial intelligence bots. In this way, companies will save time for employees and reduce costs. The artificial intelligence bots will have access to the entire internet of data, information, a search history so that they become more effective than humans.

E) Continued Learning: With the help of artificial intelligence, not only will it reveal some hidden data, but it will teach them and incorporate them into new promotional campaigns and optimize the messages to the most relevant users. Over time, the artificial intelligence solutions will become more intelligent, effective and will promote decision making in real time.

6. Conclusion

Artificial intelligence, through big data, machine learning and perfect solutions, are already transforming the technological landscape of the companies. Companies change the way they do business by making it more responsive, more productive, and more competitive. The technological advances have always created new opportunities for marketing. Just as the advent of TV brought an era of truly mass advertising and reach, and the Internet and mobile phones brought a new level of targeting and context, so artificial intelligence will change how people interact with information, technology, brands and services.

Artificial intelligence is a study of how to make machines intelligent or capable of solving problems as well as people can. At its core, machine learning is a new way of creating those problem-solving systems. For decades, programmers manually coded computer programs to provide outputs when given a certain input. With machine learning, we teach computers to learn without having to program them with a rigid set of rules (Sterne, 2017).

What does this mean for marketers? The further integration of technology into the physical, real world, new interactions are created with consumers that are simpler and instantaneous. High customer expectations will be higher than ever. This will pose a new challenge, a new opportunity for companies and marketers. Artificial Intelligence helps marketers to realize full personalization and relevance. With platforms like Search, Facebook, YouTube, Google reaching billions of people every day, and with digital ad platforms, it will finally achieve communication at scale. This scale combined with a customization possible through artificial intelligence means that companies will soon be able to tailor personalized campaigns in real time. The world of the future is in the application of artificial intelligence.

REFERENCES

Davis Ben (2016). 15 Examples of Artificial Intelligence in Marketing, Econ-Consultancy, Manchester, UK, 19 April 2016

Johnsen Maria (2017). The Future of Artificial Intelligence in Digital Marketing – The next big technological break, USA

Korada Prasanthi (2018). Impact of Artificial Intelligence on Digital marketing, Andhra University, India

Laney Doug (2001). Controlling Data Volume, Variety and Velocity, in 3D Data Management, Meta Group, (https://blogs.gartner.com/doug-laney/files/2012/01/ad949-3D-Data-Management-Controlling-Data-Volume-Velocity-and-Variety.pdf)

Lasse Shulterbraucks (2017). A short history of Aritificial Intelligence, December 2017, https://dev.to/lschultebraucks/a-short-history-of-artificial-intelligence-7hm

Marvin Chow (2017). Artificial Intelligence and Machine Learning get us one step closer to relevance at scale, Emerging Technology Mobile, September 2017

Sterne Jim (2017). Artificial Intelligence for Marketing- Practical Applications", Wiley, New Jersey and Canada, https://books.google.mk/books?id=o_YtDwAAQBAJ&printsec=frontcover&dq=artificial+intelligence+and+marketing&hl=en&sa=X&ved=0ahUKEwiiycCUrODdAhVNaVAKHX_ACkoQ6AEIJjAA#v=onepage&q=artificial%20intelligence%20and%20marketing&f=false

Tanase George Cosmin (2018). Artificial Intelligence: Optimizing the Experience of Digital Marketing", Romanian Distribution Committee Magazine, vol. 9, issue 1, 24-28, Econpapers, https://econpapers.repec.org/scripts/search.pf?ft=artificial+intelligence+and+marketing

Tjepkema Lindsay (2017). What is Artificial intelligence marketing and why is it powerful?, Emarsys

Utku Kose, Selcuk Sert (2017). Imrpoving Content Marketing Processes with the Approaches by Artificial Intelligence, EcoForum, vol. 6, issue 1, 31