Evolution and Ethics of Digital Technology in Marketing

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Abstract

The purpose of this paper is to identify the implications of ethics in the evolution of technology. This article aims to define and analyze concepts such as: Big Data, Artificial Intelligence and Bioinformatics. Also, this article presents the applicability of Artificial Intelligence and discover the future trend of jobs in the coming years, the importance of adapting to changes and learning more skills that help to support future jobs.
Keywords: digital, technology, marketing.

1. Introduction

Technology in digital marketing, the expansion of the Internet and high-speed broadband connections, the development of social media platforms and the widespread adoption by users of smart mobile devices have led to the development of digital marketing, social media marketing and mobile marketing.

The digital transformation of marketing is reflected in how companies and consumers have adopted new technologies, as well as how technology has facilitated new market behaviors, new ways of interaction and new consumer experiences (Lamberton C., Stephen A.T., 2016).

The adoption of digital technologies transforms the business models, the products, the price models, the ways of distribution, networking and communication with customers.

Ethics in the evolution of technology refers to the application of ethical thinking regarding the practical concerns of technology. The main reason why the ethics of technology is growing is reflected in the new technologies that give us more power to act, and that means we have to make certain choices that we didn't have to make before. If in the past, our actions were involuntarily limited by our vulnerability, at present, we must learn how to be voluntarily constrained by our reason, more precisely, by our ethics. (Weckert J., Douglas A., 1997)

Ethics in the evolution of technology addresses issues that may arise in areas such as information technology, biotechnology, artificial intelligence, cybersecurity and other emerging disciplines. The question that is emphasized is How can you turn a threat into an opportunity? under the conditions in which the technological trends will have the greatest impact in the next 10-15 years.
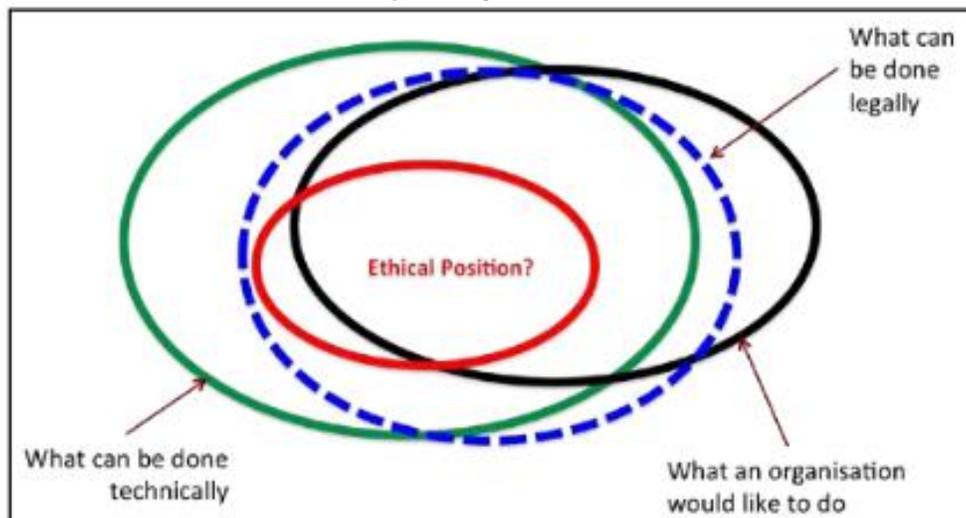
2. Big Data Analytics

Big data analysis is a fairly complex process that examines sets of big data in order to discover information, such as market trends, certain unknown correlations, and customer preferences, in order to help organizations make informed business decisions. (Kitchin R., 2014)

Focused on specialized analysis systems and software, as well as high-power computing systems, big data analysis offers certain business benefits, including: more efficient marketing, new revenue opportunities, competitive advantages over rivals, and improved operational efficiency. The term Big Data refers to the extraction, manipulation and analysis of data sets that are too large for ordinary processing. Because of this, special software is used and, in many cases, also dedicated computers and hardware. Generally, at these data the analysis is done statistically. Based on the analysis of the respective data, predictions of certain groups of people or other entities are usually made, based on their behavior in various situations and using advanced analytical techniques. Thus, tendencies, needs and behavioral evolutions of these entities can be identified. (Reichman O.J., Jones M.B. and Schildhauer M.P., 2011)

2.1. Ethics in big data

Big data ethics, also known as simple data ethics, refers to the systemization, defense and recommendation of the concepts of right and wrong behavior in relation to data, especially personal data. (Reynolds G.W. , 2002).

Fig. 1 – Big data ethics

Source : www.ibmbigdatahub.com

The ability to analyze big data gives the analytical world new opportunities to predict behavior. Access to new forms of data (social media, text analysis and internet data) outside the organization's environment, when analyzed together with internal data, offers the ability to research, predict trends and ask questions that have not been before. . Data scientists can make analyzes so advanced that they can invade a person's privacy without violating data protection laws. Laws and regulations (GDPR) guide organizations, especially regarding privacy and data usage, so that recent advances in analytics and big data technologies have widened the gap between what is legally allowed and what is possible, replacing the balance of power between individuals and data collectors. Technology knows and remembers more about us and our preferences than we do, so we can say that big data can be manipulative and unethical.

As an organization seeks to apply big data analytics to improve the way it works, we have no way of knowing whether the use of this technology is ethical, however, it is stated that it is advisable to have skills in the collection and marketing business.

Online marketing intermediaries provide information about the destination sites, being a means of connecting Internet users with product information.

The Internet is not a threat, on the contrary, we can discuss strategic directions for using the Internet:

- market penetration strategy: The Internet is used to create sales for current parts.
- market creation strategy: The Internet is used to generate sales for us, to make geographic markets, to capitalize on the advantage of advertising to achieve the international level at a low cost, without the need for support or sales infrastructure for other parts.
- product application strategy: Develop new intelligent digital care products for the Internet.
- diversification strategy: The Internet supports the sale of products that are cared for and developed and sold to us.

This determines surveillance capitalism, which means looking for human experience as a free raw material for translating into behavioral data, but it has given rise to a concept called *dataism,* which is considered to be a techno-religion that treats everything in terms of data processing. and whose supreme value is the free flow of information.

Dataism is a term that has been used to describe the mindset or philosophy created by the emerging significance of Big data. It was first used by David Brooks in the New York Times in 2013.

Ethical considerations of dataism:

1. Can Big Data make choices on our behalf?
2. Will it become a tool of subjugation and manipulation by global elites?
3. Will it produce a useless generation?

3. Artificial Intelligence

Artificial Intelligence technologies, such as machine learning, are the basis of advanced analysis tools that many large organizations rely on for competitive advantage. As AI (Artificial intelligence) becomes ubiquitous, a wider range of organizations will have access to Artificial Intelligence tools to help make business decisions. (Smith B., Shum H., 2018).

It is claimed that AI aggregates information to multiple users and has the ability to do predictable things.

AI is an area of computer science that emphasizes the creation of intelligent machines that function and react as humans.

Two important approaches of AI: logical and rule-based approach and big data and machine learning based on patterns / algorithms. Artificial Intelligence has to do with the aggregation of marks for a long time, in essence, it takes human intelligence, transposed into human behavior, and transmits it to a computer that takes this information.

Artificial Intelligence is a field of technological endeavors that people explore to make a better sense of the world and, in making the best decisions, in a way, AI has a fundamentally ethical aspect. Therefore, we must give efficiency to morality, but because something is more efficient it does not mean that it is morally better, although often efficiency is a dramatic benefit to humanity.

3.1. Applicability of Artificial Intelligence

Artificial Intelligence has become an essential part of the technology industry and research associated with Artificial Intelligence is highly technical and specialized.

This concept is a branch of computer science that aims to create intelligent machines, dealing with the simulation of intelligent behavior in computers or the capability of a machine to imitate intelligent human behavior. Also, Artificial Intelligence is an area of computer science that deals with giving machines the ability to seem like they have human intelligence or the power of a machine to copy intelligent human behavior.

Artificial Intelligence can replace certain jobs such as: computer programmers, call center operators, driver, teacher, doctor, etc.

Previous studies have identified the effects of automation, such that:

• low-skilled jobs will decrease by 30%

• qualified jobs are the trades that follow a routine process and are repetitive. usually, it does not require a higher academic level.

• medium skilled jobs will improve by 8%

• medium skilled jobs are jobs that require a small amount of knowledge in managing people in the process where teams deal with more difficult problems

• highly skilled jobs - will increase by 56%

• highly skilled jobs are jobs that require creative and critical thinking, analytical and problem solving skills.

As far as Artificial Intelligence is concerned, we must also present some negative aspects, such as: "the system" will develop "a consciousness" and will rebel against people, people will lose the freedom to choose and we will have the dictatorship of the algorithm "and mass manipulation" , people will not be able to learn digital skills fast enough, they may misinterpret human instructions due to lack of context, people will lose the ability to hide their true emotions and feelings.

4. Bioinformatics: modernization of elites

Bioinformatics is an interdisciplinary science that deals with the development of software methods and tools that help to understand data of biological importance. (Luscombe N.M., Greenbaum D., Gerstein M., 2000)

Therefore, bioinformatics is a branch of biological science that deals with the study of methods of storage, retrieval and analysis of large sets of biological data.

According to Wikipedia, "bioinformatics uses many fields of computer science, mathematics and engineering to process biological data. Complex machines are used to read biological data at a much faster rate than before. Databases and information systems are used for the storage and organization of biological data. Biological data analysis can involve algorithms in the field of artificial intelligence, soft computing, data extraction, image processing and simulation. Algorithms in turn depend on theoretical foundations such as discrete mathematics, control theory, system theory, information theory and statistics. Software tools and technologies commonly used in the field include Java, C #, XML, Perl, C, C ++, Python, R, SQL, CUDA, MATLAB, and spreadsheet applications."

Also, bioinformatics is considered an area of science in which biology, computer science and information technology are merged into one discipline. The ultimate goal of this science is to allow both the discovery of new knowledge in biology and to create a global perspective from which the unifying principles of biology can be distinguished. We observe three important directions of research in bioinformatics:

• the development of new algorithms and statistics with the help of which can be extracted, from a large number of data, those elements that have common features.

- analysis and interpretation of different types of data related to nucleotide and amino acid sequences, protein structure.
- development and implementation of tools that allow efficient access and manipulation of different types of information. (Luscombe N.M., Greenbaum D., Gerstein M. ,2000)

The emergence and development of bioinformatics were determined by certain opportunities and challenges. Currently, the new high-efficiency technologies bring unprecedented opportunities for scientific research, allowing us access to new data and studying genetic differences in different people, as well as discovering genetic mutations that are responsible for some diseases.

The huge amount of data requires efficient methods, and exponential growth requires scalable methods. Bioinformatics is a mixture of molecular biology and data science and deals with the application of calculation methods to analyze biological data collections, such as genetic sequences, cell populations or protein samples.

Bioinformatics has two main roles: firstly, it is a powerful technology for searching, managing and analyzing big data in scientific research. Secondly, as a methodology, it is a holistic system based on data, an approach that generates new assumptions, finds new patterns and new functional elements. This complements the traditional methods of experimental biology. So we see that there are three major approaches to bioinformatics: data analysis, software development and modeling.

In conclusion, bioinformatics aims to apply information technology to advanced biological problems, such as transcriptomics and proteomics, involving huge amounts of data, so that we can talk about: human improvement as a loaded term that has eugenics, human improvement will be practiced with recklessness and selfishness , with a short-term outlook (first in the Chinese military), most of the investments by the big technology billionaires have concerned brain technologies and anti-aging.

5. Conclusions

The convergence of new big data management programs has produced a unique moment in the history of data analysis. This trend means that we have the capabilities to analyze data sets very quickly and cost-effectively for the first time in history, and it is a real leap forward and a clear opportunity to make huge profits in terms of productivity, efficiency, revenue and profitability.

Big data and business analytics solutions are now a core technology and, together with AI and automation, are the basis on which the digital transformation process is built.Artificial Intelligence and technology are an important component of life that always interests us and surprise us with new ideas, topics, innovations, products.The importance of ethics among information technology professionals is responsible for ensuring that computer technology is not used in the wrong ways that can harm people, the environment and society.Ethics in the evolution of technology has principles that can be used to govern technology, including factors such as risk management and individual rights. Finally, we present some optimistic recommendations: adopt and invest in technology, manage and lead network organizations, invest in education, adopt and invest in humanity.

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