

## Recension Marketing and the fourth industrial revolution

### Recensión *El marketing y la cuarta revolución industrial*

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#### Introduction

The transformation process of a social and economic nature in societies, in view of technological changes and developments, has traditionally been referred to as the industrial revolution. To date there have been three, which are described below.

In the first industrial revolution, the steam engine represented an absolute paradigm shift from an essentially agricultural and livestock industry to an industrial and mechanized economy. In the second revolution, electric energy played an absolutely preeminent role, in addition to the development of notable inventions and discoveries such as the light bulb, the combustion engine, the vehicle, the airplane, mass production –in which the American Henry Ford was heavily involved–, the radio and the telephone. Efficient scales were also achieved in industrial manufacturing with lower unit costs and higher levels of business profitability. Later, in this order of things, a third industrial revolution was reached with the digital phenomenon, which produced a marked automation and a model change from analog to digital, which gave rise to what has been dubbed as the *information age*.

The common thread of the three revolutions outlined above is to achieve continuous improvements in the scale of industrial production. In the fourth industrial revolution, in which we are currently immersed, there is an unprecedented expansion of personal computers and smart devices. To all this, we must add the growth of the Internet and the automation of mass production.

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The fourth industrial revolution has also been called hyper-connectivity. This new era poses profound changes for society and marketing in general. We are also in a scenario where the Internet of Things (IoT) plays a major role. This new era implies a transformation of humanity –as never seen before– where digital, physical and biological systems converge.

There is a wide range of phenomena that need to be mentioned. These include cloud computing, big data, IoT, autonomous robots, artificial intelligence, augmented reality and geolocation. The fourth industrial revolution has enormous disruptive power and, moreover, is developing along very different paths from the three previous ones. This new stage –in which new technologies play an enormous role– will involve taking on very important challenges that, until now, were unknown.

Everything related to new technologies must be linked to marketing, which has undergone a remarkable development in society. During marketing 1.0 we were focused on the product or service, while in marketing 2.0 we focus on the consumer or user. Linked to the above, in marketing 3.0 the focus is on the person. Finally, currently, in marketing 4.0, what is relevant is an individual in a digital economy or society. There is a number technological contributing tools in the sense that the information and the use given thereto are highly significant for the competitiveness and success of brands.

In recent years, a revolution has taken place with a significant impact on consumer behavior. Digital economy has changed the key concepts of marketing. Everything we have discussed generates new technological tools that can be used by companies to improve their brand. Companies can take many actions in this regard. For example, investing in certain digital applications to create innovative content and participate in social networks where data that are essential for new market strategies are monitored, analyzed and evaluated. In this way, IoT, augmented reality and geolocation will improve the customer experience.

The author of the work which is the subject matter of this review is Elías Amor Bravo. His brilliant biographical trajectory includes a degree in Economics and Business Administration from the Universidad de Valencia and a Master's degree in Public Management at the Instituto Nacional de Administración Pública, both in Spain. In addition, since 1994 he has been an academic at the ESIC Business & Marketing School (Valencia headquarters), and since 2013 he has been president of the Spanish Association for the Promotion of Active Employment Policies and Qualifications, AFEMCUAL. He has also held various relevant positions in the public sector. The book integrates a total of fourteen sections, which are outlined below.

In the first section of the book, the author positions the reader in the origins of the fourth industrial revolution, which has two main features. First, the convergence of multiple technologies that seek to reduce the limits of the physical, digital and biological planes of reality. Secondly, connectivity. The impact of these two aspects has been multiplied as a result of emerging technologies.

The second section refers to artificial intelligence (AI). The purpose of this technology is to create an intelligent machine capable of learning. It is worth mentioning that artificial intelligence was born in 1956, in Dartmouth, USA. The term was coined by J. McCarthy, who with this expression intended to allude to a machine that imitated the cognitive capabilities of people. The application of AI has numerous advantages in health (it enables accurate diagnoses), education (it contributes to the generation of knowledge) and communication (it produces immediacy in a fully interconnected society).

Everyday reality shows that social networks also involve the use of AI. Thus, when a user posts a photo with other people, the social network, by resorting to AI, can recognize faces whose profiles are not yet tagged in the image. AI proves to be one of the most remarkable and far-reaching technological revolutions in industries and economic activities. By virtue of AI, marketing can become something entirely new.

Among the many applications that make use of this technology are, among others, smartphone voice assistants. Also noteworthy is what is known as machine learning, i.e. systems capable of learning autonomously. These technological systems have the ability to identify, within millions of data, patterns of a certain complexity by using certain algorithms to predict future behavior.

In relation to the need to obtain as much data as possible from consumers or users worldwide, there is a wide variety of big data tools or mechanisms that obtain significant volumes of information at a reduced cost. Services such as Salesforce Einstein allow to adjust actions to the interests or real needs of users. It is an intelligent CRM (Customer Relationship Management) assistant that supports variants. Every business acts differently and therefore uses Salesforce differently. In this sense, the Einstein Platform incorporates powerful mechanisms that enable administrators and developers to create a customized intelligent assistant.

Another of the disruptive changes generated by AI has occurred in search engines, due to the fact that content is localized, but at the same time those results that are most relevant to the consumer are offered, which implies considerable savings in time and effort. In this context, we can refer, as an example, to *chatbots*.

The third section concerns robotics. Robots have been around for several decades and exist in banks all over the world (e.g., in ATMs). In Japan, the robots found in customer service are familiar to many people. In addition, at the Japanese bank Mitsubishi UFJ there is a robot called Nao that can engage in conversations in more than a dozen languages and interpret consumers' expressions. One can also cite the case of the Japanese company SoftBank, which in 2018 introduced Pepper, a robot capable of interpreting emotions that sells Nestlé brand products to potential customers.

In the United States, the Indiana airport was the first one to resort to a robot for customer service. We can also refer to Furo (Future Robot), which is located at the Canadian airport; this robot is capable of responding in more than ten languages, but it can also transport users to different destination points in the airport.

In addition to customer service, robots have played roles in tasks that are boring for humans. One example is Walmart in the United States, which has robots to scan items in stores. There are also companies that have gone much further, such as *Comerzzia*, which created a robot called *Mercurio* that could interact with customers and, based on their physical features, offer them certain products or services.

There are robots capable of writing news about sports, elections or economics, and although sometimes they have fairly basic content, others can be of a certain complexity. Among the possible examples, we can refer to the AP Agency, Washington Post, or other media. There are also other types of robots that are capable of writing ingenious commercial messages autonomously and automatically.

The IoT is the subject of study in the fourth section of the book. It is probably one of the technologies that will benefit corporate marketing in the fourth industrial revolution. IoT can successfully anticipate customer needs (even before they are aware that they have a need). In Japan, for several years now, companies have been creating smart gondolas to deliver their products, and obtain information through the network to know the status of their products.

The range of opportunities that IoT can generate is exciting. Brands should make it more relevant, as they can create a closer relationship with consumers or users, which could lead to customer loyalty. Brands have a duty to innovate and anticipate consumer needs, and companies should make the most of this technology to optimize their results.

In the IoT, every instrument in the house seeks to be connected –refrigerators, printers, voice assistants, televisions or toothbrushes– to provide vast volumes of information about the user. The data and information must be processed and analyzed in real time to be of use to companies' business and marketing models. In addition, it should be noted that IoT will provide the opportunity to make objects themselves more attractive and more connectable to the user. The usefulness of coffee makers, refrigerators or microwave ovens that give advice on healthy eating, or washing machines that offer suggestions based on the type of fabric of each garment, would be enormous. From all of the above, it can be seen that brands could bring an artificial, almost human-like personality to smart devices. The IoT offers the possibility to do this efficiently.

Smart devices could change the way many companies do business. For example, the FitBit, which is a smart watch to monitor heart rate and track personal fitness, could partner with a health food store to give discounts when a certain amount of exercise is demonstrated.

It could also be useful for health insurance companies, because if users demonstrate regular exercise, they could get rebates. However, brands are expected to make ethical and responsible use of such an immense volume of data. Over-communication and privacy violations are detrimental, as they stir up negative emotions for the potential consumer.

Autonomous vehicles are examined in the fifth section of the book. As the author points out, in the not too distant future, vehicles will be fully autonomous driving; however, it is true that there have been accidents with fatal consequences. In this sense, we can refer, without exhausting spirit, to the experiences of autonomous driving with Uber. In Tempe, Arizona, a woman crossed on her bicycle at an improper place without a crosswalk and was hit by an autonomous vehicle, without the latter being able to act in time. As a result, Uber stopped all testing.

In the United States, since 2017, with the Obama administration, a legal framework on the matter was approved. The autonomous vehicle not only represents a technological challenge, but a social one. Google began testing autonomous vehicles before Uber did. Both companies even went to court as a result of a series of illegal actions –linked to the theft of Google's patents and information– for which Uber was forced to pay around 245 million dollars to Google. On the other hand, the American company Ford and the Japanese Toyota have also expressed interest in joining this technology. Tesla, for its part, has made significant advances in this area. Other brands, such as Volvo, are advancing at a slower pace.

In the sixth section, 3D printers are analyzed in detail. These are machines that enable facsimiles of certain designs to be made. To date, they have been used in numerous sectors such as architecture and industrial design. They have also had great success in the field of health, since, among other aspects, they allow the design and creation of medical prostheses of extraordinary precision. In addition, housing construction has also made use of this technology.

This type of printers allows to achieve very remarkable benefits in a novel commercial area without borders. When linked to digital marketing, 3D printers allow new possibilities of interaction with consumers of companies to be implemented. In this way, it would be possible to move from content marketing to product marketing, with the user himself being able to download and print them. This new technology opens up exciting possibilities for merchandising and sales promotion.

The seventh section refers to nanotechnology, which is the manipulation of matter at the nanometer level. Public and private participation in this area is essential. This technology is still underdeveloped in scientific research centers belonging to the public sector without a clear alliance with the business spectrum.

Biotechnology is considered from a novel perspective in the following section. It could be said that this is any technological application that uses biological systems and living or derived organisms to create or modify products or processes for certain uses. Among other things, healthier foods, better medicines, more robust or less polluting materials, renewable energies or systems to eliminate pollution are created. There are many applications of biotechnology that represent a challenge for marketing.

The ninth section discusses materials science. This was introduced as a new scientific and academic discipline in 1958. Its purpose is to investigate the relationship between the structure and properties of materials. One of the challenges we are likely to face is to achieve the development of sustainable technologies in the field of energy, transport and communications. In general, the aim is to create new materials.

The tenth section studies energy storage. The technologies aimed at this end seek to increase the efficiency of the electricity system by reducing the demand curve and integrating renewable energies. In short, the aim is to avoid wasting energy and optimize supply sources in times of scarcity.

The following section discusses everything related to quantum computing. This technology is the undisputed leader in the execution of certain arithmetic operations. It has applications in areas where security is essential, such as digital banking. It could also be applied in cryptocurrencies. There are even those who believe that bitcoin will be able to do away with cryptocurrencies in about a decade. The power that can be achieved with this technology will be able to overcome the security systems of the popular cryptocurrency. Quantum computing has novel applications in multiple sectors; one of them is the automotive industry, where Volkswagen stands out.

The impact on the activities of companies and organizations is discussed in section twelve. One of the most important challenges of the fourth industrial revolution lies in the difficulty of understanding and preventing the acceleration of innovation and the disruptive capacity of new technologies. The author's observations on the collaborative economy, which stands out in many goods and services, are highly appropriate.

Section thirteen analyzes the impact of governments and public administrations and emphasizes the advantages of new technologies in the relationship between citizens and the public sector. This is linked to the convergence that the fourth industrial revolution is bringing about in the physical, digital and biological worlds. The marketing of public services, which until today has not been successful, has a great opportunity to develop by making use of the various prerogatives arising from the 4.0 revolution.

Finally, in section fourteen of the book, the author refers to the impact on social organization and points out how the fourth industrial revolution will not only modify what

we do, but also who we are and the way in which our lives develop. He also mentions that it will probably do so in unpredictable ways.

As we have seen, the great development that technology will undergo in the fourth industrial revolution will give way to a surprising repertoire of new goods and services that will improve efficiency and personal life in many areas. Consumers or users, the clear target of marketing, will be the winners of this process of social transformation, as well as those who can access the digital space, which will be an increasing number, as markets are expanding, intensifying and democratizing at levels not seen in the past.