

# **THE IMPACT OF ARTIFICIAL INTELLIGENCE USAGE IN BUSINESS**

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**Abstract:** The main objective of this paper is to study the impact of artificial intelligence (AI) in business, both by using automated tools to provide decision support for companies and their customers, and the presentation of the finished product in a digital environment. New methods of approaching the customer will appear after the transition to automated tools, and these methods require a detailed predictive analysis, because the result will be customer satisfaction in the first place, which will increase the company's profit. Customers will have unlimited time to search for offers, because digital promotions require the existence of details on the Internet, regardless of the consultation period. Therefore, the client will have access to a permanent, comparative consultancy, this being a new marketing strategy, which will ensure a better promotion of a product or service.

**JEL classification: C63, G14, M21, M31, M41**

**Key words: AI - Artificial Intelligence, Big Data, Business Intelligence, Marketing, Predictive analysis**

## **1. INTRODUCTION**

We considered it necessary to present the use of artificial intelligence in current activities. For this, we identified a close link between machine learning and artificial intelligence, which led to their integration into the autonomy of presenting a product. Statistics have shown that, increasingly, artificial intelligence is part of our lives. Based on this, we have identified how user data is automatically processed and how it is used on IoT (Internet of Things) platforms, which will then give detailed

product information. A strong point is the fact that marketers have this data and can adapt their sales offers, promotions to identify new types of customers, customer satisfaction at the digital level to be consistent with delivery. We also considered it necessary to present Big Data analysis tools, given that the data identified on the Internet are not structured. At the same time, we have identified software for intelligent business development that can be used in decision-making at a company level. Finally, we described tools for using artificial intelligence in business, by identifying the advantages and disadvantages of using artificial intelligence in business, as well as marketing tools that frequently use artificial intelligence.

## 2. LITERATURE REVIEW

Today, the dictionary explains artificial intelligence as a sub-field of computer science and describes how machines can mimic human intelligence. For example, the Oxford Living Dictionary defines "The theory and development of computer systems capable of performing tasks that normally require human intelligence, such as visual perception, speech recognition, decision-making, and translation from one language to another."

Merriam-Webster, an American company that publishes book references and is best known for its dictionaries, defines artificial intelligence as:

- branch of informatics that deals with the simulation of the intelligent behavior of computers;
- the ability of a machine to mimic intelligent human behavior.

(<https://www.merriam-webster.com/>, accessed at 18 march 2020)

Research associated with artificial intelligence is technical and specialized. The basic problems of artificial intelligence include programs / applications actions, such as knowledge, reasoning, problem solving, perception, learning, planning, ability to manipulate and move objects (Siddhivinayak, 2012).

Thus, coming to support customers, artificial intelligence also intervenes in the activity of companies, by creating an advanced and detailed psychological profile of the customer, which shows what type of consumer he is, customizing offers so that the customer receives exactly what he wants. This can be identified by the way the client dresses, what passions he has or what photos he posts on social networks. At the same time, customers want much smarter products that make their lives much easier (eg. phones, TVs, cars, smart refrigerators, smart houses) and this can make market competitors become leaders or even stand out from the crowd (Marr, 2019).

Data has become the most valuable commodity for modern companies. More and more companies have digital businesses, and the result is that a large amount of data is produced in the supply chain. However, data, unlike capital, is useless without the tools that allow organizations to order, understand, and gain deeper knowledge of it. The Big Data revolution has made business leaders need to invest in technologies that enable big data analytics (Mayer-Schönberger, Kenneth Cukier, 2013).

According to statistics, 80% of existing data worldwide is unstructured. This data is on social media platforms, e-mails or digital photo storage and audio / video files. Unstructured data can be difficult to analyze, leading to inability to process and use it to maximum synthesis. Data analysis can be done by the following methods:

diagnostic analysis, descriptive analysis, predictive and prescriptive analysis (Geng, 2017).

Each method of analysis involves studying the environment in which an activity occurred and looking for solutions to perpetuate the actions.

Artificial intelligence (AI) has a special place in the applications used to develop a business. These smart applications incorporate learning algorithms into their daily functionality to automate user tasks. Automating these processes saves time and energy for the user, makes their work easier and allows employees to work more efficiently and productively.

Artificial intelligence (AI) is becoming a key element of business applications, whether or not users know it. Frequently, AI and machine learning are embedded in applications and provide users with features such as predictive automation. These smart applications make the processes and tasks of companies and employees simpler and easier with the help of AI, but it is important to differentiate between AI tools and those that help develop smart applications (Maglogiannis, 2007).

Business Intelligence can be defined as a set of mathematical models and analysis methodologies that systematically exploit available data to retrieve information from useful knowledge, in support of complex decision-making processes. Despite the restrictive meaning of the term business, which seems to limit the subject within the limits of company organization, business intelligence systems address both companies with a specific object of activity and other more complex types of organizations with more activities (interdisciplinary) (Reitman, 1984).

A business model reflects a company's strategy for creating value. Four different scenarios link business intelligence to the business context, from simple applications to information as an essential part of strategic planning.

Business Intelligence scenarios are:

- Business Intelligence is independent of management strategy;
- Business Intelligence supports strategy performance monitoring;
- The feedback given by BI in order to formulate the strategy;
- Business Intelligence as a strategic resource.

Obviously, this classification depends on the size of the organization and the scope of activity considered (Grossmann, Rinderle-Ma, 2015).

### **3. METHODOLOGY**

Business intelligence methodologies are interdisciplinary and broad, covering several areas of application. Representation and organization of the data collection and storage process are intended to facilitate the decision-making process and therefore with data storage technology with mathematical models for optimization and data extraction in several application areas such as marketing, logistics, accounting and control, finance and public administration. Business intelligence systems tend to promote a scientific and rational approach to the management of complex organizations (Vercellis, 2011). From the marketing point of view, it can be said that suppliers face the expansion and development of products and services, study the price, follow the distribution channels and check them, promote, analyze market opportunities. Also, segmentation, targeting, market positioning of products and services are important elements to study when it comes to marketing. One opportunity

that suppliers want to take advantage of is the new technology with which they have been sold on the market and which make products and services better. In this sense, the SWOT analysis of the use of artificial intelligence in business is prepared:

**Table 1. Strengths, Weaknesses, Opportunities and Threats research**

<b>Strengths</b>	<b>Weaknesses</b>
<p>Global coverage with a wide range of products and technologies, as well as a strong distribution network with a large number of outlets</p> <p>Production focused on human needs and especially the availability of financial resources</p> <p>Interest in competitiveness; Alliances between services; Significant history of products or services; Strong connection with customers; State-of-the-art technologies; Aggressive marketing and advertising; Ability to expand and reduce production according to market demand</p> <p>Diversified workforce, with people from many geographical, racial, cultural and educational backgrounds; Large portfolio of products and services; Unique product offers that are not provided by competitors; Strong financial position, with positive profits reported in recent years; Strong social media presence</p>	<p>Production problems</p> <p>Production limitations</p> <p>The time required to purchase and sell products is long</p> <p>Lower budget for quality control department</p> <p>Small amounts of research and development expenditure</p> <p>High rate of employee turnover, low employee motivation</p>
<b>Opportunities</b>	<b>Threats</b>
<p>Business / Production Development</p> <p>Global influences</p> <p>Investment in new production technologies</p> <p>Increasing demand</p> <p>Market expansion / Increasing market penetration</p> <p>the number of internet users around the world has increased</p> <p>Trend and growth in e-commerce industry sales</p> <p>The number of social media users around the world is growing</p> <p>Technological developments</p>	<p>Continuous innovation due to competitors</p> <p>Increasing prices due to materials used and innovative technologies</p> <p>A vulnerable selling market</p> <p>International production regulations</p> <p>Increasing the costs of raw materials or the maintenance of a product</p> <p>Competition with other manufacturers</p> <p>Constant technological developments require training of the workforce</p> <p>Several substitute products are now available.</p>

The architecture of the sales model consists of the implementation stages of digital marketing using AI. Thus, we collected the data by the observation method, from several companies, to identify potential customers that fit a predefined offer and that correlate their present characteristics with anticipated behaviors. By creating a buyer profile, a customer report can be prepared that uses both AI support and AI implementation in digital marketing activities.

Taking into account product descriptions and customer profiles, we also collected data on products and services that implemented AI systems. Based on this data, we drew up a dashboard, which would help the marketer either to more easily view the preferred configurations of customers in a certain category, or for the centralized situation and subsequent analysis of data, after sales.

We used the following types of data:

The first data

- Calendar: Date

- Products: Product Id, Product Name, Product Subcategory, Product Category, Standard Price (Thousands Euro)

- Agent: Agent Id, Agent Name, Sales Department Name

- Country: Id Country, Country, Region, Continent

The second data file

- Sales: Trans #, Date-Time, Agent Id, Country Id, Product Id, pieces, Price (thousand Euro), Discount, Sale type (flower or retail)

As a result, based on these data, I set myself the following requirements, which I solved:

a) The relationships between the five tables (Calendar, Products, Agent, Countries and Sales) were made by selecting the link fields.

b) Add the following columns to the Calendar table: Year, Quarter, and Month (month name)

c) Defining the measures of the form Total revenues, Total revenues (previous year), Total revenues (absolute variation), Total revenues (relative variation), Total revenues (objective) (Obs. the value of the measure Total revenues (objective) is 10% higher than the value recorded in the same period of the previous year by the measure Total revenue)

The measures are:

*Total Sales = sum ([Sales Value])*

*Total sales (% Change) = [Total sales (Change)] / [Total revenue (last year)]*

*Total sales = [Total sales] - [Total revenue (last year)]*

*Total sales (target) = 1.1 \* [Total revenue (last year)]*

*Total revenue (last year) = CALCULATED ([Total Sales], SAMEPERIODLASTYEAR ('Calendar' [Date]))*

*We have built a new help column for calculating total sales*

*Sales value = Sales [pieces] \* [Price (thousand Euro)] \* (1 - [Discount (%)])*

The dashboard construction contains cards showing Total Revenues, Total Revenues (previous year) and Total Revenues (relative variation), two slicers: Year (not allowing multiple selections) and Continent (allowing selections multiple), as well as four graphs, of which

- a. gauge: Total revenue compared to Total revenue (objective)
- b. line chart: Total monthly income for each continent

- c. clustered column chart: Total revenue for each product category
- d. clustered column chart: Total revenue for each region and product category
- e. a matrix showing Total Monthly Revenues for each Product Category.

#### 4. DISCUSSIONS

Artificial intelligence has a complex nature and uses a complex mixture of computer science, mathematics and other exact sciences. Complex programming helps products or services to reproduce the cognitive abilities of human beings.

Artificial intelligence helps reduce errors and achieve perfection. For example, robots that explore space and transmit accurate information about the explored environment or robots that operate on humans but are assisted by doctors.

Another example is that artificial intelligence and robotics science can be used in mining and other fuel exploration processes. Due to the programming of robots, they can perform more laborious and hard work, with a greater responsibility (Govers, 2018).

Computerized methods for automatic reasoning, learning and perception have become a common phenomenon in our lives. The smartphone is an example of how we use artificial intelligence. Humans use Siri, Cortana or even GPS every day.

**Table 2. The advantages and disadvantages of AI**

<b>Advantages AI</b>	<b>Disadvantages AI</b>
Reduce human errors	High costs
Difficult exploration	No human involvement
Daily applications	Without improving the experience
Digital assistants	Without original creativity
Repetitive tasks	Unemployment
Medical applications	It does not interpret custom data
It works without breaks	It provides only for what is designed

#### 5. RESULTS

Artificial intelligence (AI) causes a profound disruption by streamlining production capacity and growing business. The design and deployment of new technologies, including autonomous mobility, simulations, rapid prototyping and AI-enabled product factories creates a positive outlook for the autonomous technology market. Manufacturers are rapidly modernizing their existing production systems by incorporating AI platforms and are increasingly focusing on product development.

Like any new technology, the cost of acquisition and maintenance can be very high and can soon lead to the impossibility of updating without a new investment. The frequency of such investments must be taken into account by any firm before

implementing an AI system. This system requires a lot of time, because it requires an adaptation to the culture of the entity and must learn the organizational structure and legislation in force, or even marketing models used by the company.

The algorithms used in AI systems can go wrong if you change the architecture that the program initially learned about car sales. Without human intervention, the application will generate errors in the configuration of a vehicle and even low prices for optional packages, with high costs. An AI system does not keep customers confidential. The model that it generates, through configuration, for a certain client, will be provided to another client, proposing the configurations that he learned in the interaction with a previous client.

However, the power of artificial intelligence systems in digital marketing allows the assisted marketing of vehicles and thus, helps in its business operations or even realizes them.

Predictive analysis will allow me to extract information from the collected data and use it to configure buying trends and user behavior patterns. This tool analyzes large volumes of data and helps to discover future perspectives by:

- identifying the purpose and analyzing the data to determine product models that fit our needs;
- creation of models and their validation, in personalized form;
- the application of the model results in business decisions and mass production of some products.

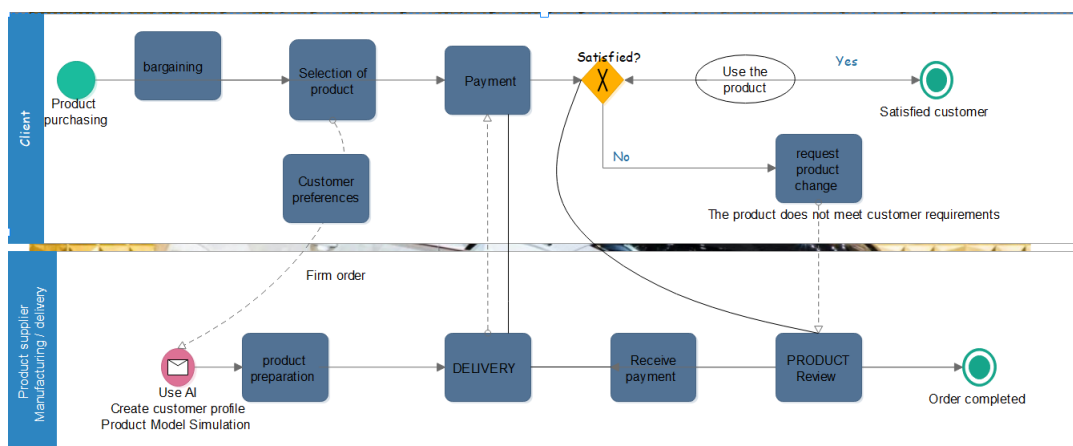


Figure no. 1 The architecture of the sales model of a product, using AI

## 6. CONCLUSIONS

Artificial intelligence allows customers to learn and habits, so it creates dependence on automation. The personal intelligent assistant knows the client, and by using intelligent algorithms, he can interact with him autonomously and adaptively. AI fundamentally changes the way products are used and significantly improves the time

spent choosing products or services. Individual customer benefits are the main goal of manufacturers, imposing mobility, smart systems and technologies are time-oriented, safe, efficient and customizable.

The way we communicate with consumers has changed the marketing process. As a core, it is related to the mind and soul of the client, intelligence and emotion. The big change that is happening in marketing is due to artificial intelligence and machine learning. In the next period, the way people interact with information, technology, products and services will change. Thus, marketers need to adapt artificial intelligence systems in their marketing strategies to succeed in the current era of digital marketing. It saves time and money for marketers, customers and takes care of customers' thinking, without human intervention, through the automatic offers it makes available to people.

The risks and limitations in sales marketing are given only by the availability of source data. From this point of view, an AI can respond limited to the problems that a client can raise, while the human being can adapt and look for solutions instantly. Recurring tasks can be easily transferred to AI systems, but tasks requiring human intervention will remain unresolved for an AI-based computer system.

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