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E-commerce and artificial intelligence[*]

El comercio electrónico y la inteligencia artificial

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Abstract
The purpose of this research is to describe the importance that the use of artificial intelligence offers for electronic commerce, as an alternative to enhance electronic sales. To achieve this objective, an eminently qualitative, descriptive research is carried out, with documentary design in which the use of artificial intelligence is analyzed as an alternative to enhance electronic sales within the transactional modality of electronic commerce. It is concluded that the adoption of this transactional modality is a transcendental option for social organizations to create attractive and useful experiences for customers, by means of relevant offers and promotions that are linked to the needs and interests of market demanders-participants, who continue to find in e-commerce an efficient alternative for making purchases in a post-pandemic process by Covid-19.
Keywords: Electronic commerce, Artificial Intelligence, Electronic Sales

Resumen
La presente investigación tiene como propósito describir la importancia que ofrece para el comercio electrónico la usanza de la inteligencia artificial, como una alternativa para potenciar las ventas electrónicas. Para alcanzar este objetivo, se lleva a cabo una investigación eminentemente cualitativa, descriptiva, con diseño documental en la que se analiza la usanza de la inteligencia artificial, como una alternativa para potenciar las ventas electrónicas dentro de la modalidad transaccional del comercio electrónico. Se llega a la conclusión que la adopción de esta modalidad transaccional, es una opción transcendental para que las organizaciones sociales, puedan crear experiencias atrayentes y útiles a los clientes, por medio de ofertas y promociones relevantes que están vinculadas a las necesidades e intereses de los

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demandantes-participantes del mercado, que siguen encontrando en el comercio electrónico una alternativa eficiente para la realización de compras en un proceso de post-pandemia por Covid-19.
Palabras Claves: Comercio electrónico, Inteligencia Artificial, Ventas Electrónicas

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SUMMARY

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Introduction

"Information and communication technologies (ICT) have burst into the different areas of human endeavor worldwide," (Buitrago, Molina & González, 2018, p. 23); for example, one of the most incursion areas by the advances of ICT is the one that refers to commercial transactions. Indeed, when trade is established as any economic activity that allows the exchange of goods and services between natural persons and social organizations (individual companies, social enterprises), and there is the irruption of ICT in commercial transactions, there is evidence of a transformation in the particular way of conducting commercial activity, giving way to new business figures, such as "social trade" (García, Rodríguez & Pineda, 2020, p. 174).

Social commerce, as a mercantile-commercial application, is supported by the "use of technological tools such as the internet that together with the use of social networks and web 2.0 technologies, make consumer behavior has become very complicated with the existence of the world of social networks" (Huang & Benyoucef, 2013, p. 246), and this challenged social enterprise organizations to communicate and deliver goods, products and services in social environments that favor the exchange and use of collective intelligence, so "the growing popularity of social networks such as Facebook, LinkedIn and Twitter, has given rise to growing opportunities for the development of new e-commerce business models" (Alderete & Jones, 2019, p. 49).

These commercial exchange relationships supported by technological tools and artificial intelligence, "allow companies to renew their business models, create new lines of products and services, as well as to meet the expectations of consumers - digital natives - who have always experienced the digital ecosystem" (Valenzuela & Alarcón, 2021, p. 247) and with that what is sought is to decipher "customer needs and make targeted sales based on consumer preferences, through targeted marketing for online sales and business support to customers and potential buyers in the sales and post-sales process" (Chesñevar & Estevez, 2018, p. 127). Therefore, artificial intelligence and the technological tools that allow to carry them out solve problems, "through algorithms that are raised with the purpose that a computer learns automatically based on data and experience, as a person would do" (Rodríguez, 2020, p. 10), which translates into the predictive power of the computer based on the data provided to it, and this is similar to the thinking of individuals of the human species.

Therefore, market globalization has gained special relevance in the world economic discussion, "to the point of being considered as a model of market reality that integrates the micro and macro dimensions through an interactive network of connections that conditions the way of thinking, acting and conceiving the world" (Mesino, 2009, p. 10) and, in addition, the

incorporation of ICTs as a modern commercial guideline, has caused countless social organizations throughout the world to have "an adequate recommendation of the products offered and a personalization of the products offered and a personalization of the products offered. 10) and In addition to this, the incorporation of ICT as a modern commercial guideline has caused countless social organizations throughout the world to have "a more appropriate recommendation of the products offered and a personalization of the offer, based on the opinions, tastes, frequency of purchases and previous transactions made by the user" (Malham & Huerta, 2020, p. 26).

In Venezuela, there is evidence in commercial practice of very slow or stealthy technological advances that prevent the flourishing of electronic commerce; this may be based on the fact that the legal support of Venezuelan commerce is based on an old Commercial Code and that there is no law approved and currently published in the Official Gazette of the Republic, which regulates electronic commerce and provides legal protection for the contracting parties of this transactional modality. Therefore, entering elements such as artificial intelligence within the business platforms and electronic commerce of companies and enterprises that emerge in the country is considered fruitless, unfeasible, and inoperative.

Therefore, this study is interested in describing the importance of using artificial intelligence for e-commerce as an alternative to enhance electronic sales according to the demands and requirements of the moment's commercial, social, and real reality. Methodologically, this research is qualitative and descriptive, with documentary design and allowed reasoning that artificial intelligence within e-commerce is an option for social organizations to create attractive and useful experiences for customers through relevant offers and promotions that are linked to the needs and interests of the market plaintiffs-participants, who continue to find in e-commerce an efficient alternative for making purchases in a post-pandemic process by Covid-19. Moreover, based on this, artificial intelligence should be considered an option for online sales by allowing to predict the behavior or purchase pattern based on the goods purchased and the time of acquisition carried out by buyers.

Resolution scheme

1. Research problem

How important is the use of artificial intelligence for e-commerce as an alternative to enhance e-sales?

2. Methodology

In order to consolidate the proposed objective, the use of the qualitative approach was considered empirically since it "evaluates the natural development of events, that is, there is no manipulation or stimulation concerning reality" (Hernández, Fernández & Baptista, 2006, p. 6), so qualitative research gives the possibility "to assume the everyday life of people and communities as a space for the construction of social knowledge" (Villegas & González, 2011, p. 55). Because of this, "written documents were used to study social situations" (Albert, 2007, p. 146). Regarding the level of knowledge obtained, the descriptive type of research was used since it is characterized by "describing some essential particularities of homogeneous sets of phenomena" (Sabino, 1992, p. 44); in other words, it starts from "a fact, individual or group phenomenon, in order to establish its structure or behavior" (Arias, 2006, p. 24), since it is

based on the identification of the characteristics of the event under study (Hurtado de la Barrera, 2000, p. 133). The study systematically sought to describe the importance of using artificial intelligence for e-commerce as an alternative to enhance electronic sales.

Regarding research design, it has been stated that "It is the general strategy adopted by the researcher to respond to the problem posed. According to the design, research is classified as documentary, field and experimental" (Arias, 2006, p. 26) and reviewing each of these designs, it was considered that the most pertinent to the research conducted in the documentary design, since it is based on "a process based on the search, recovery, analysis, critique, and interpretation of secondary data, that is, those obtained and recorded by other researchers in documentary sources: printed, audiovisual or electronic" (p. 27), as argued by Arias (2006).

Meanwhile, the techniques and instruments used for data collection were those of documentary research, which allowed the study to be approached according to the defined objective. The information required to apply this methodology was extracted from secondary sources, i.e., the data to be used have already been collected in other investigations and are known through the corresponding reports (Sabino, 2002, p.64). Within this scope, a series of operational techniques were used to manage the documentary sources, such as underlining, fishing, and bibliographic reference notes (Rodriguez, 2014, p. 103). Finally, for the analysis of the information, the technique of documentary observation was used, which is the elementary empirical procedure of science that has as its object of study one or several facts, objects or phenomena of the current reality (Campos, Covarrubias & Martínez, 2012, p. 50), as well as the technique of evaluative reading that allowed "the condensed exposition of a writing in which the ideas expressed in the original text are faithfully reflected, its extension in variable" (Alfonso, 1999, p. 117), analytical summary and critical analysis of the information (Balestrini, 2006, p. 152).

3. Writing plan

3.1 Artificial intelligence

One of the greatest achievements that human beings have been able to consolidate is the one referred to the implementation of artificial intelligence in this Digital era since artificial intelligence is conceived as the capacity of a machine to imitate, in part, the behavior of the human mind, and to develop the complex analysis of a matter based on incomplete data supplied to it. Hence, the machine makes decisions using a structure supported in three phases: learning, training, and results.

According to the Royal Spanish Academy (2022), artificial intelligence "1. f. Inform. Scientific discipline that deals with the creation of computer programs that execute operations comparable to those performed by the human mind, such as learning or logical reasoning" (p. 1). However, there is no univocal definition of the scope of this figure since the specialized doctrine has been given the task of defining artificial intelligence from different areas of science, so that, despite its relevance, "no universal consensus has been reached regarding the conceptualization of the term artificial intelligence" (Malham & Huerta, p. 2). (Malham & Huerta, 2020, p. 8).

Therefore, for some authors, "artificial intelligence (AI) is a discipline that cuts across many areas and has an impact on complex systems as varied as autonomous vehicles, recommender systems, intelligent decision making and internet search, among others" (Chesñevar & Estévez, 2018, p. 127). For another part of the authors, artificial intelligence is related to a:

> An academic discipline related to the theory of computation whose objective is to emulate some of the human intellectual faculties in artificial systems. By intelligence, we typically refer to sensory perception processes (vision, hearing, and others) and their consequent pattern recognition processes (Benítez, Escudero, Kanaan & Masio Rodó, 2014, p. 9).

For his part, Rouhiainen (2018) proposed that artificial intelligence "is the ability of machines to use algorithms, learn from data and use what they learn to make decisions just as a human being would" (p. 17). Hence, it should be internalized that artificial intelligence refers to learning and predictive decision-making by machines or computers, which, using algorithms, solve a situation as if it were a human being. In other words, artificial intelligence is related to the simulation of human intelligence processes by machines, and specifically to computer systems, which include learning, i.e., the acquisition of information and rules for its use; reasoning, by which these rules are applied to reach approximate or definitive conclusions; and self-correction.

3.2 Artificial intelligence and e-business

One of artificial intelligence's most emblematic applications is simplifying commercial and business activities. In this regard, the specialized doctrine has stated that artificial intelligence "will change the way of doing business by providing competitive advantages to companies seeking to understand and apply these tools quickly and efficiently" (Rouhiainen, 2018, p. 18). Indeed, e-commerce worldwide is plagued with overwhelming advantages thanks to computer systems that host artificial intelligence instead of traditional commerce. This is based on the fact that this scientific discipline, which relies on the use of specialized software in learning and decision-making for computers, processes the online requirements of customers and recommends goods or services, in addition to suggesting or advising through virtual assistants, the predictive decision more in line with the expectations of human beings, so that artificial intelligence plays different roles in the most diverse types of companies and industries[1]. In this sense, authors such as Chesñevar & Estevez (2018) stated that:

> the increase in various options for online payments and the possibility of making product offers on online platforms make it easier for e-commerce to apply AI techniques to identify the profile of consumers and, based on this, improve and enhance the possibilities of different business models. AI has benefited different online business models through specific algorithms that aim to draw intelligent conclusions to anticipate public demand by anticipating offers or solutions to their needs. (p. 127)

Because of this, e-commerce finds in artificial intelligence an ally of great value, because, by means of algorithms and specialized software, it allows the machine or computer to perform

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[1] An example of artificial intelligence in e-commerce can be seen in the recommendation engines used by many companies in the field of e-commerce to provide a more appropriate recommendation of the products offered and a personalization of the offer based on the opinions, tastes, frequency of purchases and previous transactions made by the user. Similarly, they see application in programs capable of estimating the probability of fraud resulting from a financial transaction based on similar transactions made by the customer in previous opportunities (Malham & Huerta, 2020, p. 28.).

the learning process and predictive decision making, which creates in the social organization, an expansion of its scope of business competence, identifying the profile of consumers and their respective preferences or tastes in reference to goods, service or products, thereby creating a "targeted marketing by internet or recommendation systems" (Chesñevar & Estévez, 2018, p.129).

These recommendation systems that constitute a renewed marketing modality "are information filtering systems that work based on different types of information items (movies, music, books, news, images, product descriptions, etcetera) that are of interest to a particular user" (Chesñevar & Estévez, 2018, p.128); therefore, the social or business organization that performs business activity through e-commerce based on artificial intelligence, has an attractive potential compared to social organizations that maintain the realization of offers or proposals under the conservative system of traditional trade or the most rudimentary e-commerce that can be bifurcated into off-line[2] e-commerce and on-line e-commerce[3].

3.3 Lack of legal regulation of e-commerce and consequently of artificial intelligence in Venezuela

The legal uncertainty regarding electronic commerce in Venezuela is based on the non-existence within the Venezuelan legal system of a law in force that regulates electronic commerce and all the implications derived therefrom. This creates a legal vacuum in reference to this transactional modality that has been strongly criticized by specialists in the matter[4], since the current rules that regulate mercantile and commercial transactions in the country are supported by a legal instrument that advocates a series of figures that do not fit in the "Digital Era" in which business and entrepreneurial activities are moving worldwide.

Indeed, at the date of writing this research product, there are only e-commerce bills in the years 2014[5] and 2020[6], which have been shelved and have not fully complied with the process of formation of the law provided in the text of the Constitution of the Bolivarian Republic of Venezuela (1999)[7] specifically, which refers to the content of Articles 207, 213, 215[8] ejusdem.

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[2] Off-line e-commerce is a "set of customer support services, carried out through the Internet, in which we do not interact with the customer in real time" (Seoane, 2005, p. 170).

[3] Online e-commerce "includes what is known as direct e-commerce, since both the order of goods or the provision of services, payments and supplies are made online, by allowing the digitization of operations entirely on the network" (Buitrago, 2014, p. 159).

[4] In Venezuela, no regulation formally regulates electronic commerce, which has the effect of creating a legal vacuum that limits the application of existing legislation in certain cases because traditional commerce processes are slower and are not updated for the advances that arise every day in the area of electronic commerce (Pernía, 2021, p. 124).

[5] The National Assembly of the Bolivarian Republic of Venezuela, on November 4, 2014, approved in plenary the draft Law on Electronic Commerce in the first discussion, which, in a general way, expresses the regulation of electronic commerce in the Republic (Buitrago, 2017, p. 148).

[6] In the Debate Journals of the Venezuelan National Assembly, a draft Law on Electronic Commerce was found approved in the first and second discussions. However, it has not been published, nor has such a legislative provision been enacted (Dubuc-Piña, 2020, p. 51).

[7] Constitution of the Bolivarian Republic of Venezuela (1999). As amended by Amendment No. 1 dated February 15, 2009. Official Gazette of the Bolivarian Republic of Venezuela No. 5,908 Extraordinary, dated February 19, 2009.

[8] Article 207. In order to become a law, every bill shall receive two discussions on different days, following the rules established in this Constitution and the respective regulations. Once the bill has been approved, the President of the National Assembly shall declare the law sanctioned.

Therefore, the lack of a "law regulation that "truly" promotes, encourages, and generates clear rules for the consumer, the seller, and the satellite companies that work in the e-commerce environment"[9], disturbs the relations between the consumer and the seller and the companies that work in the e-commerce environment. Therefore, the lack of a "law that "really" promotes, drives, and generates clear rules for the consumer, the seller, and the satellite companies that work in the e-commerce environment not only disturbs the legal relationships that emerge as a result of e-commerce but also affects the protection of the rights of the contracting parties, as well as negatively affects the incursion of any other element that encourages e-commerce; for example, artificial intelligence applicable to this transactional modality.

Indeed, not having the legal certainty of a rule involving various factual assumptions in which artificial intelligence can be regulated, it is unlikely to answer some questions, such as: Who is responsible for the predictive decisions made by the computer? Are those decisions ethical, and do they respect the freedom of choice of the contracting parties? Or any other unknown that mayarise[10]. Therefore, by ignoring the legal limit that the parties have about the responsibilities and rights that they have as contracting parties, an imaginary wall is erected, which makes the choice of this transactional mechanism unfeasible and, with it, an impediment to venture into the use of computer programs based on artificial intelligence, and based on the above, the opinion of Laín (2020) who on the need for a regulation outlined that it is necessary for:

> preserve values such as authenticity, safeguard the safety and security of the human race, and cover ethical issues and conflicts that may arise in robot/person and robot/robot relationships. It is not a matter of regulating technology but society so that it remains for humans as they choose. The lack of specific regulation for the AI sector has generated legislative movements prompted by the possible legal vacuum that may occur in the face of future problems that may be caused by AI (p. 217).

By the above considerations, it is necessary to reflect on the importance for any legal system in the world to include in its legal regulations rules not only to regulate electronic commerce but also to cover factual assumptions that are imbued aspects such as conflicts that may arise between the computer and the contracting person, to guarantee, with these legal premises, aspects of authenticity, security, and protection in operation and, in addition, to safeguard the etiquette and freedom of choice of the contracting parties in choosing between traditional commerce, electronic commerce, and electronic commerce based on artificial intelligence.

Article 213. Once the Law has been passed, it shall be drawn up in duplicate with the final wording resulting from the discussions. The President shall sign both copies, the two Vice Presidents and the Secretary of the National Assembly, with the date of its final approval. One of the copies of the Law shall be sent by the President of the National Assembly to the President of the Republic for its promulgation.
Article 215. The Law shall be promulgated upon its publication with the corresponding "Cúmplase" in the Official Gazette of the Bolivarian Republic of Venezuela.
[9] Ujueta-Contreras (2021, p. 1).
[10] For example: who pays for the broken dishes, which generates this responsibility, or, better yet, on whom does it fall, who is responsible for the decisions and acts of the artificial intelligence system, how is it demonstrated, how should it be regulated to avoid the risks of artificial intelligence without limits, how do you regulate something that is not to change, is it enough with the current legal system or is it necessary to create a basic general law on AI and robots (Laín, 2020, pp.199-200)?

3.4 Importance of the use of artificial intelligence as an alternative to boost e-sales

In post-pandemic times Covid-19, electronic transactions have become the greatest ally for obtaining products, goods, and services since it is no secret that in pandemic times, the World Health Organization recommended a series of measures to curb the spread of COVID-19. These recommendations or guidelines were focused on social confinement - quarantine, "which meant restricting or suspending face-to-face physical activities, or isolating individuals, which meant "the separation of an individual from other people, in order to prevent the spread of a contagious disease and contamination among healthy people" (Namihira-Guerrero, Namihira-Guerrero, Gallardo-Namihira & Meneses-Namihira, 2020, p. 3).

Hence, social organizations saw e-commerce and, consequently, the application of artificial intelligence to boost sales and increase revenues. Thus, "both e-commerce and the application of artificial intelligence allowed us to better understand the needs of customers and make targeted sales based on consumer preferences" (Chesñevar & Estévez, 2018, p. 127), who, being overwhelmed by the reality of confinement, relied on e-commerce and the multiple applications that it provided, to achieve overcome the inhospitable pandemic scenario, with the bonus of feeling virtually attended, regardless of whether or not such attention came from a machine or computer.

Indeed, Rodriguez (2020) stated that "Globally, the main objective with which companies use Artificial Intelligence today is for the improvement of the customer experience" (p.10), and this is achieved not only by giving options of goods and services suited to the needs, tastes, and requirements of the customer but also by providing such shopping experience in a more expeditious period, optimizing the time invested for it and providing customer service, which translates into "product availability, ease of purchase and the quality of customer service"(Rodriguez, 2020, p. 10), the first being an essential element in the commercial scenario. Regarding product availability, it should be noted that this is evidenced when the user-buyer electronically chooses the product. The same is within the stock of stock managed by the company or virtual store with which the e-commerce is carried out since "ensuring the availability of products on the Internet is more difficult than ensuring that of products in physical stores" (Garrido, 2017, p. 3).

Regarding the ease of purchase, e-commerce and digital commerce operations are characterized by "the use of electronic means of payment" (Berti & Buitrago, 2016, p. 81), which gives support so that "the user-buyer can satisfy payment obligations from the comfort of his home, using instruments and procedures that allow the circulation of money and facilitate the fulfillment of obligations" (Rico, 2012, p. 35), so electronic techniques that allow the circulation of digital money are used.

About customer service, it should be understood that this is one of the most important aspects in the process of buying and selling goods and services, especially if the experience is being carried out by electronic means, since it is erroneous to believe that customer service should be understood as a service to solve incidents during the buying and selling process, since, thanks to personalized attention through chatbots or "virtual customer service assistants on the web" (Rodriguez, 2020, p. 17), it is possible to obtain from the customers the information about their needs and requirements. 17), it is possible to obtain from the computer programs that, during the process of choice and sale, various requests and requirements of customer-users can be attended, such as, for example, those related to answering the questions posed by the user at the same time as managing their orders, which translates into understanding the needs and requirements of customers.

Therefore, one of the alternatives that e-commerce companies have to boost sales is the application of artificial intelligence because the user-customer will perceive a friendlier shopping experience, in which he is attended to or understood in their needs or requirements, in addition to requesting the product, good or service, it will be available within the stock of goods in the showcase or virtual closet of the company, and at the time of payment, you can do it through the movements of electronic payment systems.

All this allows companies that carry out e-commerce with artificial intelligence to compete, develop, and maintain a portfolio of customers who have among their priorities the personalized attention to obtain goods or services in less time, in the time of pandemic and why not in the post-pandemic by Covid-19. Therefore, this captive clientele boosts sales in this transactional modality, compared to companies that maintain the basic structure of traditional face-to-face business as a guide.

4. Research results

Regarding how the concept of artificial intelligence has been treated, the multiplicity of voices on this figure was found in the specialized literature. However, it was made clear that artificial intelligence is an application referred to as learning and predictive decision-making that allows the machine, using programmed software (data and repetitions), to emulate the reflexivity of the human being. Similarly, it was found that with time, and under the context of the Digital era, e-commerce has been evolving and perfecting itself more and more, which moves it away from the primitive and rudimentary conceptions of off-line e-commerce and online e-commerce to rely on applications such as artificial intelligence, with which significant advantages have been obtained about marketing or targeted digital offer (Chesñevar & Estévez, 2018) of goods and services, as well as payment by electronic payment systems, among others.

In the same way, it was evidenced that the patriotic legal system does not have a law in force that regulates e-commerce or artificial intelligence. Therefore, the actors involved in the materialization of electronic commerce are waiting for a law that provides the guidelines that regulate and legalize the acts of commerce carried out by electronic means and that contemplate the budgets to regulate applications such as artificial intelligence to avoid legal uncertainty. The reason for this is that in case of conflicts of interest involving aspects such as ethics, freedom of choice, rights, and warranties of the contracting parties, and responsibility of action, a legal instrument can be used to regulate the solution to such situation and be adaptable to the reality of the Digital era.

It was also evidenced that artificial intelligence is an option for companies that perform transactional activities through e-commerce to increase their customer market and to be able to offset the losses resulting from the collateral effects of the Covid-19 pandemic (fall of trade and consumer economies during those more than two years), in traditional commerce. Therefore, the importance of artificial intelligence in e-commerce revolves around creating an attractive and useful experience for customers through relevant offers and promotions that are linked to their needs and interests, as well as maintaining and continuing to capture captive customers who feel taken care of, thanks to the advantages of acquiring goods, products or services, in markets where the offer of virtual customer service assistants on the web (Rodriguez, 2020), as well as payment methods through electronic payment systems (Rico, 2012) and digital marketing or the offer of goods, products, and services that effectively have real existence both in the web showcases and in the stocks of goods of the social organization, are the order of the day.

Conclusions

Artificial intelligence is a concept that has been adapted to different areas of science; therefore, there is no univocal definition of this concept. However, it should be considered that it is related to the simulation of human intelligence processes by machines, which, based on incomplete data, make predictive decisions emulating the cognitive capacity of human beings.

Artificial intelligence has a preponderant role in e-commerce worldwide since this application has modified the conception of doing business and carrying out acts of commerce, which has a positive impact on commercial transactions by electronic means by giving customers and consumers the possibility of an interactive experience, in which this subject feels cared for in their search needs for goods, products, and services (targeted digital marketing), This is important in this post-pandemic time for Covid-19 because the application of artificial intelligence in e-commerce should be seen as an option for online sales, as it allows predicting the behavior or purchase pattern, based on the goods purchased and the time of acquisition carried out by buyers.

Therefore, it is convenient for social or business organizations that wish to carry out electronic commerce using artificial intelligence to see this as an alternative to boost electronic sales. However, given these advantages, the Venezuelan context is more complicated since there is no legal regulation governing electronic commerce or its applications, such as the one referring to artificial intelligence, creating legal uncertainty for those who wish to materialize trade operations using this transactional modality, either as a company or as a user-consumer (buyer).

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