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E-COMMERCE CASINO: HOW AI ALGORITHMS GAMBLE WITH YOUR WALLET AND YOUR MIND

EL CASINO DEL E-COMMERCE: CÓMO LOS ALGORITMOS DE LA IA APUESTAN CON TU BOLSILLO Y TU MENTE

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ABSTRACT

The daily use of cell phones has profoundly transformed our habits, and online shopping has become one of the most frequent activities. This change has impacted both consumer behavior and traditional business models. According to recent data from the European Commission and INE, more than 75% of Internet users in Spain bought online in the last year, and more than 40,000 physical stores closed between 2019 and 2023. In this new scenario, recommendation algorithms used by platforms such as Amazon, Aliexpress, Shein or Temu have acquired a central role. Far from simply displaying products, these systems interpret behavioral patterns and personalize offers to encourage consumption. The problem lies in the fact that these algorithms operate under an opaque logic: they do not inform the user about the criteria they use, nor do they explain how decisions are made. Thus, the consumer is faced with an environment designed to elicit immediate responses, without clarity as to whether these recommendations are really in his or her best interests. The article asks whether these strategies activate brain mechanisms similar to those involved in behavioral addictions, such as gambling, and analyzes how persuasion techniques based on data analysis can condition automated purchasing decisions, reducing user autonomy. Against this backdrop, it is urgent to reflect on the need for a regulation that sets clear limits on the commercial use of these algorithmic tools

Palabras clave:
algoritmos de recomendación, consumo impulsivo, comercio electrónico, carrito abandonado, adicción al consumo.

RESUMEN

The widespread use of mobile phones has significantly reshaped daily habits, with online shopping becoming one of the most common activities. This shift has not only altered consumer behavior but also transformed traditional business models. According to recent data from the European Commission and Spain's National Statistics Institute, more than 75% of internet users in Spain made at least one online purchase in the past year, while over 40,000 physical stores closed between 2019 and 2023. In this evolving landscape, recommendation algorithms used by platforms such as Amazon, Aliexpress, Shein, and Temu have taken on a central

role. These systems go beyond displaying products; they interpret user behavior and personalize offers to encourage purchases. The concern lies in the opaque logic behind these algorithms: users are not informed about the criteria guiding their recommendations, nor are they given insight into how decisions are made. As a result, consumers are immersed in an environment designed to trigger immediate responses, without knowing whether the suggestions truly serve their interests. This article explores whether such algorithmic strategies activate brain mechanisms similar to those involved in behavioral addictions like gambling. It also examines how persuasion techniques - grounded in behavioral analysis and intensive data use - increasingly shape consumer decisions in subtle, automated ways, potentially undermining user autonomy. In light of these findings, the article calls for regulatory frameworks that set clear boundaries on the commercial use of algorithm-driven personalization

Introduction

Today, the term "algorithm" is part of our everyday vocabulary. Although we mention it often, we do not always fully understand its significance and the impact it can have on our daily lives. In simple terms, a algo-rhythm is a set of instructions intended to solve a problem or execute a task. In the e-commerce domain, recommendation algorithms process users' browsing and consumption data in order to anticipate their interests and personalize their online shopping experience (Russell & Norvig, 2021; Mitchell, 2022).

These tools are not limited to facilitating access to products or improving platform navigation: they also directly influence our purchasing decisions. Indeed, one of the central aspects of this work is to question to what extent these automated strategies - aimed at maximizing sales - are applied in a transparent and ethical manner, and whether they are truly aligned with consumer interests.

This debate is particularly relevant in the current context, marked by a radical transformation in consumer habits. Digitalization, accelerated in the wake of the pandemic, has led to the closure of thousands of physical stores around the world, while online sales have continued to grow. In Spain, according to the CNMC (2023), e-commerce exceeded €70 billion in turnover in 2022, representing a year-on-year increase of 25%. This expansion has been driven both by giants such as Amazon and Aliexpress, as well as by small businesses that have found in digital a way to survive.

Numerous studies have shown that recommendation algorithms can trigger compulsive consumption patterns, appealing to psychological mechanisms similar to those operating in behavioral addictions (Turel et al., 2022; LaRose et al., 2019). The combination of intensive personalization, time pressure and continuous notifications generates an environment conducive to immediate gratification, favoring poorly thought-out decisions. D'Ardenne and Eshel (2020), for example, argue that such algorithms trigger dopaminergic responses similar to those produced by slot machines.

Gemma Mestre-Bach, from the Behavioral Addictions Research Group at UNIR, has participated in work that identifies neurobiological similarities between compulsive shopping and substance use disorders (Mestre-Bach, 2025). In both cases, elements such as loss of control, positive reinforcement and compulsion appear. Although less visible than other forms of addiction, these dynamics can have serious psychological and economic consequences for those who experience them.

This article argues that marketplaces influence user behavior constantly and silently, without users being fully aware of it. The hypothesis put forward is that these platforms not only perfect their sales thanks to algorithmic personalization, but also do so by taking advantage of dynamics that can be addictive. And the most worrying thing is the scarce defense capacity that the consumer has against these practices: there are no tools to deactivate algo-rhythms, nor simple ways to limit actions such as remarketing or the activation of the "abandoned cart".

The situation is to some extent similar to that of casinos, with the difference that, while in the latter we can decide to enter or leave, in digital commerce we are constantly exposed to stimuli without even realizing it. The cell phone has become a permanent access channel, making it difficult to take the critical distance needed to reflect on our purchasing decisions.

From this perspective, the present study is located at the crossroads between digital law, consumer psychology and technological ethics. The increasing incorporation of artificial intelligence and machine learning into sales processes makes a critical review of these dynamics urgent. It's no longer just about what we buy, but about understanding

how, when and why we make those decisions. In this sense, the article seeks to contribute to the academic and professional debate on the role that algorithms should assume in digital consumption and where the line should be drawn between useful recommendation and manipulation.

Theoretical Framework and Literature Review

Following the COVID-19 pandemic, much of the traditional trade was forced to close temporarily or even permanently. This situation significantly accelerated the boom in e-commerce, which experienced unprecedented growth. According to Statista data (2023), global sales through digital platforms are estimated to exceed $6 trillion by 2024. This change not only affects the way we shop, but has also transformed the way companies collect, interpret and use consumer information to guide their marketing strategies. The large digital platforms have strengthened their dominance, not only because of their sales volume, but also because of their ability to learn and adapt in real time thanks to increasingly complex predictive systems and algorithms. Thanks to these advances, marketplaces are able to anticipate user behavior with an accuracy that was unthinkable a few years ago.

This development has opened up an increasingly necessary debate on the ethical dilemmas involved in the intensive use of algorithms. Authors such as Shoshana Zuboff (2019) have denounced what they call "surveillance capitalism": a model in which personal data is not only used to improve the customer experience, but also as a tool for control and economic benefit. In this model, the user's purchasing decisions are not completely free, since they are conditioned by systems that know and exploit his habits more effectively than the individual himself. From this perspective, the consumer ceases to be an autonomous subject and becomes an object of analysis and commercial manipulation.

In the same vein, a report by NielsenIQ (2022) notes that the pandemic has been a catalyst for the expansion of e-commerce on a global scale. At the national level, the Adevinta Spain study (2021-2022) confirms that the digitalization of consumption has been definitively consolidated in Spain. In this context, recommendation algorithms have acquired a central role. According to Russell and Norvig (2021), these algorithms rely on user history analysis to predict user preferences and tailor offers accordingly. While this technology facilitates access to products and streamlines the shopping experience, it has also raised concerns about its influence on consumer autonomy and its relationship with compulsive consumption.

Impact of Algorithms on Consumer Behavior

In recent years, several studies have shown that the recommendation algorithms used by e-commerce platforms not only personalize the shopping experience, but can also encourage impulsive consumption patterns. This influence is largely due to the ability of these systems to apply constant pressure on users through content that is highly adapted to their tastes and behaviors. Turel et al. (2022) point out that algorithms act in much the same way as the mechanisms involved in gambling addiction, generating automatic purchase responses that often do not go through prior reflection. This constant repetition of stimuli activates reward circuits in the brain that, over time, consolidate habits that are difficult to control or reverse.

LaRose et al. (2019) add that this continuous exposure to messages, personalized promotions, and notifications can trigger a dopaminergic response-that is, an activation of the brain's pleasure centers-that reinforces purchase behavior. This is not only an economic problem. In the medium and long term, this dynamic can affect the psychological balance of the user, reducing their capacity for self-control and normalizing

compulsive behaviors within a digital environment that leaves no room for pause or reflection.

Furthermore, as explained by Griffiths et al. (2018), the design of these environments favors what we could call "passive consumption": purchase decisions that do not arise from a specific need, but are triggered by the digital architecture of the marketplace itself. In other words, the system identifies trends in user behavior and enhances them, transforming a momentary interest into an almost automatic purchase action.

This type of hyper-personalization not only grabs the consumer's attention, but also distorts their perception of urgency and need. D'Ardenne and Eshel (2020) explain that, by activating brain circuits related to immediate pleasure, algorithms train users to react almost mindlessly to certain stimuli: attractive images, emotional messages or seemingly innocent reminders. In this context, marketplaces are not limited to covering existing needs, but generate new ones -often artificial- to keep the user within the consumption cycle.

As a consequence of all this, the digital shopping experience tends to lose its rational and voluntary character. In many cases, it becomes an automated process, guided more by impulses than by thoughtful decisions. Critical judgment is weakened with each interaction, and what could have been an informed choice becomes an emotional response to an environment carefully designed to persuade.

Algorithmic Manipulation and Lack of Transparency

One of the most recurrent concerns in recent studies on e-commerce has to do with the opacity surrounding the functioning of recommendation algorithms in marketplaces. As Mestre-Bach (2025) points out, consumers often do not have clear and accessible information about the criteria that determine the product suggestions they receive. This lack of clarity leaves many questions open: do these recommendations respond to our real interests or, rather, to commercial objectives aimed at maximizing sales?

The truth is that the user experience is left in the hands of a system that operates in the background, without the consumer being able to know, let alone control, how their data is processed or why they are shown one product and not another. Faced with this situation, the European Union has begun to take steps with the Digital Services Directive, which aims to introduce certain transparency obligations for large platforms (European Commission, 2023). However, the debate remains open, especially around whether these measures are sufficient to give the consumer back control over their digital shopping environment.

Comparison with Behavioral Addiction Models

D'Ardenne and Eshel (2020) propose a revealing comparison between the way recommendation algorithms work in e-commerce platforms and the reward mechanisms used in gambling. Both rely on a pattern of intermittent gratification: that is, offering positive stimuli irregularly, which activates a dopaminergic response in the brain that reinforces the behavior and hinders its conscious control. This dynamic, well known in the field of behavioral addictions, can generate a kind of psychological dependence that, in the context of e-commerce, manifests itself in repeated, impulsive and often unnecessary purchases.

From behavioral psychology, it has been pointed out that this type of reinforcement has a particularly powerful effect, since it stimulates the brain's reward system in an intense and prolonged manner. Griffiths (2018) already warned that platforms that apply variable reward systems-such as limited-time offers, messages that

generate urgency, or unexpected discounts-reproduce an experience similar to that of a slot machine, where it is not so much the "prize" itself that engages, but the anticipation of getting it.

In this context, the consumer no longer responds to a rational need, but enters into an automated emotional dynamic. As with compulsive gamblers, every click and every purchase is part of a routine that is repeated without much reflection. And this cycle is enhanced by elements such as "abandoned cart" reminders or personalized notifications, which function as constant calls to re-engage in the shopping game.

Moreover, this form of addiction is particularly difficult to detect. Unlike gambling, which is already recognized as a health problem, the act of buying is socially accepted and even associated with personal success. This means that these behaviors often go unnoticed or are not recognized as problematic. Mestre-Bach (2025) warns about the invisibility of this type of addiction in environments where consumption is the norm. For his part, Zuboff (2019) also underlines how these dynamics are hidden within a system designed to encourage constant consumption.

Therefore, comparing these algorithms with behavioral addiction models helps to better understand what is at stake. It also reinforces the need for stricter controls, both from an ethical and legal point of view. If commercial algorithms are reproducing pathological gambling dynamics, it seems reasonable that they should also be evaluated from a mental health and effective consumer protection perspective.

Need for Regulation and Consumer Protection

Different authors have agreed on the urgency of establishing regulatory frameworks that allow the user to have greater control over how recommendation algorithms influence their purchasing decisions (Mitchell, 2022). In today's digital context, dominated by automation, consumers have few tools to understand - let alone question - the systems that determine what they see, what they are offered and how they interact with products. This ranges from the possibility of disabling personalized recommendations to setting filters that limit certain commercial content, or even avoiding invasive practices such as the constant reminder of the "abandoned cart" or the avalanche of notifications.

Existing laws have not yet covered these new challenges in sufficient depth. Although there are advances, such as the European Union's Digital Services Act or proposals such as the Digital Advertising Transparency Act in the United States, many platforms continue to operate with wide margins of opacity (European Commission, 2023). The lack of a clear obligation to explain why one product is prioritized over another places consumers in a situation of vulnerability to algorithms that are optimized to generate revenue, not to look after their interests.

According to Kapoor et al. (2023), marketplaces have taken personalization to a new level by using artificial intelligence to observe, categorize and anticipate user behavior. With this information, they adjust prices, promotions and suggestions in real time. Although this personalization is presented as a service improvement, it can also become a source of risk if there are no clear legal limits or ethical principles. Therefore, the user should have the right to choose whether or not to be subject to this type of automated segmentation, and have the tools to manage when and how their personal data is used.

In addition, many studies agree that algorithmic operation can lead to impulsive consumption dynamics. Turel et al. (2022) argue that this type of immediate gratification triggers addiction-like responses. Along the same lines, D'Ardenne and Eshel (2020) point out that the combination of constant access, immediacy and immediate gratification

triggers addiction-like responses, as occurs in gambling. In the face of this, it is imperative to recognize the risk of developing a technological dependency. While mechanisms such as self-exclusion or preventive measures exist in the gambling sector, in online commerce the possibility of limiting the constant commercial stimulus has not yet been contemplated.

Zuboff (2019) points out that this problem is not only technical, but also legal: it is about the right of any individual to understand how decisions that affect his or her purchasing behavior are made. In this regard, regulations should ensure that algorithms can be tracked, explained and audited by independent entities.

Ultimately, while recommendation algorithms can improve the shopping experience, their unsupervised use can have serious consequences experience, their unsupervised use can have serious consequences. Turel et al. (2022) warn that immediate gratification can generate technological dependence. D'Ardenne and Eshel (2020) insist on the addictive effects of intermittent reinforcement on purchase decisions.

Legal Framework for E-Commerce in Spain

The legal framework regulating e-commerce in Spain is scattered in several bodies of law that, although relevant, do not always respond clearly to the contemporary challenges of the automated digital environment. Firstly, Article 51 of the Spanish Constitution establishes the obligation of the public authorities to guarantee the defense of consumers and users, protecting their safety, health and economic interests. This provision serves as the basis for any interpretation that seeks to preserve consumer autonomy in the face of persuasive technologies.

The Civil Code, in its articles 1261 and following, defines the essential elements for the validity of consent in contracts, among them, freedom and the absence of vices such as error, fraud or coercion. Increasing automation in the algorithmic personalization of the shopping experience raises questions about whether this consent can be considered fully informed and free.

From a commercial perspective, the Commercial Code, in its articles 325 and following, regulates electronic contracting, although without going into the technical and ethical details involved in recommendation algorithms and their effects on purchasing behavior.

Law 34/2002 on Information Society Services and Electronic Commerce (LSSI-CE) establishes the basic transparency and information obligations that digital service providers must comply with. However, it does not expressly contemplate the risks of behavioral manipulation through predictive systems, as the recent Digital Services Act promoted by the European Union does begin to address.

Finally, the General Data Protection Regulation (GDPR), directly applicable in Spain, guarantees the right to the protection of personal data and establishes the principle of algorithmic transparency (Articles 5 and 22). However, its practical implementation in marketplaces is still limited, especially with regard to the user's right not to be subject to automated decisions without significant human intervention.

This legal framework, although advanced in some respects, is insufficient to address the psycho-emotional and ethical effects of algorithmic hyperpersonalization. From a hermeneutical point of view, this article interprets the above-mentioned regulations in relation to the right to a free and informed purchasing decision, concluding that the current regulation does not adequately protect the consumer against the new risks of digital manipulation.

Method

Data Analysis

The analysis conducted in this study is not based on data collected directly from the consumer, but rather on a reflective and critical interpretation of secondary academic sources. Due to the exploratory approach of the work and its documentary nature, a qualitative methodology has been chosen to identify frequent patterns and common trends in the way marketplaces use algorithms in their commercial strategies. This methodological approach provides a useful framework for understanding the mechanisms behind purchase decisions induced by automated recommender systems, as well as their impact on consumer autonomy.

The technique used has been the systematic review of recent scientific literature, as this practice is also recent, coupled with a detailed analysis of the behaviors observed on reference platforms such as Amazon, Aliexpress and Alibaba. These marketplaces use recommendation algorithms to personalize the shopping experience based on each user's browsing and consumption history. Its objective is clear: to increase the probability of conversion, i.e., that the consumer ends up making a purchase (Russell & Norvig, 2021).

According to several studies, these algorithms play a key role in the reinforcement of impulsive behaviors, as they rely on immediate gratification techniques and repetitive stimuli that trigger automatic decisions in the user (Turel et al., 2022). Such strategies, while commercially effective, raise ethical and regulatory questions. are they really aimed at improving the customer experience or do they simply seek to maximize profits regardless of the effects they have?

Another relevant component in the analysis has been the "abandoned cart" tactic, a resource widely used by the platforms to retain the consumer. According to a report by BusinessChat (2024), marketplaces employ tools such as Google Analytics to track at what point the user abandons the purchase process. From there, they deploy automated recovery campaigns via emails or WhatsApp messages, which act as constant reminders. In addition, many platforms build detailed conversion funnels to identify the most sensitive stages of the buying process and fine-tune their remarketing strategies.

The combination of extreme personalization of recommendations with these types of recovery tactics creates a digital environment in which the consumer is under constant pressure to buy. Often, this pressure is exerted without the user being fully aware of the degree of influence these systems exert on their daily consumption decisions.

Ethical Considerations

Although this research did not require direct contact with individuals or the handling of sensitive personal data, it is essential to consider the ethical aspects surrounding any documentary analysis. In the academic field, ethics obliges to use sources in a rigorous, transparent and respectful manner, also recognizing the possible implications that may derive from the object of study. In this case, the focus is on the effects of algorithms on consumer behavior, a particularly sensitive area because of the influence that persuasive technologies can exert on users' everyday decisions.

As no surveys or interviews were conducted, and no data obtained directly from consumers were used, it was not necessary to apply specific protocols related to privacy or informed consent. Even so, the study has been developed under the fundamental principles of research ethics: only public and accessible sources have been used, and all references have been accurately cited, respecting the integrity of the works consulted.

This responsible attitude not only responds to an academic obligation, but also to a question of coherence with the content of the study itself, which analyzes business practices whose opacity may have consequences for consumer rights. For this reason, ethical reflection has been present in all phases of the work.

The following section presents the results of the analysis, based on a qualitative review of specialized sources and specific cases that illustrate the strategies used by marketplaces to personalize recommendations and encourage user retention on their platforms.

Results

A review of documentary sources has revealed a number of patterns that recur in the way the major e-commerce platforms interact with consumers. Based on the analysis of specialized literature, case studies and recent regulatory developments, a body of evidence has been gathered that demonstrates how recommendation algorithms and certain retention strategies have a direct impact on consumer habits. These findings not only help to understand the current functioning of the digital ecosystem, but also provide a solid basis for thinking about the urgency of moving towards a more transparent and regulated environment. This section details the main results grouped according to the most relevant thematic axes identified during the analysis.

The findings suggest that both the recommendation algorithms and the lack of transparency about how they work, along with the retention tactics employed by marketplaces, have a significant effect on user behavior. These dynamics can reinforce repetitive buying routines and, in certain cases, lead to compulsive behavior. In other words, today's digital environment, as it is configured, may be driving automated forms of consumption beyond the consumer's conscious control.

Recommendation Algorithms and their Impact on the Consumer

The review of specialized literature highlights the crucial role played by recommendation algorithms on platforms such as Amazon, Aliexpress or Alibaba in personalizing the online shopping experience. These systems are designed to analyze an enormous amount of information about user behavior - such as their searches, past purchases and browsing habits - in order to generate increasingly accurate product suggestions. This ability to tailor recommendations based on individual interests has been shown to significantly increase the likelihood of conversion (Russell & Norvig, 2021).

However, several studies have warned that this fine-tuned level of personalization can also have undesirable effects. By reinforcing instant gratification, algorithms can lead consumers to make impulsive decisions, guided more by immediate stimuli than by conscious reflection (Turel et al., 2022). As pointed out by Griffiths et al. (2018), this immediate response to recommendations can erode the user's ability to clearly assess their real needs, promoting buying patterns that border on compulsive behavior.

Lack of Transparency in the Use of Algorithms

One of the most frequently reported problems in e-commerce is the lack of clarity about how recommendation algorithms actually work. Consumers generally do not have access to accurate information that would allow them to understand why certain products are shown to them and in what order. As Mestre-Bach (2025) points out, this opacity makes it difficult to know if the recommendations respond to the real interests of the user or if they simply obey commercial objectives of maximizing sales, without taking into account the possible consequences for the personal economy of the buyer.

This lack of transparency creates a strong informational inequality between the platform and the user. While the buyer is confronted with an interface that appears neutral, the system operates under invisible, profit-oriented parameters. As Zuboff (2019) warns, these algorithms act as black boxes: they do not let us see either how

decisions are made or for what exact purpose, making it virtually impossible for the user to evaluate whether those suggestions benefit or harm him.

Faced with this situation, the European Union has begun to take measures with initiatives such as the Digital Services Act, which seeks to make platforms explain, at least in part, the criteria with which they profile and prioritize content (European Commission, 2023). However, the scope of these requirements is still limited, as it does not oblige to detail how these criteria are combined or what actual effects they have on purchasing decisions.

Researchers such as Mitchell (2022) have warned that, despite these regulatory advances, digital platforms continue to use systems that are difficult for the average user to understand. In addition, there are still no clear standards for external bodies to audit these algorithms, leaving oversight in the hands of the companies themselves. It is therefore becoming increasingly urgent to establish algorithmic governance mechanisms with verifiable transparency requirements and effective controls by independent authorities.

Retention Strategies and Abandoned Cart

A particularly relevant aspect of marketplaces' practices is the systematic use of the "abandoned cart" as a customer retention tool. When a user adds products to the cart but does not complete the purchase, the platforms activate tracking mechanisms that detect this behavior and automatically initiate a series of actions aimed at recovering the sale (BusinessChat, 2024).

This technique is part of what is known as the digital conversion funnel: a process where each click, pause or abandonment is analyzed as an opportunity to reactivate the buyer. Far from interpreting cart abandonment as abandonment, the platforms turn it into a signal of interest that triggers personalized remarketing campaigns. These campaigns typically include everything from reminder emails to push notifications to targeted social media ads, all with the goal of keeping purchase intent active and driving it through to conversion.

However, several studies have warned about the emotional consequences of this strategy. The bombardment of stimuli generated by remarketing can generate psychological pressure on the consumer, causing anxiety and pushing him to make purchases that perhaps, in another context, he would have discarded or postponed (Dellarocas et al., 2020). This continued insistence, through multiple channels, reinforces a sense of urgency that weakens self-control and can compromise the user's financial stability.

From an ethical point of view, this practice raises serious questions: at what point does a suggestion become a manipulation? Is the consumer's freedom respected when his or her hesitation to close a sale intensifies? In many cases, the user has no tools to limit the number of reminders or to disable this tracking function. This aggravates the inequality between the platform, which controls the timing and messages, and the consumer, who receives impacts without knowing or understanding the criteria that trigger them.

It is therefore necessary to propose regulatory frameworks to curb this dynamic. It would be advisable to establish clear limits on the frequency of these communications and to impose the obligation to provide the user with visible and accessible options to manage - or even reject - this type of interaction. This could restore some of the balance in a relationship where today, control is almost exclusively on the side of the platform.

General Influence on Consumer Behavior

The combination of recommendation algorithms aimed at encouraging consumption and strategies designed to prevent the user from abandoning the purchase process has given rise to a digital environment that could be described as intensely persuasive. In this space, the consumer is surrounded by continuous stimuli whose objective is none other than to keep him connected as long as possible and increase the likelihood that he will end up buying. Platforms no longer simply showcase products: they build experiences that make the path to purchase more fluid - and less conscious - by guiding the user without them realizing the extent to which their decisions are being directed.

What at first glance may appear to be a neutral environment, in reality obeys a business logic focused on optimizing indicators such as the conversion rate, the number of interactions or the average time a user spends on the site. Every consumer action - a click, a search, even an uncompleted purchase - feeds predictive models that platforms use to immediately adjust what, when and how to display their offer. It is an automatic response system that learns from user behavior and shapes it in real time.

It is often thought that it is enough to uninstall applications or mute their notifications to avoid their influence, but this solution does not take into account the weight of our immediate environment. We live in society, and the consumption decisions of those around us also affect us. When our circle buys more, frequently releases or brags about recent acquisitions, it is easy to fall into comparisons that feed the feeling of lack. As a result, we may perceive that we buy too little, wear clothes that are out of fashion or have not indulged ourselves in a long time. All of this, although subtle, shapes our behavior as consumers.

The data analyzed show that many people are not really aware of the level of influence these systems have on their purchasing decisions. And it is precisely this invisibility that makes it all the more urgent to have mechanisms that provide transparency and give some control back to the consumer. Because what appears to be freedom of choice is, in many cases, the result of a digital architecture carefully designed to guide, condition or even manipulate user behavior. This reality raises profound questions about individual autonomy in today's consumer environments.

The following section will reflect on how these results relate to the scientific literature and what regulatory proposals might help mitigate the most problematic effects of this algorithmic logic.

Discussion and Conclusions

The results of this study reinforce what has already been pointed out by an important part of the literature: recommendation algorithms play a key role in e-commerce and have a real influence on consumer decisions. Turel et al. (2022) note that these techniques may encourage compulsive buying patterns. Along the same lines, Griffiths et al. (2018) note parallels with addictive behaviors.

This phenomenon must be understood within a context in which e-commerce is no longer a secondary alternative, but the main consumption channel for many people. Today, we live daily with marketplaces that normalize constant exposure to automatically generated recommendations. That fine line between "personalized suggestion" and "covert commercial pressure" is blurred. Shoshana Zuboff (2019) was already warning about the risks of a digital economy that bases its profitability on predicting - and conditioning - user behavior. This study seems to confirm that perspective.

The lack of transparency in the operation of these algorithms is another point on the table. Users do not clearly understand how what they see on their screens is generated. As Mestre-Bach (2025) explains, the information they receive is filtered through opaque systems that respond to commercial interests. This information asymmetry places the consumer at a clear disadvantage, even more so when the platforms present these recommendations as if they were neutral, when in fact they are carefully targeted.

The effect of strategies such as the "abandoned cart" also deserves attention. Although on the surface these practices are intended to facilitate the purchase and remind the user that something has been left pending, the truth is that they can end up generating constant pressure. As Dellarocas et al. (2020), insistent and personalized follow-up through notifications or emails can push the user to make poorly thought-out decisions, affecting their autonomy and ability to control.

From a regulatory perspective, the work confirms that there is still a long way to go. The European Union's Digital Services Act represents progress, but it is not enough. Mitchell (2022) stresses that current regulations do not ensure that the consumer has real control over how their digital experience is constructed. The lack of independent oversight also limits the effectiveness of these measures.

Ultimately, what these results suggest is that we need to move towards a fairer and more transparent e-commerce model. One where the user has real tools to know how and why a product is recommended to them, and can choose to what extent they want to be influenced. It is not just a matter of adjusting standards: it is also necessary to rethink our digital culture and the way we relate to technology and consumption. The next section will present some conclusions and concrete proposals to move in this direction.

Practical Implications

The results of this study are not only theoretical, but offer clear clues as to what steps can be taken on different fronts to improve the current digital ecosystem. For policymakers and legislators, for example, the findings highlight the urgency of updating and strengthening regulations on algorithmic transparency and consumer rights. Although frameworks such as the European Union's Digital Services Act are already in place, effective mechanisms for auditing and monitoring the internal functioning of recommender systems have yet to be established. It is necessary to set clear limits to certain commercial practices that, under the guise of neutrality, may condition the autonomy of users.

From the side of the platforms, the data should also serve to initiate a profound reflection on their role and social responsibility. It is not just a matter of complying with the law, but of committing to a business ethic that puts the consumer at the center. Measures such as offering accessible control panels, allowing to disable content personalization, or limiting the bombardment of notifications and remarketing emails, would be concrete steps towards a more balanced relationship based on trust. Far from being a loss, this transparency could even improve customer loyalty.

And of course, consumers also play an active role. The study highlights the need to promote greater critical awareness of the stimuli we receive every day through screens. Algorithmic literacy initiatives -that is, understanding how these systems work- and information campaigns on digital rights could help users regain some of the control they have been losing to the logic of the platforms. Questioning what we see, understanding why we see it and deciding whether we want to continue seeing it, are key actions to achieve a fairer, healthier digital environment focused on people's real wellbeing.

Limitations of the Study

As with all documentary and qualitative research, this study has certain limitations that should be taken into account when interpreting its results. To begin with, the analysis is based exclusively on secondary sources, such as academic articles, institutional reports and published case studies. This means that we have not relied on data obtained directly through surveys, interviews or other field techniques. Although this approach allows us to detect general trends and build a solid theoretical framework, it does not allow us to draw specific conclusions about how individual consumers react to recommendation algorithms.

Another important limitation is related to the speed at which technology and business practices evolve in the digital environment. Algorithmic personalization and retention systems are under constant development, and this could make some of the findings presented here obsolete in a short period of time. Platforms regularly modify their algorithms, marketing strategies and usage policies, adapting quickly to market changes and user behavior.

In addition, this paper does not include an in-depth technical or mathematical analysis of how the algorithms in question are constructed. This part of the knowledge remains inaccessible in many cases, because the companies that operate these systems protect them as trade secrets. Therefore, the reflections and conclusions presented are based on what can be observed externally and on the available documentation, without access to the internal architecture of these systems.

Finally, although references covering various geographical contexts have been used, the overall focus of the study is on the European and Western experience. This leaves out insights and data that could enrich the analysis, especially in regions with different regulations or socioeconomic realities that are less represented in the available literature. Future research could broaden this approach by incorporating international comparisons that would help to better understand the global implications of the phenomenon analyzed.

Conclusions

This article has made it possible to show how the recommendation algorithms used by Marketplaces, together with their retention strategies and the opacity with which they operate, have a significant influence on users' purchasing decisions. This combination of factors can encourage impulsive or even compulsive consumption dynamics, without the consumer having the possibility of evaluating the impact that these decisions have on his or her personal economy. In many cases, what is observed is a tendency to consume above and beyond what is necessary, which fits the phenomenon of consumerism: a behavior driven by external stimuli rather than by a real need.

In any case, there is a real risk that this type of practice may promote an increase in consumption levels which, in certain cases, takes on an impulsive nature with adverse effects on the user's financial stability. Even if it affects only a fraction of consumers, this pattern of over-consumption can lead to over-indebtedness

One of the main problems identified is the lack of transparency with which these systems operate. Users are unaware of how the algorithms that feed the recommendations are constructed, and this lack of information prevents them from clearly understanding the degree of influence they are exerting on their decisions. These platforms collect all browsing and consumption history, process it and turn it into a series of personalized suggestions designed to maximize sales. This can end up pushing the user

to make decisions that were not foreseen, which calls into question his or her ability to make free and conscious choices. While these practices may be effective from a commercial perspective, as with abandoned cart reminders, they also raise concerns about their impact on individual autonomy.

From a public policy perspective, this analysis confirms the urgency of advancing in the creation of rules that oblige digital platforms to provide clear explanations on how their personalization systems work. The consumer should have the right not only to know why a particular product is recommended to him, but also to decide whether or not he wants his past behavior to be used as a basis for shaping his future decisions. Incorporating mechanisms that allow the user to disable such personalization would be an important step towards a more equitable and transparent digital economy.

On the other hand, it would be very useful for future research to address the long-term effects of such algorithmic practices. In an increasingly connected society, it is essential to understand how consumption habits evolve under the constant influence of these systems. In addition, an analysis segmented by age, income level or digital experience could shed light on which groups of consumers are more vulnerable to this type of influences and which have more tools to protect themselves.

Proposals for Regulation and Consumer Education

In order to build a fairer and more transparent digital environment, it is essential to advance in the development of regulations that impose clear limits to automation in business decision-making processes. The Digital Services Law approved by the European Union in 2023 represents a first relevant step forward, but its effectiveness will depend on its being accompanied by real control, verification and sanction mechanisms. Similarly, the United States is currently debating the Digital Advertising Transparency Act, a proposal that reflects the growing concern about how these technologies affect consumer freedom of choice. Similar initiatives have also been proposed in Canada, all with the same objective: to give users greater control over their data and how it is used.

Among the most effective measures that could be implemented are several. On the one hand, platforms should be obliged to provide understandable explanations of how their recommendation algorithms operate. On the other hand, it would be necessary to allow the user to modify or even disable content customization. Clear labels could also be introduced to distinguish whether a suggestion is driven by commercial interests or based solely on user preferences. In addition, establishing external and periodic audits of the most influential algorithms would help ensure that they operate according to ethical and transparent criteria.

From the point of view of citizenship, it is essential to promote consumer education. Legislation is not enough: people need to understand how algorithms shape their decisions and what tools they have to protect themselves. For this reason, it would be essential to develop awareness campaigns that explain in a simple and accessible way the impact of these technologies on purchasing habits. Providing consumers with critical tools not only strengthens their decision-making capacity, but also enhances the effectiveness of any regulation. A well-informed citizenry is the best defense against the risks of digital manipulation.

Future Lines of Research

Given the growing influence of recommendation algorithms in e-commerce, it is essential to open new avenues of research to better understand their impact from different angles. One of the most necessary approaches would be to analyze how these systems unequally affect different consumer profiles. Studying the interaction of factors

such as age, socioeconomic status, degree of digital literacy or continuous exposure to shopping platforms could reveal specific vulnerability patterns. This would make it possible to identify the groups most sensitive to algorithmic influence and better target consumer protection policies.

Another approach that deserves attention is to conduct longitudinal studies, which observe the evolution of consumption habits over time. This type of research would test whether the intensive and sustained use of personalized shopping environments translates into the emergence of compulsive or addictive behaviors. The time perspective would help to better understand if, and how, algorithms can come to foster a technology dependency that directly affects user buying behavior.

Also, the use of comparative law could provide useful insights. Analyzing which regulatory frameworks are being most effective in different parts of the world - such as the European Union, the United States or Canada - would allow identifying good legal practices in the face of hyper-personalization. This analysis should include not only the content of the standards, but also their degree of compliance, the external audit mechanisms applied and the transparency required of the platforms.

A complementary line would be to explore how consumers perceive fairness and the control they have over their digital experience. Investigating whether the ability to manage their browsing history or disable personalized recommendations influences their trust in a platform could provide key information for designing safer environments. Surveys or qualitative studies with real users could provide valuable data in this regard.

Finally, the importance of an interdisciplinary approach should not be overlooked. Integrating knowledge such as behavioral psychology, digital law or data science would make it possible to build a more complete framework for interpreting the effects of algorithmic e-commerce. This type of analysis would help to move towards more ethical consumption models, in which technological efficiency is not at odds with respect for the autonomy and rights of the consumer.

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