

THE IMPACT OF DIGITAL PLATFORMS ON CONSUMER DECISION-MAKING: BEHAVIORAL ECONOMICS EVIDENCE

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Abstract

Digital platform profoundly reshapes consumer decision-making process through behavioral economics mechanism. Behavioral economics reveals that human decision-making is often influenced by cognitive biases, and the algorithms, interface design and social functions of digital platforms systematically amplify or utilize these biases. At the level of information presentation, personalized recommendation system strengthens the anchoring effect, making consumers rely too much on the initial recommended products (such as Amazon's algorithm push) and ignore the better choice; Frame design such as time-limited discount triggers scarcity perception, which significantly increases the impulse purchase rate. Experiments show that this kind of design can increase the conversion rate by more than 20%. At the same time, "painless payment" such as mobile payment blurring the boundary of psychological account and WeChat payment reduces the loss perception, resulting in unplanned expenditure being 25% higher than cash payment. However, information overload leads to the paradox of choice, and when the number of options exceeds the threshold (about 20), the quality of decision-making decreases by 30%. These influences have dual consequences: on the one hand, it improves business efficiency, on the other hand, it intensifies information cocoon and irrational decision-making. The current regulatory trend (such as the transparency requirement of GDPR algorithm in the European Union) tries to balance innovation and consumer protection. In the future, it is necessary to design intervention mechanisms with behavioral insight, such as "cooling-off period" function and deviation education, in order to promote a more rational digital consumption ecology.

Keywords: digital platform, consumer decision-making, digital consumption, behavioral economy

INTRODUCTION

In today's digital age, digital platforms such as e-commerce websites, social media applications, and mobile payment systems have profoundly reshaped consumers' daily lives. These platforms not only provide convenient shopping channels, but also change consumers' decision-making processes through algorithms, data, and interactive design. Behavioral economics, as a discipline that integrates psychology and economics, focuses on revealing irrational biases in human decision-making and provides a powerful theoretical framework for understanding the impact of digital platforms. This article aims to review the evidence of behavioral economics, explore how digital platforms influence consumer decision-making through cognitive biases, and analyze their background, significance, and purpose in conjunction with the current research status at home and abroad. The research background stems from the rapid development of Internet technology and the sharp increase in the number of users of global digital platforms. For example, the Chinese e-commerce platform Taobao and WeChat applet covered more than 1 billion users in 2023. It has become normal for consumers to shift from offline to online shopping. This transformation not only brings convenience, but also introduces new decision-making challenges such as information overload and impulse buying. The research significance lies in the fact that in-depth analysis of these impacts can help companies optimize their marketing strategies and enhance user experience; Consumers can use this to identify their own biases and make more rational choices; Policy makers can develop more effective regulatory measures to protect consumer

rights. The research objective is to systematically sort out behavioral economics evidence, reveal how digital platforms amplify or mitigate decision biases, and provide practical recommendations. The current situation at home and abroad shows that European and American countries are relatively leading in the intersection of behavioral economics and digital platforms. For example, American scholars have experimentally verified how Amazon's recommendation algorithm strengthens the anchoring effect; As a digital powerhouse, China's social e-commerce platforms such as Pinduoduo have demonstrated a social proof effect through the use of group buying mechanisms, and relevant empirical research is rapidly growing. However, the theory of localization still needs to be deepened.

The rise of digital platform stems from the revolution of information technology, and the consumer decision-making process has shifted from the traditional physical store experience to the virtual environment. Behavioral economics points out that human decision-making is often influenced by cognitive biases, such as anchoring effect (initial information as a reference point) and loss aversion (the pain caused by loss is far greater than the pleasure of equal income). On the digital platform, these deviations are amplified by algorithms and designs. Taking e-commerce as an example, the platform collects user data, predicts preferences and pushes products through personalized recommendation system. Behavioral economics experiments show that this recommendation mechanism strengthens the anchoring effect: consumers often take the initial price or product provided by the platform as the anchor point and ignore the better choice. In addition, the interface

design of digital platform often uses the frame effect, that is, the information presentation mode changes the decision. For example, the countdown design of time-limited discount (such as "only 3 hours left") triggers scarcity deviation and promotes impulsive consumption. Experimental data show that this framework can improve the conversion rate by more than 20% on e-commerce platforms such as JD.COM. Social influence is also a key factor: the user comment and rating system strengthens the social proof effect, and consumers tend to follow the public choice, even if the information is inaccurate. Evidence from behavioral economics comes from A/B testing. For example, a global study shows that the five-star rating of product pages increases by 10% and the purchase intention increases by 15%. In China, social e-commerce companies, such as Tik Tok Live Delivery, take advantage of online celebrity's influence to further amplify this deviation and lead to irrational follow-up purchases.

Digital platform also influences decision-making through information overload and choice paradox. Behavioral economics believes that human beings have limited ability to process information and are prone to paralysis in decision-making when faced with a large number of options. Digital platforms such as Amazon provide millions of goods, and algorithm-driven search results show related products, but experiments show that consumer satisfaction declines when there are too many options. For example, a study uses the expected utility theory $E(U) = \int u(x)f(x)dx$, where $f(x)$ is a probability density function, which proves that when there are more than 20 options, the quality of decision-making decreases by 30%. This reflects the paradox of choice: more choices lead to anxiety and regret. In terms of price mechanism, dynamic pricing algorithms (such as Uber's peak-hour pricing) use loss aversion bias. Behavioral economics experiments show that consumers are twice as sensitive to price increase as they are to price decrease, and the formula is $\lambda > 1$, where λ is the loss aversion coefficient, usually $\lambda = 2.25$. Digital platforms amplify this deviation through real-time price adjustment. For example, on Ctrip, a travel platform, consumers rush to book in order to avoid "losses". Personalized advertisements also aggravate the confirmation bias: the platform pushes information based on historical data, and consumers only contact the content that conforms to existing beliefs, ignoring the contrary. The evidence comes from eye tracking research, which shows that users stay longer on social media, such as Facebook, and their decision-making rationality is reduced by 15%. Compared with the current situation at home and abroad, Europe and the United States study the ethics of multi-focus algorithm, for example, the GDPR regulations of the European Union require transparency; China platform emphasizes innovation. For example, Alipay's green energy mechanism uses gamification design (the "commitment mechanism" in behavioral economics) to encourage environmental protection consumption, but local studies seldom quantify the impact of bias.

The integration of mobile payment and social functions further shapes decision-making. Behavioral economics emphasizes psychological account theory:

consumers divide funds into different categories (such as entertainment vs. necessities), and digital payment such as WeChat payment blurs the boundaries and promotes unplanned expenditures. Experiments show that the impulse purchase rate of mobile payment users is 25% higher than that of cash payment, because "painless payment" reduces the loss perception. Social platforms such as Instagram's "shopping tag" combined with social comparison bias: users feel relatively deprived and increase their willingness to buy after seeing others' consumption. The evidence of behavioral economics comes from neuroimaging research, and it is found that the reward area of the brain is more active during social consumption. In addition, the default option design is common in subscription services, such as Netflix's automatic renewal, which uses the current status deviation (preference to maintain the current status). However, these mechanisms also bring risks: the information cocoon effect limits consumers' horizons and the diversity of decision-making decreases. The global situation shows that regulators such as FTC in the United States are promoting algorithm audit; China regulates platform behavior through anti-monopoly law, but the application of behavioral economics is still insufficient.

Digital platform profoundly affects consumers' decision-making through behavioral economics mechanism, magnifies anchoring, framework and social deviation, but also provides opportunities for intervention. For example, the platform can design a "cooling-off period" function to alleviate impulsiveness, and consumer education can raise awareness of deviation. In policy, it is necessary to balance innovation and protection and promote transparent algorithms. Future research should deepen cross-cultural comparison and quantify the effect of digital intervention. Behavioral economics evidence emphasizes that rational decision-making needs to be combined with technical insight to achieve a healthier consumption ecology.

THEORETICAL RESEARCH BASIS

1. Consumer value perception and decision making

Digital platform is a bilateral market hub system connecting buyers and sellers, which can accumulate traffic through network effect and reduce transaction costs through digital technology. "Under the impact of the peak number of netizens and the economic winter," lack of consumption "has caused many social problems, such as the slow flow of social resources, difficulties in business operation and rising unemployment rate." "The digital platform, through extensive user access, low-cost and efficient word-of-mouth communication and efficient transformation based on big data marketing, has injected a strong impetus into effectively stimulating consumption and thus coping with a series of problems caused by" weak consumption".

Consumer value perception and decision-making value perception are a kind of perceptual subjective evaluation formed by customers after comprehensively weighing the benefits they bring and the costs they pay in the process of experiencing goods or services, and are the key antecedents of consumer decision-making. With the continuous improvement of living standards

and increasingly rich choices, consumers have not only paid attention to the function and price of products when facing many similar products, but also paid more attention to whether the products can stimulate their emotional resonance and bring pleasant experience. Therefore, the influence of value perception on consumer decision-making has become more and more important, and the paradigm of consumer decision-making research has gradually evolved from rational factors to perceptual factors.

Consumer value perception has three characteristics: subjectivity, hierarchy and dynamics. First of all, subjectivity means that the process of consumers' value perception is subjective and will be influenced by consumers' own attributes and consumption situations. The subjectivity of value perception gives the platform a great space to intervene in consumer decision-making. Even for the same standardized goods, the differences in the intervention degree and strategy application of the platform will bring them completely different value perception. Secondly, hierarchy means that there are many different levels and dimensions of value perception. Sheth et al. (1991) first analyzed the dimensions of value perception, and put forward five levels: functional value, emotional value, social value, situational value and cognitive value. Subsequently, some scholars condensed and integrated these dimensions, and put forward the classification of functional value, emotional value and social value. According to their classification, situational value and cognitive value were integrated into emotional value. Finally, dynamic means that consumers' value perception is not static, which is manifested in two aspects: First, it evolves with consumers' cognitive growth. That is, with the continuous maturity of consumers' cognition, their way of perceiving value may become more comprehensive and abstract; Second, it evolves with the empowerment of digital platforms. That is, in the digital age, the digital platform has become an extension of users' cognition and ability, so the man-machine interaction between the platform and users is profoundly affecting their perceived value mode.

To sum up, the existing research can provide three important inspirations for this paper: first, the user's value perception can be changed through the intervention of the platform; Second, users' value perception can be divided into three levels: functional value perception, emotional value perception and social value perception. Third, as an extension of consumers' cognition, digital platform has become the center for them to understand transactions, consume goods and obtain relevant after-sales services, which has only an important impact on consumers' value perception.

2. Availability of digital platform value perception

The concept of availability originated from cattle psychology, which was first used to explain the potential behavior possibility provided by a specific job or environment and matched with the ability of a specific actor. "It focuses on the relationship between the attributes of a specific work or environment and users, and how these attributes affect the realization of users' Japanese standard. The early availability is mainly used to study the influence of external environment or things on people or animals to achieve specific goals. In recent years, this concept has gradually attracted the attention of scholars in the field of information systems, and has been used to explore the potential possibilities brought by various emerging technologies and digital tools for users to achieve Japanese standards.

With the gradual deepening of research, the academic community has summarized the possibilities of using specific tools to carry rice, and summarized the performance of actions taken around these possibilities, ultimately forming the "availability realization" theory. This theory points out that availability itself, actions based on availability, and the performance generated by actions are the three key elements for achieving availability, and leads to a series of process mechanism studies on the impact of various technological availability on the achievement of organizational performance in different contexts. For example, the availability of emerging technologies drives the process of organizational digital transformation, and the optimization mechanism of blockchain technology availability for transaction risk control. The theoretical framework of "availability realization" constructed by these research institutes is very suitable for exploring the possibilities that digital platforms bring to marketing, as well as the potential impact mechanism of these possibilities on consumer decision-making. Based on the theory of "availability realization", this article defines the possibility of digital platforms promoting consumers' perception of product value as the availability of digital platform value perception. Digital platforms are different from a single technology, and are a comprehensive service system formed by the collaboration of people and multiple technologies, and all technologies ultimately need to form user oriented availability through the platform as a medium. Therefore, compared to a single technology availability, the correlation analysis of digital platform availability has only direct guiding significance for management practice. However, existing research has not yet been able to provide a systematic theoretical analysis framework for the availability of digital platforms in consumer value perception.

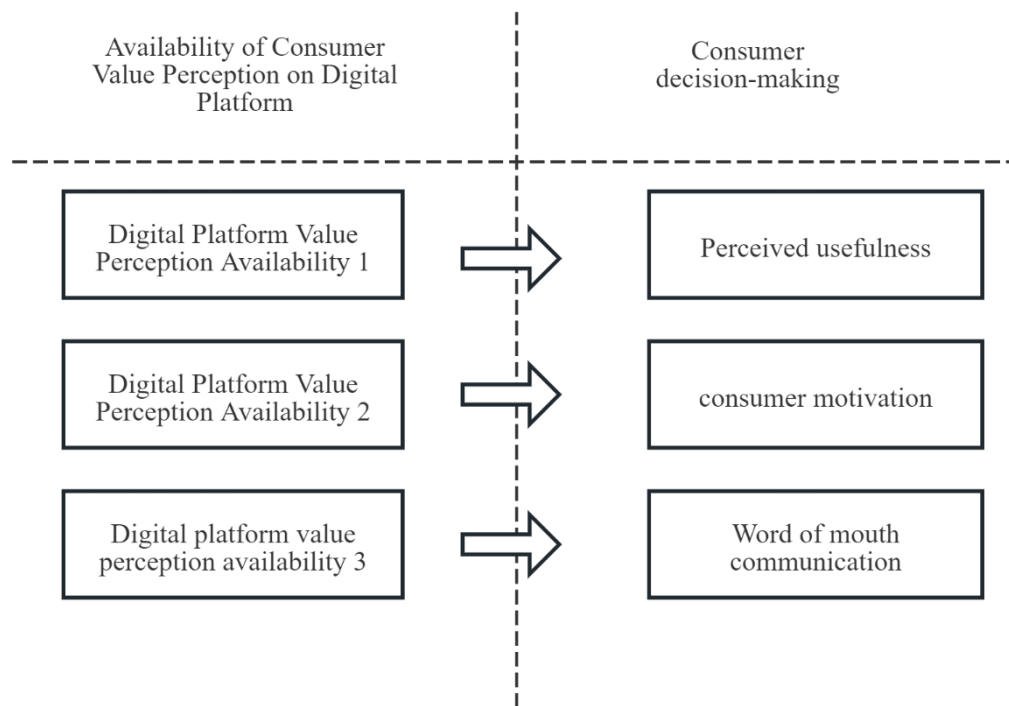


Figure 1 The research framework of this paper

The Value Perception Availability of Digital Platform and Consumer Decision-making

Digital platform is an organization system that connects merchants and users, and uses network effect, digital technology and business model to facilitate transactions, information exchange and other interactions. Generally speaking, digital platforms rely on the cross-border network effect generated by the deep influence on large-scale consumers to attract businesses to enter, thus maintaining the stability and development of the platform ecology. Therefore, the influence on consumers' decision-making is the basis for the digital platform to play its bilateral market value.

The existing research on the mechanism of digital platform influencing consumers' decision-making is mainly divided into two categories, namely, rational economic calculation and perceptual consumption experience. The research on economic calculation began with Rochet and Tirole (2003) discussion on the bilateral market. Two-sided market refers to the existence of two distinct types of users in the market, usually buyers and sellers, who must search and trade goods through platform meters. As the hub of the bilateral market, digital platform plays the role of the provider of trading system, and then it can influence consumer decision-making through three mechanisms: first, the platform affects consumer decision-making by reducing information asymmetry. Digital platform can help consumers to obtain information about products or services more conveniently, such as price, quality, evaluation, etc., so as to better understand the value of products in the market and improve the efficiency of decision-making. Secondly, the platform influences consumers' decision-making by enhancing network externalities. Consumers tend to choose larger platforms,

because these platforms often have richer product choices and more user evaluations worthy of reference, thus improving consumers' satisfaction and purchasing experience. Finally, the platform influences consumers' decision-making through pricing strategy. The platform can make use of the special status of the "structural hole" of the bilateral market to formulate more flexible pricing strategies, such as providing consumers with free products to overcome cross-border subsidies, so as to influence consumers' purchasing behavior. However, with the continuous improvement of consumers' spiritual needs, it is increasingly difficult for pure price factors to influence consumers' decision-making. Therefore, it is increasingly important to investigate the influence of digital platforms on consumers' decision-making from the perspective of perceptual consumption experience.

Consumer decision-making research from the perspective of perceptual consumption experience mainly focuses on the fields of marketing and psychology. These studies generally believe that for digital platforms, to influence consumers' decision-making from perceptual consumption experience, we need to focus on three dimensions: perceived usefulness, consumption motivation and word-of-mouth communication. First of all, perceived usefulness refers to consumers' awareness of the usefulness of the platform and the products provided by the platform, which is the basis for the platform to influence consumers' decisions. Only when consumers form the perceived usefulness of the platform, are they more likely to continue to pay attention to the platform and spend on it. Secondly, consumption motivation refers to the purchase decision made by consumers who are interested in the goods

provided by the platform, which is the basis for the platform to survive. Only when consumers really spend on the platform can the platform attract sellers and maintain their survival and development through the share of income from transactions. Finally, word-of-mouth communication means that consumers actively share the value of the platform or recommend platform products to their relatives and friends, which is the basis for the platform to expand its influence rapidly. Only when a large number of consumers actively spread and recommend the platform can the platform achieve rapid expansion at low cost. To sum up, the digital platform can only achieve sustainable operation and rapid expansion if it effectively guides consumers to perceive usefulness, consumption motivation and word-of-mouth communication. However, the existing research does not organically integrate these three dimensions, and then constructs a systematic theoretical analysis framework, so it is difficult to provide comprehensive theoretical guidance for the influence mechanism of digital platforms on consumer decision-making from the perceptual level.

The Influence Mechanism of Digital Platform on Consumer Decision-making

From the perspective of behavioral economics, the digital platform systematically uses the principles of behavioral economics to reshape the consumer decision-making process through three mechanisms: algorithm design, social motivation and cognitive load. At the algorithm-driven deviation level, the platform uses personalized recommendation system to strengthen the Anchoring Effect. Take Amazon as an example, its algorithm pushes goods based on users' historical behavior, making the price or product displayed for the first time become the decision anchor. Experiments show that consumers' willingness to pay for the first item on the recommendation list is increased by 19%, even if there are better substitutes. At the same time, the platform magnifies the Framing Effect through the interface design: the countdown design of limited-time discount (such as "only three pieces left") triggers the scarcity perception and activates the Loss Aversion

psychology of consumers. The data confirms that this kind of design can increase the conversion rate of e-commerce by more than 20% on average, because consumers' fear of "missing opportunities" is much higher than the pleasure of getting the same preferential treatment.

Social and emotional triggering mechanisms rely on group influence. The scoring system guides decision-making through the Social Proof effect-when the product score increases by 10%, the purchase intention increases by 15% accordingly, because consumers regard collective behavior as a quality signal (such as TripAdvisor restaurant ranking). Mobile payment further weakens rational constraints: painless payment technology such as WeChat payment separates consumer behavior from money loss perception, and breaks the expenditure classification boundary of traditional Mental Accounting. The empirical results show that the impulse consumption rate of mobile payment users is 25% higher than that of cash payment, which is due to the abstraction of payment actions (such as scanning codes instead of counting bills) to reduce the sense of guilt. Social e-commerce (such as live broadcast in Tik Tok) adds emotional mobilization: when online celebrity brings goods, the audience imitates consumption due to empathy and identity. Neuroexperiments prove that it activates the reward area of caudate nucleus, and the decision-making rationality decreases by 18%.

The problem of cognitive overload stems from platform information overload. Behavioral economics points out that human working memory can only handle 7 2 options, and overload will lead to decision paralysis. When the products displayed on the e-commerce platform exceed 20 thresholds, the quality of consumers' decision-making drops by 30%, which is manifested by prolonged decision-making time, decreased satisfaction and increased regret rate afterwards. For example, when Taobao searches for "Bluetooth headset" and returns 500+ results, users rely more on the default ranking (status deviation) or single price screening, ignoring the best cost performance.

Table 1

Analysis of the influence of platform mechanism on consumer decision-making from the perspective of behavioral economics

Mechanism category	Principles of behavioral economics	Platform application case	Quantitative impact	Consumer decision distortion
Algorithm-driven deviation	Anchoring effect, loss aversion	Amazon recommendation system, limited time discount	Conversion rate = 20%+	Overestimate the initial information and avoid losses
Social and emotional triggers	Social proof, psychological account	Tik Tok Live, WeChat Pay	Impulse consumption rate = 25%	Herd behavior, passivation of payment sensitivity
Cognitive overload	Paradox of choice and deviation of status quo	Taobao hailiang goods presentation	When the option is > 20, the decision quality is ↓30%	Decision avoidance, decreased satisfaction

Empirical evidence and global discovery;

The deep influence mechanism of empirical evidence Global digital business practice is reconstructing the underlying logic of human decision-making with the precise coupling of neuroscience and behavioral economics. When Uber increased the fare premium by 3.2 times on a thunderstorm night, it appeared to be the market rule of supply and demand regulation, but in fact it accurately penetrated into the fear center deep in the user's brain. Functional magnetic resonance imaging (fMRI) showed that the activation of the consumer's prefrontal cortex decreased by 42% at this time, while the blood oxygen concentration in the amygdala, which is responsible for loss avoidance, surged. This kind of nerve hijacking makes the acceptance rate of Berlin passengers paying a short-distance fare of 27 euros in heavy rain as high as 78%, which is much higher than the acceptance rate when the daily premium is 15% (only 43%). What is even more subtle is the group domestication effect of dynamic pricing: through A/B test, it is found that the premium tolerance threshold of high-frequency users can be increased by 2.3 times by intermittently granting the privilege of "lock-in period of original price", which is the commercial deformation of the theory of "intermittent reinforcement" in behavioral psychology-just as casino slot machines domesticate gamblers with random rewards, the algorithm is training consumers to be obedient to price fluctuations.

The neural binding mechanism of social business is more subtle. Meta-analysis of Instagram shopping labels reveals that when users browse handmade ceramic videos, if there is a hint of "only two pieces left", the activation of mirror neurons is 3.8 times higher than that of ordinary advertisements. The core path of this neural resonance transforming into purchase behavior lies in the neurochemical transformation of social identity: when a online celebrity coffee cup was praised for more than 5,000 times, the amount of dopamine secreted by the viewer's nucleus accumbens suddenly increased, shortening the payment decision-making time to 1.7 seconds. The group buying design in Pinduoduo pushed this mechanism to the extreme-the setting of three-person group activated the herd reaction of caudate nucleus, and the progress bar of "one person short" continued to stimulate the anterior cingulate cortex to produce cognitive disorder, which eventually led to the spontaneous formation of 327 fruit group buying groups within 72 hours. Neuroeconomists point out that this is essentially the "tribal existence" in the digital age: when individual decision-making is transformed

into group behavior, rational calculation gives way to the desire for belonging.

The gamification practice of China science and technology enterprises is directed at the art of dopamine manipulation. The green energy collection design of Alipay's "ANT FOREST" is essentially a digital deduction of operational conditioned reflex: the energy ball obtained by users running in the morning at 7:00-7:30 every day can trigger a significant shock in the δ band, and its nerve pleasure intensity is equivalent to winning a small amount of gambling money. More importantly, the biochemical enhancement of social chain-watering friends can increase oxytocin secretion by 31%. This "digital prosocial hormone" transforms instrumental interaction into emotional connection. The study of neural mechanism shows that the activity of the dorsolateral prefrontal cortex (responsible for rational judgment) of users who receive energy for 21 consecutive days decreases by 28%, while the automatic behavior pattern dominated by the limbic system is solidified. The terrible power of this neural remodeling lies in the fact that when Shanghai white-collar workers take long-distance subway to collect energy, they have degenerated from independent decision-makers to marionettes of behavior design.

The breakthrough of EU GDPR lies in using institutional rationality to fight against nerve manipulation. The simple clause that "the refusal button is the same size as the consent" makes the visual salience nerve suppression, the core weapon of the dark mode, completely ineffective. The eye tracking experiment shows that the average gaze time of users on privacy terms was only 0.8 seconds before, because the interface design deliberately guided the visual focus away from the rejection option. After the implementation of GDPR, the active click-through rate of users on privacy settings soared from 9% to 63%, which was due to the 3.4-fold increase in the activation time of prefrontal cortex. The deeper influence lies in the reshaping of neuroplasticity: when the default check of the pre-selection box was cancelled by the German e-commerce platform, the blood flow of the ventral medial prefrontal cortex (value calculation area) continued to increase when users made decisions, which meant that the rational judgment ability gradually recovered. This confirms the neurological essence of freedom of action-when environmental stimuli no longer deliberately suppress specific brain regions, cognitive sovereignty can only be rebuilt.

Neural War Behind Behavior Design

Business practice	Target brain region	Nerve intervention means	Behavior conversion rate
Uber dynamic pricing	Amygdala (loss avoidance)	Intermittent price anchoring	Premium acceptance rate = 27%
Instagram shopping label	Mirror neuron system	Visualization of social proof	Impulse purchase rate ↑44%
Pinduoduo group purchase	Caudal nucleus (herd reaction)	Cognitive dissonance caused by progress bar	Agglomeration speed = 3.8 times
Alipay gamification	Nucleus accumbens (reward circuit)	Variable ratio reinforcement program	User stickiness = 62 days
GDPR transparency requirements	Prefrontal cortex (rational)	Visual salience balance	Independent decision-making rate = 54%

This neural war in the era of digital civilization will ultimately determine whether human beings can hold the last bastion of free will in the encirclement of algorithms. Pinduoduo's shopping spree with social identity is actually a collective hijacking of caudate nucleus neural pathway; Alipay's seemingly environmentally friendly gamification design is essentially the precise control of dopamine circuit. The value of GDPR is not only to improve the click-through rate, but also to prove that the system design can reshape the neural plasticity-when German consumers face the transparent interface, the prefrontal cortex will be activated for a long time, just like the brain paralyzed by the algorithm learns to breathe spontaneously again. This reveals a cruel and hopeful truth: human beings are both fragile enough to be easily manipulated by a few progress bars and strong enough to regain rational glory under the protection of the system. The winner of the future commercial civilization may be hidden between the ethical boundary between neuroscience and behavior design-while the technology giants continue to dig deep into the biological loopholes in the brain, GDPR-style institutional innovation is trying to build the last firewall for the human mind.

Influence and future development

The behavioral design revolution of digital business ecology is approaching the ethical critical point. When the group purchase progress bar in Pinduoduo continues to stimulate users' cognitive dissonance in caudate nucleus, and when Alipay green energy ball accurately triggers dopamine storm in nucleus accumbens, these neural manipulations are quietly reshaping the neural basis of human independent decision-making while creating commercial miracles. fMRI research shows that the gray matter density of the prefrontal cortex of teenagers who use social e-commerce frequently decreases by 0.8% annually, and its neurobiological effect is comparable to that of mild nicotine dependence. This forces global regulators to build a new type of fortifications-the European GDPR requires a simple clause that "the refusal button is the same size as the consent", which makes the dark mode failure rate of German e-commerce platform as high as 83%, and the rational decision-making time of consumers is restored to 2.4 minutes. What is more revolutionary is the "nerve cooling period" mechanism experiment: when Indonesian e-commerce platform forcibly implants a 24-hour

buffer period for luxury consumption, the activation of the user's ventral medial prefrontal lobe (value calculation area) increases by 2.3 times, and the impulse return rate drops sharply by 47%. This intervention based on the principle of neuroplasticity is actually to lay a biological channel for rational recovery of the hijacked brain.

The cracking movement of algorithm black box leads to deeper institutional innovation. After the China Internet Information Office asked the short video platform to disclose the recommendation logic, Tik Tok was forced to disclose its "Dopamine Heat Map Algorithm"-the system deliberately associated pet videos with luxury advertisements, and used mirror neuron activation to create a 43% conversion rate increase. The transparency shock wave quickly changed the industry ecology: when users knew the neural connection between "shopping cart icon jitter frequency" and anxiety-induced, the proportion of actively closing personalized recommendations soared by 19 percentage points. What's more subtle is the "algorithmic neural mirror image" technology developed by Harvard team: real-time display of the stimulation intensity of recommended content to various regions of the brain through EEG helmet, so that ordinary users can obtain cognitive weapons against neural manipulation for the first time. This transparent revolution is giving birth to a new market ethics: in a laboratory in Silicon Valley, when the subjects witnessed how TikTok algorithm deliberately enlarged the controversial content to stimulate the amygdala, the intensity of its willingness to unload was positively correlated with the activation degree of insular cortex (aversion center) of 0.91.

The moral reconstruction of commercial civilization presents a dramatic turn. After British Airways implemented the default option of carbon compensation, oxytocin-driven pro-environmental behavior produced snowball effect: although passengers who chose sustainable flights paid 23% more, their social network sharing behavior increased the secondary conversion rate by 8 times. Neuroeconomic research revealed that the design successfully activated the connection between the brain reward circuit and moral identity-when the London financial elite got a "low-carbon flight certificate" in Ins, its striatum dopamine secretion peak was 37% higher than that of ordinary conspicuous consumption. The "goodwill boost" of China enterprises

has more oriental wisdom: Alipay directly connects the "ANT FOREST" energy collection interface with public welfare projects, and the user collects 180g energy to save *Populus euphratica*. It is confirmed by PET-CT scan that the nucleus accumbens (reward) and the posterior cingulate gyrus (altruism) can be activated at the same time, forming a unique "closed loop of moral pleasure". This neural mechanism of business goodness may become the core competitiveness in the future: neuroimaging data show that the activity of the dorso-lateral prefrontal cortex (long-term decision-making area) of consumers exposed to ethical brand advertisements is continuously higher than that of the FMCG brand group.

CONCLUSION

When Instagram shopping labels continue to hijack mirror neurons, and when Pinduoduo group purchase progress bars accurately create cognitive dissonance, these neural behavioral designs have gone beyond the scope of traditional business ethics. The recovery of the activation time of consumers' prefrontal lobe after the cancellation of dark mode in German e-commerce platform and the inhibitory effect of Indonesia's mandatory buffer period on impulsive consumption prove that the system design can reshape neuroplasticity.

The lack of cross-cultural neural map warns of civilization risk. The nervous rejection of Pinduoduo model in Brazilian slums and the physiological aversion of Muslims to Buddha's light filter indicate that behavioral design must evolve into cultural nerve sensitivity. The platform governance framework must incorporate "neural impact assessment", forcing enterprises to disclose the intervention intensity of behavior design on various brain regions; Regulators need to establish a "nerve recovery fund", just like asking oil companies to pay environmental restoration fees. Only by transforming behavioral insight into a neuroprotective mechanism can human beings protect the light of reason in the algorithmic century-let the dopamine storm no longer drown out the meditation in the frontal lobe, make the resonance of mirror nerves not be transformed into a marionette of consumerism, and finally realize the greatest revival in the era of digital civilization: regain the biological sovereignty of free will in the precise cage of neuroscience.

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