Research on Countermeasures to Strengthen Green Marketing Governance against "Online Sales Chaos": Based on Digital Economy and Institutional Innovation Theories

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Abstract: Against the backdrop of the digital economy and green development, this paper focuses on the governance of online marketing chaos. Based on theories of the digital economy, green marketing, and institutional innovation, it systematically analyzes the current situation, harms, causes, and governance pathways of such chaos. The study finds that online marketing chaos currently exhibits characteristics of concealment, intelligence, and persistence. The root causes lie in institutional adaptation imbalances and governance technology shortcomings: on the one hand, legislative lag and rigid regulatory tools have caused institutional updates to fall far behind new digital marketing formats; on the other hand, criminals exploit technologies such as AI and deepfakes to commit violations, while governance technology development lags, creating a real-world dilemma where "the good is one step behind the evil." A comparison of compliant cases (e.g., Pinduoduo, Vipshop) with negative cases (e.g., live-streaming view fraud, online troll farms) shows that governing such chaos is practically feasible. Accordingly, this paper proposes a collaborative governance approach of "institutional innovation + technological governance," leveraging digital technologies to "use digital means to govern digital chaos," return to green value orientation, and establish adaptive regulatory institutions, thereby providing theoretical and practical references for regulating online marketing and promoting green consumption transformation.

Keywords: Online Sales Chaos; Green Marketing; Digital Economy

1. Introduction

China is currently navigating a pivotal convergence of digital economic integration, regulatory compliance, and green, low-carbon transition. Driven by this momentum, the Three-Year Action Plan for Digital Commerce (2024–2026) explicitly mandates a multi-stakeholder governance framework to standardize industry operations, establishing a clear policy baseline to curb irregularities in online retail. This rapid digital expansion has fundamentally altered traditional commerce, introducing highly dynamic marketing formats such as live-stream e-commerce, social media marketing, and algorithm-driven recommendations. By leveraging precise targeting and efficient consumer reach, these channels have emerged as vital vectors for enterprises to promote eco-friendly practices and sustainable consumption.

However, the negative externalities of these digital advances are becoming increasingly severe. Market disruption has intensified, which is characterized by predatory algorithms that lead to excessive consumption, misleading green cleaning suggestions, click-through labor mobility on farms and big data pricing discrimination that undermines fair trade [1] This kind of improper behavior not only violates the rights of consumers, but also undermines the integrity of the market. It subverts the basic concept of green marketing. By simplifying environmental discourse into pure propaganda, these abuses seriously hinder the structural synergy between digital economy and sustainable development.

Institutional defects aggravate this regulatory defect. The traditional monitoring mechanism is difficult to deal with complex strategies, such as algorithmic black box and deceptive marketing driven by artificial intelligence, which exposes the major defects of the platform in institutional adaptability, technical ability and accountability [2] Therefore, the adaptation gap between the slow institutional framework and the rapidly

changing digital marketing strategy is widening.

The systematic consequences of this computer chaos have spread to the economic and social fields. The quantifiable economic losses are staggering: in 2025 alone, state authorities sanctioned more than 3,600 cases of green advertising fraud, totaling more than 1.5 billion yuan. In addition, fraudulent transactions and misleading opinions cause an average loss of more than 600 yuan per consumer every year, while compliant green SMEs lose more than 800 million yuan every year due to market distortions. As for market order: By 2026, the cyberspace governance movement has identified and closed more than 12 million online troll farm accounts and closed 32,000 fake green stores. The market share of green compliance enterprises has declined, and the industry compliance rate has dropped below 40%. According to the survey of China Consumers Association, 65% of consumers are facing false green marketing, 70% are skeptical about the green proposition of the platform, and the intention of green consumption has dropped by 22% compared with the same period of last year, which has seriously hindered the spread and popularization of the concept of green consumption.

Based on the above problems, this study adopts a predominantly qualitative approach, combining case analysis, policy text analysis, and literature review. Drawing on digital economy theory, green marketing theory, and institutional innovation theory, it systematically analyzes the generative logic and evolutionary pathways of online sales chaos from multiple perspectives. Centered on the core logic of "identifying weaknesses and shortcomings in the empowerment of green initiatives by the digital economy – institutional innovation supported by digital technologies," the paper constructs a dual-driver governance framework of "institutional adaptation + technology empowerment," aiming to provide a systematic theoretical analytical perspective and practical pathway references for the governance of online sales chaos.

2. Analysis of the Research Status (Literature Review)

In recent years, scholars have conducted extensive research on the empowerment of green marketing by the digital economy and the governance of online marketing chaos, yielding rich results. Among these, the enabling effect of the digital economy on green marketing and sustainable consumption is one of the core issues in current academic discourse. Jia Yunshan proposed that "while digital tools lower the cognitive threshold for environmental information and enable green marketing, they may also exacerbate technological exclusion and value imbalance due to the digital divide, conflicts between individual and collective rationality, and information security issues. Therefore, it is necessary to establish a government-led, market-oriented and society-led coordinated governance system, balance technical capabilities and ethical constraints, and promote green consumption from concept to sustainable practice [3] In addition, under the background of on-site e-commerce and social media marketing, Wu Qiangkai reveals the paradox of green consumption in the digital age: while conveying the green concept, digital marketing may also aggravate unsustainable consumption behavior through over-marketing and algorithmic induction. It is necessary to improve the regulatory agencies, guide the rationalization of digital green marketing, and avoid confusion such as false advertising and over-marketing [1]. These views have considerable reference value.

From the perspective of action mechanism, Liang Wei and Wu Shun's empirical research on provincial panel data shows that digital economy has greatly promoted the green development of retail industry through three intermediate mechanisms: green technology innovation, green financial support and upstream green supply. Formal and informal environmental laws and regulations have positive regulatory effects, and institutional adaptability plays a key role in promoting the green development of digital economy [4] Sun Quansheng further emphasized that the promotion of digital economy in green marketing is not spontaneous, but limited by the institutional environment. Only by optimizing environmental regulation instruments and promoting institutional synergy between the digital economy and green development can the positive value of technological empowerment be fully released [5].

Regarding online marketing chaos, scholars have conducted extensive discussions on its manifestations, causes, and governance pathways. In terms of the forms of chaos, new types of malpractices have become research

hotspots, such as "greenwashing" through platform eco-labels, deceptive marketing by AI digital humans, false advertising in live-streaming e-commerce, viewership manipulation by online troll farms, and big data-enabled price discrimination. Wang Haoyu, focusing on the "greenwashing" of eco-labels on e-commerce platforms, pointed out its negative impacts on market screening mechanisms, competition order, and institutional credibility, and proposed governance ideas of shifting from static certification to dynamic assessment and implementing differentiated penalties [6]. Sheng Yuhua (2025), addressing the chaos of false marketing by AI digital humans, argued for the need to clarify the legal nature of AI-generated content and the boundaries of multi-stakeholder responsibilities, and to build a full-chain regulatory system of "pre-operation filing + in-operation monitoring + post-operation accountability" [7].At the level of cause analysis, most scholars believe that lagging regulatory technology, insufficient institutional adaptability, and ambiguous definition of platform responsibilities are the core reasons for the frequent occurrence of these chaotic practices. A prominent perspective offered by Gu Jianyu suggests that e-commerce regulation in the digital era is constrained by lagging regulatory technologies, institutional rigidity, and poorly defined platform liabilities [2].

Because conventional governance frameworks fail to keep pace with the sophisticated, fast-evolving nature of digital marketing, the market has seen a surge in deceptive practices, most notably fraudulent advertising and big-data price discrimination.

To address these challenges, existing literature generally converges on three primary governance paradigms: institutional regulation, technological governance, and collaborative frameworks.From the perspective of institutional regulation, a representative view is that of Li Yang, who, drawing on the Interim Provisions on Anti-Unfair Competition in the Internet, proposes a collaborative governance path of "technological monitoring + credit punishment + multi-stakeholder co-governance" to address unfair competition practices such as fraudulent brushing of transaction volumes and fake reviews, as well as big data-enabled price discrimination [8] From the perspective of technological governance, Zhang Qing puts forward an innovative path of "using technology to govern technology," advocating the use of digital technologies such as big data monitoring and AI recognition to enhance the regulatory efficiency of digital intelligence advertising and prevent algorithmic abuse and deceptive marketing [9]. This view is notably representative. From the perspective of collaborative governance, Peng Mengyin and Li Taoying propose a soft law and hard law collaborative governance framework. They argue for strengthening the binding force of self-regulatory norms through soft law review and filing, while dynamically supplementing and improving the legal system based on hard law, so as to build a multi-stakeholder co-governance pattern. This approach effectively breaks through the institutional bottlenecks of traditional hard law, such as regulatory lag and single means, as well as the governance limitations of soft law, including insufficient binding force and low credibility [10], and is worthy of reference for this study.

At the level of policy practice, the State Administration for Market Regulation has proposed strengthening the governance of the internet advertising ecosystem, improving regulatory rules for live-streaming e-commerce and AI-generated advertising, and preventing false marketing problems caused by the misuse of AI technology. The Cyberspace Administration of China and the State Administration for Market Regulation have proposed systematically rectifying online trading chaos through three major measures: strengthening information management, cut off the chain of online troll farms, and protecting personal information.

Although the above research findings have laid a theoretical and practical foundation for this study, there remain several gaps: insufficient scenario-specific focus, with a lack of research on the governance of online chaos specifically within the context of green marketing; a lack of studies on collaborative mechanisms, with no integrated analytical framework of "technology empowerment – institutional adaptation – chaos governance" having been formed; and insufficient operability of governance pathways, with a lack of targeted countermeasures for green marketing chaos in the digital economy.

3. Analysis of the Development Pathways of Green Marketing and "Online Sales Chaos"

The following section employs a comparative

analysis method, combining compliant cases with negative cases of chaos, to present a more intuitive picture of the current reality of online marketing, thereby highlighting the urgency of governing such chaos [11].

As a leading e-commerce platform, Pinduoduo actively responds to the national call by integrating green development into its core corporate strategy, fulfilling social responsibilities through compliant green marketing and aligning with the nation's overall green and low-carbon development framework. In its early days, Pinduoduo focused on bringing agricultural products to urban markets as its main business. Coupled with its "direct from origin, no middlemen" marketing model, the platform fully leveraged its advantages in lower-tier markets, accurately captured the public's demand for green consumption, and promoted "natural, high cost-performance" green products that catered to ordinary consumers' preferences for green consumption, thus forming an early prototype of green marketing and accumulating user reputation and market recognition for subsequent full-category green marketing. At the same time, the platform strictly audits green marketing content, prohibits false claims such as "organic" or "eco-friendly", has launched a "Billion Agricultural Products" green zone, promises "authentic goods with a ten-to-one compensation guarantee", and implements a "seven-day no-reason return and exchange" policy, significantly reducing the risks associated with green consumption. By the end of 2025, the repurchase rate for Pinduoduo's green product categories had reached 68%, and consumer trust ranked among the highest in the industry, establishing the platform as a benchmark for compliant green marketing [12].

Pinduoduo's commitment to compliant green marketing is mainly based on long-term value creation. In the era of digital economy, consumers' demand for authentic, transparent and environmentally friendly products is growing, and compliance operation has become the cornerstone of creating differentiated competitive advantages. This strategy enables the platform to avoid destructive price wars, reduce regulatory risks, and establish an elastic growth model. It is very important for Pinduoduo to emphasize the authenticity of products and the connection between real advertisements and ecological value and business sustainability, so as to prevent ecological speculation. From the perspective of institutional innovation, the positive improvement of the platform in content audit, traceability management and post-purchase consumer protection represents the institutional agent at the enterprise level. These measures effectively make up for the subtle defects of the current green marketing regulations [1] Therefore, in a healthy platform economy, compliance is not a financial burden, but a strategic asset. By delivering genuine green value through transparent operations, the platform secures consumer trust while reducing external regulatory friction. Pinduoduo's trajectory illustrates that digital architectures can successfully facilitate genuine green marketing, confirming that corporate self-discipline and platform-led governance are powerful levers to curb marketplace disorder.

In the field of clothing and beauty, Vipshop has implemented a strict "quality control+green certification audit" mechanism. For products marketed with eco-friendly or organic statements, the platform requires verified third-party environmental test reports and ecological certification to systematically filter out deceptive green cleaning. This operational rigor is reflected in its "green packaging" plan, which uses biodegradable courier bags and recycled cardboard, while maintaining honest and non-exaggerated communication on carbon emission reduction targets. At the same time, Vipshop will strengthen its consumer compensation framework; Its "seven-day unconditional return" policy covers all product categories, effectively minimizing disputes caused by misleading marketing [13].

Vipshop will turn to the strategic fulcrum of compliant green marketing, which is a direct response to the ubiquitous industry green cleaning and consumer trust fracture. By establishing strong quality control barriers and certification thresholds, the platform has created a unique brand identity, eliminated compliance risks and achieved high-quality growth. In the theory of institutional innovation, the internal governance matrix of Vipshop-including strict quality control, strict certification and comprehensive after-sales policy-is the epitome of industry self-discipline, aiming at filling the formal regulatory gap. This case emphasizes that curbing green cleaning from the source requires a clear green entry threshold, which is characterized by strict verification, thorough

information transparency and traceable accountability. Finally, the industry success of Vipshop shows that industry self-discipline and internal platform control can decisively alleviate market chaos and provide an extensible blueprint for the collaborative governance ecosystem composed of "government supervision, platform autonomy and industry self-discipline".

On the other hand, some live-streaming e-commerce hosts engage in false advertising through means such as “greenwashing” and “illegal public opinion monitoring.” Some hosts, eager to boost their viewership, purchase live-streaming control software (commonly known as “follower inflation tools”) from unscrupulous companies to gain fake followers, likes, and comments, thereby artificially creating a “lively atmosphere”. According to typical cases released by the Ministry of Public Security in 2024, an investigation by the cybersecurity department of the Jinzhou Public Security Bureau in Liaoning Province revealed that a certain Xi and his associates recruited over 300 people to provide paid “public opinion monitoring” services on several well-known domestic automotive evaluation platforms. Using specific script templates, they posted “praising” comments and manipulated public opinion by deleting and down-ranking negative comments. In total, they posted over 400,000 fake comments and deleted more than 1,000 negative comments. This “artificial prosperity” created by “online troll farms” seriously disrupts market order and infringes upon consumers’ right to know and right to choose [14].

The core motivation for hosts and online troll farm gangs to take such risks is short-term profit-seeking: live-streaming viewership directly determines sales conversion and income, while viewership manipulation and comment control are low-cost and fast-acting; troll organizations can obtain high illegal profits through large-scale fraud, with strong concealment and low enforcement costs. From the perspective of digital economy theory, such behaviors constitute technological abuse, exploiting algorithmic recommendation vulnerabilities and data fabrication to damage the digital marketing ecosystem, thereby deviating from the original purpose of the digital economy in enabling genuine transactions. From the perspective of institutional innovation theory, the fundamental reason for the frequent occurrence of such chaos is the lag, ambiguity, and overly lenient penalties in the rules governing live-streaming and public opinion governance, resulting in significant room for violations due to insufficient institutional supply [10]. The implications of this case for the governance of online sales chaos are as follows: short-term high profits combined with low enforcement costs are key drivers of chaos; it is essential to raise the cost of violations, strengthen technological regulation, and clarify platform responsibilities, thereby creating constraints that make violations “dare not and cannot occur.” The value of this case for the present study lies in providing negative evidence that insufficient institutional adaptation and technological abuse are root causes of chaos, offering counter-evidence for constructing a dual-driver framework of “institutional innovation + technological governance,” and highlighting the necessity of improving rules and strengthening technological regulation [15,16].

The repeated and persistent occurrence of online marketing chaos despite repeated prohibitions is the result of multiple overlapping factors. The core contradictions are concentrated in two major aspects: institutional adaptation imbalance and governance technology shortcomings. These two factors are intertwined and mutually reinforcing, together making it difficult to eradicate the chaos over the long term.

3.1 Significant Contradiction in the Adaptability between Institutional Innovation and Technological Development

Institutional innovation theory and new institutional economics point out that institutions must be forward-looking and dynamically adaptable in order to keep pace with the rhythm of technological change and market evolution; otherwise, structural contradictions such as institutional lag and governance failure will arise [2]. In the digital economy sector, the rapid iteration of digital technologies has driven online marketing to continuously evolve from graphic-and-text e-commerce and social “grass-planting” (content marketing that plants consumer desire) to live-streaming sales, algorithm-based recommendations, AI marketing, and green marketing. Marketing scenarios, communication methods, and transaction logic are being constantly restructured, exhibiting new characteristics of

intelligence, concealment, and cross-domain operation. Meanwhile, the current regulatory system is still built on the foundation of traditional offline marketing and early-stage e-commerce models; it is slow to update and its structure is rigid. The pace of institutional innovation lags far behind the speed of technological iteration, creating an adaptability contradiction in which "technology runs ahead while institutions lag behind," which serves as the institutional root cause of the proliferation of chaos [11].

From the legislative point of view, the existing laws and regulations are mostly based on traditional marketing scenarios, which are difficult to apply to new forms of online marketing chaos, highlighting the lag of legislation. At present, the Advertising Law of the People's Republic of China limits its scope to the general provisions of fraudulent advertisements, leaving obvious legal gaps in "greenwashing", vague environmental remarks and the behavioral threshold of ecological certification fraud. This defect leads to excessive discretion in law enforcement and weakens the deterrent power of supervision. Similarly, although the E-commerce Law of the People's Republic of China clarifies the platform responsibility, it fails to formulate specific obligations in green marketing certification, algorithm compliance, and traffic management. Therefore, the platform-led audit is still superficial to a large extent, leading to the systematic lack of accountability. In addition, emerging areas, such as live broadcast business, digital human marketing generated by artificial intelligence and green consumption loyalty points, still have no special legal framework. These persistent regulatory loopholes inevitably create arbitrage opportunities for speculative violations.

From the perspective of regulatory institutions and methods, the regulatory system is rigid and its means are singular, seriously lagging behind the pace of digital marketing development. Regulatory powers and responsibilities are dispersed among multiple authorities, including market regulatory authorities, cyberspace administration authorities, and commerce authorities, resulting in coexisting problems of fragmented regulation, overlapping responsibilities, and regulatory gaps. Cross-departmental coordination is insufficient, making it difficult to address cross-platform, cross-regional online marketing chaos [4]. Furthermore, regulation still relies primarily on manual inspections and ex-post penalties, lacking digital regulatory tools such as big data monitoring, AI recognition, and blockchain traceability. Faced with concealed violations such as algorithmic black boxes, deepfakes, and data fabrication, regulators encounter difficulties in timely detection, evidence collection, and effective enforcement, making regulatory effectiveness unable to match governance needs [15].

3.2 Insufficient Development of Governance Technology, Making It Difficult to Curb the Chaos of Technological Abuse

Digital technology is originally an important tool for enabling green marketing and regulating market order. However, the insufficient development of governance-side technologies has made it impossible to effectively prevent wrongdoers from using advanced technologies to commit violations, resulting in the real-world dilemma where "the good is one step behind the evil." Digital economy theory emphasizes that technology is the core driving force of economic and social development, and that technological empowerment coexists with technological risks. Governance technology must iteratively update in tandem and take the lead proactively in order to effectively curb technological abuse [6]. The technical track of digital marketing presents the dual characteristics of "illegal authorization and utilization". Although big data, artificial intelligence (AI) and blockchain provide structural support for accurate consumer matching and information transparency in green marketing, opportunists use technical loopholes to improve their fraudulent methods. This asymmetry leads to an unbalanced path, which is manifested in excessive iteration of non-compliant technologies and delayed governance mechanisms, which makes it more difficult to eradicate technology abuse [13].

In recent years, market manipulators continue to upgrade their technical arsenals and use big data, artificial intelligence and replication technologies to plan secret and intelligent violations. Online click farm now deploys artificial intelligence to generate synthetic product feedback and create large-scale traffic indicators; On-site speakers use deepfake technology to forge environmental test reports and ecological certification; Digital platforms

use black-box algorithms to induce excessive consumption and implement price discrimination in big data. As a result, the information and concealment of market misconduct increased significantly [4,5]. In contrast, there is a serious bottleneck in the development of defensive governance technology, and there is a lack of proven enterprise tools, such as artificial intelligence semantic recognition, automatic image verification, algorithm audit and so on. This deficit weakens the ability to accurately detect pioneer violations such as deep fraud, complex green speech and traffic fraud, resulting in insufficient preventive ability of regulators.

In addition, due to the lack of data interoperability between the platform and the monitoring benchmark, the technical governance framework is still decentralized, which hinders the complete chain and standardized prevention system; The deployment of traceability and intelligent monitoring based on blockchain is currently limited to isolated applications. If there is no global technology governance ecosystem covering the whole life cycle of green product manufacturing, ecological certification and digital marketing, it is impossible to limit bad behavior from the source. As long as these systematic technical loopholes persist, online marketing violations will continue to escape structural repression.

4. Research Conclusions and Related Recommendations

4.1 Research Conclusions

This paper focuses on the chaos of network marketing under the background of digital technology and green marketing, and systematically reviews its manifestations, deep reasons and practical harm. By combining the successful practices of Pinduoduo, Vipshop, Taobao and other platforms with the shortcomings exposed by some live broadcast industries, it makes a comparative case analysis. Based on digital economy theory, green marketing theory, and institutional innovation theory, the paper deeply analyzes the pathways through which online marketing chaos emerges under the current circumstances, and draws the following core conclusions: current online marketing chaos exhibits characteristics of concealment, intelligence, and persistence. Its root causes lie in ssinstitutions lagging behind technological iteration and insufficient governance capacity, forming a vicious cycle that severely distorts the original intent of green marketing and disrupts market order. Practices on platforms such as Pinduoduo and Vipshop demonstrate that such chaos is governable. However, relying on a single approach is insufficient to eradicate it. A dual-driver system of “institutional innovation + technological governance” must be established to form a long-term synergistic force and return green marketing to its fundamental purpose.

4.2 Related Recommendations

Based on the above research conclusions and drawing on the theoretical support of digital economy theory, green marketing theory, and institutional innovation theory, the following policy recommendations are proposed to further enhance the effectiveness and targeting of governance over “online sales chaos”:

First, based on digital economy theory, build an intelligent dynamic governance system to “use digital means to govern digital chaos”. Relying on big data, artificial intelligence, and blockchain, establish a cross-platform monitoring and traceability system to accurately identify violations such as false advertising and traffic fraud, achieve real-time early warning and rapid response, eliminate information falsification at the technological source, and solve traditional regulatory pain points.

Second, based on green marketing theory, establish a marketing norm system oriented toward green value. Green marketing theory takes sustainable development as its core, requiring marketing activities to balance economic, social, and ecological benefits. Market entities should proactively disclose product environmental information truthfully, avoid exaggeration and forgery, abandon the orientation of traffic supremacy, convey authentic green value, cultivate a rational green consumption culture, avoid irrational consumption, and enable green marketing to truly serve the goals of ecological protection and sustainable development.

Third, based on institutional innovation theory, improve adaptive regulatory institutions and strengthen institutional constraint effectiveness. Institutional innovation theory advocates eliminating institutional lag through rule optimization. At the institutional level, it is necessary to: refine violation standards for new

business formats, fill regulatory gaps, establish cross-departmental coordination mechanisms to eliminate regulatory blind spots, create dynamic institutional adjustment mechanisms, increase the cost of violations, strengthen rigid constraints, and curb the emergence of chaos at the source.

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