The Dilemma, Root Causes, and Adaptation of the "One-Size-Fits-All" Approach: A Study on the Governance Efficacy of the Packaging National Standard (GB 23350-2021) from a Cost Constraint Perspective

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Abstract: The implementation of the mandatory national standard GB 23350-2021 marks a new stage in China's governance of excessive commodity packaging. However, a significant tension has arisen between its "one-size-fits-all" regulatory model and the functional diversity of commodity packaging, leading to multiple practical dilemmas such as compliance at the expense of quality, compliance leading to disenchantment, and compliance through circumvention. Existing research primarily describes this tension from technical, legal, or ethical dimensions, lacking a realistic consideration of governance costs and efficiency from the perspective of public policy implementers (regulators).

This paper constructs a "regulation–adaptation under cost constraints" analytical framework to systematically analyze the deep-seated roots of the aforementioned dilemmas. These roots lie in: (1) the fundamental contradiction between the standardized thinking that pursues management convenience(to reduce regulatory enforcement costs) and the high institutional design costs necessary to address market complexity; and (2) the problem of centralized state governance costs and diminishing efficacy resulting from over-reliance on "command-and-control" instruments.

Through conceptual analysis and typical case discussion (tea, mooncakes), this paper proposes that the key to resolving the dilemma lies in promoting a shift in the governance paradigm from threshold controlto function-based agile governance. The core pathway is to construct a composite toolkit coordinated by the state, market, and society: the state reduces coordination and accountability costs through legislation and framework standards; market incentive mechanisms (e.g., differentiated environmental taxes) are introduced to internalize part of the supervision costs and incentivize source reduction; industry organizations are authorized to formulate detailed rules to leverage their information cost advantages; and social supervision is activated to decentralize enforcement costs. This study provides a reference that balances theoretical depth and practicality for enhancing the responsiveness and efficacy of the packaging governance system while controlling overall governance costs.

Keywords: Excessive Packaging; GB 23350-2021; Governance Costs; Collaborative Governance; Regulation–Adaptation Framework

1. Introduction: The Predicament of Standards and the Missing Perspective

Excessive commodity packaging is a global chronic issue concerning resources and the environment. Statistics indicate that global packaging waste constitutes over 40% of solid waste[3]. To address this challenge, China issued the mandatory national standard GB 23350-2021: Requirements for Restricting Excessive Packaging of Foods and Cosmeticsin 2021, which was fully implemented on September 1, 2023. This standard provides a clear basis for enforcement through quantitative indicators (packaging void ratio, number of layers, cost, and mixed packaging requirements), representing a significant milestone in the governance process[2][7].

However, since its implementation, the standard has sparked widespread controversy and practical dilemmas in industries such as tea, mooncakes, and cosmetics. The core contradiction manifests as an inherent tension between standardized, uniform technical parameters and the inherent diversity of commodities in terms of physical attributes, cultural functions, and circulation scenarios. This tension forces enterprises into a dilemma between compliance and maintaining quality/preserving culture, and has also given rise to various designs aimed at circumventing regulation[1]. Academia has diagnosed the issue from perspectives such as fragmented legal regulation and imbalanced accountability mechanisms, generally advocating for collaborative governance[3][4][5].

Nevertheless, existing discussions largely remain at the level of principled appeals regarding what ought to be, lacking in-depth analysis from the what is perspective of policy formulators and implementers (i.e., the regulators). Under the constraint of limited resources (financial, human, attention), regulators must weigh the governance costs and efficiency of different policy instruments. A theoretically perfect but costly fine-grained management scheme may be impractical in practice. Therefore, the core research question of this study is: Against the backdrop of the "one-size-fits-all" national standard falling into practical dilemmas, how can we, from a governance cost–efficiency perspective, design a collaborative governance framework that can effectively curb excessive packaging, respond to commodity diversity, and remain within the tolerable capacity of state governance?

To this end, this paper constructs an analytical framework of regulation–adaptation under cost constraints. Through the analysis of typical cases and cross-national comparison, it aims to reveal the systemic cost roots of standardized governance and design a composite governance pathway integrating legal, market, and social instruments. The goal is to provide a reference that combines theoretical construction and practical concern for the modernization of China's packaging governance system.

2. Literature Review: From Problem Diagnosis to the Absence of a Cost Perspective

2.1 Multi-Dimensional Achievements in Existing Research

Academic research on excessive packaging regulation has yielded multi-dimensional achievements. At the technical standard level, studies have provided detailed interpretations and case analyses of the parameters of GB 23350-2021 and its amendments (e.g., void ratio formula, k-value, layer calculation), offering operational guidance for compliance determination[2][7]. At the legal regulation level, research systematically criticizes the current structural dilemmas of legislative fragmentationand insufficient deterrence, lack of incentives, and a consensus is forming on building a collaborative governance system of law–standards–market–society[3][4][5]. At the industry and cultural level, studies focus on the compliance particularities of specific commodities like tea and mooncakes, and the cultural–emotional conflicts embodied in their packaging[6].

2.2 Limitations and Research Gaps

Reviewing existing research, its contribution lies in clearly revealing the surface-level conflict between the "one-size-fits-all" standard and commodity diversity, as well as its manifestation within the legal system. However, its shortcomings are also evident:

First, most research approaches the issue from the perspective of the regulated entities (enterprises, consumers) or abstract legal values (fairness, efficiency), lacking examination from the regulators' own resource constraints and behavioral logic.

Second, calls for collaborative governancemostly remain at the level of enumerating instruments and advocating directions, failing to conduct in-depth analysis of the governance cost structures, efficacy boundaries, and the mechanisms of linkage and coupling among different governance tools (command-and-control, economic incentives, social supervision). For instance: What are the respective legislative and enforcement coordination costs of enacting a unified Commodity Packaging Lawversus maintaining the current fragmented legislative model? Which has lower execution costs and better long-term incentive effects: full-chain inspection by market supervision departments or price-signal-based environmental taxes? These questions are precisely the key to moving policy design from idealto feasible, yet they represent a gap in current research.

This paper attempts to address this gap, taking governance cost–efficiency analysisas the core thread throughout.

3. Analytical Framework: "Regulation–Adaptation" Under Cost Constraints

To systematically analyze the dilemmas of GB 23350-2021, this paper moves beyond static provision analysis, introducing a dynamic perspective of regulation–adaptationand explicitly embedding the core dimension of cost constraints. This framework posits that the implementation effect of any regulatory policy (e.g., a national standard) is not unilaterally determined by its provisions. Instead, it occurs within a dynamic field constituted by the regulatory environment–market structure–actor strategies, and the behavior of all actors is constrained by explicit or implicit costs.

3.1 Core Components of the Framework

Regulatory Environment: Includes laws, regulations, mandatory standards (e.g., GB 23350-2021), and policy objectives. Its formulation and revision entail high institutional design and procedural costs.

Market Structure: Involves commodity diversity (e.g., differences in physical properties between tea and pastries), consumer culture (gift attributes), technological forms (e-commerce packaging), etc. Higher complexity increases the information costs of unified regulation and the social loss costs (e.g., suppressing reasonable innovation) caused by a "one-size-fits-all" approach.

Strategic Interactions Among Actors:

Regulators (Managers): Under constraints of manpower and budget, their core goal is to control enforcement costs (information acquisition, inspection, penalty, adjudication) while pursuing governance efficacy. They tend to choose simple, clear, easily enforceable rules ("one-size-fits-all"), essentially seeking to minimize management convenience costs[8].

The Regulated (Enterprises): Weigh compliance costs against violation risks (penalties). When standards conflict with market demands, they may adopt innovative complianceor design circumvention strategies (e.g., detachable packaging), effectively transforming compliance costs into enforcement costs that regulators must recognize.

Consumers and Social Organizations: Can act as supervisors. Their participation can disperse state costs but also requires the design of effective mobilization and incentive mechanisms.

3.2 Deconstructing the "One-Size-Fits-All" Dilemma

The dilemma of the "one-size-fits-all" national standard can be deconstructed within this framework as follows: A simple rule designed to reduce the costs of regulatory enforcement, by overlooking the complexity of the market structure, produces the opposite effect. High enterprise compliance conflict costs and diversified strategic response costs ultimately lead to a decline in the actual efficacy of regulation. The total social cost (resource waste + environmental damage + regulatory cost) is not optimized and may even increase. The following sections develop empirical analysis based on this framework.

4. Practical Dilemmas of GB 23350-2021: Embodiment of Cost Conflicts

Based on the aforementioned framework, the tensions in the implementation of GB 23350-2021 manifest in three forms of cost conflict:

4.1 Technical Function Dilemma: Conflict Between Compliance Cost and Quality Assurance Cost

Uniform void ratio and layer restrictions struggle to adapt to the physical protection needs of all commodities. For example, For example, loose tea (with a k-value of 13 or 20) requires certain space to prevent breakage[8], while porcelain and high-end pastries are fragile and need enhanced protection[7]. Forcing compressed storage space presents enterprises with a choice: either bear the quality and reputation costs from the risk of product damage, or invest higher costs in developing new protective materials. This essentially shifts the environmental external costs of regulation directly into additional production costs or quality risk costs for enterprises. Under cost constraints, enterprises are often caught in a dilemma.

4.2 Market–Culture Dilemma: Conflict Between Compliance Cost and Market Value Cost

The packaging of commodities like mooncakes and gift tea carries emotional expression and cultural ritual functions. Strictly restricting their packaging’s aesthetic and ritualistic appeal weakens their market competitiveness, forcing enterprises to bear the cost of sales loss due to disenchantment. This has led to implicit violations such as sky-high price mooncakes(transferring costs to other items), requiring regulators to incur higher information recognition and investigation costs to respond[6]. This dilemma reflects the high transaction costs for standardized regulation to priceand manage non-monetized socio-cultural value.

4.3 Regulatory Enforcement Dilemma: Conflict Between Rule-Making Cost and Dynamic Response Cost

Faced with circumvention designs like detachable packagingand online-exclusive gift boxes, as well as new business formats like live-streaming sales, static standards suffer from identification ambiguities and coverage fade zones[1][10]. This means the upfront standard-setting costs invested by the state in pursuit of clarity rapidly depreciate due to market innovation. To maintain regulatory effectiveness, managers must continuously input rule interpretation costs, case adjudication costs, and the sunk costs of standard revision, falling into a high-cost cycle of formulation–lag–patching, resulting in low governance efficiency.

5. Deep-Seated Roots of the Dilemmas: Systemic Cost Limitations of Standardized Governance

The common root of the aforementioned symptoms lies in the systemic flaws in the cost structure of the current command-and-controlcentric standardized governance model.

5.1 Regulatory Philosophy Conflict: Minimizing Management Convenience Cost vs. Minimizing Total Social Cost

The essence of the "one-size-fits-all" model is a strategy chosen by regulators to reduce their own regulatory enforcement costs (simplifying inspection and judgment). However, this cost-saving is contradictory to the overall social optimum. It comes at the expense of total social cost (including enterprise compliance conflict costs, the additional payment cost for consumers, environmental damage costs). From a public policy perspective, this is a form of cost transfer and externalization, not effective cost control.

5.2 Singular Governance Tool: Centralized State Costs and Diminishing Efficacy

Current governance over-depends on administrative penalties and other "command-and-control" tools, leading to highly centralized governance costs at the state level[9]. Market regulatory authorities must bear the full chain of costs, ranging from standard formulation and publicity to inspections and penalties. As market complexity increases, the marginal regulatory costs of this model rise sharply, while the marginal effectiveness of governance decreases. Simultaneously, the lack of economic incentives and other market tools means enterprises lack the internal motivation for green innovation at the source. The valuable self-regulating mechanism of the market remains underutilized, resulting in waste of instrumental costs.

5.3 Rigid Standard Supply: High Iteration Costs and Response Lag

The revision process for national standards, while rigorous, is protracted and costly. This creates a temporal mismatch between the essentially staticnature of the regulatory supply and the dynamic evolution of the market, resulting in an inherent lag within the standards themselves. Policymakers face a dilemma: the cost of frequent revisions is prohibitive, yet inaction leads to a progressive erosion of regulatory efficacy. The high iterative costs born of this institutional rigidity represent the systemic root cause that prevents standards from flexibly adapting to diversity.

6. Adaptation Pathway: Building a Cost-Controllable Agile Collaborative Governance System

To resolve the predicament, it is necessary to start from cost constraints, promote a shift in the governance paradigm towards function-based agile governance[9]. The core is to construct a collaborative governance toolkit that shares costs and complements strengths.

6.1 Promoting a Paradigm Shift in Standards: Using a "Classification Framework" to Reduce Social Loss Costs and Enforcement Dispute Costs

Promote the evolution of national standards from a single-threshold typeto a classification framework type. The state is responsible for establishing classification rules and baseline standards based on the core functions of commodities (protection, display, gifting) and main scenarios (retail, express delivery, gifts). This increases the cost of designing the initial classification system but can significantly reduce the social loss costs caused by "one-size-fits-all" and subsequent enforcement dispute costs. Finer classification makes rules more realistic, thereby lowering enterprises' compliance uncertainty costs and regulators' interpretation costs.

6.2 Constructing a "Legal–Economic–Social" Composite Toolchain: Achieving Cost Dispersion and Incentive Compatibility

Legal Level (Strengthening Authority, Reducing Coordination Costs): Promote the formulation of a Commodity Packaging Regulationto integrate and enhance legal authority. Its core value lies in using a relatively high one-time legislative cost to clarify the powers and responsibilities of each party, thoroughly resolving the high coordination costs and legal application conflict costs brought by current legislative fragmentation, providing stable expectations for long-term governance.

Economic Level (Introducing the Market, Internalizing Governance Costs): This is key to reducing the country's ongoing regulatory costs. Design a Packaging Environmental Taxwith differentiated tax rates based on the difficulty of recycling packaging materials and carbon footprint. Impose heavy taxes on excessive packaging portions and offer tax reductions for enterprises using recyclable, reduced packaging. This tool transforms the daily supervision costs borne by the state into clear legal rules and tax collection/administration costs. Simultaneously, through price signals, it incentivizes enterprises to internalize environmental action as economic power for cost reduction, achieving incentive compatibility.

Social Level (Activating Participation, Distributing Enforcement Costs): Actively promote industry-wide green packaging covenants—leveraging the informational efficiency of self-regulation—and establish an official public oversight and incentive-based reporting platform dedicated to packaging reduction. With modest rewards as a catalyst, this approach can mobilize vast societal oversight, significantly distributing the state's costs for detecting violations and maintaining sustained pressure on regulated entities.

6.3 Establishing Agile Response Mechanisms: Utilizing Data Technology to Reduce Information and Decision-Making Costs

Establish a National, Full Life-Cycle Data Monitoring Platform for Packaging[10]: This entails building a state-led platform that legally mandates data integration from manufacturers, e-commerce platforms, and logistics enterprises. The initial fixed cost of platform development is thus exchanged for the ability to acquire real-time, low-cost information on market dynamics. This capability provides a foundation for precision-based supervision and scientific evaluation. Concurrently, explore creating a rapid-release channel for Standard Interpretations and Typical Case Guidelines. By delegating authority to specialized technical institutions, this channel would enable swift, normative responses to emerging issues, such as packaging for e-commerce livestreams. This mechanism would drastically reduce the temporal and procedural costs associated with standard revisions, thereby enhancing the overall resilience of the governance system.

7. Conclusion

The "one-size-fits-all" dilemma confronting GB 23350-2021 is, in essence, a systemic failure of the traditional command-and-controlregulatory model when operating under cost constraints to address the complex diversity of the market. By constructing the regulation–adaptation under cost constraintsanalytical framework, this study reveals that the predicament stems from regulators' pursuit of a localized optimization of enforcement costs at the expense of greater total social cost. Furthermore, the over-reliance on a singular governance tool has led to prohibitively high state expenditure and diminishing efficacy.

Therefore, the path to governance modernization lies not in abandoning standards, but in innovating the paradigms and toolkits for their implementation. The core logic of the function-based agile collaborative governancesystem proposed in this paper operates as follows: it reduces backend conflict costs through more refined front-end institutional design (a classification framework); transforms state supervision costs into corporate innovation incentives by introducing market-based mechanisms (e.g., environmental taxes); distributes enforcement costs by activating social oversight; and lowers information and decision-making costs through digitalization and rapid response mechanisms.

This pathway aims to optimize the allocation and rational sharing of governance costs among the state, the market, and society. Consequently, it seeks to build, under controllable governance costs, a new packaging governance ecosystem that can uphold environmental bottom lines, accommodate legitimate diversity, and actively stimulate green innovation.

Future research could build upon this foundation by conducting specific cost–benefit simulations for various policy instruments (such as environmental tax rates and methods of green subsidies), thereby advancing the proposed solutions toward greater practicality.

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