

Research on the Innovative Commercial Development Path of Public Opinion Analysis in Shandong Province

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Abstract

The public opinion analysis industry is undergoing a profound transformation from an information monitoring tool to a decision-making empowerment engine. However, its commercialization process faces multiple structural contradictions, including business model dilemmas, technological bottlenecks, disorderly market competition, stringent policy compliance, and misalignment with client needs. As a major province ranking among the top three in China's GDP with a population exceeding 100 million, Shandong Province exhibits a distinctive “dual nature” in its public opinion ecology, characterized by both proactive public oversight and regional stigmatization. This provides unique practical opportunities for the commercialization of public opinion analysis. Based on a systematic review of the commercialization challenges facing the public opinion analysis industry, this paper conducts an in-depth analysis of Shandong's public opinion characteristics and the existing foundation of its public opinion industry. It proposes four possible paths for the innovative commercialization of public opinion analysis in Shandong: technological breakthroughs; service upgrading; business model reconstruction; and ecological collaboration. The study concludes that Shandong, leveraging its unique public opinion governance practices and industrial foundation, has the potential to forge a differentiated development path distinct from traditional price-competition models, offering a “Shandong Model” for the commercial transformation of the national public opinion analysis industry.

Keywords

public opinion analysis, commercialization, Shandong province, regional characteristics, innovative development

1. Introduction

Over more than a decade of development, the public opinion analysis industry has evolved from a mere information monitoring tool into a critical infrastructure for government governance and corporate risk management. According to incomplete statistics, the global enterprise-level public opinion monitoring and services market exceeded RMB 10 billion in 2025, with a compound annual growth rate (CAGR) of over 8%. The domestic public opinion services market reached RMB 80 billion, showing rapid growth compared to a decade ago. However, this rapid market expansion has not been accompanied by a commensurate increase in industry profitability. With technological advancements, technical barriers have been lowered, basic monitoring functions have become increasingly homogeneous, price wars are rampant, and the industry's average gross profit margin has fallen by over 10 percentage points. The public opinion analysis industry is

thus caught in a growth trap characterized by increasing volume but not profit. Concurrently, Shandong Province, as an economic powerhouse ranking among the top three nationally in GDP with a population exceeding 100 million, presents distinct regional characteristics in its public opinion ecology. On one hand, it has established a nationally rare proactive public oversight system through platforms like Wenzheng Shandong (Governance through Public Inquiry) [1]. On the other hand, it frequently faces regional stigmatization attacks such as labels like “the province obsessed with civil service exams,” “drinking culture,” and “feudal conservatism.” This “dual nature” not only creates rich application scenarios for public opinion analysis services but also imposes higher demands on technical capabilities, service depth, and commercialization models within the industry. This paper aims to explore a core question: Against the backdrop of prevalent commercialization difficulties in the public opinion analysis industry, how can Shandong Province leverage its unique regional public opinion characteristics and industrial foundation to forge a differentiated and innovative development path?

2. Argumentation process

2.1 Commercialization Challenges in the Public Opinion Analysis Industry

2.1.1 Crisis in Business Model Sustainability

The public opinion monitoring industry suffers from a structural contradiction of “high investment, low return.” Establishing a self-built monitoring system requires initial investments running into tens of millions of yuan, while basic annual subscription fees have dropped from the RMB 100,000 level to RMB 20,000-30,000. Furthermore, revenue growth from government clients is declining, SaaS (Software as a Service) transition is sluggish, and renewal rates continue to decrease. A deeper contradiction lies in the fact that clients require solutions integrated into their business contexts, yet standardized models struggle to fully meet the differentiated needs of various clients. Simultaneously, the rapid erosion of technological barriers exacerbates this dilemma. Basic public opinion monitoring technology is becoming increasingly pervasive, with numerous small and medium-sized vendors entering the market, leading to high functional homogeneity.

2.1.2 Technological Bottlenecks in Data Acquisition and Intelligent Analysis

Challenges in data acquisition are escalating. Major social media platforms are implementing stringent anti-crawling measures; high-frequency data collection from fixed IP addresses is easily blocked, leading to data gaps and sampling biases. Short-video monitoring presents higher barriers, requiring capabilities such as image recognition, speech-to-text transcription, and OCR (Optical Character Recognition) extraction. Moreover, unstructured data now accounts for over 60% of all data, rendering traditional keyword-based filtering nearly ineffective [2]. Simultaneously, the challenge of semantic understanding remains prominent. Complex linguistic phenomena prevalent in the Chinese language environment, such as sarcasm, internet slang, and puns, pose significant difficulties. Even advanced models struggle to achieve satisfactory sentiment analysis accuracy in complex contexts. Additionally, current Large Language Models (LLMs) have two major weaknesses – AI hallucinations and low accuracy on recent events – which hinder their ability to meet the real-time requirements of public opinion analysis.

2.1.3 Disorderly Market Competition and Escalated “Dark PR” Tactics

Basic functions have become commoditized, with user interfaces across different vendors looking similar. Some vendors over-promise customization to secure orders, leading to delivery difficulties later on. Price wars trigger a chain reaction of negative consequences. On the other hand, the boom in AI technology has enabled “Dark PR” (malicious public relations) and online troll armies to continuously evolve. In 2025, the total volume of public opinion in the automotive industry increased significantly compared to the past, with complaints related to “battery locking” incidents in the new energy vehicle sector surging by 273% year-on-year. Attack methods include coordinated sensationalism, identity impersonation, content reposting and rewriting, and AI-generated content produced in bulk. Some “Dark PR” operations have even industrialized their task allocation, distributing defamation tasks as systematically as assigning work orders.

2.1.4 Rigid Constraints of Policies and Regulations

The Data Security Law of the People's Republic of China, the Personal Information Protection Law of the People's Republic of China, and the revised (2026) Cybersecurity Law of the People's Republic of China establish a stringent legal framework [3]. Vendors must continuously invest in security audits and system overhauls, while the legality of data acquisition is frequently questioned. Law enforcement challenges such as the admissibility of electronic evidence, data breach risks, and difficulties in cross-departmental evidence collection are real and persistent. Issues like algorithmic recommendation bias, information cocoons, and AI-generated content without proper source attribution also pose potential legal risks [3].

2.1.5 Structural Misalignment with Client Needs

Client needs have evolved from “knowing where public opinion is” to “early warning, analysis, and providing solutions for public opinion.” However, most current analyses remain at the univariate level, easily misinterpreting correlations as causations. The depth of automated reports and the practicality of strategic recommendations are often insufficient. The majority of products merely serve as tools for a single department, lacking deep integration with client business processes.

2.2 Characteristics of Public Opinion in Shandong Province

2.2.1 Structural Features of the “Dual Nature” Public Opinion Ecology

Shandong's public opinion ecology presents a distinct “dual nature.” On one hand, relying on platforms like Wenzheng Shandong [1], Shandong has built a nationally rare proactive public oversight system, forming a closed loop through on-site questioning of officials, immediate commitments to rectification, and follow-up visits. On the other hand, Shandong frequently suffers from regional stigmatization attacks, labeled as “the province obsessed with civil service exams,” “drinking culture,” or “feudal conservatism.” This sense of dichotomy is intertwined with Shandong's unique “major province imprint”—social contradictions arising from its massive economic output versus industrial transition pains, and its traditional folk culture versus the pursuit of modern order.

2.2.2 Special Demands for Public Opinion Analysis Services

The characteristics of public opinion in Shandong impose four specific demands on analysis services: in-depth service needs for public oversight scenarios; precise identification needs for regional stigmatization; narrative construction needs for industrial transformation; and rapid response needs for online rumors.

In-depth service needs for public oversight scenarios: Platforms like Wenzheng Shandong require government agencies at all levels in Shandong to demand high timeliness, precision, and closed-loop management capabilities in public opinion monitoring. This necessitates comprehensive process assistance from public opinion service providers, spanning early warning to resolution.

Precise identification needs for regional stigmatization: Stigmatization labels like “the province obsessed with civil service exams” or “drinking culture” often originate from isolated extreme cases or jokes, which then spread via short videos and Weibo, forming stereotypes and storms of prejudice. This demands high multi-modal content recognition capabilities, deep semantic understanding, and refined sentiment analysis accuracy from service providers.

Narrative construction needs for industrial transformation: There is a structural disconnect in the information dissemination regarding Shandong's transition driven by new and old growth drivers. Traditional industries, though large in scale, lack compelling narratives, while emerging industries, despite having a tangible presence, lack effective branding and storytelling. Service providers need to shift from “passive monitoring” to “active narrative construction” to help Shandong build a new industrial image.

Rapid response needs for online rumors: Shandong is a hotbed for online rumors, where rumor-mongers often fabricate content linked to social pain points to generate clicks. The average response time for debunking rumors related to Shandong in 2025 has significantly decreased compared to before, placing extremely high demands on the real-time and accurate capabilities of public opinion monitoring.

2.2.3 Existing Foundation for the Public Opinion Industry in Shandong

Shandong Province has accumulated a certain industrial foundation in the field of public opinion analysis. The Shandong Internet Media Group is one of the earliest news media organizations in China to engage in public opinion services. Its subsidiary, Dazhong Information Industry Co., Ltd., has been deeply involved in this sector for 15 years, developing full-chain service capabilities encompassing monitoring and early warning, analysis and assessment, response and guidance, and training and drills, serving nearly 500 institutions [4]. In 2025, it monitored and processed approximately 740 million pieces of data and produced over 23,000 public opinion analysis and think tank reports. Its annual revenue from public opinion data services exceeded RMB 60 million, ranking first in market share within the province and leading nationally.

In terms of technological innovation, the “Haidai Public Opinion LLM” passed the filing and review process with the Cyberspace Administration of China (CAC) in September 2025, becoming the first vertical industry-specific LLM for public opinion in Shandong Province. Concurrently, products like the “Haiyan Public Opinion Monitoring System” and the “Hailan Holistic Situational Awareness System” have undergone continuous iteration [2]. In 2025, the Shandong Internet Media Group completed the inclusion of “Shandong Internet and Related Services Internet Public Opinion Data” as a data asset on its balance sheet. The inclusion amount of over RMB 1.3 million accurately reflected the full lifecycle cost of the data, with the market value subsequently assessed at over RMB 20 million.

These practices demonstrate that Shandong possesses the industrial foundation and technological accumulation necessary for the innovative commercial development of public opinion analysis. The key lies in transforming regional characteristics into competitive advantages.

2.3 Paths for Innovative Commercial Development of Public Opinion Analysis in Shandong Province

Building upon the above analysis of common industry challenges and the specific characteristics of Shandong Province, this paper proposes four paths for the innovative commercial development of public opinion analysis in Shandong.

2.3.1 Technological Breakthroughs

Technological capability is the core competitiveness of the public opinion analysis industry and a key lever for escaping homogenized competition. Future breakthroughs for the industry lie in the systematic development of multi-modal content recognition capabilities, deep optimization of regional semantic understanding, and the prevention of AI hallucinations alongside enhanced real-time performance.

Systematic development of multi-modal content recognition capabilities: Faced with the reality that unstructured data from short-video platforms exceeds 60%, it is necessary to simultaneously possess capabilities such as image recognition, speech-to-text transcription, and OCR extraction [2]. Leveraging existing foundations like the “Haidai Public Opinion LLM,” Shandong can accelerate the R&D of multi-modal fusion analysis technologies to achieve comprehensive coverage of new information carriers like short videos and live streaming.

Deep optimization of regional semantic understanding: Shandong's public opinion landscape involves a significant amount of regional expressions, from internet slang to local dialects, and from sarcasm to puns, which generic models struggle to identify accurately. By constructing a regional linguistic corpus specific to Shandong based on existing LLMs and leveraging the research capabilities of prestigious local universities like Shandong University and Ocean University of China, it is possible to train sentiment analysis and opinion clustering models tailored to the Shandong context, thereby fostering better development in public opinion analysis.

Prevention of AI hallucinations and enhancement of real-time performance: LLMs face the dual weaknesses of AI hallucinations and real-time limitations in public opinion analysis. Exploring a hybrid “LLM + manual assessment” model can be effective, where the LLM handles data collection, preliminary classification, and trend prediction, while professional public opinion analysts are responsible for in-depth interpretation and strategy formulation. Going further, training AI models for decision-making analysis can leverage AI's efficiency advantages while mitigating its accuracy risks.

2.3.2 Service Upgrading

Client needs have progressively shifted from “knowing where public opinion is” to “early warning, analysis, and providing solutions for public opinion.” Public opinion service providers in Shandong must also closely follow this market shift, completing the transition from being a “monitoring tool” to a “governance partner.”

Building a closed-loop service system integrating monitoring, early warning, assignment, handling, and feedback: Currently, most products serve only as tools for individual departments, lacking deep integration with client business processes. Leveraging its existing full-chain service capabilities, Shandong can further develop standardized response plan repositories and intelligent dispatch systems for different industries and scenarios, enabling automated closed-loop management of public opinion. Concurrently, introducing expert systems to assess customized business needs for different clients can enhance service quality. It is also crucial to expand from “post-event monitoring” to “pre-event early warning, in-event guidance, and post-event remediation.” The proactive governance demonstrated by Shandong's Wenzheng Shandong platform highlights the effectiveness of active management. Service providers can learn from this experience by developing public opinion risk prediction models and positive topic-setting tools to help clients shift from passive reaction to active guidance. For instance, to counter recurring pessimistic narratives about Shandong's private economy, such as claims that the “business environment cannot retain talent,” providers can offer services aimed at proactively constructing a positive image based on data.

Deep integration of think-tank-oriented services: Dazhong Information Industry Co., Ltd.'s internal reference biweekly, Dazhong Public Opinion Reference, has been continuously published for 460 issues. Building on this foundation, providers can further upgrade their offerings by integrating public opinion data analysis with public policy research and industrial strategic consulting, providing in-depth think-tank services that move from “what” and “why” to “how.”

2.3.3 Business Model Reconstruction

To resolve the dilemma of increasing volume without profit growth, fundamental innovation in business models is required.

Promoting the asset-based operation of public opinion data: The Shandong Internet Media Group has already pioneered the inclusion of public opinion data as assets on the balance sheet, setting a benchmark for the industry. The next step involves exploring the compliant circulation and commercial application of data assets, transforming accumulated massive public opinion data into sustainable asset-based returns. Simultaneously, collaborating with universities and research institutions in Shandong to establish a Shandong Public Opinion Data Open Innovation Lab could facilitate data value realization while ensuring data security.

Deepening focus on vertical industries to build differentiated barriers: Generic public opinion monitoring has become a red ocean, but deep services for vertical industries still represent a blue ocean. As a major province in agriculture, manufacturing, and energy, Shandong holds unique advantages in vertical areas like agricultural public opinion, chemical safety public opinion, and new energy public opinion. Developing specialized models and industry-specific solutions for these sectors, and building competitive barriers through deep accumulation of industry knowledge, is a viable path. The Haidai Public Opinion LLM has already articulated its direction of gradually extending to multiple industries to create specialized small models or intelligent agents, a trajectory worth persistent pursuit.

Exploring a diversified revenue model integrating SaaS, consulting, and training: Given the persistent low retention rates of SaaS subscriptions, relying solely on subscription revenue cannot sustain continuous R&D investment. Drawing on hybrid models like “SaaS subscription + turnkey delivery,” providers can offer differentiated services to various client segments: providing high-end integrated services (systems, manual analysis, think-tank reports) to government and large enterprises; offering standardized SaaS products to SMEs; while simultaneously expanding value-added services such as public opinion training, emergency drills, and security assessments to meet diverse client needs, enhance customer satisfaction, and increase the willingness for long-term cooperation.

2.3.4 Ecological Collaboration

The innovative development of the public opinion analysis industry cannot rely solely on individual companies; it requires building a collaborative and mutually beneficial industrial ecosystem.

Strengthening government guidance and policy support: Shandong has already issued policies related to the deep integration and collaborative innovation of culture and technology. Building on this, the public opinion analysis industry could be designated as a key area for cultural-technology integration, with policy support in R&D investment, data compliance, and talent cultivation [3]. Furthermore, innovative mechanisms like the “direct liaison points for enterprise-related online complaint and rumor debunking” can be adopted to establish normalized collaboration platforms between the government and public opinion service providers.

Deepening industry-university-research collaborative innovation: Prestigious Shandong universities like Shandong University and Ocean University of China have existing research accumulations in areas such as influencing factors of public opinion dissemination, lifecycles of typical cases, and effectiveness evaluation of government new media responses. Establishing collaborative mechanisms connecting universities, enterprises, and the government can facilitate the translation of academic achievements into industrial capabilities.

Building regional industrial alliances and standards systems: Faced with the dual challenges of escalating “Dark PR” tactics and disorderly market competition, Shandong Province can take the lead in establishing regional industry standards and self-regulatory conventions for public opinion services, standardizing service processes, clarifying data compliance boundaries, and curbing vicious price competition. Simultaneously, platforms like the Shandong Provincial Online Public Opinion Management Forum can be utilized to promote industry exchange and collaborative governance.

3. Conclusion

The commercialization challenges faced by the public opinion analysis industry are essentially structural contradictions inevitably encountered during the transition from extensive expansion to high-quality development. Resolving these challenges requires not only continuous technological breakthroughs but also fundamental restructuring of business models and service philosophies. Shandong Province is already well-positioned in this transition and possesses unique advantageous conditions. Its “dual nature” public opinion ecology creates rich application scenarios and urgent upgrade demands for public opinion analysis services, while its existing industrial foundation provides a solid base for innovative development.

The four paths proposed in this paper—technological breakthroughs, service upgrading, business model reconstruction, and ecological collaboration—constitute a mutually reinforcing systemic framework. Technological breakthroughs address the question of “whether it can be done,” service upgrading addresses “whether it can be done well,” business model reconstruction addresses “whether it can be sustained,” and ecological collaboration addresses “whether it can be scaled.” The integration of these four elements is expected to help Shandong's public opinion analysis industry forge a differentiated development path distinct from traditional price-based competition models.

In the long run, the ultimate value of the public opinion analysis industry depends on the real value it creates for its clients—whether it helps governments govern more effectively, whether it helps enterprises manage reputational risks more precisely, and whether it provides reliable decision-making bases in complex public opinion environments. If Shandong can persistently focus on this positioning, transforming public opinion pressures into innovative momentum, it will not only open up new space for its own industrial development but also provide a valuable “Shandong Model” for the commercial transformation of the national public opinion analysis industry.

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