

# ***Utilizing Big Data Analytics to Delve into the Economic Dynamics of the Catering Industry: A Comparative Analysis Between Traditional and Innovative Catering Sectors in China***

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**Abstract:** This paper aims to delve into the economic changes and developmental trajectories between traditional and emerging gastronomy in China, revealing disparities and contrasts between the two. Initially, the paper meticulously delineates the historical context of traditional gastronomy and the current challenges it faces, encompassing issues such as exorbitant labor costs, the viral transmission risk associated with dine-in services, and restrictions on imported frozen foods. Subsequently, it focuses on the current status and future trends of emerging gastronomy, particularly highlighting the application of advanced data analytics technologies in the culinary domain, such as precision marketing, real-time delivery services, and data-driven site selection decisions. Finally, through a comparative analysis of traditional and emerging gastronomy, the paper puts forth corresponding reform strategies, underscoring the advantages and immense potential for development within the emerging gastronomy sector.

**Keywords:** Catering Industry, Big Data, Development Trends, Intelligent Service

## **1. Introduction**

As the global economy flourishes and societal structures evolve, the restaurant industry, as a core component of the service sector, is occupying an increasingly significant position in economies worldwide. Particularly in China, the restaurant industry not only stands as one of the pillars of the economy but also vividly showcases its rich cultural heritage. However, amidst shifting consumer demands, rapid technological advancements, and the impact of globalization, the restaurant industry is undergoing unprecedented transformations.

Traditional Chinese dining establishments carry a profound historical and cultural legacy, ranging from time-honored eateries to regional culinary specialties, all integral parts of Chinese gastronomic culture. Yet, faced with challenges such as rising labor costs, complex operational environments, and intensified market competition, traditional restaurants are seeking new breakthroughs. Simultaneously, emerging dining concepts are gaining prominence with their innovative, efficient, and technology-driven advantages. Leveraging modern technological tools such as the internet and

big data, these new dining ventures offer consumers more convenient and personalized service experiences, greatly propelling the industry's development.[1]

## **2. Analysis of Economic Changes in the Traditional Catering Industry**

### **2.1. Challenges Faced by the Traditional Catering Industry**

**Labor Expenses Are Substantial:** The traditional catering industry incurs costs in labor, comprising roughly one-third of its total expenses. Given its labor-intensive nature, with a heavy reliance on human service that encompasses recruitment, training, and other aspects, these expenses naturally drive up operational costs.

**Dine-in Service Poses Significant Health Risks:** Traditional dine-in methods carry inherent risks of virus transmission. Especially during the widespread COVID-19 pandemic, there was a significant decline in dine-in customers, leading to a noticeable drop in revenue.

**Challenges Arise from Import Restrictions on Frozen Foods:** The traditional catering industry faces challenges stemming from restrictions on imported frozen foods, which are commonly utilized in the sector. This undoubtedly disrupts its operational flow.

**Food Waste Remains a Pressing Issue:** The traditional catering industry struggles with significant food waste, posing environmental challenges and adverse health impacts on individuals.[2]

### **2.2. The Development History of the Catering Industry**

Since the "Reform and Opening-Up" policy, the catering industry has undergone four distinct stages: the recovery period, the growth period, the maturity period, and the transformation and upgrading period.

#### **Recovery Period:**

In the 1980s, with China's reform and opening-up, the catering industry experienced ideological liberation, and the private economy flourished. Individual catering enterprises emerged rapidly, and national catering revenue showed a rapid growth trend.

#### **Growth Period:**

Since 1992, with the establishment of the socialist market economic system, the catering market has released its vitality comprehensively, entering a period of rapid growth. State-owned and collective catering enterprises, through modern enterprise system reforms, regained vitality and became leading forces in the industry. Imbalanced market pricing and supply-demand relationships sparked enthusiasm for investment in the catering industry from all sectors of society, leading to an influx of private and foreign capital. The industry structure gradually shifted to one dominated by private enterprises, with state-owned and foreign enterprises playing supporting roles.

#### **Maturity Period:**

After joining the WTO, China's catering industry entered a stage of mature development. The introduction of advanced management concepts and methods propelled continuous progress in the industry, while the improvement of consumption levels further drove sustained growth in catering revenue. Chinese cuisine was promoted globally through international events and exhibitions, increasing its influence and showcasing the unique charm of Chinese culture.

#### **Transformation and Upgrading Period:**

Faced with challenges such as the loss of low-cost advantages, the establishment of new advantages, and the difficulties encountered in the expansion of quantity and scale, transformation and upgrading became the industry's main task. By 2018, catering industry revenue had reached 4.2716 trillion yuan, achieving qualitative improvements in industrialization, branding, innovation, and food safety, entering a new stage of high-quality development.[3,4]

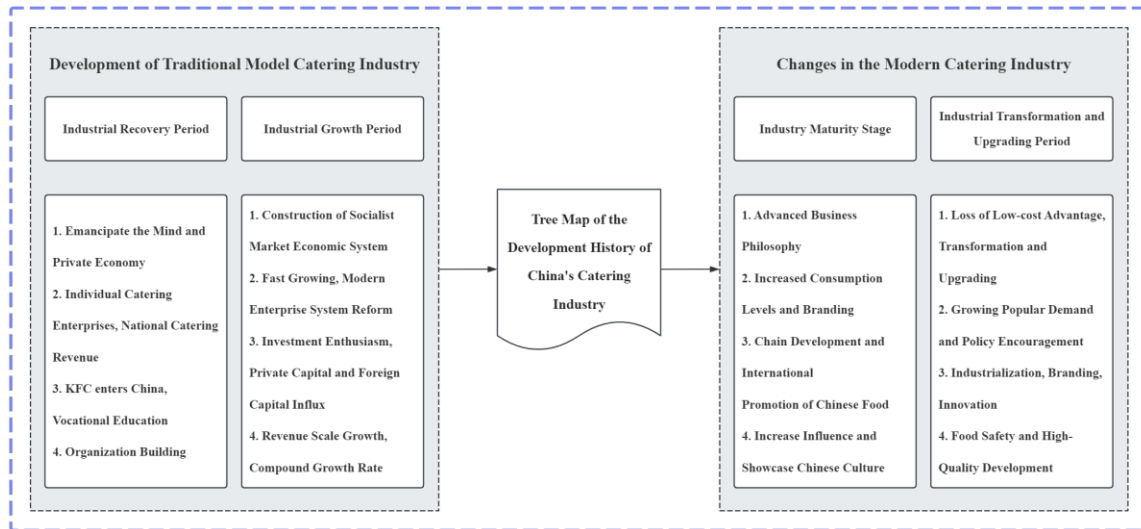


Figure 1: The Development History of the Catering Industry

### 2.3. Challenges Present in the Traditional Catering Industry

Standardized service models have resulted in homogenous competition, stripping enterprises of their competitive edge. This over-reliance on procedural operations has stifled innovation and personalized service, ultimately undermining both the competitiveness and customer satisfaction of these businesses.

In the pursuit of efficiency, enterprises often overlook the customer experience, leading to customers enduring queues or feeling pressured by service staff during their dining experience. This not only increases customer time costs but also generates unnecessary consumption pressure.

Bidirectional communication between enterprises and customers remains inadequate, resulting in delayed and inaccurate information dissemination. Traditional promotional methods lack variety and allure, making it difficult to capture customer attention and provide them with a thorough understanding of restaurant offerings. This ultimately impacts their consumption decisions and satisfaction levels.

Post-sales services often lack the necessary priority, resulting in service personnel failing to respond promptly or proactively when addressing errors. This can lead to increased customer dissatisfaction and complaints. The absence of effective complaint resolution mechanisms and customer care measures can erode the reputation and customer loyalty of enterprises, further heightening the risk of customer attrition.[5]

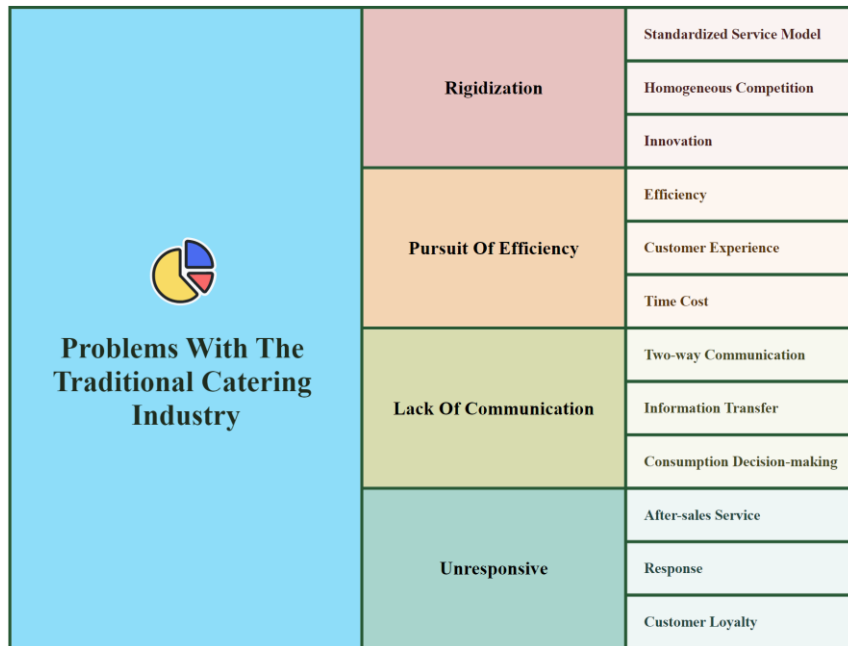


Figure 2: Challenges Present in the Traditional Catering Industry

### 3. Analysis of Economic Changes in the New Catering Industry

#### 3.1. The Current State of the Catering Industry

The government work report of 2023 explicitly identified "actively expanding domestic demand" as the primary task of the year, with a focus on restoring and expanding consumption.

Additionally, diverse and abundant consumption promotion activities, coupled with the rapid development of new consumption patterns, are crucial elements in stimulating consumption and expanding domestic demand.[6]

**Industry Scale and Future Development Potential:**

The catering industry boasts a vast scale and enormous potential for future development. In 2018, catering revenue surpassed the 4 trillion yuan mark for the first time, showing a steady growth trend, particularly in the performance of fast-food and specialty catering enterprises. The widespread application of the internet has enhanced industry competitiveness, lowered operating costs, and promoted diversified and differentiated development within the sector.

**Diversity in Culinary Culture:**

The diversity of culinary culture stands out as a highlight of the catering market, encompassing specialties from various countries such as China, the United States, the United Kingdom, and Japan. This cultural integration not only enhances the internationalization of the catering industry but also strengthens its competitiveness in the global market.

**Challenges Arising from Outdated Management Models:**

The catering industry faces challenges due to outdated management models. Extensive operational methods and inefficient manpower management lead to frequent personnel turnover, rising operating costs, and an inaccurate grasp of market changes, and subsequently affect the overall competitiveness of enterprises.

**Intensifying Market Competition:**

Competition in the catering industry is becoming increasingly fierce, with rankings of the top 100 catering enterprises frequently changing. Despite the increasing number of entrepreneurs, they also face multiple challenges such as soaring store rents and intensified competition within the industry.

Leading enterprises also face strong pressure from emerging competitors, making market competition even more intense.[7]

### 3.2. The Utilization of Big Data in the Catering Industry

**Precision Marketing:** By harnessing the power of big data analytics, marketers delve deeply into consumers' online shopping patterns and personal identity information. This enables the construction of intricate user profiles and behavioral models, leading to personalized product recommendations and targeted marketing promotions. This strategy has gained widespread adoption across numerous e-commerce platforms, including Taobao and JD.com, among others.

**Real-time Delivery Services:** Leveraging big data-driven intelligent dispatching systems, takeaway delivery services and modern fresh retail supermarkets have seamlessly integrated real-time delivery applications. By intelligently matching historical orders with real-time rider locations and optimizing delivery routes, these companies have significantly boosted delivery efficiency. Companies such as Meituan and Hema Fresh have achieved remarkable successes in this realm.

**Scientific Site Selection Decisions:** Big data serves as a valuable tool in providing scientific support for site selection decisions in both retail and catering industries. By real-time monitoring of customer flow and demographic movement data, precise demographic analysis and market forecasting are conducted. This assists enterprises in making informed decisions about offline store locations, ultimately enhancing operational efficiency and market competitiveness.[8]

### 3.3. The Example

Since its establishment in 1982, Laoxiang Chicken has gradually transformed from traditional catering sales to a digitized operational model, with a registered capital of up to 3.6 billion yuan. In 2021, the company was honored with the title of "National Leading Enterprise" by the Ministry of Agriculture and Rural Affairs. By the end of 2022, the number of directly operated stores had reached 1007, with 118 franchise stores, spanning seven provinces and municipalities, and employing over 10,000 people.

**Comprehensive Examination:** Seamlessly integrating online and offline data, overcoming the challenge of data integration, optimizing management efficiency, and deepening data applications.

**World at Hand:** A mobile-end data visualization platform supporting multi-angle inquiries into store operating indicators, cultivating store owners' data insight.

**Inspection Record:** The online inspection system improves work efficiency, enforces unified execution standards, and enhances the timeliness and accuracy of management.

**Daily Wage Settlement:** A fair and transparent daily wage payment system, real-time settlement of employee salaries, ensuring the openness and transparency of salary payments.

**Emergency Response:** Real-time response mechanism for sudden events, coordinated handling, immediate notification of management lines, and providing strong support for operations.

**Task Control:** Online task execution management enhances business processing capabilities, ensuring comprehensive task monitoring and execution.

**Data Standardization:** Standardized data management processes ensure data accuracy and consistency, providing the accurate basis for business decisions.

**Data Consolidation Center:** Online data reports meet the diverse needs of various departments, flexibly view data, and improve business processing efficiency.

**Intelligent Logistics:** IoT devices monitor the cold chain process, reducing food loss and waste, and improving logistics operation efficiency.

**Intelligent Farming:** Big data analysis helps optimize production plans, improve production efficiency, and achieve digital decision-making and management.

By relying on big data analysis, the company continuously optimizes production, management, and logistics, improving efficiency, reducing costs, and achieving stable and sustainable growth. Through data standardization and precision management, data accuracy is ensured, providing strong support for business decisions. Meanwhile, leveraging intelligent logistics and intelligent farming technologies optimizes supply chain management, reduces losses, and enhances overall production efficiency.[6]

#### **4. Comparison Analysis between Traditional and New-age Catering Industries**

The deep integration of online and offline services in the new catering industry has revolutionized the entire foodservice sector by delivering a more efficient and seamless experience to consumers. Simultaneously, the new catering models offer group buying and door-to-door delivery services, fully meeting the diverse needs of consumers and thereby enhancing customer satisfaction. In enhancing platform efficiency and effectiveness within the foodservice industry, information technology, cloud computing, and data analysis play a pivotal role. Traditional restaurants, without undergoing online service integration, still maintain relatively conventional operating methods. Compared to the new catering industry, traditional restaurants may encounter significant challenges in terms of efficiency and convenience.

##### **4.1. The Assistance of Big Data to the Catering Industry**

**Business Philosophy:** Embracing the benefits of the Internet economy, we establish a seamless dual-channel sales system encompassing both online and offline platforms. The enterprise needs to prioritize consumer feedback, continuously enhancing our brand's influence and fostering stronger relationships with our customers.

**Collaborative Expansion:** Through tight collaboration with food delivery platforms and internet finance entities, the enterprise needs to solidify our consumer base. The enterprise needs to listen intently to customer voices, continuously optimizing service quality to meet their evolving needs.

**Delivery Optimization:** The enterprise needs to enhance delivery efficiency and service quality, ensuring food safety as our topmost priority. By leveraging information technology, the enterprise needs to facilitate intelligent delivery management, optimizing routes and improving turnaround time.

**Online Marketing Strategies:** Leveraging innovative marketing techniques on internet platforms, we expand our market share. Through community marketing, the enterprise fosters a sense of identity and belonging among our consumers, deepening their loyalty to our brand.

**Market Standardization:** We strengthen the protection of personal information, vigorously guarding against data leakage risks. The enterprise needs to improve the security protection mechanisms of our internet platforms, ensuring a safe and trusted environment for our customers.

**Multi-tier Platform Innovation:** We innovate our service models, enhancing the user experience across all platforms. By expanding local food delivery service platforms, the enterprise needs to reduce operating costs while maintaining high-quality service delivery.

**Win-Win Collaborations:** The enterprise fosters deep collaborations with food delivery and e-commerce platforms, sharing traffic resources and expertise. Through establishing a robust cooperation mechanism, the enterprise needs to promote mutual development and growth.

**Consumer-Centric Focus:** The enterprise strives for seamless integration of online and offline channels, enhancing the user experience throughout their journey. The enterprise needs to promptly respond to customer feedback, continuously adapting to meet the changing needs and preferences of our consumers.[9]



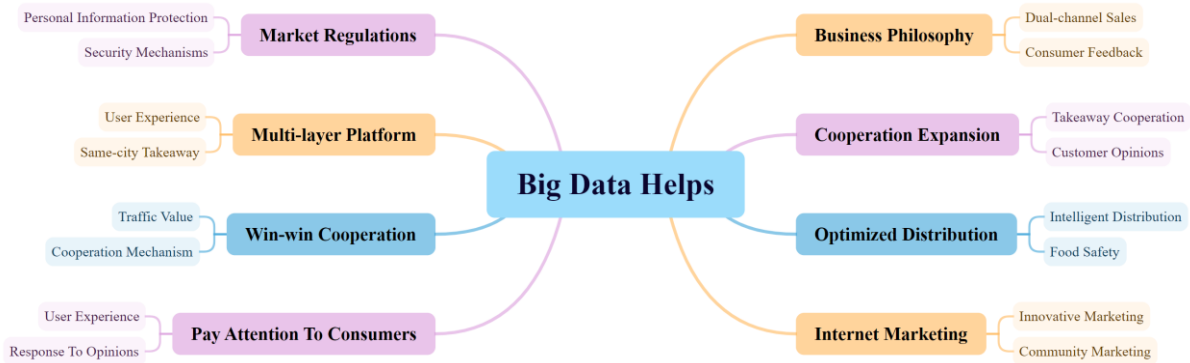


Figure 3: The Assistance of Big Data to the Catering Industry

## 4.2. Response Strategies

### New Retail Model: Novel Strategies in Response to the Pandemic

Amidst the challenges posed by the pandemic, the new retail model has injected fresh vitality into the catering industry. This innovative sales approach not only enhances sales efficiency but also significantly broadens sales coverage, providing robust support to catering enterprises in combating the epidemic.

#### Platform Infiltration: Expanding Sales Channels

The catering industry actively joins food delivery platforms, and even establishes their own online platforms, greatly expanding sales channels. This initiative not only promotes rapid brand development but also brings about significant growth in sales revenue.

#### Strengthening Brand Construction: Enhancing Market Competitiveness

Brand construction has become an important means for catering enterprises to enhance market competitiveness. Through careful brand image crafting, enterprises successfully deepen consumers' awareness and trust in the brand, thus occupying a more favorable position in the market.

#### Personnel Training: Novel Measures to Enhance Service Quality

The catering industry attaches great importance to personnel training. By strengthening training, it not only enhances the service quality of employees but also strengthens their ability to deal with emergencies, ensuring that every customer can enjoy a safe and comfortable dining environment.

#### Policy Support: New Impetus to Alleviate Financial Pressure

Government-supported policies provide timely assistance to catering enterprises, effectively alleviating the financial pressure on businesses and injecting new impetus into their survival and development.

#### Intelligent Management: Enhancing Productivity through New Avenues

With the help of intelligent management methods, catering enterprises have achieved a significant increase in productivity. Intelligent management not only accelerates service processes and improves work efficiency but also greatly enhances customer experience, bringing more competitive advantages to enterprises.[9]

## 5. Future Outlook

Looking ahead, the catering industry is poised to embark on a new era of digitization, intelligence, and personalization. With the ever-growing maturity and widespread implementation of big data technology, catering enterprises will gain a deeper understanding of consumer demands, enabling personalized customization and precision marketing. Furthermore, the advent of intelligent technology will significantly boost the efficiency and quality of catering services. Intelligent ordering

systems and smart delivery solutions will revolutionize the dining experience, offering consumers unprecedented convenience and efficiency.

Moreover, as consumers increasingly prioritize healthy eating and environmental conservation, the catering industry must prioritize food safety and sustainable development. This shift towards healthier and more environmentally friendly catering products aligns with consumer preferences and societal expectations.

Amidst the numerous challenges facing the industry, there are also boundless opportunities. Only by continuously innovating and adapting to market dynamics can catering enterprises secure long-term stability and growth. By embracing digitization, intelligence, and personalization, the catering industry stands to thrive in this new era.[10,11]

## 6. Future Research Directions

In future research, the focus will be on the in-depth application of big data technology in the catering industry and frontier research in related fields. On one hand, further exploration will be conducted into the application scenarios and effectiveness assessment of big data technology in the catering industry, such as utilizing big data analysis to understand consumer behavior patterns and optimizing supply chain management. On the other hand, emerging technologies such as artificial intelligence and the Internet of Things will be integrated to study the development path and prospects of intelligent catering services. Additionally, active efforts will be made to seek cross-industry collaboration with other relevant sectors such as agriculture and logistics to jointly explore the digital transformation and innovative development of the entire industry chain. In summary, big data technology will be one of the key directions for future research in the catering industry. Its application will bring more opportunities and challenges to the catering sector, while also providing rich research topics for the academic community.[12,13]

## 7. Conclusion

The restaurant industry, as a vital pillar of the service sector, has seen its prominence accentuated amidst global economic and societal transformations. In China, it not only serves as an economic engine but also embodies profound cultural heritage. However, with shifting consumer demands, rapid technological advancements, and the impacts of globalization, the traditional restaurant sector is undergoing profound changes.

The integration of emerging dining concepts with modern technologies such as the internet and big data is revolutionizing the industry, offering consumers convenient and personalized experiences. Looking ahead, the restaurant industry is poised to enter a new era characterized by digitization, intelligence, and personalization. Big data technology will enable enterprises to understand consumer needs better, facilitating precise marketing, while intelligent systems will significantly enhance service efficiency and quality.

Moreover, the growing emphasis on healthy eating and environmental conservation necessitates a heightened focus on food safety and sustainable development within the industry. Restaurants must keenly observe market trends, innovate continuously, and adapt to changing times to ensure long-term stability and growth.

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