

## Article

# Research on the Development Status and Strategy of Home Appliance Industry in Shandong Province

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**Abstract:** In the new development stage, information technology is advancing rapidly, and consumer demand is upgrading at an accelerated pace. As a traditional and advantageous consumer goods industry in Shandong Province, the home appliance industry plays a crucial role in the region's economic development. This paper provides an in-depth empirical analysis of the current status of Shandong's home appliance industry using detailed data and tables. It examines the measures taken during the industrial transformation and upgrading process, identifies existing issues, and proposes future development strategies. The study shows that Shandong's home appliance industry has certain advantages in terms of production volume and scale, but it also faces serious challenges such as lagging standard updates and market disorder. Through strategic planning, the industry is expected to achieve better development.

**Keywords:** Shandong Province; home appliance industry; development status; strategic research

## 1. Introduction

The home appliance industry is a traditional strength and a vital livelihood sector in Shandong Province. In the national home appliance market, Shandong Province offers a wide range of products with a relatively complete industrial system and significant brand recognition and influence. In the new economic landscape, promoting supply-side reforms in the home appliance industry, enhancing product quality and industrial development standards, is crucial for its healthy and sustainable growth. In recent years, with changes in the market environment and technological advancements, the home appliance industry in Shandong Province faces an urgent need for transformation and upgrading. To better understand the current state of the industry and develop a scientific and practical strategy, this article conducts an in-depth study.

## 2. Development Status of Home Appliance Industry in Shandong Province

### 2.1. Industrial Scale and Output

The home appliance industry in Shandong Province is large and has a significant clustering effect, attracting leading enterprises such as Haier, Hisense, and AUCMA, which have national and even global influence. Based on the steady growth of the home appliance industry in 2023, it is expected that the province's home appliance industry will achieve a main business revenue of 450 billion yuan in 2024, representing a 5.6% increase from the previous year. This indicates strong market resilience and growth potential. In terms of production volume, core home appliance categories such as refrigerators, washing machines, and air conditioners continue to grow steadily, further solidifying the industry's foundation. Specifically, refrigerator production reached 16.3 million units, up 4.5% year-on-year; washing machine production was 13.5 million units, with a 5.5% increase; air conditioner production grew the fastest, exceeding 8.8 million units, with a 7.3%

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growth rate. These figures indicate that the home appliance industry in Shandong Province is advancing both in total expansion and structural optimization, providing strong support for regional economic development. For specific data, see Table 1.

**Table 1.** Table of Growth Rates of Different Products in 2023-2024.

| Product Type                     | Output in 2023 | Output in 2024 | Growth Rate |
|----------------------------------|----------------|----------------|-------------|
| Refrigerators (million units)    | 15.6           | 16.3           | 4.5%        |
| Washing Machines (million units) | 12.8           | 13.5           | 5.5%        |
| Air Conditioners (million units) | 8.2            | 8.8            | 7.3%        |

## 2.2. Industrial Structure and Enterprise Distribution

The home appliance industry in Shandong Province has developed a diversified product system that includes white and black appliances as well as emerging health-related appliances, with the industrial layout becoming increasingly comprehensive. Qingdao, as the core development hub, leverages leading companies like Haier and Hisense to lead in high-end smart appliance manufacturing and cutting-edge technology research, creating an innovative ecosystem that integrates design, production, and integrated services. Zibo, Binzhou, and other areas have gradually formed regional clusters of home appliance components by guiding the clustering development of small and medium-sized enterprises, with the industrial chain's synergy becoming increasingly evident. Emerging regions like Linyi, leveraging their manufacturing strengths, are actively exploring differentiated development paths, focusing on the deep integration of home appliances with smart home technology and green energy-saving technologies. This has led to a new pattern of complementary functions and differentiated development among regions, laying a solid foundation for the continuous upgrading of the province's home appliance industry [1].

## 2.3. Market Competitiveness

Shandong Province's home appliance companies have demonstrated strong competitive strength in both domestic and international markets. Leading enterprises not only dominate their domestic niche markets but have also successfully expanded into overseas markets through a global strategy. In 2024, Shandong Province's home appliance exports reached \$12 billion, marking a 6.8% year-on-year increase. This growth aligns with the robust export performance of the national home appliance industry. The average export prices for major and small appliances have continued to decline, with the annual average price drops of 1.3% and 5.9%, respectively. Haier Group has been actively implementing its 'localization + branding' strategy by establishing multiple R&D centers and manufacturing bases in Europe, America, and Southeast Asia, maintaining an overseas revenue share of over 40% for several consecutive years. Hisense Group, leveraging core technologies such as ULED and laser TVs, has successfully driven steady growth in the global market for smart terminal products. In particular, Hisense TVs lead the market share in countries like Japan, Australia, South Africa, and Slovenia [2]. Meanwhile, companies such as AUCMA and Xiaoya have made significant breakthroughs in areas like cold chain equipment and commercial appliances, forming a multi-point support export pattern, further solidifying Shandong's position as a key home appliance export base in China.

## 3. Measures Taken by the Home Appliance Industry in Shandong Province

### 3.1. Strengthen Investigation and Research and Enterprise Guidance

During the planning process, the Shandong Home Appliance Industry Association actively coordinated with various resources and conducted systematic research at the industry's front lines. The association organized a professional team to visit key enterprises

in Qingdao, Zibo, Linyi, and other areas, focusing on key aspects such as product structure, technical pathways, and market layout [3]. During the research, staff meticulously documented the practical challenges faced by enterprises during their transformation and upgrading, and based on industry trends, proposed practical improvement strategies to help enterprises clearly define their strategic direction and implementation steps. Meanwhile, the association collaborated with the provincial credit union to establish a dynamic monitoring mechanism, utilizing the online direct reporting system of key enterprises and the economic data platform of the provincial statistics bureau to achieve real-time tracking and analysis of the industry's operational status. Through data modeling and analysis, timely market fluctuation signals were captured, providing scientific evidence for enterprises to adjust their production schedules and optimize resource allocation, thereby enhancing the industry's overall risk resistance capability.

### *3.2. Strengthen Communication with Government Functional Departments*

The association actively strengthens regular communication with government departments, including the provincial economic and information commission, market supervision bureau, and product quality supervision and inspection institutions. It focuses on core issues such as industrial policy guidance, industry standardization, and the improvement of quality supervision systems. By regularly reporting industry trends, organizing thematic seminars, and participating in policy discussions, the association aims to foster a system environment that meets the needs of industrial upgrading. It collaborates with local government departments to develop regional home appliance industry cluster plans and assists in creating specialized parks and demonstration bases centered on smart home appliances. The association also ensures the precise implementation of policy resources, guiding enterprises to effectively utilize special support measures such as technical renovation subsidies, innovation support, and brand cultivation, thereby enhancing the efficiency of policy benefits. Additionally, it promotes the establishment of an efficient cross-departmental collaboration mechanism, deepening the organic integration of standards, certification, and testing services, and laying a solid institutional foundation and service support for the industry's sustained high-quality development.

## **4. Problems Facing the Home Appliance Industry in Shandong Province**

### *4.1. Chaos in the Market of Emerging Home Appliances*

In recent years, while new health appliances like water purifiers and air purifiers have met residents' aspirations for a higher quality of life, the industry has fallen into a vortex of disorderly expansion. Due to the lag in standard system construction, low entry barriers, and insufficient regulatory efforts, the market has gradually revealed chaos characterized by numerous brands and inconsistent quality. Many small and medium-sized enterprises (SMEs) have entered the market without core technology support, relying on low-price strategies to capture market share while neglecting product performance and user experience. This has led to frequent issues such as false labeling of functions, high costs for filter replacement, and actual purification effects that deviate from the advertised claims. Consumers, facing information asymmetry, find it difficult to distinguish between good and bad products, leading to a continuous rise in after-sales rights protection cases. According to data from the Shandong Consumer Association, complaints involving air and water purifiers in the province increased by 30% in 2024 compared to the previous year, highlighting the urgent need for the industry to improve standards, strengthen quality traceability, and promote collaborative governance to rebuild consumer confidence and market order [4].

#### 4.2. Insufficient Standard Formulation and Application

The home appliance industry in Shandong Province lags significantly behind in standard setting and application, which has become a critical bottleneck for its high-quality development. Some companies have not yet developed a systematic awareness of standardization, showing low participation in national and industry standards and lacking the strategic vision to proactively lead standard revisions. The current standard update cycle is long, and the response mechanism is rigid, making it difficult to keep pace with the rapid iteration of home appliance products and technological integration, especially in the emerging categories of smart appliances and health products. The current standards primarily focus on basic performance indicators, while forward-looking planning in areas such as user experience optimization, device interconnectivity, and energy conservation and environmental protection is still insufficient. Additionally, the connection between local standards and national industry standards is poor, making it difficult to effectively convert regional technological achievements into unified norms. Research indicates that some leading enterprises still rely on empirical operations in their actual production, rather than following the latest standards, reflecting an inadequate supervision and training mechanism for the implementation of standards, which seriously affects the coordination of the industrial chain and the establishment of market order (Figure 1).



**Figure 1.** Electrical Product Picture.

### 5. Development Strategy of Home Appliance Industry in Shandong Province

#### 5.1. Continue to Do a Good Job in Planning and Implementation and Enterprise Guidance

Following the release of the "Shandong Province Home Appliance Industry Transformation and Upgrading Implementation Plan", the Shandong Home Appliance Association promptly responded by organizing a specialized task force to conduct policy interpretation and liaison services at key enterprises. The association plans to hold quarterly specialized seminars, industry scheduling analysis meetings, and SME experience exchange activities, covering 4 to 5 key industrial clusters, to ensure the precise implementation of policies. By establishing a "one enterprise, one policy" research mechanism, the association focuses on core issues such as technological upgrades, standard application, and market expansion, assisting enterprises in overcoming transformation bottlenecks. Additionally, the association collaborates with research institutes and industry associations to establish an expert consultation platform, offering professional and personalized guidance solutions to enhance enterprises' understanding and execution of policies, thereby significantly improving the overall development quality and collaborative efficiency of the industry.

#### 5.2. Strengthening the Construction of Public Service Platforms

The establishment of the Shandong Province Home Appliance Development Research Institute and the Industry Development Fund aims to create an efficient and collaborative public service platform. The institute will leverage the technical expertise from universities, research institutions, and leading enterprises to focus on common technology

R&D and standardization system construction, promoting the industrialization of innovation outcomes and providing professional support for brand building and market promotion. Drawing on the success of the Shandong Province New Industrialization Development Fund, our industry development fund is initially set at 1 billion yuan. Of this amount, 300 million yuan will come from the Economic and Information Commission's mother fund, while the association will collaborate with professional fund management institutions to raise 700 million yuan from social capital. The funds will primarily support high-quality projects and enterprises with leading technology and significant market potential, aiming to promote the high-end, intelligent, green, and clustered development of the home appliance industry in Shandong Province. Through a platform-based operational mechanism, we aim to enhance resource integration and service integration, boost the overall innovation capability and core competitiveness of the industry, and create a home appliance industry cluster with regional leadership.

### *5.3. Strengthen the Construction of Industry Integrity System*

Under the guidance of the provincial Administration for Industry and Commerce, the Shandong Home Appliance Industry Association is actively promoting the construction of a comprehensive integrity system across the industry, aiming to establish a new regulatory mechanism based on credit. By establishing a credit information service platform that covers the entire industrial chain, the association aims to dynamically collect and analyze data on enterprises' basic information, business activities, and quality credit. It encourages leading enterprises to establish standardized credit files first, promoting the formation of a traceable, evaluable, and applicable enterprise credit management system. The association regularly releases the home appliance industry's credit index, providing authoritative data for enterprise financing, market cooperation, and brand promotion. Additionally, it implements a "black and red list" public disclosure system, offering policy support and publicity to enterprises with good credit, while imposing joint punitive measures on untrustworthy entities, thereby strengthening industry self-discipline and standardization. This initiative not only enhances the integrity awareness of market entities but also provides a solid foundation for the high-quality development of the industry.

### *5.4. Standardize the Market of Emerging Home Appliances*

To address the issues of missing standards, inconsistent quality, and false advertising in the emerging home appliance market, such as water purification and air purification, industry associations will expedite the development of regulatory documents that cover product performance, energy efficiency ratings, after-sales service, and other aspects. They will actively promote the establishment of a more scientific and reasonable industry standard system. In collaboration with market supervision departments, they will launch special rectification actions, focusing on combating counterfeit and substandard products, false labeling of parameters, and exaggerated claims of efficacy, to effectively maintain the order of compliant business operations and consumer safety. Simultaneously, they will organize a series of activities under the "Water Purification and Air Purification Benefit People's Livelihood Project Qilu Journey", where expert teams will visit communities, enterprises, and public places to provide product education, quality testing, and technical consulting services, enhancing public awareness and health protection capabilities. Through the guidance of demonstration projects and the promotion of typical experiences, they aim to strengthen the primary responsibility awareness of enterprises, promote the industry towards standardization, regulation, and transparency, and form a governance pattern with coordinated efforts from government supervision, industry self-discipline, and social oversight.

### 5.5. Accelerate the Cultivation of Famous Brands and the Construction of Industrial Bases

To accelerate the development of brand cultivation and industrial bases, it is essential to base efforts on the region's industrial foundation and development potential, establishing a collaborative promotion mechanism centered on brand value and supported by industrial clusters. Through thorough research, we have identified several key enterprises with significant competitive advantages and substantial growth potential, incorporating them into the industry brand cultivation list. We implement strict dynamic management and precise support policies to help these enterprises enhance their quality and brand influence, actively striving to create "Shandong Brands" and provincial famous trademarks. Additionally, leveraging the clustering effect of home appliance industries in cities like Zibo and Linyi, we aim to build a distinctive industrial base with high-quality products as its foundation and a comprehensive industrial chain. We have strengthened policy guidance, optimized resource integration, and focused on improving the planning level, infrastructure construction, and public service capabilities of the park, aiming to create a modern industrial cluster with exemplary and leading roles. By 2025, we aim to officially name the provincial industrial base and, upon reaching maturity, initiate the application process for a national-level industrial base, promoting the dual enhancement of regional brands and industrial levels, and providing strong support for the industry's high-quality development.

### 6. Conclusion

The home appliance industry in Shandong Province has certain advantages in terms of scale, production volume, and market competitiveness. However, it also faces challenges such as market disorder for new home appliances and insufficient standards formulation and application. By implementing strategic measures such as continuing to promote planning, enhancing public service platforms, strengthening the industry's integrity system, regulating the market for new home appliances, and accelerating the development of well-known brands and industrial bases, it is expected that the home appliance industry in Shandong Province can achieve transformation, upgrading, and rapid, sustainable development. In the future, the home appliance industry in Shandong Province should further enhance technological innovation, improve product quality and service levels, actively expand both domestic and international markets, and boost the overall competitiveness of the industry.

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