

# Opportunities and Challenges for the Development of the Office Furniture Industry: A Case from China

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The office furniture industry plays a pivotal role in shaping modern work environments, reflecting broader trends in industrial development and the diffusion of innovation. However, it faces significant imbalances globally – particularly in developing countries – such as fragmented competition, limited intelligent manufacturing capabilities, and weak brand recognition. Taking China as a representative case, this study employed a mixed-methods approach combining bibliometric analysis, industry interviews, and SWOT analysis to explore the current status, key challenges, and future directions of the office furniture sector. The results show that while China has become a global manufacturing hub with mature supply chains and cost advantages, it still lags in brand influence, design innovation, and environmental sustainability. The evolving demands for ergonomic, modular, and smart furniture—driven by the rise of remote work and flexible spaces—present new opportunities for transformation. This study proposes development strategies for emerging markets focused on technological adoption, green manufacturing, and digital sales models. Findings offer valuable insights not only for the restructuring of China's office furniture sector but also for guiding industrial upgrading in other developing economies.

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## INTRODUCTION

The rapid rise of knowledge-based economies and office workers since the early 20<sup>th</sup> century has made office furniture design, production, and usage a critical element of the furniture industry. The types, functions, forms, and production technologies of office furniture reflect the working culture, industrial development, and socio-material conditions of a nation, serving as a barometer of productivity and modernization.

Office furniture has become a ubiquitous part of modern environments, spanning corporate offices, homes, educational institutions, healthcare facilities, and government agencies. Its layout and design have measurable impacts on user comfort, productivity, and well-being (Jiwa *et al.* 2019). Research has shown that height-adjustable Visual Display Terminal (VDT) workstations help reduce fatigue in corporate offices (Yan *et al.* 2021), while poor ergonomic design in office chairs contributes to musculoskeletal

disorders (Yu *et al.* 2024). Material selection also affects occupant health and perception (Hu *et al.* 2025); for instance, wooden office furniture has been linked to reduced mental fatigue and enhanced user satisfaction (Zhu *et al.* 2023). These findings illustrate the functional and psychological value of office furniture in shaping productive and healthy spaces.

At the same time, the nature of the office environment is undergoing significant transformation. The COVID-19 pandemic accelerated the trend of remote work, prompting companies to downsize or reconfigure their workspaces. As a result, demand has surged for office furniture tailored to home settings. Meanwhile, open-plan and shared office layouts-designed to encourage collaboration-often result in acoustic distractions, leading to a growing focus on sound insulation panels and modular dividers (Zhou *et al.* 2024). These elements, once peripheral, are now as central as desks and chairs in supporting diverse work styles. This evolving landscape highlights the increasing need for adaptable, ergonomic, and health-conscious furniture solutions. Our study responds to these shifts by focusing on key functional elements-such as desks, chairs, and partitions-that directly impact comfort, privacy, and productivity across a range of contemporary office scenarios.

While office furniture plays a central role in the modern work environment, the industry itself remains complex, involving intricate supply chains, material procurement, design innovation, and end-user interaction (Ollonqvist *et al.* 2011). Globally, it is dominated by a few leading multinational brands (*e.g.*, Herman Miller, Steelcase), with most producers being small and medium-sized enterprises (SMEs). Developing countries, in particular, face challenges such as fragmented competition, weak brand identity, and limited adoption of intelligent manufacturing (Hoang *et al.* 2014). Among developing economies, China represents a compelling case. Although it entered the global office furniture market relatively late, China has rapidly grown into one of the largest producers and exporters, leveraging its manufacturing scale and cost efficiency. According to China Customs, 196,000 office furniture units were exported in 2023, amounting to a value of \$374.6 billion. Research efforts in China have also increased, covering themes such as ergonomics, intelligent technology integration, remote work adaptability, and sustainable materials (Chen *et al.* 2024; Cao *et al.* 2024; Peng and Xiong 2024).

However, Chinese office furniture brands remain underrepresented in the high-end global market. The industry is characterized by OEM dependence, limited R&D investment, and low brand recognition-common features among emerging markets. From the perspective of industrial development theory and innovation diffusion, China's ongoing transition reflects a broader structural shift in how value is created-not just through scale, but through digital transformation, brandization, and sustainable innovation. As such, studying China's office furniture industry offers insights into the broader mechanisms of industrial upgrading and innovation dissemination in developing economies.

This paper adopts a multi-method approach-including bibliometric analysis, market investigation, and SWOT analysis-to examine the opportunities and challenges in China's office furniture sector. The goals of this study are: (1) to assess the development status and fundamental characteristics of the modern office furniture industry, (2) to synthesize research on design, manufacturing, sales, and remanufacturing through bibliometric review, (3) to explore industry evolution, market structure, and supply

chains *via* surveys and case studies, (4) to evaluate strengths, weaknesses, opportunities, and threats through SWOT analysis, (5) to provide strategic recommendations for industry transformation and reference pathways for other developing economies.

## EXPERIMENTAL

### Bibliometric Method

Bibliometric analysis is a quantitative analysis method widely used to uncover the knowledge structure, research hotspots, and development trends in a specific research field (Chen 2016). In this study, bibliometric analysis is applied to extract and visualize data from academic literature in the office furniture sector, aiming to identify research frontiers and summarize development trends.

#### *Data source and key-concept selection*

The data sources for this study include three authoritative databases: Web of Science (WOS), Scopus, and China National Knowledge Infrastructure (CNKI). WOS, as the world's oldest citation database (established in 1964), maintains strict journal selection criteria (including only the top 10% to 20% of impact factor journals), ensuring data reliability (Bornmann and Mutz 2015). Scopus, the world's largest peer-reviewed literature database, covers 15% more unique journals than WOS (Mingers and Leydesdorff 2015). CNKI provides authoritative academic papers from China, offering exclusive access to industry-specific data on the Chinese office furniture sector.

This combined strategy effectively avoids the limitations of a single database, such as “language bias” (as English databases cover less than 30% of Chinese literature) and “regional blind spots” (as international databases cover only 12% of China's core journals) (Chen 2017). As a result, the findings of this study maintain both global relevance and regional interpretability.

#### *Search strategy and aspect investigated*

To ensure the scientific rigor and representativeness of the data, the following search strategy was adopted: **(1) Web of Science and Scopus:** The search terms “office furniture” (as Topic) OR “office furniture industry” (as Topic) were used. The search was limited to the Web of Science Core Collection, and only articles were selected, yielding 585 relevant papers. **(2) CNKI:** The keywords “办公家具” (office furniture), “办公桌” (office desk), and “办公椅” (office chair) were used. The search was restricted to “Peking University Core Journals” to ensure high-quality literature, resulting in 234 relevant papers.

The content analysis focused on the following aspects: **(1) Research hotspot analysis:** Extracting highly cited papers and keywords to identify major research directions. **(2) Temporal trend analysis:** Counting the number of publications over time to observe temporal evolution patterns. **(3) Disciplinary distribution analysis:** Examining the academic fields related to office furniture research, such as industrial design, materials science, and intelligent manufacturing.

#### *Classification*

Based on the results of bibliometric analysis, office furniture research was

categorized to reveal different research themes and their focus areas. This study employed CiteSpace for bibliometric clustering analysis and classified the literature according to the product lifecycle of office furniture (design, manufacturing, sales, use, and remanufacturing) (Chen 2016).

The classification results are as follows: product design and development, product manufacturing, and sales, usage and remanufacturing. This classification method aligns with the practical structure of the office furniture industry and facilitates a systematic review of existing research. Additionally, it provides a foundation for subsequent industry analysis and SWOT evaluation.

### Industry Research and Case Study

Industry research and case studies serve as crucial methods for analyzing industry conditions and validating findings from bibliometric research (Yin 2009). This study collects industry reports and market data, combined with case study analysis, to explore key aspects of China's office furniture industry, including market size, industrial chain structure, and corporate development models. The data sources include: **(1) China Furniture Yearbook:** Provides annual statistical data on China's office furniture industry, covering market size, production volume, and import/export statistics. **(2) Statista:** Offers global market trend data on the office furniture industry, enabling comparative analysis with the Chinese market. **(3) Industry interviews and market surveys:** Case studies of typical enterprises were collected for the study, and interviews were conducted with professionals within the enterprises, with a total of 20 specific interviews, including 12 men and 8 women, and an average interview time of 45 minutes, with the interviews recorded by means of audio recording. The content of the interviews mainly included information on their product development, market competition strategy, and application of intelligent manufacturing technology.

### Strengths, Weaknesses, Opportunities, and Threats (SWOT) Analysis Method

SWOT analysis is a widely used strategic analysis tool that helps businesses and industries identify their internal strengths (S) and weaknesses (W), as well as external opportunities (O) and threats (T) (Benzaghta *et al.* 2021). In this study, SWOT analysis is employed to evaluate the current state of China's office furniture industry and, combined with case study findings, to propose future development directions. Additionally, SWOT analysis provides theoretical support for the discussion section, enhancing the practical significance of the research findings.

Implementation steps of SWOT analysis: **(1) Data collection:** Constructing a SWOT matrix for China's office furniture industry using data from literature reviews, market research, and case studies. **(2) Analysis of internal factors (strengths and weaknesses):** Identifying industry strengths (*e.g.*, large production scale, well-developed supply chain) and weaknesses (*e.g.*, insufficient brand influence, limited innovation capacity). **(3) Analysis of external factors (opportunities and threats):** Evaluating industry opportunities (*e.g.*, growing demand for smart offices, government policy support) and challenges (*e.g.*, intensified international competition, environmental regulations). **(4) Strategic recommendations based on industry trends:** Proposing

specific development strategies to address industry challenges, such as strengthening brand development, promoting intelligent manufacturing, and optimizing sales models.

## RESULTS AND DISCUSSION

### Summary of Office Furniture-Related Research

By analyzing the abstracts of retrieved literature, irrelevant samples were further filtered out, and a publication trend graph spanning the past 20 years was generated, as shown in Fig. 1. The results indicate that research on office furniture has shown a growing trend in both domestic and international academia.

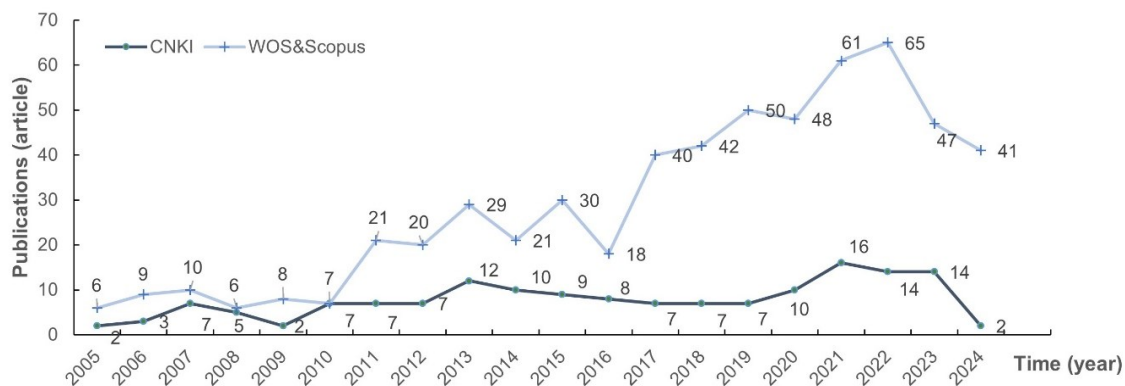


Fig. 1. Statistics on the number of publications

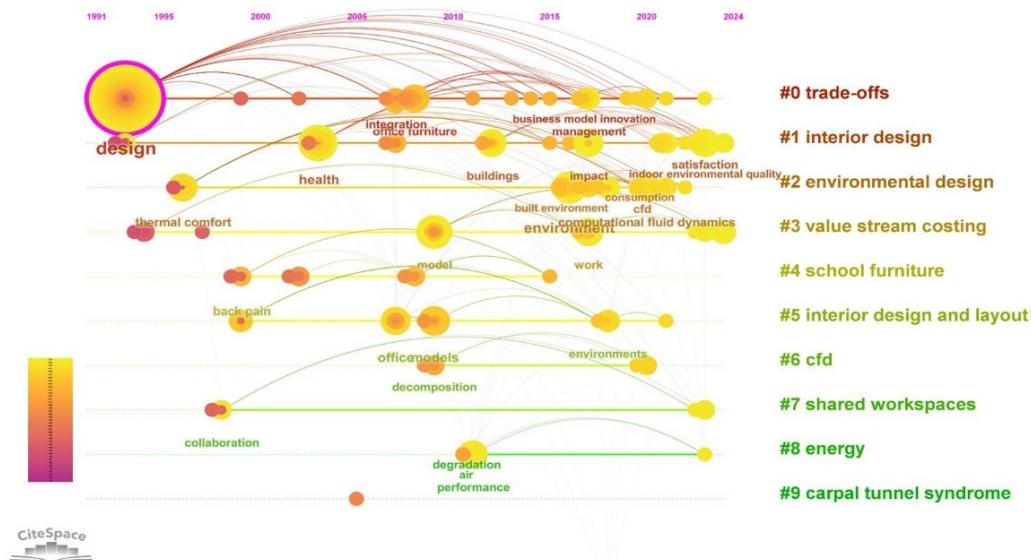


Fig. 2. Literature cluster analysis

In China, the number of publications in the CNKI database has steadily increased since 2005, reflecting the gradual recognition of office furniture research. The research topics cover design, materials, ergonomics, and the impact of office environments on employee health.

**Table 1.** Categorization and Analysis of Related Review Papers

| Field | Main Content                         | References                                                                                                                                                           | Summary & Future Research Implications                                                                                       |
|-------|--------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|
| PDD   | Ergonomic design                     | Peteri (2017), Mantooth <i>et al.</i> (2017), Jeong and Yoon (2014), Zhou <i>et al.</i> (2024), Helmy Almaz (2022)                                                   | Use AI and big data analysis to personalize office furniture ergonomics, e.g. biomechanically adaptive furniture.            |
|       | Adjustable, modular design           | Groenesteijn <i>et al.</i> (2009), Hou (2021), Gudarzi <i>et al.</i> (2022), (Zhu <i>et al.</i> , 2024)                                                              | Integrating modular furniture with smart home systems to maximize space and explore sustainable materials.                   |
|       | Sustainable design                   | Seyajah <i>et al.</i> (2014a), Besch (2005), Askham <i>et al.</i> (2012), Seyajah <i>et al.</i> (2014b), Costa <i>et al.</i> (2015), Seyajah <i>et al.</i> (2016)    | Promote environmentally friendly design of office furniture throughout its life cycle.                                       |
|       | Healthy office                       | Chun and Qing (2020), Wilkin (2009), Liu and Zhang (2014), Withagen (2016)                                                                                           | Development of real-time smart sensing technologies to optimize office comfort.                                              |
|       | Smart office furniture               | Stojanovic <i>et al.</i> (2018), Van Meel and Vos (2001), Chen and Guan (2024), Fan and Jin (2020), Yassin <i>et al.</i> (2023)                                      | Intelligent office furniture adaptive learning, and remote management using AI.                                              |
| PM    | Material selection                   | (Zhu <i>et al.</i> , 2023), Zhu and Niu (2022), Brokob (2014), Tuncel and Kayan (2018), Mao <i>et al.</i> (2024), Zhu <i>et al.</i> (2023), (Bai <i>et al.</i> 2024) | Develop sustainable bio-based materials, reduce hazardous chemicals, and improve recyclability and degradability.            |
|       | Environmental performance            | Carter and Zhang (2006), Boughnim <i>et al.</i> (2006), Diodiu <i>et al.</i> (2015)                                                                                  | Reduce carbon emissions, optimize office furniture production and use using LCA.                                             |
|       | Intelligent manufacturing technology | Halim <i>et al.</i> (2023), Sheebu <i>et al.</i> (2024), Weigl (1995), Xiong <i>et al.</i> (2024), (Peng and Yan 2022)                                               | Combining it with Digital Twin technology improves smart manufacturing quality control and productivity.                     |
| SUR   | Product sales optimization           | Medeiros <i>et al.</i> (2017), Chen and Shi (2024), Gupta and Subramanian (2008)                                                                                     | Use big data and AI to optimize market demand forecasts for product recommendation systems and intelligent sales management. |
|       | Spatial layout implications          | Ribino and Bonomolo (2023), Atef (2024), Jiwa <i>et al.</i> (2019), Leung <i>et al.</i> (2022), Hatif <i>et al.</i> (2023)                                           | Investigate using VR/AR technology in office furniture layout design to improve space optimization visual interaction.       |
|       | Remanufacturing strategies           | Krystofik <i>et al.</i> (2018), Otieno <i>et al.</i> (2024)                                                                                                          | Improve remanufactured product traceability and market acceptance with blockchain-based supply chain management.             |

\* PDD= Product design and development, PM= Product manufacturing, SUR= Sales, Usage and Remanufacturing.

The results in the Summary & future research implications section are based on the literature review and expert interviews.

Internationally, WOS database publications have shown an even more significant increase, especially in recent years, indicating the growing global interest in healthy office environments and efficient space utilization. The rise of remote and flexible working trends has further driven advancements in office furniture research. This upward trend may be linked to the increasing global emphasis on healthy work environments and efficient office space design, particularly in response to the rise of remote work and flexible office arrangements.

CiteSpace-based bibliometric clustering analysis was conducted, with results shown in Fig. 2. The articles were primarily clustered into nine major thematic categories. Additionally, aligning with the product lifecycle of office furniture, the research field can be classified into three overarching themes: product design and development, product manufacturing, and sales, usage and remanufacturing, as summarized in Table 1.

### *Product design and development*

Ergonomics, flexibility, health-conscious design, and intelligent advancements dominate office furniture research. Keywords like “design” and “thermal comfort” emerged from early studies on office chair comfort and desk-chair height's effect on ergonomics. Research then covered the entire office furniture system, including office environment models and functional integration (keywords like “integration” and “office models”). As office environments evolve, research has focused on indoor environmental quality (IEQ), user satisfaction, and smart office furniture, as shown by the rise of keywords like “indoor environmental quality” and “satisfaction”.

Office furniture studies prioritize ergonomic design for research outcomes. Groenesteijn (2009) found that partition screens integrated into office furniture meet users' privacy needs while affecting thermal radiation and air quality (Zhang *et al.* 2024). Additionally, smart office furniture research has grown. Stojanovic *et al.* (2018) employed 3D point cloud technology to rapidly classify office furniture and track object changes, improving furniture adaptability to user needs.

Researchers are studying how eco-friendly materials affect office environments. Studies have examined formaldehyde emissions from wood-based materials and the impact of flame retardants like Tris (chloropropyl) phosphate (TCPP) in upholstered office furniture on indoor air quality (Carter and Zhang 2006). Future office furniture design will emphasize multi-functionality, health impacts, and intelligent adaptability to accommodate remote work and co-working spaces.

### *Product manufacturing*

Office furniture manufacturing involves design, marketing, and material supply. Office furniture products have diverse production processes, but they generally follow similar models. Materials and environmental protection research shows that choosing the right materials can cut costs and boost efficiency. Orientated Strand Board (OSB), a low-cost office furniture material, is mostly used for decorative purposes due to its low process stability (Fang *et al.* 2020). Health and safety issues related to office furniture materials, such as formaldehyde emissions from wood and fire retardancy *versus* environmental impact, have received attention (Jeong and Yoon 2014).

Second, intelligent manufacturing technologies have improved production

efficiency and quality. For instance, Pichler (1986) introduced fully automated powder processing and coating technology, which allowed single-operator supervision and improved metal office furniture processing efficiency and environmental sustainability. Weigl (1995) optimized office furniture production scheduling using ARENA simulation software, improving manufacturing efficiency. Xiong *et al.* (2024) examined smart manufacturing applications in solid wood office furniture and key technological advances that boost industrial quality.

Smart technologies apply to order processing and production optimization. In office furniture manufacturing, Wang *et al.* (2024) proposed automated inspection, data-driven management, and industrial software integration for smart order-splitting. These smart strategies have improved production, cut costs, and reduced human error.

#### *Sales, usage, and remanufacturing*

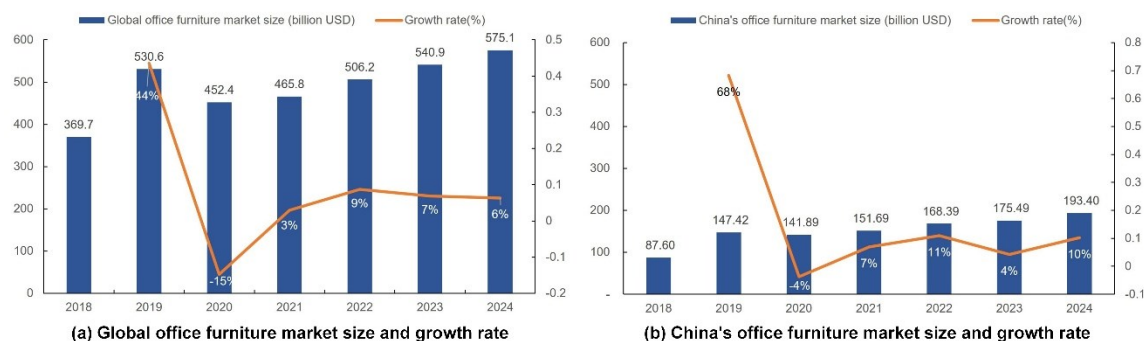
Sales management is crucial in the competitive office furniture market. Product reuse and remanufacturing are essential for sustainable development. Office furniture sales now include customized workspace solutions. Effective sales process management allows companies to gather market feedback and use adaptive remanufacturing to optimize products, according to research. Krystofik *et al.* (2018) found that effective product lifecycle management can reduce product obsolescence and make remanufacturing more economically viable if material integrity is preserved. In 2024, Otieno *et al.* proposed a Multi-Criteria Decision Making (MCDM)-based approach for selecting office furniture for remanufacturing, which greatly improved resource utilization.

Sales management and office furniture use are changing with intelligent systems. Ribino *et al.* (2023) optimized multi-person office furniture layouts using multi-objective reinforcement learning. Chen *et al.* (2024) developed a flexible neural tree model algorithm that partitions and optimizes office furniture configurations, improving office adaptability. The circular economy approach to remanufacturing and digitalization and intelligent management of office furniture sales will remain industry research priorities.

### **Current Development of China's Office Furniture Industry**

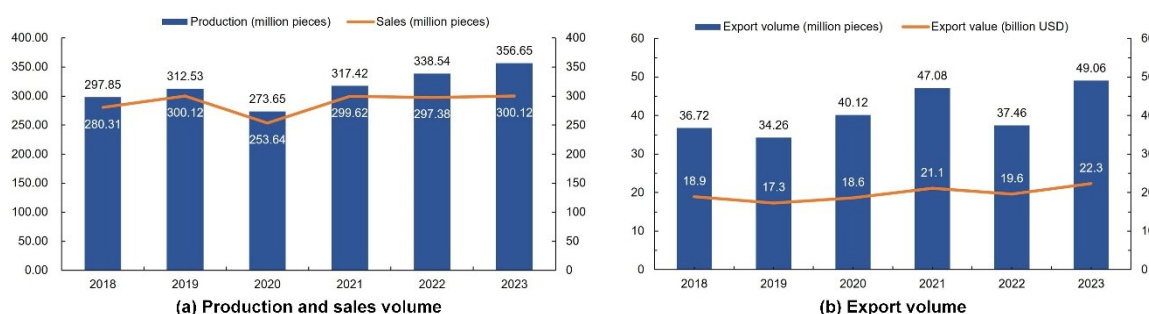
#### *The overall development of office furniture industry*

Figure 3(a) demonstrates the global office furniture market size from 2018 to 2024, showing a trend of steady annual growth. Specifically, the growth rate remained stable from 2018 to 2019. However, in 2020, due to macroeconomic factors, the market size experienced a decline, which then rebounded to its typical growth trajectory. By 2023, the market size had reached 54.09 billion USD, with projections suggesting it could approach 57.51 billion USD in 2024. The growing demand for comfortable office environments, improved work efficiency, and technological advancements and innovations are expected to provide new growth opportunities for the office furniture market. Figure 3(b) shows that the Chinese office furniture market has shown a year-on-year increase from 2018 to 2024. Although the growth rate of market share has fluctuated, it has generally followed an upward trend. This fluctuation may be attributed to intense market competition and the gradual shift in consumer demand. Therefore, Chinese office furniture companies must continue to enhance product quality and service levels to adapt to these changing market needs.



**Fig. 3.** Office furniture market size and growth rate, 2018-2024

Regarding domestic office furniture production and sales, statistics indicate that China's office furniture production has increased in line with the overall growth of the furniture industry in recent years. As shown in Fig. 4, the production volume of office furniture in China reached 338.54 million units in 2022 and approximately 356.65 million units in 2023. As the economy grows and more enterprises are established, the demand for office furniture continues to rise. In 2022, the demand for office furniture in China reached 297.38 million units; in 2023, it surpassed 300 million units. Regarding imports and exports, China is the world's largest producer and exporter of office furniture, with exports far exceeding imports. According to data from Chinese customs, as shown in Fig. 6, the number of office furniture units exported in 2023 amounted to 196,000, with an export value of 374.6 billion USD. The United States, Germany, Japan, the United Kingdom, and Australia were the top five destinations for China's office furniture exports.



**Fig. 4.** China's office furniture production, sales and exports, 2018-2024

#### *Distribution of the office furniture industry in China*

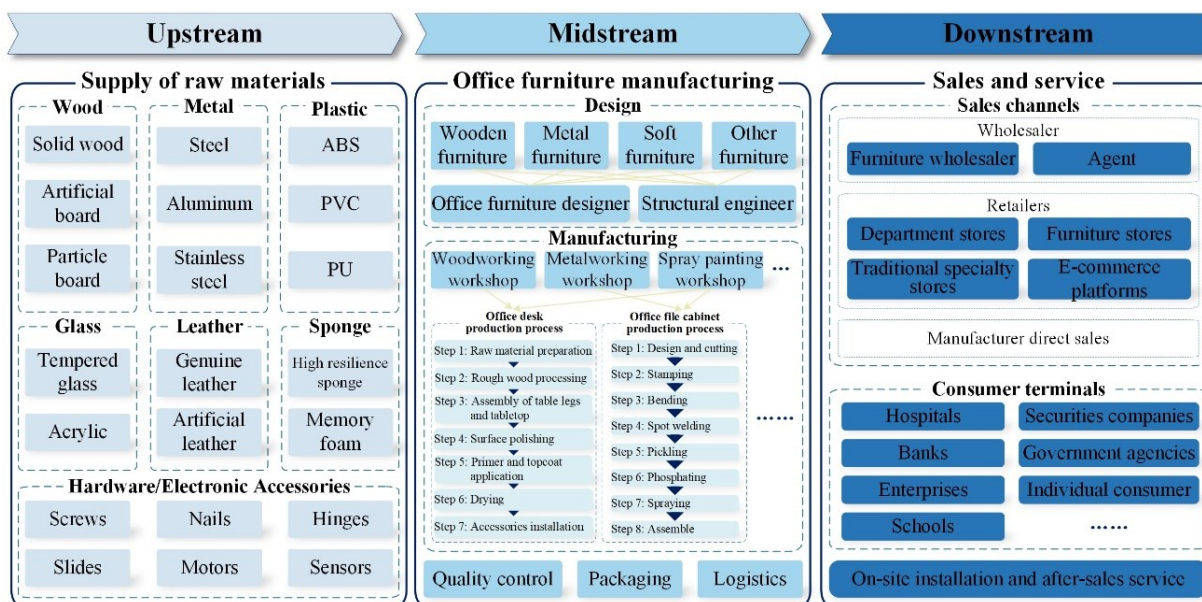
Due to low entry barriers, Chinese office furniture companies are widely dispersed, with relatively weak innovation capabilities, low profits, and a lack of large-scale enterprises and industry leaders. This is especially evident compared to well-known office furniture brands from Europe and North America, which lead to design innovation and international recognition. However, during the COVID-19 pandemic, industry consolidation accelerated. A number of key and well-known office furniture production companies and brands gradually emerged in China, including Lamex, Logic, UB, Aurora,

Sanjiu, Changjiang, Deluxe, Huaya, Chengfeng, Kinwai, Posh, Ousheng, Braw, Nanyang, Rongfeng, Guojing, Zhongtai, and Numen. Some companies producing office and residential furniture, such as Landbond, Tintan, and Guotai, have also entered the market. A few relatively concentrated office furniture production bases have emerged, such as in Shunde and Dongguan in Guangdong, Shanghai, Hangzhou, and Anji in Zhejiang. These enterprises and regions are gradually forming a new structure for Chinese office furniture production companies in the future competitive landscape.

### *Structure of the office furniture industry chain*

The office furniture industry involves a wide range of product types and complex materials to meet the diverse demands of office spaces. The upstream of the office furniture industry chain encompasses various manufacturing sectors, including hardware components, leather, fabrics, foam, wooden parts, plastic components, and electronic components. Among these, electronic components are used to produce electric office chairs and desks. The upstream raw materials manufacturing industries are highly competitive, with numerous suppliers and an abundant supply of raw materials. Larger enterprises in these sectors typically possess more substantial bargaining power.

The midstream comprises office furniture manufacturers who process these raw materials using different techniques to produce various office furniture products. For example, the production of office desks typically takes place in woodworking workshops, where raw materials undergo rough processing, fine processing, assembly, and inspection before final manufacturing. Office filing cabinets are produced mainly in metal processing workshops. Finally, downstream sales channels distribute these office furniture products through supermarkets, furniture stores, online sales, and direct sales channels to end-users, such as companies, banks, schools, and hospitals. Key participants in this stage include importers, distributors, customers/enterprises, and consumers, as shown in Fig. 5.



**Fig. 5.** Structure of the office furniture industry chain in China

## Office Furniture Industry SWOT Analysis

### *Strengths*

China's office furniture industry is supported by a mature manufacturing ecosystem, competitive labor costs, and strong supply chain integration. Its production clusters enable scale efficiency and rapid market responsiveness. In recent years, some enterprises have begun integrating smart technologies-such as AI, IoT, and digital twins, with a goal of enhancing user experience and operational efficiency. Cross-border e-commerce, flexible logistics, and localized manufacturing models have further increased global competitiveness. Additionally, Chinese firms are increasingly engaging with global standards, including FSC and GREENGUARD certification, which improves product credibility in overseas markets (Boughnim *et al.* 2006).

### *Weaknesses*

Despite these advantages, the sector faces persistent structural limitations. Many Chinese office furniture enterprises still rely heavily on OEM business models and lack independent brand influence. Compared to global leaders like Herman Miller, Steelcase, and Vitra, Chinese firms fall short in design originality, R&D investment, and long-term customer loyalty cultivation. Low value-added products and cost-driven competition contribute to severe product homogenization and limited design innovation. Moreover, small and medium-sized enterprises (SMEs), which constitute the majority of the industry, often lack the financial and technical capacity to adopt advanced technologies such as digital twin systems and AI-driven customization (Gudarzi *et al.* 2022; Helmy Almaz 2022). This mirrors challenges seen in other developing countries, where technology diffusion in the SME sector is notably slow (Van Meel and Vos 2001).

### *Opportunities*

The shift toward intelligent, healthy, and sustainable office environments offers a transformative opportunity. Post-pandemic changes-such as increased remote work and dynamic team configurations-have raised the demand for ergonomic, modular, and acoustically optimized furniture. Future office settings are expected to prioritize (1) seamless remote interaction, (2) sound insulation for concentration, and (3) spatial flexibility to accommodate transient collaboration and individualized tasks. These emerging needs may disrupt the dominance of traditional giants, as firms like Herman Miller and Steelcase risk being tied to outdated models of static office layouts. In contrast, nimble enterprises-particularly those in developing markets-can capitalize on the growing emphasis on smart, mobile, and wellness-oriented solutions.

Environmentally conscious design is another critical area of expansion. With rising global awareness of lifecycle emissions and health standards, green manufacturing practices-including the use of eco-friendly materials, low-VOC finishes, and recyclable modular components-are becoming standard expectations (Askham *et al.* 2012; Seyajah *et al.* 2016). Technologies such as Product-Service Systems (PSS) and Life Cycle Assessment (LCA) provide frameworks for transitioning from product-based to service-enhanced business models (Besch 2005). Additionally, the digital economy has diversified sales models: omnichannel marketing, virtual showrooms via AR/VR, and AI-driven recommendation systems enhance consumer engagement and product fit (Yassin *et al.* 2023).

### Threats

The sector is also exposed to several macro- and micro-level threats. Geopolitical shifts, such as US-China trade tensions, rising protectionism, and regulatory pressures in Western markets, are increasing export uncertainty. Compliance with evolving environmental legislation, including carbon disclosure and formaldehyde restrictions, adds cost burdens, especially for SMEs. Moreover, raw material price volatility and logistical disruptions-exacerbated by pandemic and war-related instabilities-highlight the fragility of global supply chains (Gupta and Subramanian 2008; Abu *et al.* 2021).

Technologically, the gap in core proprietary technologies – such as smart sensing, ergonomic algorithms, and intelligent manufacturing platforms – remains a bottleneck. Although Chinese firms have made progress in automation and data analytics, critical AI applications for adaptive furniture and health-monitoring workstations are still underdeveloped. In this context, it is essential to critically evaluate whether such advanced technologies can be realistically scaled across the SME-dominated manufacturing base, or whether innovation should be strategically concentrated among leading firms with strong R&D infrastructure.

### SWOT-Based Development Strategy for Emerging Markets

A comprehensive SWOT analysis of China's office furniture industry can help developing nations establish or improve their own office furniture sectors. Based on China's experience, the following development strategies are recommended:

**(1) Using local resources to build industrial clusters:** Developing countries can learn from China and form supply chain advantages in furniture industry clusters through policy guidance, improving production efficiency and lowering costs.

**(2) Developing independent brands and increasing added value:** Meet domestic market needs, actively develop independent brands, improve product design and quality, and switch from export-oriented OEM models to value-driven brand operations. As Van Meel and Vos (2001) noted, buyers in mature markets favor branded products and are willing to pay a premium.

**(3) Promoting green manufacturing and international competitiveness:** Develop an environmentally friendly furniture industry, reduce pollution through technological upgrades, and improve product environmental standards to meet international market expectations. Certifications such as GREENGUARD (USA), Ecolabel (EU), and FSC facilitate market entry and enhance trust (Boughnim *et al.* 2006; Askham *et al.* 2012; Besch 2005; Seyajah *et al.* 2016).

**(4) Personalizing production with digital technology:** Digital tools can enhance intelligent manufacturing, reduce inventory costs, and support customized services. However, considering the limited resources of SMEs in many developing countries, technological adoption should follow a phased approach. Priority could be given to larger or more innovative firms with the infrastructure to pilot AI and digital twin technologies, which can later be disseminated to broader industry clusters.

In conclusion, China's office furniture industry has a strong manufacturing foundation but faces limitations in branding, innovation, and high-end competitiveness. Developing countries can draw lessons from China's dual-track development in supply chain integration and digital innovation, applying them in accordance with their own industrial maturity, policy environment, and market needs.

## CONCLUSIONS

1. This study systematically investigated the development trajectory, structural challenges, and future opportunities of China's office furniture industry through bibliometric analysis, industry research, and SWOT evaluation. While the industry benefits from cost efficiency, scale, and supply chain maturity, it continues to face substantial obstacles in brand development, product differentiation, and sustainable innovation.
2. The shift in workplace dynamics – exemplified by the expansion of remote work, rising demand for acoustic privacy, and growing environmental awareness – offers an unprecedented opportunity for emerging-market firms to reshape their product strategies. However, critical gaps remain in SMEs' capacity to adopt advanced technologies such as digital twins and AI-driven customization, which calls for a phased, capability-driven transformation strategy.
3. Strategic recommendations include (1) promoting industrial clustering and supply chain integration, (2) investing in brand identity and ergonomic product innovation, (3) adopting sustainable materials and gaining environmental certifications such as FSC and GREENGUARD, and (4) building omnichannel and data-driven sales ecosystems. For developing countries, China's experience provides a valuable framework to guide the transition from low-cost manufacturing to value-added innovation and international competitiveness.
4. The findings contribute to the broader literature by contextualizing China's industrial evolution within the frameworks of innovation diffusion and sustainable development. They provide actionable insights for policymakers, manufacturers, and researchers aiming to enhance the global value and impact of the office furniture sector.

## ACKNOWLEDGMENTS

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