

Enterprise Risk Management from the Perspective of Global Value Chain: Gree Electric Appliances

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Abstract

With the deepening of globalization, competition among enterprises in the global value chain has become increasingly intense. In this context, effective risk management has become crucial for enterprises to gain competitive advantages and achieve sustainable development. This paper uses the global value chain as an analytical tool to explore the competitive position of Gree Electric Appliances in the global market and the main risks it faces, including supply chain management, technological innovation, market uncertainty, and exchange rate fluctuations. Through an in-depth analysis of Gree's risk management strategies, this paper reveals how the company addresses various risks through diversified layouts, technological innovation, and supply chain optimization. At the same time, this paper summarizes the successful experiences and challenges in Gree's risk management, providing valuable references and insights for other enterprises in the process of globalization.

Keywords

Global Value Chain; Enterprise Risk Management; Supply Chain Management; Sustainable Development.

1. Overview of Gree Electric Appliances and Its Position in the Global Value Chain

1.1. Basic Overview of Gree Electric Appliances

Zhuhai Gree Electric Appliances Co., Ltd. (hereinafter referred to as "Gree Electric Appliances") was established in 1991 and is headquartered in Zhuhai City, Guangdong Province, China. It is a diversified, technology-driven global industrial group. As a global home appliance company with a wide range of business areas, Gree Electric Appliances is primarily engaged in the research, development, production, and sales of air conditioning technology, with its industrial chain extending to compressors, motors, chips, capacitors, and other fields.

Since its inception, the company has been committed to providing consumers with high-quality home appliances and has established a strong brand image in the industry. Gree's core products cover various fields, including household air conditioners, commercial air conditioners, refrigerators, and washing machines, with air conditioners being the most well-known. After years of development, Gree Electric Appliances has become one of the leading companies in China's home appliance industry.

The brand has undergone five stages of transformation and has continuously innovated, ultimately aiming to "serve the world" and make the world fall in love with Chinese manufacturing. Gree Electric Appliances has set the global market as its long-term goal, with the local market serving as its most solid foundation.

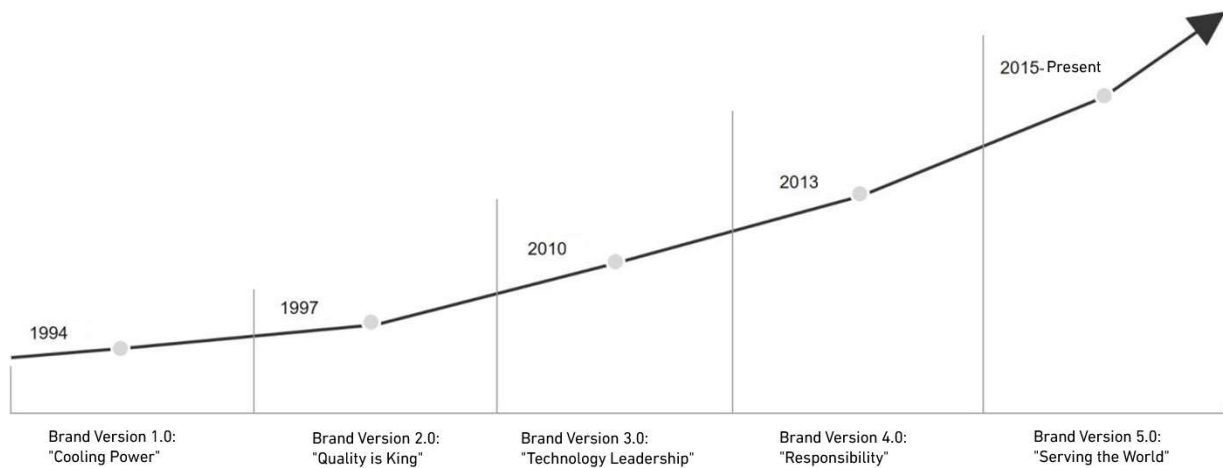


Figure 1. The Development Story of Gree Electric Appliances

Data Source: Official Website of Zhuhai Gree Electric Appliances Co., Ltd.

Gree Electric Appliances has a wide range of business operations and numerous sub-brands, covering the research, development, production, and sales of home appliances, precision instruments, and commercial equipment. Its main products include household air conditioners, commercial air conditioners, smart home devices, industrial equipment, and various ventilation and refrigeration equipment. A more notable feature is that Gree Electric Appliances has also ventured into the new energy sector, launching products such as solar air conditioners and photovoltaic air conditioning systems, and continues to improve related new energy products. The company places great emphasis on technological innovation and product development, investing significant resources annually in research and new technology development to maintain its competitive advantage in the market.



Figure 2. Sub-brands of Gree Electric Appliances

Data Source: Official Website of Zhuhai Gree Electric Appliances Co., Ltd.

Gree Electric Appliances has maintained a strong financial position over the years. By continuously optimizing its product structure and expanding its market share, the company achieved operating revenue of 205.018 billion yuan in 2023, a year-on-year increase of 7.82%, with steadily increasing net profits. Gree Electric Appliances holds the top market share in the household air conditioner market, demonstrating robust growth momentum and strong profitability, laying a solid foundation for future development strategies and indicating promising prospects for the company.

Table 1. 2023 Annual Financial Report of Gree Electric Appliances(RMB)

Item	2023	2022	Year-on-year change
Operating Revenue	203,979,266,387	188,988,382,706	7.93%
Net Profit Attributable to Shareholders of Listed Company	29,017,387,604	24,506,623,782	18.41%
Net Profit Attributable to Shareholders of Listed Company After Deducting Non-recurring Gains and Losses	27,565,461,117	23,986,248,264	14.92%
Net Cash Flow from Operating Activities	56,398,426,354	28,668,435,921	96.73%
Basic Earnings Per Share	5.22	4.43	17.83%
Diluted Earnings Per Share	5.22	4.43	17.83%
Weighted Average Return on Equity	26.53%	24.19%	2.34%

Data Source: Zhuhai Gree Electric Appliances Co., Ltd.

1.2. Gree Electric Appliances' Position in the Global Value Chain

1.2.1. Global Market Layout

Gree Electric Appliances has a broad global market presence, with its products sold in over 190 countries and regions. From the perspective of the global value chain, the company is closely linked to the global value chain through its research and development, product development, manufacturing, and marketing activities. Gree Electric Appliances actively expands its international market by establishing overseas subsidiaries, R&D centers, and production bases. In both emerging and developed markets, the company enhances its international brand influence through localized production and marketing strategies. Additionally, Gree Electric Appliances actively participates in international exhibitions and industry conferences, such as the recent Canton Fair and the Hangzhou Cross-border E-commerce Exhibition, to strengthen interactions and cooperation with global customers, further increasing its market share.

1.2.2. Analysis of Core Competitiveness

According to global value chain theory, the various links in the global value chain are interconnected and collectively determine a company's competitiveness in the international market[1]. Gree Electric Appliances' core competitiveness is mainly reflected in four aspects: technological innovation, brand influence, efficient supply chain management, and a diversified product line. From a micro perspective, these aspects constitute Gree Electric Appliances' internal value chain, which encompasses design, production, sales, distribution, and supporting activities.

First and foremost is Gree Electric Appliances' technological innovation. The company has a strong R&D team and a rich reserve of technologies, investing heavily in research and new technology development each year. As of 2023, the company has applied for over 100,000 patents, maintaining a leading position in technological advancement.

Gree Electric Appliances' brand influence remains significant. With high-quality products and excellent service, the company has earned a strong reputation in both domestic and international markets. Its brand image of "making the world fall in love with Chinese manufacturing" is deeply rooted in the minds of consumers, with high market recognition and customer loyalty.

Efficient supply chain management also provides strong support for Gree Electric Appliances' competitiveness. The company has established a comprehensive supply chain management system, ensuring stable supply of raw materials and high-quality production through close cooperation and efficient management with suppliers[2].

Finally, its diversified product line enhances market competitiveness. In addition to its core air conditioning products, the company has expanded into the home appliance and new energy sectors, such as solar products and photovoltaic systems, forming a diversified product portfolio.

In summary, Gree Electric Appliances' internal production value chain has a strong foundation, providing robust global competitiveness and serving as the "backbone" for its external value chain in the global environment.

1.2.3. Key Partners and Supply Chain Relationships

Gree Electric Appliances' core competitiveness lies in its internal production value chain. However, in the external environment, i.e., the global environment and global value chain, Gree Electric Appliances is interconnected with suppliers, other manufacturers, product distributors, and consumers, forming both an internal and an external value chain.

Gree Electric Appliances has established stable cooperative relationships with global partners and suppliers, with strong value chain connections. In terms of supply chain management, the company has implemented strict quality control measures, selecting internationally renowned suppliers as long-term partners to ensure the quality and stable supply of raw materials and components.

At the same time, Gree Electric Appliances has optimized its supply chain management processes through informatization, improving the responsiveness and efficiency of the supply chain. The company emphasizes mutual growth with its partners, conducting regular exchanges and training to promote the upgrading and transformation of the entire supply chain. This strong supply chain relationship provides a solid foundation for Gree Electric Appliances' stable development and competitiveness enhancement in the global value chain.

1.2.4. Position at the Forefront of the Global Value Chain

Gree Electric Appliances' global value chain is a comprehensive value creation system driven by R&D, guided by customer demand, based on efficient production and high-quality service, and supported by strong cooperation with global partners and suppliers[3]. With its core technologies and significant brand influence globally, Gree Electric Appliances is positioned at the forefront of the global value chain. This positioning not only helps the company maintain a leading position in the fiercely competitive market but also lays a solid foundation for its future sustainable development.

However, being at the forefront also presents challenges in maintaining this position and continuing to lead. Therefore, this paper will further analyze the risks Gree Electric Appliances faces in this position and how the company plans to address these risks.

2. Risk Analysis of Gree Electric Appliances from the Perspective of Global Value Chain

2.1. Supply Chain Management Risks

2.1.1. Supplier Dependency and Management

As Gree Electric Appliances expands globally, it has established an extensive supplier network. However, the high concentration of its supply chain also brings potential risks, particularly the dependency on key component suppliers. Key components are critical to the successful production of electrical appliances, and Gree Electric Appliances sources or imports these components globally[4]. If key suppliers experience production disruptions, quality issues, or decide to terminate cooperation, it could impact the production and R&D links in the global value chain, directly affecting Gree Electric Appliances' production efficiency and product quality.

To mitigate this risk, Gree Electric Appliances has adopted a strategy of establishing long-term cooperative relationships with multiple suppliers for the same components. The company has also created a supplier self-recommendation platform where suppliers can log in using their social credit codes and input relevant self-recommendation information. Gree's procurement center will promptly evaluate and provide feedback, implementing a strict supplier review mechanism to ensure the stability and reliability of the supply chain. Additionally, the company has implemented a dual-source strategy for key components, reducing the risk associated with relying on a single supplier.

2.1.2. Fluctuations in Raw Material Prices

Fluctuations in raw material prices are a significant factor affecting Gree Electric Appliances' costs and profitability. The global economic situation directly impacts raw material prices: when the economy grows, demand increases, leading to higher raw material prices; when the economy declines, demand decreases, leading to lower raw material prices[5].

In its annual report, Gree Electric Appliances stated that the main raw materials for its products include various grades of copper, steel, aluminum, and plastics. The cost of these main raw materials accounts for a high proportion of the main business costs, and fluctuations in raw material prices will affect costs. As shown in the figure below, the prices of copper and aluminum, Gree Electric Appliances' main raw materials, have fluctuated frequently. After rising in 2021, prices began to decline in the first half of 2022. Although the overall cost level has rebounded, it remains relatively low. However, these unstable raw material prices have had a significant impact on the company's manufacturing.

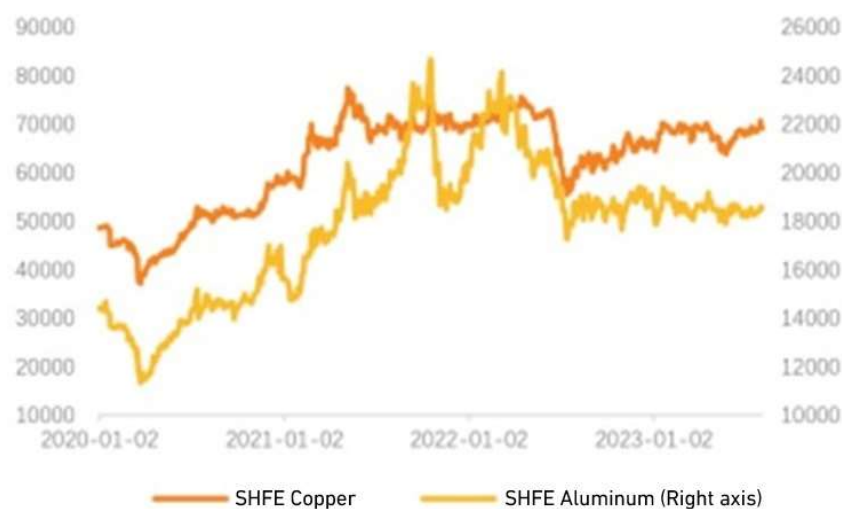


Figure 3. Price Trends of Bulk Raw Materials (Copper and Aluminum)

Data Source: Wind, TF Securities Research Institute

To address this risk, Gree Electric Appliances has locked in raw material prices through long-term contracts and financial instruments such as hedging. The company is also actively exploring the use of alternative and recycled materials to reduce costs. Nevertheless, the uncertainty of raw material prices remains a key risk that the company needs to continuously monitor and manage.

2.2. Technological Innovation and R&D Risks

2.2.1. Risk of Technological Obsolescence

In the context of rapid technological development in the global home appliance industry, technological obsolescence could lead to a loss of market competitiveness and a displacement

in the value chain. Gree Electric Appliances has always placed great emphasis on technological innovation, investing significant resources in R&D each year. The company has been practicing the mission of "developing core technologies" in the field of intelligent equipment, achieving independent R&D, production, and use of the four core components of robots: controllers, drivers, servo motors, and reducers.

However, with the rapid iteration of technology and changing market demands, the risk of technological obsolescence still exists. The vitality of the manufacturing industry lies in continuous innovation. Gree Electric Appliances can only create value and achieve high-quality development by relying on independent R&D and mastering key core technologies[6]. To address the challenge of innovative transformation, Gree Electric Appliances has strengthened cooperation with research institutions, promoted the integration of industry, academia, and research, and acquired advanced technologies through the acquisition of high-tech enterprises. Additionally, the company has established a professional technology forecasting team to track cutting-edge technological trends, plan for technology upgrades and product iterations in advance, and continuously invest in R&D projects.

2.2.2. Intellectual Property Protection Risks

With the expansion of its global business, Gree Electric Appliances also faces challenges in intellectual property protection, especially in overseas markets where intellectual property infringement incidents occur from time to time. This not only harms the company's interests and reduces its market competitiveness but also affects its international reputation. To address this risk, Gree Electric Appliances has strengthened its global intellectual property layout and protection efforts, applying for patent protection in multiple countries and regions.

2.3. Market Competition Risks

2.3.1. Risk of Domestic Market Saturation

Table 2. 2024 China Top 500 Home Appliance Companies

Rank	Home Appliance Manufacturer	Top 500 Ranking	Revenue (RMB 10,000)
1	Midea	73	37,370,980
2	Haier	74	37,182,197
3	Xiaomi	102	27,097,014
4	Gree Appliance	133	20,397,927
5	Hisense	135	20,222,566
6	TCL Technology	155	17,444,617
7	Changhong	187	14,028,348
8	TCL Industrial Holdings	214	12,032,191
9	Honor	256	9,937,190
10	AUX	286	8,602,936

Data Source: China Enterprise Confederation, China Enterprise Directors Association

The domestic home appliance market is becoming saturated, and competition is increasingly fierce. As shown in Table 2, there are still many highly competitive home appliance companies in China. Although Gree Electric Appliances has a very high market share in the domestic air conditioning market, there is limited room for further expansion, and maintaining competitiveness requires continuous effort. To address this challenge, the company is actively exploring new business areas such as smart homes and industrial automation. At the same time, through product diversification and premiumization strategies, the company is enhancing the added value of its products and strengthening market competitiveness. Additionally, Gree Electric Appliances is using big data and artificial intelligence technologies to optimize marketing strategies and increase market share and customer loyalty.

2.3.2. International Competitive Pressure

In the international market, Gree Electric Appliances faces significant competitive pressure from other global home appliance giants, especially in developed markets such as Europe, the United States, and Japan, where local brands hold a large market share. The competition is intense, and Gree Electric Appliances needs to enhance its competitiveness to establish a foothold in the international market and maintain its leading position in the global value chain. To secure a place in the international market, Gree Electric Appliances is enhancing its competitiveness by improving product quality and service levels, strengthening brand building and promotion, and implementing localized operation strategies. Additionally, the company is acquiring high-quality overseas enterprises and establishing R&D centers to enhance its technological and innovative capabilities in the international market.

2.4. Geopolitical and Exchange Rate Risks

2.4.1. Impact of Trade Policy Changes

In recent years, global trade policies have been unpredictable, with countries adopting trade protection measures, creating uncertainty for Gree Electric Appliances' export business and posing risks to global division of labor and cooperation. For example, the United States' imposition of tariffs on China and other countries' trade barriers directly affect the company's export costs and market share.

To mitigate the impact of trade policy changes, Gree Electric Appliances has taken several measures. The company has strengthened cooperation with international trade partners, bypassing trade barriers through joint ventures and the establishment of subsidiaries[7]. It has also increased investment in and development of emerging markets to reduce over-reliance on any single market. Furthermore, the company is actively participating in the formulation of international policies and industry standards to gain more voice and initiative.

2.4.2. Impact of Exchange Rate Fluctuations

Since most settlements are conducted in US dollars or other foreign currencies, exchange rate fluctuations have a significant impact on the company's revenue and costs. The fluctuation of the RMB against the US dollar directly affects the company's profit levels. Gree Electric Appliances' products are sold in multiple countries and regions, and as the company continues to expand and extend its overseas market, exchange rate fluctuations may not only adversely affect product exports but also increase financial costs due to exchange losses. To address this risk, Gree Electric Appliances has adopted financial instruments such as foreign exchange hedging to mitigate the impact of exchange rate fluctuations. The company is also diversifying its market layout to spread exchange rate risks. In terms of financial management, the company has strengthened monitoring and management of foreign exchange risks, developed detailed response plans and emergency plans, and improved internal cost control and efficiency to absorb the negative impact of exchange rate fluctuations.

3. Gree Electric Appliances' Enterprise Risk Management Strategies

Based on the potential or existing enterprise risks in the global value chain environment, Gree Electric Appliances has formulated corresponding risk management strategies for each type of risk.

3.1. Diversification Strategy

3.1.1. Product Diversification

If a company does not innovate its products, it risks being replaced by other companies' products in the global value chain. There are numerous global home appliance companies, and Gree Electric Appliances' main links include product R&D and design. If Gree Electric

Appliances does not invest in product innovation and R&D, it could be replaced by companies like Midea and LG, losing market share and reducing competitiveness.

In response to market competition and changing demands, Gree Electric Appliances has adopted a product diversification strategy, further expanding into diversified industries. Currently, the company's industries cover various air conditioners, home appliances, high-end equipment, and smart homes, maintaining a strong market share in the air conditioning industry while retaining a certain level of market competitiveness.

In addition, Gree Electric Appliances has upgraded its air conditioning products to mid-to-high-end levels, focusing on household air conditioners, commercial air conditioners, refrigeration equipment, nuclear power air conditioners, and photovoltaic air conditioners, enhancing its competitiveness in the "air conditioning" sector of the home appliance industry and ensuring its unshakable position[8].

Beyond industrial products, intelligent equipment, and green energy products, Gree Electric Appliances is also developing high-end equipment fields such as intelligent equipment, CNC machine tools, industrial robots, precision molds, and precision casting equipment. The company continues to deepen the application of high-end technologies in home appliances, not only meeting consumers' increasingly diversified needs but also keeping up with the intelligent characteristics of the current era.

Table 3. 2023 Annual Operating Revenue of Some Gree Electric Appliances Products

Item	2023	2022	Year-on Year Change
Total Operating Revenue	203,979,266,387	188,988,382,706	7.93%
Industrial Products	10,002,891,047	7,599,259,996	31.63%
Intelligent Equipment	669,842,288	432,085,871	55.03%
Gree Energy	7,106,463,576	4,701,188,530	51.16%

Data Source: Zhuhai Gree Electric Appliances Co., Ltd.

By continuously developing new product lines and optimizing existing products, Gree Electric Appliances not only reduces the market risks associated with a single product line but also meets the needs of different consumer groups. This is the company's primary strategy for addressing risks. As of 2023, Gree Electric Appliances' revenue in the intelligent equipment sector has grown rapidly, demonstrating the success of its product diversification strategy.

3.1.2. Market Diversification

To reduce reliance on a single market, Gree Electric Appliances has expanded into multiple regions globally. The company not only focuses on the domestic market but also actively explores international markets, continuously extending the global value chain to cover every link, reducing dependence on other companies' products and technologies, and achieving self-sufficiency.

Currently, Gree Electric Appliances has conducted business in over 160 countries and regions. In its overseas market layout, the company emphasizes localized operation strategies, customizing products and marketing strategies according to the culture and consumption habits of different markets[9]. Additionally, the company enhances its international competitiveness by acquiring overseas enterprises and establishing R&D centers. Through these measures, Gree Electric Appliances effectively disperses market risks and strengthens its global market resilience.

3.2. Technological Innovation and R&D Management

3.2.1. Continuous Technological Investment

As mentioned earlier, without technological innovation and R&D, a company risks being replaced, losing market share, and reducing competitiveness.

Therefore, Gree Electric Appliances has long emphasized technological innovation and continuously increased its investment in R&D. The company has multiple national-level research laboratories and a large number of R&D personnel. By establishing a comprehensive technological innovation system and R&D management mechanism, Gree Electric Appliances has made significant progress in core technology areas. For example, the company has achieved major breakthroughs in compressor technology, significantly improving product energy efficiency and performance. Continuous technological investment not only helps Gree Electric Appliances maintain a leading position in the market but also enhances the company's technological reserves and risk resilience.

Table 4. 2023 Annual R&D Investment of the Company

Item	2023	2022	Year-on Year Change
R&D Investment (RMB)	7,006,497,352	6,429,702,080	8.97%
R&D Investment as a Percentage of Operating Revenue	3.43%	3.40%	0.03%
Capitalized R&D Investment (RMB)	244,361,090	148,307,649	64.77%
Capitalized R&D Investment as a Percentage of Total R&D Investment	3.49%	2.31%	1.18%

Data Source: Official Website of Zhuhai Gree Electric Appliances Co., Ltd

3.2.2. Patents and Standard Setting

To protect intellectual property and enhance technological competitiveness, Gree Electric Appliances actively applies for patents and engages in standard setting. As of now, the company has applied for over 100,000 patents, covering multiple technological fields.

Moreover, through the dual strategy of patent protection and standard setting, Gree Electric Appliances not only consolidates its technological advantages but also effectively curbs imitation and infringement by competitors. In 2024, the company was awarded the title of National Intellectual Property Demonstration Enterprise and National Intellectual Property Advantage Enterprise, marking its continued leadership in comprehensive intellectual property strength and its significant contribution to key industrial fields in the country and region. Gree Electric Appliances also takes strict legal actions against infringement to strongly protect its rights and interests.

4. Conclusion and Outlook

4.1. Research Conclusion

This paper, based on the perspective of the global value chain, first identifies Gree Electric Appliances' position in the global value chain and then conducts an in-depth and systematic analysis of the company's current status and strategies in enterprise risk management. Through a detailed exploration of supply chain management, technological innovation, market competition, and exchange rate fluctuations, the study finds that Gree Electric Appliances effectively reduces market and operational risks through diversification and technological innovation. The company has implemented a series of effective measures in supply chain management and exchange rate fluctuations to address external uncertainties. Despite

significant achievements, Gree Electric Appliances still faces certain risks of technological obsolescence and market competition pressure.

4.2. Future Outlook and Development Directions

Gree Electric Appliances should continue to deepen its product and market diversification strategies, especially by accelerating its international market layout and developing emerging business areas such as smart homes and industrial equipment.

In summary, from the perspective of the global value chain, Gree Electric Appliances should take the following five measures: First, strengthen supply chain management optimization to improve its ability to respond to raw material price fluctuations. Second, continuously increase R&D investment to maintain technological leadership and promote the formation of more independent intellectual property rights. Third, actively respond to challenges brought by changes in international trade policies by flexibly adjusting export strategies and increasing localized production to reduce the impact of trade barriers. Fourth, improve foreign exchange risk management mechanisms to reduce the impact of exchange rate fluctuations on the company's financial performance. Fifth, build a more robust risk management system to enhance the company's overall risk resilience.

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