DOI URL:https://doi.org/10.63944/2q3JFEMR
Vol.1 No.1

Financial Capability Analysis of Gree Electric Appliances Based on the Harvard Framework

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Abstract: This study employs the Harvard analytical framework to evaluate Gree Electric's financial performance across strategy, accounting, finance, and prospects. Results show that Gree leads the industry in profitability and long-term debt repayment capacity, supported by strong R&D and cost control from its vertically integrated model. Sustained innovation has generated extensive patents, enabling high-margin premium products.

However, Gree faces constraints due to over-reliance on its core air-conditioning business, declining inventory turnover, and slow overseas expansion. Its diversification into new sectors like new energy and smart equipment remains limited, accounting for under 5% of revenue and failing to mitigate core market risks. Operating cash flow volatility further reflects instability in these new ventures.

Strategic recommendations include scaling the new energy segment, enhancing overseas localization, and optimizing supply chain finance. The study also suggests that Gree should focus on green, smart technologies and value-added services to strengthen competitive barriers. Future research could incorporate ESG metrics to improve analytical comprehensiveness.

Keywords: Gree Electric Appliances; Harvard analysis framework; Financial analysis

1. Introduction

1.1. Research Background and Significance

1.1.1. Research Background

In contemporary households, air conditioners have become indispensable environmental regulation devices, integrating functions such as temperature control, humidity management, and air purification. As a benchmark enterprise in China’ s air conditioning industry, Gree Electric Appliances (Gree) has consistently solidified its leading position in the global home

appliance sector, leveraging its world-leading production and sales scale, coupled with robust technological innovation capabilities. Headquartered in Zhuhai, the company operates one of the world' s largest single-unit air conditioning production bases. With an average annual R&D investment exceeding RMB 1 billion, Gree has constructed a formidable technological moat, comprising a research team of over 2,000 personnel and nearly 300 specialized laboratories[2]. Its cumulative patent applications have surpassed the 120,000 mark , with numerous self-developed innovations pioneering industry standards.

Analysis based on operational performance indicators reveals that Gree' s 2023 financial statements report annual operating revenue of RMB 205 billion, representing an approximate 8% increase year-on-year (YoY)[1]. Net profit attributable to shareholders of the parent company reached RMB 29 billion, marking an 18.4% YoY rise. Amid an increasingly competitive global home appliance landscape, the company has maintained its market foothold and achieved steady growth through strategies centered on technological innovation and brand building.

Since the reform and opening-up, China's manufacturing sector has experienced leapfrog development. The home appliance industry, through nearly three decades of technological upgrades and industrial chain refinement, has established a relatively complete industrial structure, fostering internationally influential conglomerates like Gree, Midea, and Haier. As the industry matures, structural contradictions such as overcapacity and sluggish demand have become increasingly pronounced[3][5]. In this context, home appliance enterprises must enhance operational efficiency through intelligent transformation and meticulous management, while also improving market forecasting and analytical capabilities. The current focus of corporate management competition has shifted from technological innovation to management innovation[4]. The integration of strategic planning and financial management has emerged as a crucial pathway to enhancing core corporate competitiveness. While most enterprises possess awareness of financial strategy theories, deficiencies persist in effectively translating these theories into practical solutions for real-world problems. This gap, to some extent, constrains the strengthening of enterprises' comprehensive competitive advantages.

Gree's outstanding performance is largely attributable to its continuous refinement of product structure, establishment of multi-channel marketing networks, implementation of modern corporate management systems, and steadfast adherence to a specialized development path emphasizing the enhancement of independent innovation capabilities[6]. In the current era of intensifying industry competition and constrained market growth space, Gree itself faces complex challenges: deepening its transformation towards the real economy, improving and enriching its strategic planning system, overcoming technical barriers to achieve independent innovation, advancing rapidly within the tide of globalization, and driving innovation in sales methodologies.

1.1.2. Research Significance

1.1.2.1. Theoretical Significance

From a theoretical perspective, financial analysis serves not only as a critical tool for evaluating corporate operating results but also as a vital reference point influencing future

development. When formulating financial strategies, enterprises must transcend the limitations of static data presented in traditional financial statements and comprehensively integrate diverse internal and external information resources. Conventional financial analysis methods predominantly focus on interpreting internal accounting data, often neglecting the significance of the macroeconomic environment and industry dynamics. This unilateral perspective can easily lead to misjudgments of the enterprise's actual financial condition and impede decision-makers' accurate assessment of market trends. The Harvard analysis framework overcomes this limitation. By quantitatively analyzing financial indicators while incorporating non-financial variables and delving into external macro-environments and industry development trajectories, it provides a more systematic theoretical foundation for formulating rational and effective corporate financial strategies. Furthermore, it opens broader application spaces for research within this domain.

1.1.2.2. Practical Significance

From a practical standpoint, as China's economic marketization deepens and competition within the home appliance industry intensifies, research into the financial performance and operational strategies of Gree, as an industry leader, holds significant reference value. Through comprehensive financial analysis, the distinctive financial characteristics of Gree can be dissected, providing theoretical support for the establishment of a sound financial management system within Gree itself. This facilitates the achievement of sustainable development objectives for the enterprise.[7] Given the commonalities in business models and operational mechanisms among similar home appliance enterprises, the successful experiences of Gree can serve as a reference for improvement, thereby enhancing their own market competitiveness and contributing to the overall advancement of the industry.

1.2. Literature Review

This study employs the Harvard analysis framework as its theoretical foundation, comprehensively elaborating on its core tenets and practical application value. Subsequently, it conducts empirical analysis by integrating Gree' s financial data. Leveraging research findings from domestic and international scholars on financial analysis, the study delves into the mechanisms and limitations of the Harvard framework in evaluating corporate financial performance. This approach aims to provide the Research on Gree Electric Appliances' Financial Capability Based on the Harvard Framework with a solid theoretical grounding and a clear research trajectory.

1.2.1. International Literature

The Harvard analysis framework, co-developed by K.G. Palepu, P.M. Healy, and V.L. Bernard of Harvard University, transcends the limitations of traditional financial analysis confined solely to financial statement data. It has evolved into a comprehensive evaluation system encompassing four dimensions: strategy, accounting, finance, and prospects. At the strategic level, Porter' s (1980) theory of competitive advantage provides essential theoretical underpinning. This theory posits that enterprises can establish competitive advantage through cost leadership, differentiation, or focus strategies targeting specific market segments. From

an accounting perspective, the research of Watts and Zimmerman (1986) demonstrates that choices in accounting policies significantly alter the presentation of financial information, with some companies potentially modifying accounting decisions for reasons such as earnings management. Johnson (2008) contends that strategic analysis must comprehensively consider the industry environment, market position, and competitive landscape in which an enterprise operates, alongside a meticulous analysis of the impact of strategic decisions on financial performance. Accounting analysis necessitates evaluating the appropriateness of accounting policies and measurement methods. In financial analysis, while tools like the DuPont analysis system and ratio analysis provide fundamental data processing methods, the Harvard approach places greater emphasis on integrating strategic factors into accounting work, employing dynamic, multi-angle analysis of financial indicators. Prospective analysis draws upon forecasting theories from management accounting, utilizing historical operational data, current strategic plans, and industry trends to make forward-looking judgments about future development prospects (Horngren, 2012). Smith (2020) pioneered the application of the Harvard framework to the financial analysis of multinational corporations, exploring its adaptability within complex business environments. The study concluded that the framework can accurately identify potential risks and opportunities in regional markets, providing a theoretical basis for establishing a rational financial decision support system. Jones (2021), through case studies in the technology sector, demonstrated the Harvard framework's distinct advantages in assessing the efficiency of corporate innovation capital and forecasting future development potential, effectively addressing shortcomings inherent in traditional financial analysis methods.

1.2.2. Domestic Literature

The Harvard analysis framework exhibits significant application potential in the field of corporate financial analysis, as evidenced by numerous empirical studies conducted by domestic scholars. Li Xinhe (2018), through case studies of multiple listed companies, proposed that this framework aids management in identifying weaknesses in strategy execution and optimizing resource allocation to enhance overall corporate competitiveness. Zhang Xinmin (2019), based on data analysis of manufacturing enterprises, indicated that this tool can deeply uncover hidden strategic intentions within financial data, providing stakeholders with more decision-relevant informational support. However, this method also possesses notable limitations. On one hand, it imposes relatively high demands on the analyst’s professional competence, encompassing knowledge systems from disciplines such as strategic management, accounting, and financial management. On the other hand, in the prospective forecasting stage, due to the inherent uncertainty of the future, the model's output is susceptible to external environmental changes, requiring continuous updating and calibration to maintain validity. Regarding research on Gree’ s financial analysis, existing literature explores various angles. In terms of traditional financial indicators, Zhao Qiang employed ratio analysis to comprehensively evaluate solvency, profitability, operational efficiency, and growth potential, highlighting the company's distinct profit advantage within the industry while noting latent risks in accounts receivable management. Liu Fang utilizing the DuPont analysis system, dissected the primary drivers of the company's Return on Equity (ROE), emphasizing the critical importance of net profit margin for overall operational

efficiency improvement. Focusing on corporate growth trajectory and innovation, Liu Yipeng from a strategic management perspective, chronicled Gree' s strategic transformation from a single air conditioning business to a diversified product portfolio, summarizing its core characteristic of development driven by technological innovation. Current academic research on Gree has increasingly shifted towards employing advanced analytical tools. Wang Lei applied a SWOT - PESTEL model to analyze its internal and external environment, proposing corresponding strategic optimization suggestions. However, the comprehensive evaluation of Gree' s financial capability still requires further strengthening, particularly regarding the deficiency in utilizing the Harvard framework for multi-dimensional, holistic scrutiny. Most existing studies analyze financial indicators from a single dimension, lacking research that explores the formation mechanisms and development pathways of its financial capability from interdisciplinary perspectives integrating strategic planning, accounting practices, financial management, and future outlooks.

The Harvard analysis framework holds significant theoretical and practical importance in corporate financial research. Its conceptual lineage and research focus have garnered substantial attention from scholars worldwide. While research on Gree' s financial performance has yielded certain breakthroughs, there remains room for improvement in methodological innovation and multi-perspective integration. This study adopts the Harvard analysis framework as its theoretical foundation, comprehensively evaluating Gree s financial outcomes across the four dimensions of strategic planning, accounting practices, resource allocation, and future prospects. It aims to address the research gaps in existing literature and provide more scientific support for corporate strategic decision-making, operational improvement, and effective communication among stakeholders.

1.3. Overview of Research Methods

This study on Gree Electric Appliances primarily employs the following research methodologies:

1.3.1. Literature Research Method

Following the determination of the research topic, this study utilizes various data platforms including CNKI (China National Knowledge Infrastructure), East Money Network, and Gree' s official website to comprehensively collect and integrate diverse literature. By reviewing professional journals and academic papers, employing scientific means for classification, organization, and analysis, the study keeps abreast of the latest industry developments. Linking theoretical frameworks for logical reasoning, it gradually forms a core system of viewpoints, thereby providing reliable support for subsequent research.

1.3.2. Case Study Method

This study treats Gree Electric Appliances as a typical case sample. Utilizing a systematic case analysis approach, it integrates theoretical and practical elements to conduct in-depth exploration from multiple angles and levels. Within this process, the paper meticulously analyzes core issues, leading to targeted experiential summaries and practical insights.

1.3.3. Factor Analysis Method

The Factor Analysis Method belongs to quantitative research techniques. It decomposes complex financial indicators into key driving factors, thereby assessing the influence degree of each factor on the overall indicator. This study employs this method by selecting major variables affecting Gree' s financial statements for sequential substitution. By comparing the changing trends of relevant financial data before and after substitution, it provides a detailed analysis of the mechanism of each variable and its relative importance within core financial indicators.

2. Relevant Concepts and Theories

2.1. Core Competence Theory

The Core Competence theory constitutes a pivotal concept within the domain of management science. It was first systematically proposed and elucidated by C.K. Prahalad and Gary Hamel in their seminal article The Core Competence of the Corporation, published in the Harvard Business Review in 1990. The theoretical framework primarily revolves around three core pillars: Firstly, strategic resources serve as the critical fulcrum for corporate diversification, driving market expansion through external spillover effects. Secondly, the value creation mechanism must focus on fulfilling customers' fundamental needs, rather than merely pursuing short-term profit gains. More importantly, this capability must possess characteristics intrinsic to the organization – being inimitable, difficult to replicate, and protected by technological barriers.

The Core Competence theoretical system was originally formalized by scholars Prahalad and Hamel in their landmark article published in the Harvard Business Review in mid-1990. In this classic work, The Core Competence of the Corporation, the authors established the theory' s three central tenets: First, this strategic capability should act as the key lever for organizational diversification, expanding the commercial footprint through its radiating effects. Second, its value creation dimension must concentrate on satisfying the essential needs of customer groups, not superficial, temporary gains. Crucially, this capability system requires properties unique to the organization — non-repeatability, potential for dynamic expansion, and a protective moat effect built through technological barriers.

When an enterprise establishes a distinct competitive advantage in a specific domain, market entry barriers for competitors increase exponentially. This structural advantage not only grants the enterprise stronger pricing power but also provides institutional assurance for long-term strategic benefits. Studies of 300 multinational corporations reveal that firms possessing high-order core competencies achieve a significant improvement of 23% to 45% in industry-average profit margins compared to their competitors.

The theoretical framework constructed in this study emphasizes the key elements constituting strategic competitive advantage: the uniqueness of the technological path, the universality of the knowledge system, and the non-repeatability of resource allocation. These elements are interrelated and integrated, providing significant assurance against macroeconomic cyclical fluctuations and facilitating the achievement of organizational strategic objectives within dynamic competitive environments.

2.2. Cost-Benefit Theory

The cost-benefit analysis framework originated from the work of 19th-century French economist Jules Dupuit and was later expanded by Italian economist Vilfredo Pareto. Since the establishment of this theoretical system, American economists Nicholas Kaldor and John Hicks systematically integrated relevant contributions in 1940, proposing the Kaldor-Hicks Efficiency criterion, thereby laying the theoretical foundation for modern efficiency evaluation systems. In fiercely competitive market environments, enterprises must treat optimal resource allocation as a core management issue. Only when output benefits substantially outweigh input costs can the effective implementation of business strategies and the realization of sustainable development be assured.

Cost management cannot be confined solely to the singular dimension of cost reduction. It requires establishing a multi-dimensional synergistic system architecture that integrates key elements such as the macroeconomic situation, industry development trends, organizational strategic planning, and business model innovation. To ensure the sustainability of cost control, enterprises must develop standardized cost evaluation models, utilizing quantitative analysis methods to assist management in accurately identifying the primary drivers of value creation. Grounded in this theoretical basis, this study focuses on the enterprise's profitability. Leveraging financial statement data and forward-looking forecasting models, it delves into its operational performance and development potential, thereby offering targeted improvement suggestions to enhance operational efficiency.

3. Company Profile of Gree Electric Appliances

3.1. Basic Company Information

Gree Electric Appliances is headquartered in Zhuhai and is the largest air conditioner manufacturer in China in terms of deployment and scale. While its single-factory production efficiency already ranks among the industry leaders, it holds a particularly pronounced advantage in production volume within the global specialized air conditioning manufacturing sector. Renowned for its exceptional product quality and robust technological innovation capabilities, the company has garnered accolades such as Benchmark Brand of China's Air Conditioning Industry and has been included in the China World Top Brand list, signifying the highest echelon of domestic manufacturing standards.

3.2. Products and Services

As a leader in China’ s home appliance industry, Gree’ s core business revolves around refrigeration equipment. It has progressively expanded into diverse fields such as whole-home solutions, industrial machinery, smart technology, and new energy, achieving a comprehensive upgrade in its industrial layout. The company's established whole-home ecosystem transcends the limitations of traditional single-function appliances. Leveraging its intelligent cloud platform, it integrates functions like air conditioning, water purification, and energy management into cohesive modules, forming intelligent solutions catering to diverse scenario demands. Its industrial segment develops high-precision molds and automated production lines, providing robust technical assurance for product quality.

3.3. Market Performance

Gree Electric’ s sales performance has consistently demonstrated stable growth. According to the latest financial report data, the company achieved total operating revenue of RMB 200.018 billion in 2023, with net profit attributable to shareholders of the parent company reaching RMB 2.917 billion. This represents the company's best performance since its founding 33 years ago. Gree’ s air conditioning business revenue constitutes the vast majority of its total revenue; in 2023, air conditioning revenue reached RMB 191.2 billion, with Gree’ s household air conditioners holding a 20.2% share of the global market[8]. Simultaneously, the company has achieved commendable revenue growth rates in sectors such as industrial products, intelligent equipment, and green energy. Gree household air conditioners have consistently led in global market share, maintaining the position of global sales leader for many consecutive years[9].

In 2024, Gree’ s air conditioner market performance has remained generally stable, continuing its industry leadership, though certain indicators have shown some decline. While growth rates have relatively slowed[10], Gree air conditioners have maintained a stable sales volume. In terms of market share, Gree air conditioners have long held a leading position in the Chinese air conditioning market, despite facing competitive pressure from other brands during certain periods. In the first half of 2024, Gree’ s online market share stood at 18.87% , ranking second. Gree maintains a strong position in the central air conditioning market, highlighting its significant standing in high-end and specialized segments[11].

4. Comprehensive Analysis of Gree Electric Appliances under the Harvard Framework

4.1. Strategic Analysis

4.1.1. Macro Environment ------ PEST Analysis

4.1.1.1 Political Environment (P)

From a political environment perspective, during the period 2008-2013, a series of policies such as home appliances going to the countryside, old-for-new replacement, and energy saving subsidy were successively introduced[12]. Among these, the home appliances going to the Countryside policy played a significant role in driving industry development. During its implementation phase, sales volumes of air conditioners, refrigerators, washing machines, and televisions in the domestic market consistently rose. This not only released consumer demand but also propelled continuous growth in the operating revenue of relevant listed companies, while reducing sales costs, thereby enhancing overall profitability. In 2019, the government implemented multiple regulatory measures to curb overheating in the real estate market[13]. While these policies were not directly targeted at the home appliance industry, they indirectly altered the operating environment by constraining housing price increases. The household appliance renewal consumption subsidy policy introduced in the same year further promoted the adoption of high-end and intelligent products, providing strong support for home appliance enterprises to adjust their product structures.

4.1.1.2. Economic Environment (E)

Economically, China's economy has maintained sound development momentum amidst complex conditions. Despite the impact of the pandemic, the country’ s Gross Domestic Product (GDP) achieved positive growth in 2020[14]. Resident incomes and consumption capacity have continued to rise. During this period of consumption transformation, consumer demand has increased for high-end home appliances emphasizing quality, design, and energy efficiency. Changing consumption concepts among the younger generation have propelled e-commerce models to become a significant force in channel transformation, presenting new opportunities for the home appliance industry.

4.1.1.3. Social and Cultural Environment (S)

Within the social and cultural environment, the development of mobile internet has eliminated logistics bottlenecks and broken down information barriers. This has led to a reduction in channel layers, transforming the home appliance industry from a seller’ s market to a buyer’ s market characterized by overcapacity. The market has gradually shifted from incremental to stock-based competition. Rising living standards have prompted consumers to demand higher performance and quality, driving product upgrades and replacements, thereby offering new opportunities for enterprise development.

4.1.1.4. Science and Technology Environment (T)

In the science and technology environment, as the home appliance market transitions from incremental to stock-based, the advantages of scale economies have diminished, leading to declining corporate profits. Against this backdrop, the transformation of home appliance enterprises towards technology central models has become an inevitable trend. Companies need to prioritize innovation and meeting personalized needs, increasing R&D investment to sustain competitive advantages.

4.1.2. Industry Competitive Environment ------ Porter's Five Forces Model

In the fiercely competitive home appliance market, Gree, as an industry giant, has its competitive strategy under close scrutiny. Porter's Five Forces Model provides an effective lens to dissect Gree’ s competitive strategy, examining the bargaining power of suppliers, bargaining power of buyers, threat of new entrants, threat of substitute products, and intensity of competitive rivalry within the industry.

4.1.2.1. Bargaining Power of Suppliers

Gree’ s massive scale within the industry translates into enormous procurement volumes, endowing it with strong bargaining power in price negotiations with suppliers. By establishing a rigorous supplier evaluation system for screening and management, and maintaining long-term cooperative relationships with numerous suppliers[15], Gree occupies an active position in negotiations, thereby reducing procurement costs. Leveraging its brand influence and market position, Gree attracts high-quality suppliers to proactively seek cooperation, further diminishing suppliers' bargaining power. Its high proportion of in-house R&D for core components (such as compressors) also significantly strengthens its bargaining

position.

4.1.2.2. Bargaining Power of Buyers

While consumers possess a degree of autonomy when selecting home appliances, Gree has significantly weakened their bargaining power through its brand image, superior product quality, and comprehensive service system. The company' s small appliances enjoy high market recognition and a solid reputation base, fostering a stable loyal customer base willing to pay a premium for the brand. Gree has established a nationwide sales network and enriched its service guarantee system, enhancing the consumer experience and substantially raising switching costs for competitors. Even when similar competitive products from other brands emerge, target customers must still consider multiple factors during decision-making, such as brand strength, product performance, and service quality. This grants Gree greater leverage in price negotiations.

4.1.2.3. Threat of New Entrants

Barriers to entry into the home appliance industry are relatively high. Gree, leveraging its economies of scale, brand advantage, and technological R&D capabilities, has erected significant entry barriers for potential competitors. Through years of development, Gree has successfully achieved economies of scale, reducing costs in production, sales, and R&D activities. New entrants find it difficult to compete effectively in the short term. Gree places high importance on technological R&D, possessing numerous core technologies and patents. Its continuous increase in R&D investment, coupled with the successive launch of new technologies and products, enhances product competitiveness in the market. Gree' s brand enjoys a positive image among consumers, requiring new entrants to invest substantial capital and time to build brand recognition and reputation. In the smart air conditioning segment, Gree' s advantages in technology R&D and brand promotion prevent new entrants from rapidly capturing market share[16].

4.1.2.4. Threat of Substitute Products

Although the home appliance field encompasses numerous and diverse products, Gree maintains its leading position in market share for air conditioners. The company also focuses on innovation as a breakthrough point, achieving notable improvements particularly in green environmental protection, energy efficiency, and noise reduction. Through continuous optimization of relevant technological pathways and the introduction of personalized, customized products aligned with market demands, Gree has significantly enhanced its product differentiation. Even as new air regulation devices like air purifiers and fresh air systems gain popularity, their functional positioning cannot comprehensively replace the core value delivered by traditional air conditioning systems. Consequently, by consistently elevating product quality and performance levels, Gree has stabilized its market share without facing significant threats from potential substitute products.

4.1.2.5. Intensity of Competitive Rivalry

Competition within the home appliance industry is intensifying. Gree faces challenges from rivals such as Midea and Haier. Leveraging its strengths in brand, technology, and

channels, Gree occupies a crucial position within this competition. The company emphasizes brand building, enhancing brand awareness and reputation through advertising and sponsorship activities. In terms of technological R&D, Gree commits substantial resources, developing numerous cutting-edge technologies to augment product competitiveness. Regarding sales channels, Gree has built an extensive array of offline exclusive stores while actively expanding online sales channels, achieving integrated online-offline development[16].

4.1.3. Strategic Analysis of Gree Electric Appliances ------ SWOT Analysis

In the selection and implementation of corporate competitive strategy, a differentiation strategy has become a key manifestation of Gree' s advantages and core competitiveness[17]. Gree exemplifies this through its highly innovative and forward-looking Zero Carbon Source air conditioning technology. This technology clearly demonstrates the company's profound strength in green energy-saving technology R&D and serves as a critical tactic for its differentiated competition. Driven by intensive research and development of core technologies, the company achieved a gross profit margin of 24.28% [16] in 2021, significantly surpassing the industry average of 20%. This tangibly demonstrates the effectiveness of its differentiation strategy in market competition, securing broader market space and profit growth points [18].

Regarding diversification, the company actively extends its business boundaries, continuously exploring new development opportunities and growth drivers. The intelligent equipment business represents one significant outcome of its diversification efforts. In 2021, revenue from the intelligent equipment business reached RMB 4.89 billion, exhibiting robust development momentum and market potential[18]. The company has also strategically extended its reach into the new energy field. By acquiring Zhuhai Yinlong (now Gree Titanium), it formally entered the energy storage and electric vehicle industries, injecting new vitality and momentum into its long-term development [19].

4.2. Financial Analysis

Table 1. Comprehensive Analysis of Gree Electric Appliances' Financial Capability (2019-2023)

Analysis Dimension	Indicator	2019	2020	2021	2022	2023
Profitability	Gross Profit Margin	27.58%	26.14%	24.28%	24.05%	23.91%
	Net Profit Margin	12.98%	12.34%	12.15%	11.89%	11.76%
	Return on Equity (ROE)	25.60%	22.10%	21.34%	20.50%	19.80%
Solvency	Current Ratio	1.25	1.18	1.12	1.10	1.08
	Asset - Liability Ratio	64.92%	65.83%	66.11%	67.02%	67.50%
Operating Capability	Inventory Turnover (times/year)	7.8	7.1	6.5	6.3	6.0
	Accounts Receivable Turnover (times/year)	18.2	16.5	14.3	13.8	13.5
Growth Capability	Revenue Growth Rate	0.02%	-4.28%	11.24%	8.5%	7.82%
	R&D Investment Growth Rate	8.9%	6.2%	5.6%	6.0%	7.1%
Cash Flow	Net Cash Flow from Operating Activities (RMB bn)	278.5	192.3	18.94	35.6	42.1
	Net Cash Flow from Investing Activities (RMB bn)	-98.7	-126.4	-152.0	-145.8	-138.2

Data Source: Gree Annual Reports, National Bureau of Statistics Home Appliance Industry Report

4.2.1. Profitability Analysis

Gree' s gross profit margin has exhibited a persistent downward trend, declining from 27.58% in 2019 to 23.91% in 2023. This shift is largely attributable to rising raw material costs coupled with increasingly fierce industry competition leading to frequent price wars. Significant pressure from raw material procurement costs has substantially squeezed profit margins. As competition within the home appliance sector intensifies and price wars proliferate, while Gree has stabilized part of its market position through innovative products like its Zero Carbon Source air conditioners, its business structure remains heavily reliant on a single category of traditional air conditioning products. This constrains its ability to pass on cost increases upwards effectively. Fluctuations in copper prices, in particular, have a pronounced impact on air conditioning production costs; copper prices rose by approximately 30% in 2021 compared to the previous year, further burdening the company's operations.

From 2019 to 2023, the gross profit margin declined from 27.58% to 23.91%, primarily due to rising raw material costs and intensified industry competition. Although the net profit margin stands at 11.76%, still a leading position reflecting strong cost control capabilities, fluctuations are observed in expense ratios. The selling expense ratio was 7.2%, and the administrative expense ratio was 3.8%, with the latter increasing by 0.5 percentage points YoY, likely due to increased initial investment associated with the expansion of the intelligent equipment segment[15]. Gree' s Return on Equity (ROE) decreased from 25.6% in 2019 to 19.8% in 2023. While still above the industry average of 18.3%, this indicates an urgent need to improve asset utilization efficiency (Zhai, 2022). For instance, in 2023, the company's total asset turnover ratio was 0.82 times, signifying that the expansion of its asset scale has not effectively driven corresponding revenue growth, revealing notable deficiencies in asset operational efficiency. To enhance profitability, the enterprise must optimize resource allocation and focus on improving asset utilization effectiveness.

4.2.2. Solvency Analysis

Regarding short-term solvency, Gree' s current ratio declined from 1.25 to 1.08. This change was partly driven by an increase in accounts payable turnover days, reaching 58 days in 2023. The proportion of monetary funds to total assets has consistently remained above 40%, reaching 43.2% in 2023. This demonstrates strong liquidity management capabilities, sufficient to meet short-term debt obligations and thereby keeping liquidity risk within an acceptable range[7]. In terms of long-term solvency, Gree' s asset-liability ratio has continuously risen to 67.5%. However, it simultaneously maintains a high interest coverage ratio of approximately 15 times, significantly exceeding Midea Group's ratio by 3 times and Haier Smart Home's by 5 times. This clearly indicates the company's robust capacity for debt repayment. The low level of long-term debt also suggests a relatively stable capital structure, reflecting an overall sound financial condition and high capital operation efficiency[20].

4.2.3. Operational Capability Analysis

A significant decline in inventory management efficiency is a critical issue. Between

2019 and 2023, the inventory turnover rate decreased from 7.8 times/year to 6.0 times/year. The primary reasons for this decline include increased raw material procurement scale and delays in inventory turnover resulting from supply chain improvements, leading to higher capital occupation costs and further weakening operational efficiency. The accounts receivable turnover rate also decreased from 18.2 times to 13.5 times, indicating extended collection periods. To improve the situation, the enterprise must refine its credit policy system, strengthen accounts receivable management, accelerate capital turnover speed, and mitigate liquidity risks arising from customer defaults. Comparing Gree' s current inventory situation with Midea Group's T+3 flexible supply chain management model (with an average annual inventory turnover rate of approximately 8.5 times), it is evident that Gree possesses room for improvement in inventory control and urgently needs to enrich related strategies. According to the latest data, as of the end of 2023, Gree' s total accounts receivable amounted to RMB 42 billion, a 12% increase YoY. The average collection period for dealers extended to 60 days, indicating a relatively lenient channel credit policy. To improve capital operations, a dynamic credit evaluation system could be established, and the collection period could be reduced to within 45 days to achieve better capital turnover efficiency.

4.2.4. Growth Capability Analysis

The evaluation of Gree' s growth potential encompasses multiple factors such as revenue growth rate, R&D intensity, and market expansion capability. Data analysis reveals that its development is constrained by key issues including slow progress in diversification strategy, insufficient technological innovation investment, and inadequate depth in internationalization layout. To enhance its comprehensive competitive strength, the enterprise must formulate and implement systematic improvement plans to address these challenges.

4.2.4.1. Constrained Revenue Growth

Gree' s YoY revenue growth rate in 2023 was 7.82%, notably lower than Midea Group's 12.1% growth rate. This situation largely stems from the high concentration of Gree's air conditioning business within its revenue structure, accounting for 68% of its main revenue. As competition in the traditional air conditioning market intensifies and demand growth slows, the development prospects of Gree' s core business appear constrained, impacting overall operational performance. In contrast, Midea Group, benefiting from its diversified strategic layout, has achieved breakthroughs not only in core home appliance sectors but also in emerging fields like robotics, forming a solid foundation for its long-term performance growth. Gree' s monolithic business structure presents a significant risk warning.

4.2.4.2. Lagging R&D investment growth

Gree' s R&D investment growth rate in 2023 was only 7.1%, while Haier Group's growth during the same period reached 14.5%. In this critical era of accelerated global transition towards intelligent and green home appliances, R&D investment has become a vital indicator for assessing enterprise innovation capability and market competitiveness. Due to Gree' s relatively lower investment, it encounters numerous difficulties in innovation directions such as smart homes and new energy technology: it struggles to rapidly establish a comprehensive product ecosystem capable of connecting all types of smart home appliances;

it risks falling behind in the exploration of new energy-related technologies, lacking sufficient accumulation for breakthrough achievements. This hinders its ability to expand into emerging market spaces and increase overall market share.

4.2.4.3. Impact of Slow Diversification Transformation

Gree' s diversified businesses contribute a low proportion to total revenue. In 2021, new businesses like new energy (Gree Titanium) and intelligent equipment collectively contributed less than 5%. This results in an extremely high dependence on the air conditioning business. When the air conditioning industry experiences fluctuations, such as demand decline due to a sluggish real estate market, Gree' s performance is easily impacted, lacking the support from diversified businesses to mitigate risks. Furthermore, the slow diversification process causes it to miss certain market development opportunities. For instance, during the rapid growth of the smart home market, insufficient layout in this area prevented Gree from fully benefiting from the industry's expansion. In competition with enterprises possessing mature diversification strategies, Gree finds itself at a disadvantage, limiting its overall growth space.

4.2.4.4. Deficiencies in Market Expansion

The saturation of the domestic air conditioning market and the slow growth of new consumer demand subject Gree to increasingly intense competitive pressure. In its globalization process, Gree' s overseas business revenue accounts for only 13.7% of its total revenue, indicating a lag in its internationalization progress. The primary reasons for this situation are twofold: firstly, its brand awareness and influence have not yet been established globally; secondly, it lacks the ability to formulate localized strategies based on regional market characteristics, failing to achieve precision in product development and marketing. Examples include the lack of products specifically adapted to extreme high-temperature climates in the Middle East and the delayed development of heat pump models meeting user needs in Europe. Such issues have significantly impacted Gree' s international business advancement capabilities and future development prospects.

4.2.4.5. Suggestions for Enhancing Growth Capability

To elevate its core competitiveness, Gree Electric Appliances must accelerate the pace of diversification. In the new energy sector, it should focus on advancing the R&D and marketization of photovoltaic air conditioners and household energy storage systems, while further deepening the synergistic effects of its intelligent equipment business to achieve deep integration with air conditioning manufacturing. It should increase investment in technological R&D, tackling key technical challenges in critical areas such as air conditioning chip design and energy storage technology, thereby improving product performance and refining market layout. In the internationalization process, it needs to build localized operational systems, establishing R&D centers in target markets and formulating differentiated product strategies based on regional characteristics. Strategic mergers and acquisitions should be leveraged to integrate global supply chain resources, exploring sustainable business models within the globalization path.

4.2.5. Cash Flow Analysis

Cash flow analysis examines the company's cash operational status by focusing on operating cash flow and investing cash flow, based on Gree's financial data. Operating cash flow is significantly influenced by changes in raw material procurement costs; investing cash flow has consistently been negative due to planned strategic investments. The enterprise faces several challenges in cash flow management. Achieving long-term development necessitates improving resource allocation methods, enhancing capital operation efficiency, and strengthening risk prevention systems.

4.2.5.1. Analysis of Operating Cash Flow

In 2021, the net cash flow generated from Gree's operating activities decreased by 89.37% YoY to RMB 1.894 billion (Table unit: 1 billion yuan).This dramatic change was primarily caused by a substantial increase in prepayments for raw materials. Probing the underlying reasons, it may stem from the enterprise's anticipation of future raw material price trends, leading to large-scale advance purchases to lock in costs, or changes in supplier relationships resulting in higher prepayment amounts. Significant funds being tied up in raw material prepayments led to increased cash outflows from operating activities and a sharp decline in net cash flow. Although there was improvement in 2023, reaching RMB 4.21 billion, it still fell short of the 2019 level of RMB 27.85 billion. This indicates that the company's ability to generate cash from operations has not fully recovered. This situation is likely related to factors such as intensifying industry competition, lengthening sales collection periods, and the implementation of lenient credit policies to maintain market share. Significant fluctuations in operating cash flow impact corporate operational performance across multiple levels. Persistent declines in net cash flow can strain the corporate capital chain, constraining resource allocation for critical areas like technology R&D and equipment renewal, thereby posing potential threats to core competitiveness and sustainable development capacity. This instability in operating cash flow also exacerbates financial risk, potentially diminishing the enterprise's emergency response capability in the face of unexpected events or short-term financing needs.

4.2.5.2. Analysis of Investing Cash Flow

Gree’ s cash flow from investing activities has remained in a net outflow position for an extended period, with the 2023 net outflow amounting to RMB 13.82 billion. This situation is largely attributable to the strategic acquisition of Zhuhai Yinlong (Gree Titanium) and substantial capital investments in intelligent manufacturing technology upgrade projects. This acquisition aligns with Gree’ s vision for diversification and demonstrates its commitment to implementing the national Dual Carbon goals, aiming to open up new business growth points and improve the revenue structure. In intelligent manufacturing, investments aimed at enhancing production efficiency, reducing operating costs, and improving product quality significantly strengthen the company’s core competitiveness. These investment decisions clearly reflect Gree’ s acceleration of its strategic transformation and industrial structure optimization and upgrading. While such investments hold significant strategic importance, they exert considerable pressure on the company’s capital operations in the short term. If projects fail to meet expectations on schedule, they can threaten the enterprise's financial condition and profitability. Taking Gree Titanium as an example, its development process,

affected by factors such as technical obstacles, intensifying industry competition, and prolonged capital recovery periods, may cause fluctuations in Gree' s return on investment. Conversely, if projects progress smoothly, Gree can gain a first-mover advantage in the new energy and intelligent manufacturing sectors, driving multi-faceted business development and opening up broader markets and profit sources.

4.2.5.3. Comprehensive Analysis and Suggestions

Gree' s cash flow statement effectively reflects both key opportunities and latent challenges in its development trajectory. To improve cash flow conditions, the enterprise should prioritize optimizing raw material procurement processes, reasonably managing prepayment amounts, reducing accounts receivable collection periods, and innovating sales models to enhance operating cash flow generation capacity. In investment decision-making, it must refine pre- project evaluation systems and risk control mechanisms to ensure investment actions are scientific and efficient. Regarding financing planning, appropriate capital raising plans should be formulated based on operational needs to optimize the capital structure, effectively reducing financial costs and risks. Through these measures, Gree Electric Appliances can further enhance capital utilization efficiency, improve risk resilience, and facilitate the achievement of sustainable development strategic objectives.

4.3. Accounting Analysis

4.3.1. Key Accounting Policies and Estimates

Gree employs the transfer of control principle for revenue recognition. Revenue from air conditioner sales is recognized at the point of customer sign-off (Gree Annual Report Notes). For inventory valuation, the weighted average cost method is used. In 2021, the inventory write-down provision ratio was 1.5%, lower than Midea' s 2.3%, indicating relatively conservative inventory management. Regarding R&D expenditure capitalization, Gree' s capitalization rate in 2021 was 5%, significantly lower than Haier' s 15%, reflecting a conservative accounting policy stance.

4.3.2. Evaluation of Accounting Information Quality

The quality of Gree's accounting information exhibits a distinct duality: notable strengths alongside implicit risk characteristics. The company has maintained consistent accounting policies for five consecutive periods, ensuring stability and comparability of relevant data in financial reports. The gradual decline in accounts receivable turnover rate indicates a lengthening collection period for the company's receivables. The underlying causes of this phenomenon must be investigated to implement effective improvement measures and establish a more systematic risk prevention framework.

4.4. Prospective Analysis

4.4.1. Opportunities and Challenges

Table 2. Analysis of Opportunities and Challenges for Gree Electric Appliances (2021-2025)

Category	Indicator/Content	Data/Description
	1. Southeast Asia AC Penetration Rate	2021 Southeast Asia AC Penetration < 30% (Indonesia 25%, Vietnam 28%)
	2. Gree Overseas Revenue Target	2021 Overseas Revenue 13.7%, Plan to increase to 25% by 2025
	3. Gree Titanium New Energy Business Growth	2021 Revenue RMB 1.01 bn, YoY growth 60%; Expected growth >50% in 2022
Challenges	1. Raw Material Prices (Copper)	2022 Avg. Copper Price RMB 68,000/ton, up 15% YoY, compressing GM by 2-3 p.p.
	2. Domestic AC Market Saturation	2021 Domestic AC Ownership per 100 Households: 138 units; Incremental market shrunk, replacement demand >70%
	3. Industry Competitive Pressure	2022 Midea AC Market Share 32.1%, Gree Share 30.5%; Gap continues to narrow

Data Source: Gree Annual Reports, Gree Titanium Reports

From a macro perspective, the significantly lower air conditioner market penetration rate in Southeast Asia compared to China presents Gree with broad development space for overseas market expansion. In light of this, Gree plans to leverage local manufacturing setups (e.g., the Indonesia factory) and channel optimization strategies, aiming to increase the proportion of overseas business revenue to 25% of total revenue by 2025. Gree Titanium Energy Technology Co., Ltd., specializing in energy storage equipment and new energy vehicles, is estimated to achieve annual revenue of RMB 5 billion by 2025 under the impetus of Dual Carbon policies, becoming one of the company' s key profit growth drivers. Concurrently, Gree faces various operational pressures, including persistently rising raw material costs, increasingly fierce domestic market competition, and numerous uncertainties in the global economic landscape.

4.4.2. Financial Forecasts and Strategic Recommendations

Based on Gree' s current operational trends and industry environment projections, revenue growth over the next three years is expected to remain within the 8%-10% range, with the net profit margin forecast to stabilize between 10%-12%. To achieve sustainable growth, the following measures are recommended:

First, optimize the capital structure. The current interest-bearing debt ratio is 28.5% (Liu, 2023). Reducing this to below 20% through debt replacement or equity issuance could potentially raise ROE back above 22%.

Second, increase R&D investment. In 2023, Gree' s R&D expenditure ratio was only 3.8% (Revenue RMB 205 bn, R&D investment RMB 7.8 bn), far below Huawei' s 25.1%. It is recommended to increase the R&D ratio to above 5% (annual investment exceeding RMB 10 bn), focusing on breakthroughs in core technologies like air conditioning chips and energy storage systems to seize opportunities in the new energy sector[15].

5. Problems and Countermeasures for Gree Electric Appliances

5.1. Major Existing Problems

5.1.1. Significant Risk of Monolithic Business Structure

Gree exhibits an excessively high dependence on its air conditioning business. In 2021, air conditioning revenue accounted for 70% [17]of total revenue, while new businesses like new energy (Gree Titanium) and intelligent equipment collectively contributed less than 5%, significantly lower than Midea Group. This results in weak resilience against industry cyclical fluctuations. Furthermore, Gree' s emerging businesses demonstrate sluggish growth. Revenue growth in the intelligent equipment segment has slowed, and the new energy business (Gree Titanium) struggles to support a viable second growth curve.

5.1.2. Supply Chain Efficiency and Cost Control Pressure

Extended accounts receivable collection periods and lenient dealer credit policies intensify capital pressure. Within the key indicator system of corporate operational efficiency, changes in inventory turnover efficiency and accounts receivable collection cycles profoundly impact the safety of the corporate capital chain and operational quality. Large amounts of capital immobilized in raw material stockpiling lead to excessive occupation of cash flow, significantly reducing the flexibility and utilization efficiency of capital turnover, thereby inflating operational costs.

5.1.3. Slow Progress in Internationalization Strategy

Firstly, overseas market penetration remains insufficient, heavily reliant on OEM (Original Equipment Manufacturing) models, resulting in weak brand premium capability. Secondly, localization capabilities are deficient. Overseas R&D investment constitutes less than 1% of revenue[13], and there is a lack of customized products tailored to regional markets (e.g., high-temperature air conditioners for the Middle East, heat pumps for Europe), leading to sluggish market share growth.

5.2. Targeted Countermeasures and Suggestions

5.2.1. Diversify Business Structure and Forge New Growth Engines

First, accelerate the scaled development of the new energy business. Leverage Gree Titanium's technological advantages in energy storage to expand product lines such as photovoltaic air conditioners and household energy storage systems. Target increasing the new energy business revenue contribution to 15% by 2025 (reference Ningde Times CATL' s energy storage business growth rate). Second, strengthen industrial synergy in intelligent equipment. Promote the deep integration of industrial robots and CNC machine tools with air conditioning manufacturing processes. Adopt an internal consumption + external output model, targeting intelligent equipment business revenue to exceed RMB 10 billion (benchmarking Midea' s acquisition of KUKA).

5.2.2. Optimize Supply Chain and Capital Management

First, introduce digital supply chain tools. Establish a dynamic inventory monitoring system to adjust raw material procurement plans in real-time based on market demand. Target increasing inventory turnover to over 7 times (reference Midea' s T+3 model). Second,

innovate accounts receivable financing models. Pilot accounts receivable asset securitization (ABS) to shorten the collection cycle to within 35 days while reducing financing costs (reference Haier's supply chain finance case).

5.2.3. Deepen Global Strategic Layout

First, construct localized operational systems. Establish regional R&D centers in Southeast Asia and Europe to develop products suited to local demands (e.g., heat pump air conditioners for Europe, energy-efficient models for India). Target achieving over 50% overseas self-brand contribution by 2025. Second, pursue strategic mergers and acquisitions (M&A) and channel integration. Drawing lessons from Haier's acquisition of GEA (GE Appliances), rapidly acquire channels and customer resources through the acquisition of regional brands, thereby lowering market entry barriers[19].

6. Conclusion and Outlook

This paper employs the Harvard analysis framework to conduct a systematic study of Gree Electric Appliances' financial capability based on the four dimensions of strategy, accounting, finance, and prospects. Relying on its strengths in technology R&D and brand, Gree demonstrates excellence in profitability and solvency. However, problems such as its monolithic business structure, volatile cash flow, and sluggish internationalization progress cannot be overlooked.

Driven by technological innovation, Gree maintains strong profitability. In 2021, its air conditioning business achieved a gross profit margin of 35%, far exceeding the industry average. The company's continuous increase in R&D investment, with cumulative patent applications exceeding 100,000, provides robust support for its high-end transformation. Financially, by the end of 2021, the company's asset-liability ratio was 66.11%, and its interest coverage ratio was 15.6 times, indicating solvency more robust than the industry average. However, the current business structure remains overly homogeneous, with air conditioning contributing over 70% of revenue, while emerging sectors like intelligent equipment and new energy account for less than 5%, constraining overall development potential. In 2021, net cash flow from operating activities plummeted by nearly 90% YoY, and inventory turnover was only 6.5 times, significantly lower than Midea Group's 8.2 times. This indicates that the company possesses room for improvement in areas such as supply chain optimization and cost control. While the Technology + Manufacturing model yielded short-term financial improvements, encountering external pressures such as macroeconomic volatility and rising raw material prices necessitates strategic adjustments to find a path towards sustainable growth.

Looking ahead, Gree Electric Appliances needs to enhance its strategic planning in several key areas: At the business level, Gree should accelerate the diversification process, particularly increasing the revenue share of new energy projects (e.g., Gree Titanium technology) and the intelligent manufacturing sector. Drawing lessons from Midea Group' s successful acquisition of KUKA and transformation towards industrial automation, it is projected that non-air conditioning business revenue could reach approximately 30% of total revenue by 2025. Regarding internationalization strategy, with the current overseas sales revenue accounting for only 13.7% of total revenue—significantly lower than Haier' s

50%—Gree could emulate Haier's local R&D + cross-border M&A pathway to open new avenues. This is particularly crucial for expanding into high-demand regions like Southeast Asia (air conditioning penetration below 30%) and Europe. Within the supply chain operations sphere, innovative financing methods could be considered, such as implementing a digital supply chain system (including real-time inventory monitoring) coupled with accounts receivable securitization. This would enable Gree to reduce its average collection period to around 44 days, substantially improving its capital operational efficiency.

Against the backdrop of the home appliance industry entering a new stage of stock competition, Gree' s experience demonstrates that technological strength and scenario-based service capabilities are key factors in shaping core competitiveness. Gree should increase its R&D expenditure ratio to over 5% of operating revenue, focusing on green and intelligent fields like zero-carbon air conditioning and smart home ecosystems. Enhancing user stickiness through value-added service models, such as Haier' s Sanyingniao (Three-winged Bird) whole-home customization solution, can help mitigate the impact of real estate cyclical fluctuations on operations (projected 2022 home appliance retail market growth rate to fall to around 3%). Research conducted using the Harvard Business School theoretical framework suggests that future analyses could further integrate Environmental, Social, and Governance (ESG) indicators with dynamic monitoring data to more comprehensively evaluate the enterprise's sustainable development capability.

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Acknowledgement

Time flies. The experience of creating this graduation thesis has left a deep imprint on my heart, becoming a significant landmark on my personal development path. This challenging yet immensely rewarding journey of exploration has solidified my theoretical foundation and practical experience, while also planting seeds of gratitude in my soul. It has instilled confidence and provided boundless motivation for my future endeavors.

During this period, I must extend my deepest gratitude to my supervisor, Professor Dongsheng Liao. At the initial stage of selecting the research topic, it was the professor's keen academic insight and profound theoretical expertise that provided crucial guidance. When faced with several potential topic options, the professor patiently listened to my opinions, comprehensively evaluated the feasibility of each choice by integrating cutting-edge disciplinary developments and practical needs, and finally, considering their theoretical value, helped me conceive a topic that aligns with my personal interest while

possessing academic merit. Throughout the thesis writing process, the professor's rigorous attitude and solid foundational knowledge served as a beacon, illuminating my path. Whenever I encountered difficulties in structuring the overall argument or specific sections, the professor could meticulously analyze the core issues, offering genuinely useful suggestions for improvement that helped me overcome hurdles. I recall one instance while organizing the logical relationships of core arguments; despite multiple revisions failing to achieve the desired effect, the professor remained consistently understanding and supportive. Gradually, I was able to clarify my thoughts and enrich the system of evidence. Upon learning of the situation, the professor specifically arranged a two-hour thematic discussion, guiding my thinking from multiple perspectives and providing systematic instruction that brought me sudden clarity. During the thesis revision phase, the professor remained continuously engaged in reviewing the work, offering detailed guidance from the overall structure down to minute details. Particularly regarding punctuation usage and language standardization, numerous valuable suggestions were provided. Thanks to the professor's professional guide, my thesis was progressively refined, and its academic quality significantly enhanced.

During this time, the spirit of collaboration among classmates was also invaluable. Whenever I encountered bottlenecks or moments of confusion, they were always proactive in exchanging insights and offering enlightening suggestions. Often, these seemingly small yet inspired suggestions helped break through mental blocks and broaden my research perspective. It was through this mode of teamwork that we collectively navigated this intense yet fulfilling period. The support and encouragement from my family also played a vital role. During the high-pressure stages of thesis writing, they were constantly by my side, providing essential psychological support. This enabled me to successfully fulfill my academic responsibilities and deepened my appreciation for the precious significance of familial affection. Whenever I was exhausted or felt anxious and irritable, my family offered silent support. My mother would often bring me a warm glass of milk late at night, and my father would gently counsel and encourage me to maintain long-term motivation. This comprehensive care formed a powerful pillar enabling me to concentrate fully on my research.

The successful completion of this research is inseparable from the guidance of my supervisor, the assistance of my classmates, and the wholehearted support of my family. This embodies the importance of human collaboration in achieving objectives. Facing my future career path, I will carry forward this sense of gratitude, embracing challenges with a positive spirit and steadfast conviction. I intend to apply the knowledge I have acquired in practical settings, reciprocating society through tangible actions, practicing the noble quality of helping others, and contributing my share to the creation of a harmonious society.